



प्रगति प्रतिवेदन  
Progress Report  
2016-17

अखिल भारतीय समन्वित गेहूँ एवं जौ सुधार परियोजना  
AICRP on Wheat and Barley Improvement

उत्पादन वृद्धि से किसान समृद्धि  
Higher Productivity for Farmers' Prosperity

संसाधन प्रबंधन  
Resource Management

भा.कृ.अनु.प. – भारतीय गेहूँ एवं जौ अनुसंधान संस्थान, करनाल  
ICAR – Indian Institute of Wheat and Barley Research, Karnal

# **AICRP on Wheat & Barley**

**PROGRESS REPORT  
2016-17**

## **RESOURCE MANAGEMENT**

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(रमेश कुमार शर्मा)

प्रधान वैज्ञानिक एवं प्रमुख अन्वेषक  
संसाधन प्रबंधन

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## **SUMMARY**

India harvested an all time record wheat production of more than 97 million tonnes during the year 2016-17 despite shrinking land and water resources, climate abrasions and little genetic gain. This has been made possible by Indian farmers and scientists through efficient management of natural resources and various external inputs like chemical fertilizers and pesticides. The imbalanced fertilisation and intensive tillage are still matters of concern. The multiple nutrient deficiencies are being reported which is a result continuous mining of the soil coupled with imbalanced fertilisation. Nitrogen is generally applied in excess and potash and micronutrients are rarely applied. The situation is further worsened by crop residues burning, which besides causing losses of precious organic source and essential nutrients also leads to environmental pollution causing health hazards. In order to provide food security and reverse the trend in natural resource degradation, technological advancements including developing better varieties suited to different cropping systems and growing conditions in various agro-ecological zones is a must. The higher agricultural productivity has to be achieved along with the improvement or at least without further detrimental effect to the environment and natural resources for long-term sustainability. Research efforts are focussed, in addition to varietal improvement, on the refinement of the technologies, diversification/intensification by including leguminous crops, integrated nutrient and weed management, to make food production cost and energy efficient in order to increase the profit margins to the farmers.

The Resource Management group of the “All India Co-ordinated Research Project on Wheat and Barley” (AICRP-W&B), in addition to evaluating the performance of newly developed genotypes, is also actively engaged in developing and fine tuning the farmers’ and eco-friendly, location specific and cost effective technologies for higher productivity and profitability. The work on cost effective technologies is being executed through special coordinated trials depending on the priorities of various wheat growing zones. The results of the multi-location varietal evaluation and special co-ordinated trials are summarised hereunder.

In three wheat growing zones, four varietal evaluation trial series were conducted to evaluate six final year genotypes at a number of locations under different growing conditions. The newly developed genotypes were evaluated against the existing varieties used as checks. In addition, twelve special coordinated trials were also conducted to address the zone-wise problems and priorities.

The zone-wise details of the varietal evaluation trials conducted are given in Table 1. In all, 32 trials were proposed of which 31 were conducted. Out of the conducted trials, 02 were rejected due to improper time of sowing. The overall conduct of trial was 96.8 percent with a success and rejection rate of 93.5 percent and 6.5 percent, respectively. In NWPZ, out of 12 proposed trials, all were conducted but 2 were rejected due to improper sowing time. In NEPZ and PZ, 10 trials were proposed in each zone out of which 10 and 09 were conducted successfully in NEPZ and PZ, respectively. Annigeri centre did not conduct RF-TAS-LON

trial. The centres where the trials were not conducted or where the trials were rejected have been listed in the Table 1.

**Table 1. Zone-wise details of the coordinated varietal evaluation trials**

Trial Series	Locations	Trials conducted	Trials not conducted		Rejected	
			Number	Centres	Number	Centres
<b>North Western Plains Zone</b>						
IR-LS-TAS-DOS	12	12	-	-	02	Agra, Nagina
<b>Total</b>	<b>12</b>	<b>12</b>	-	-	02	-
<b>North Eastern Plains Zone</b>						
RIR-TS-TAS	10	10	-	-	-	-
<b>Total</b>	<b>10</b>	<b>10</b>	-	-	-	-
<b>Peninsular Zone</b>						
IR-TS-TAD-DOS	06	06	-	-	-	-
RF-TAS-LON	04	03	01	Annigeri	-	-
<b>Total</b>	<b>10</b>	<b>09</b>	<b>01</b>		-	
<b>Total Trials</b>	<b>32</b>	<b>31</b>	<b>01</b>		<b>02</b>	

The performance of test entries has been presented in the Table 2. The performance showed that in NWPZ, the single test entries in the AVT-II year was statistically at par with the best check HD 3059. In NEPZ, the lone test genotype HI 1612 performed significantly better than the best check K 1317 with a yield gain of 2.44%. In PZ, test entry UAS 375 gave numerically better yield than the respective best check NI 5439 with a yield gain of 4.15 percent. Both the durum test entries HI 8777, MACS 4028 were poorer than the respective best check UAS 446.

**Table 2. Performance of new genotypes in various agro-climatic zones**

Zone wise trial	Test entries	Entry sowing superiority		Best check	Yield gain, %	Locations
		Numerical	Significant			
<b>North Western Plains Zone</b>						
IR-LS-TAS-DOS	DBW 173	-	-	HD 3059	-	10
<b>North Eastern Plains Zone</b>						
RIR-TS-TAS	HI 1612	-	HI 1612	K 1317	2.44	10
<b>Peninsular Zone</b>						
IR-TS-TAD-DOS	DBW 168	-	-	MACS 6478	-	06
RF-TAS-LON	UAS 375	UAS 375	-	NI 5439	4.15	03
	HI 8777, MACS 4028	-	-	UAS 446	--	03

The details of the special coordinated trials conducted in different zones are presented in Table 3. In all, 123 trials were proposed, out of which 115 were conducted with the conduct percentage was 93.5. The maximum number of special trials were conducted in North Western Plains Zone (42) followed by Central Zone (23), North Eastern Plains Zone (23), Northern Hills Zone (15) and Peninsular Zone (12).

**Table 3. Zone-wise details of the special agronomic trials**

Trial Series	Locations	Trials conducted	Trials not conducted	
			Number	Centres
<b>Northern Hill Zone</b>				
SPL-1: Broadleaved weeds management	04	04	-	-
SPL-2: Lodging and yield maximization	05	04	01	Shimla
SPL-4: Leaf colour chart (LCC)	04	04	-	-
SPL-12: Precision nutrient management	03	03		
<b>Total</b>	<b>16</b>	<b>15</b>	<b>01</b>	
<b>North Western Plains Zone</b>				
SPL-1: Broadleaved weeds management	07	07	-	-
SPL-2: Lodging and yield maximization	11	09	02	Delhi, Sriganganagar
SPL-4: Leaf colour chart (LCC)	07	07	-	-
SPL-5: Micro-Irrigation	02	02	-	-
SPL-6: Evaluation of Hydrogel in wheat	06	05	01	Gurdaspur
SPL-7: Yield maximization under CA	04	04	-	-
SPL-10: Organic manures and mulching	04	04	-	-
SPL-12: Precision nutrient management	04	04		
<b>Total</b>	<b>45</b>	<b>42</b>	<b>03</b>	
<b>North Eastern Plains Zone</b>				
SPL-1: Broadleaved weeds management	05	05	-	-
SPL-2: Lodging and yield maximization	10	10	-	-
SPL-8: Pre-harvest sprouting in wheat	02	02	-	-
SPL-9: Mulch with irrigation in wheat	02	02	-	-
SPL-10: Organic manures and mulching	03	03	-	-
SPL-12: Precision nutrient management	01	01		
<b>Total</b>	<b>23</b>	<b>23</b>		
<b>Central Zone</b>				
SPL-1: Broadleaved weeds management	03	03	-	-
SPL-2: Lodging and yield maximization	09	08	01	Powarkheda
SPL-5: Micro-Irrigation	01	01	-	-
SPL-6: Evaluation of Hydrogel in wheat	02	01	01	Kota
SPL-10: Organic manures and mulching	01	01	-	-
SPL-11: Planting methods and varieties	08	08	-	-
SPL-12: Precision nutrient management	01	01	-	-
<b>Total</b>	<b>25</b>	<b>23</b>	<b>02</b>	
<b>Peninsular Zone</b>				
SPL-1: Broadleaved weeds management	01	01	-	-
SPL-2: Lodging and yield maximization	06	04	02	Akola, Washim
SPL-3: Nutrient management in M/S-W	02	02	-	-
SPL-6: Evaluation of Hydrogel in wheat	01	01	-	-
SPL-11: Planting methods and varieties	03	03	-	-
SPL-12: Precision nutrient management	01	01	-	-
<b>Total</b>	<b>14</b>	<b>12</b>	<b>02</b>	
<b>Total Trials</b>	<b>123</b>	<b>115</b>	<b>08</b>	



## NORTH WESTERN PLAINS ZONE

In North Western Plains Zone, one varietal evaluation trial under irrigated late sown was conducted at ten locations namely Bikaner, Durgapura, Delhi, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganaganagar, to evaluate the performance of new genotype DBW 173 which was found statistically at par with the best check HD 3059 (Figure 1).

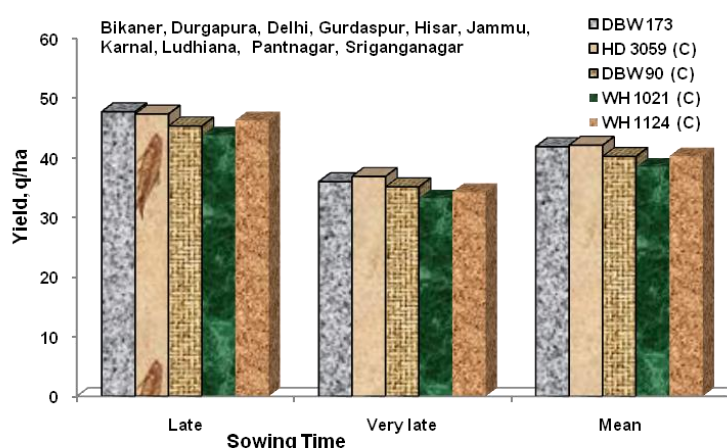


Figure 1. Genotypes under irrigated late and very late sown in NWPZ

## NORTH EASTERN PLAINS ZONE

In this zone, one varietal evaluation trial was conducted to evaluate the performance new genotype HI 1612 against five checks under restricted irrigation timely sown conditions. The test genotype performed significantly better than the best check with a yield gain of 2.44% as compared to the best check K 1317 (Figure 2)

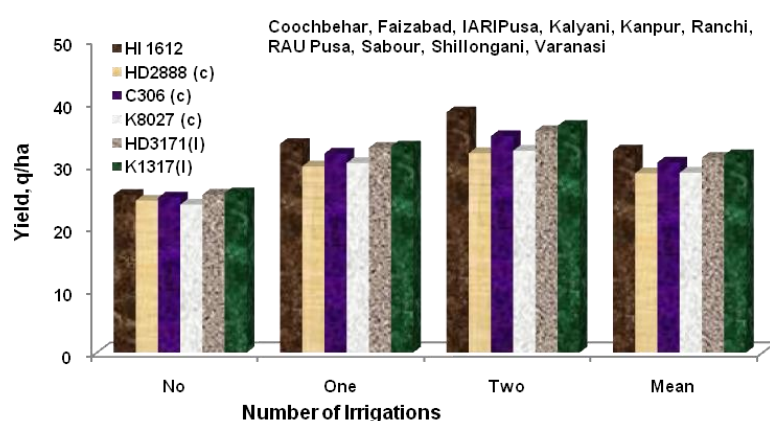


Figure 2. Genotypes under restricted irrigations in NEPZ

## PENINSULAR ZONE

In this zone, two coordinated trials for evaluation of new genotypes for irrigated timely sown and rainfed conditions were conducted.

### Irrigated Timely Sown

One test genotype (DBW 168) was evaluated against four checks (MACS 6478, MACS 6222, GW 322 and UAS 304) under two sowing conditions *i.e.* timely and late sown conditions at all the six locations. The pooled analysis revealed significant effect of sowing time and genotypes on grain yield. The test genotype DBW 168 ranked last among five genotypes in terms of grain yield (41.41 q/ha) as compared to the check varieties. The maximum grain yield was produced by check variety MACS 6478 (45.24 q/ha) followed by GW 322 (43.07 q/ha), MACS 6222 (42.33 q/ha) and UAS 304 (41.80 q/ha).

### Rainfed Conditions

In this trial one *aestivum* (UAS 375) and two *durum* (HI 8777, MACS 4028) test entries were evaluated against two *aestivum* checks (NI 5439, NIAW 1415) and two *durum* checks (UAS 446, AKDW 2997-16) at three nitrogen levels (40, 60 and 80 kg/ha). The test entry UAS 375 gave numerically better yield than the respective best check NI 5439 with a yield gain of 4.15

percent (Figure 3). Both the durum test entries HI 8777, MACS 4028 were poorer than the respective best check UAS 446.

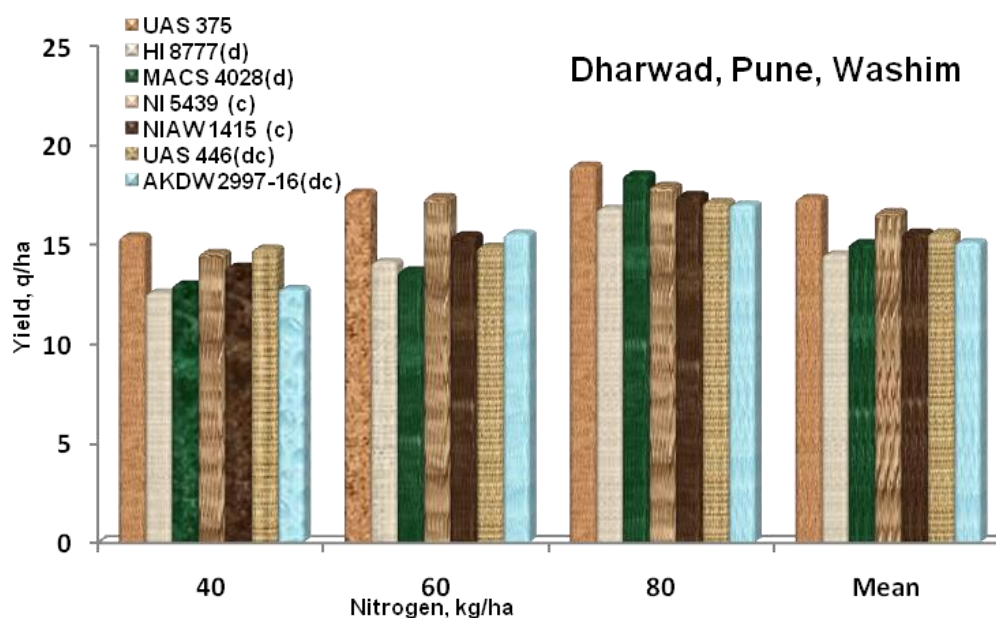


Figure 3. Genotypes under rainfed conditions in PZ

## PRODUCTION TECHNOLOGIES

Various special coordinated trials on site specific nutrient management, tillage and nitrogen management, irrigation methods, spacing and nutrient management for maximising productivity were conducted to address various issues in different wheat growing zones. The results of various experiments on updating package of practices are summarised below;

### SPL-1: Evaluation of herbicides for control of broadleaved weeds in wheat

This trial was conducted in five wheat growing zones (NHZ, NWPZ, NEPZ, CZ and PZ) to identify effective herbicides for control of broad leaved weeds in wheat. The trial was conducted in RBD with eleven weed control treatments replicated thrice. The treatments were i) *Halaxifen-methyl ester + Florasulam 40.85% WG + surfactant Polyglycol 26-2 N* (12.76 g a.i +750 ml./ha); ii) *Metsulfuron methyl 20 WG + surfactant* (4.0 g a.i +625 ml./ha), iii) *Carfentrazone 40DF* (20.0 g a.i./ha); iv) *2,4-D Na 80 WP* (500 g a.i./ha); v) *2,4-D E 38 EC* (500 g a.i./ha); vi) *Metsulfuron+carfentrazone +surfactant* (4.0 g+20 g+625 ml/ha); vii) *2,4-D Na + Carfentrazone* (400+20 g a.i./ha); viii) *2,4-D E + Carfentrazone* (400+20 g a.i./ha); ix) *Halaxifen methyl + florasulam+ carfentrazone + surfactant* (10.21+20 g a.i.+750 ml /ha); x) *Weedy check* and xi) *Weed free*. Broadleaved herbicides were applied at 30-35 days after sowing. A blanket dose of clodinafop 60 g/pinoxaden 50 g/fenoxaprop 100 g/ha was applied about 5 days before or after the broad leaf herbicide application to control grassy weeds.

The trial was conducted at twenty locations i.e. four centres (Almora, Bajaura, Khudwani and Malan) in NHZ, seven centres (Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar) in North Western Plains Zone, five locations (Coochbehar, Faizabad, Kalyani, Sabour and Varanasi) in North Eastern Plains Zone, three locations (Bilaspur, Indore and Udaipur) in Central Zone and one centre (Dharwad) in Peninsular Zone.

In all the zones weed free treatment produced the highest grain yield which was closely followed by the treatment having combination of Halauxifen methy + florasulam + carfentrazone + surfactant or Metsulfuron + Carfentrazone + S. Among broad leaved herbicides, Halauxifen methyl + florasulam + carfentrazone + surfactant (10.21 + 20 g a.i. + 750 ml/ha) was found the best treatment in controlling broad leaf weeds density and dry weight.

### SPL-2: Management of lodging and yield maximization in wheat

This experiment was conducted to maximise wheat yield with target yield of 6 and 7 t/ha using crop growth regulators Chlormequat chloride (Lihocin) and Tebuconazole (Folicur 430 SC). In Northern Hills Zone, this experiment was conducted at Almora (UttaraKhand), Bajaura (Kullu, HP), Khudwani (Anantnag, J&K) and Malan (Palampur, HP). The pooled analysis showed that increasing fertiliser doses enhanced grain yield significantly (Figure 4). Application of 150% RDF has increased the grain yield (50.45 q/ha) to the tune of 10.0% over RDF (45.40 q/ha). Even 15 t/ha FYM application along with 150% RDF increased the grain yield (51.06 q/ha) numerically as compared to 150% RDF application. Two spray of tebuconazole produced maximum grain yield (45.30 q/ha) which was significantly higher than other treatments. Application of CCC @ 0.2 % + tebuconazole @ 0.1 % twice in crop season reduced the plant height significantly as compared to other treatments.

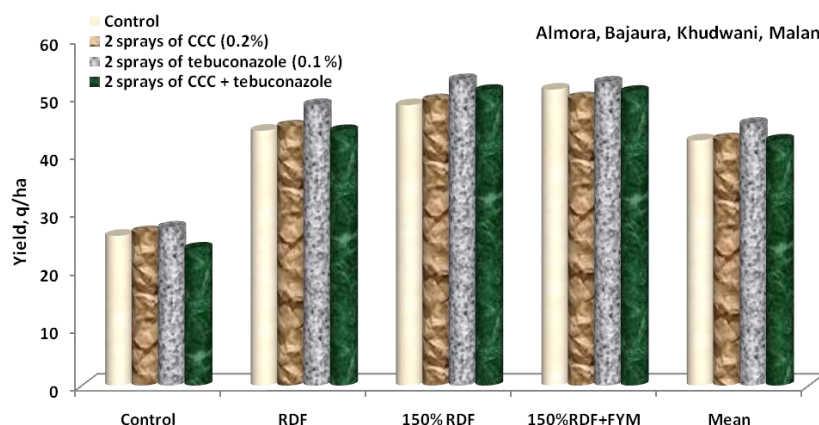


Figure 4. Maximising yield using nutrient management and growth regulators-NHZ

Two spray of tebuconazole produced maximum grain yield (45.30 q/ha) which was significantly higher than other treatments. Application of CCC @ 0.2 % + tebuconazole @ 0.1 % twice in crop season reduced the plant height significantly as compared to other treatments.

In NWPZ this trial was conducted at seven centres namely at Agra, Durgapura, Hisar, Jammu, Karnal, Ludhiana and Panthagar. The pooled analysis showed significant effect of fertilizer application on grain yield and yield attributes (Figure 5). The grain yield enhanced significantly with increasing fertiliser doses. The application of 150 % RDF increased the grain yield (56.44 q/ha) to the tune of 2.7 % over RDF (54.95 q/ha). Also, the addition of 15 t/ha FYM application along with 150 % RDF increased the grain yield (58.17 q/ha) significantly as compared to 150 % RDF application. Two spray of Chlormequat chloride (Lihocin) 0.2 % + tebuconazole (Folicur 430 SC) 0.1% produced maximum grain yield

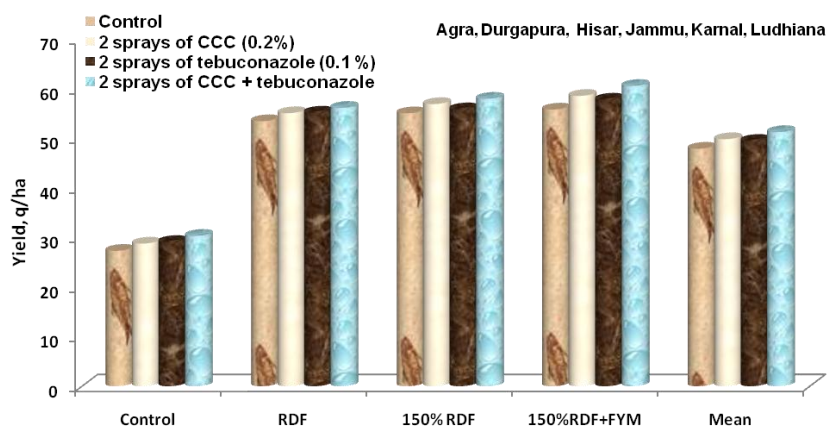


Figure 5. Maximising yield using nutrient management and growth regulators-NWPZ

(51.25 q/ha) which was significantly higher than other treatments. This showed that growth retardant in combination with fungicide tebuconazole is more effective rather alone application.

In NEPZ, this experiment was conducted at ten centres namely Burdwan, Coochbehar, Faizabad, Kalyani, Kanpur, Ranchi, RAU Pusa, Sabour, Shillongani and Varanasi. The pooled analysis showed that increasing fertiliser doses enhanced grain yield significantly (Figure 6). The trend was similar to the North Western Plains Zone and the highest yield (41.82 q/ha) was recorded with two spray of Chlormequat chloride (Lihocin) 0.2 % + tebuconazole (Folicur 430 SC) 0.1% which was significantly higher than other treatments.

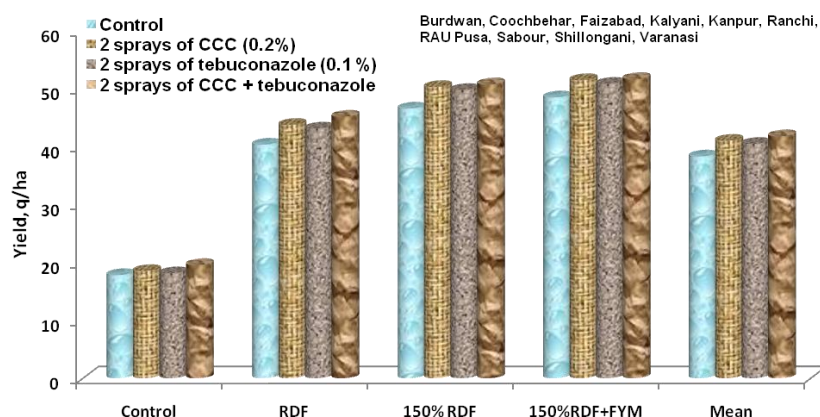


Figure 6. Maximising yield using nutrient management and growth regulators-NEPZ

In Central Zone, this trial was conducted at eight locations (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Kota Udaipur and Vijapur). The highest yield was recorded under the treatment 150%RDF+FYM (53.07 q/ha) as compared to all other treatments (Figure 7). The treatments having two sprays of Lihocin and two sprays of Lihocin+Folicur were statistically at par whereas the treatment two sprays of Lihocin+Folicur (47.45 q/ha) was statistically higher than the treatment two sprays of Folicur (46.61 q/ha). Application of growth retardants reduced plant height drastically as compared to control. Minimum plant height was observed under two sprays of Lihocin (82.88 cm) followed by two sprays of Lihocin+Folicur (82.99 cm).

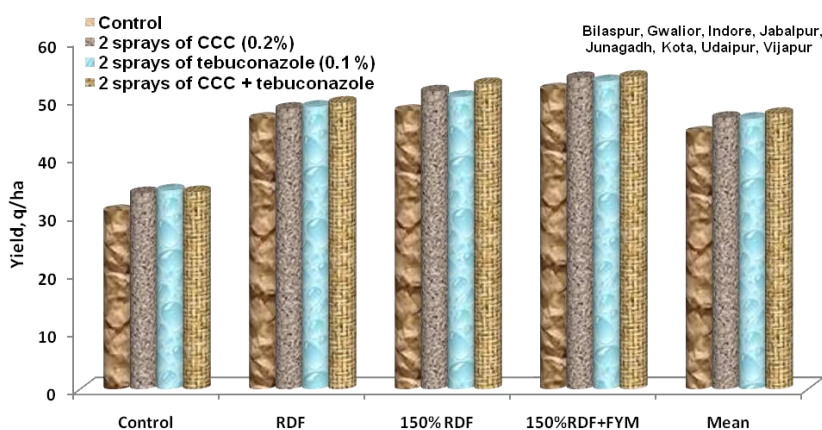


Figure 7. Maximising yield using nutrient management and growth regulators-CZ

In Peninsular Zone this trial was conducted at Dharwad, Niphad, Pune and Ugar Khurd. The treatment with

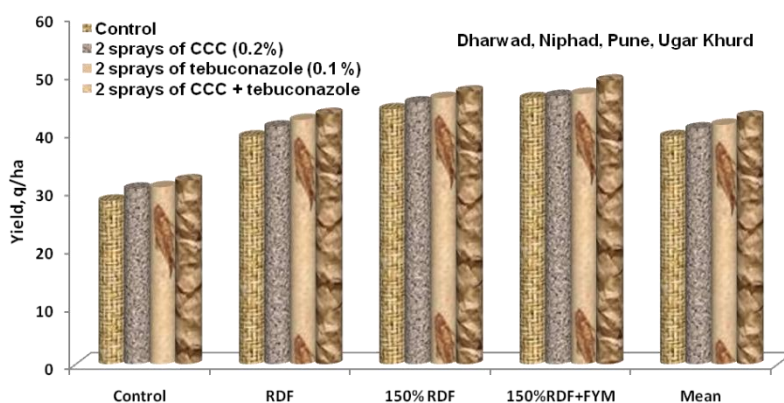


Figure 8. Maximising yield using nutrient management and growth regulators-PZ

150% RDF + 15 t/ha FYM produced maximum yield (46.94 q/ha) followed by 150 % RDF (45.53 q/ha) and both the treatments remained statistically at par (Figure 8). Among growth retardant treatments two sprays as tank mix Lihocin at 0.2% + Folicur 430 SC at 0.1% produced maximum yield (42.71 q/ha) followed by two sprays of Folicur 430 SC at 0.1% (41.31 q/ha) and remained statistically at par.

### SPL-3: Efficient nutrient management in maize-wheat system

For efficient nutrient management in maize/soybean-wheat system an experiment was conducted at two locations (Dharwad, Niphad) in Peninsular Zone. There was significant effect of nutrient management on wheat equivalent yield of maize/soybean-wheat system (Figure 9). It was found that maximum wheat equivalent yield (131.63 q/ha) was obtained in maize-wheat system with 125% of recommended dose of fertilizers (RDF) for both the crops followed by RDF for 6.0 t/ha targeted maize and 4 t/ha targeted wheat yield (127.83 q/ha) which were at par. Almost similar trend was observed at both the centres.

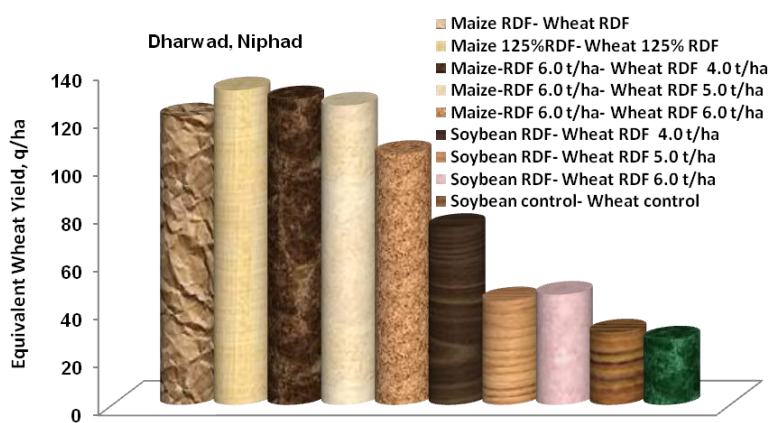


Figure 9. Efficient nutrient management in maize/soybean-wheat system

### SPL-4: Validation of leaf colour chart (LCC) for different wheat varieties

To validate the leaf colour chart for different varieties for higher nitrogen use efficiency an experiment was conducted in NHZ and NWPZ. The varieties used were HPW 349, VL 907 and HS 507 in NHZ and WH 1105, HD 2967 and DPW 621-50 in NWPZ.

In Northern Hill Zone, the trial was conducted at four centres (Almora, Bajaura, Khudwani and Malan). The application of 145 kg/ha nitrogen in treatment LCC -apply 55 kg N/ha if LCC<4 and 45 kg N/ha if LCC ≥4 recorded the highest yield (45.78 q/ha) which was significantly higher than all other treatments (Figure 10) except N rich (225 kg N/ha) treatment (45.19 q/ha). In addition, the nitrogen saving in this treatment was about 3.3%. The varietal effect was not significant and all the varieties behaved similarly.

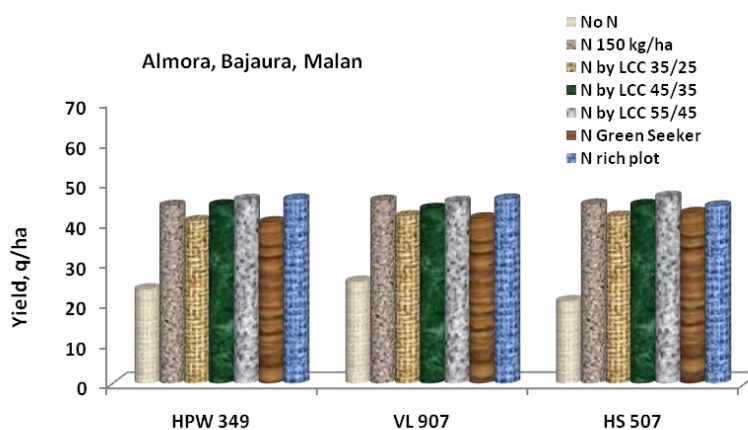


Figure 10. Validation of LCC for different wheat varieties-NHZ

In North Western Plains Zone, the trial was conducted at six centres (Agra, Durgapura, Hisar, Jammu, Ludhiana and Pantnagar). The data of two centres where Green seeker treatment was

not implemented were pooled separately. The highest mean yield of 60.92 q/ha was recorded in N rich plots, where 225 kg/ha N was applied followed by RDF (Figure 11). In comparison to RDF, LCC based N application (55 kg N/ha if LCC<4 and 45 kg N/ha if LCC ≥4) produced similar yield. Among genotypes WH 1105 produced marginally higher yield compared to DPW 621-50 and HD 2987. The highest yield (63.77 q/ha) was obtained with WH 1105 when N was applied at 225 kg/ha. Under no fertilizer application, mean wheat yield obtained was 33.63 q/ha.

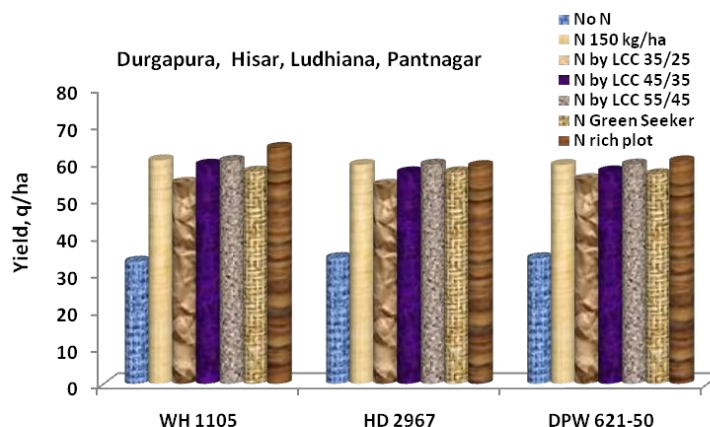


Figure 11. Validation of LCC for different wheat varieties-NWPZ

### SPL-5: Efficient water management in wheat using micro-irrigation

Water management is the key issue for economising the irrigation water use efficiency of wheat crop. To optimize the water requirement for yield maximisation in wheat, a special coordinated trial was planned and conducted under irrigated timely sown conditions at three locations *i.e.* Durgapura and Karnal in NWPZ and Vijapur in CZ.

In NWPZ, the highest yield (57.10 q/ha) was recorded in drip irrigation at 100% PE, which was significantly higher than other irrigation treatments except six irrigations at critical growth stages (Figure 12). Maximum water use was in sprinkler at 100% PE (430.5 mm) followed by check basin irrigation system (396.3 mm).

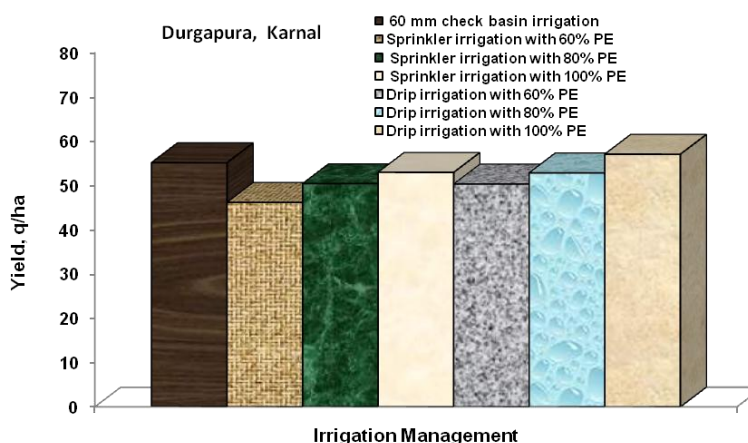


Figure 12. Micro-irrigation for efficient water management in wheat-NWPZ

In Central Zone, seven irrigation treatments followed were 60 mm check basin irrigation at critical growth stages (CRI, T, JT, BL, M and D), drip irrigation with 60%, 80% and 100% PE at 3 days interval, drip irrigation at 0.8, 1.0 and 1.2 IW/CPE *i.e.* 50 mm irrigation when cumulative Pan Evaporation (CPE) reaches 60 mm, 50 mm and 40 mm, respectively. The results presented in Figure 13 showed highest yield in drip irrigation at 1.2 IW/CPE (45.44 q/ha) followed

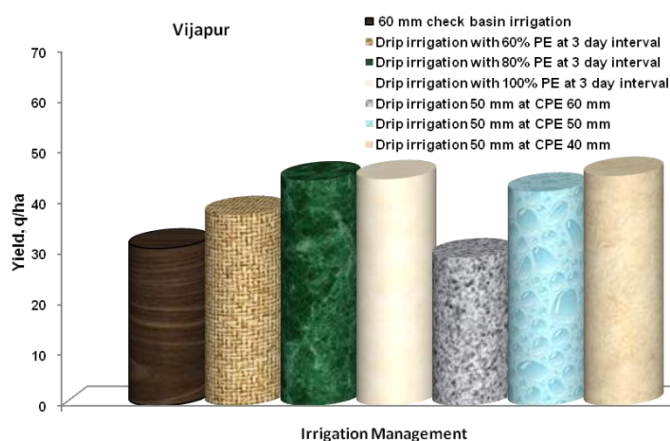


Figure 13. Micro-irrigation for efficient water management in wheat-CZ

by drip irrigation with 100% PE (44.81 q/ha). Maximum water use was in 60 mm check basin irrigation treatment (420 mm).

### SPL-6: Evaluation of Pusa Hydrogel and herbal Hydrogel on in situ moisture conservation under different irrigation levels in wheat

To improve the water use efficiency and wheat productivity a special coordinated trial was conducted. The trial was conducted at four locations in NWPZ *i.e.* Durgapura, Karnal, Ludhiana, Pantnagar and one location each in CZ (Junagarh) and PZ (Pune). The effect of irrigation and hydrogel was significant on wheat productivity but their interactions were not significant. On mean basis, significantly highest yield (59.52 q/ha) was recorded where six irrigations were applied at critical growth stages of wheat. There was significant yield improvement with application of hydrogel (Figure 14) but the difference among hydrogels was not significant. At Junagarh in Central Zone and at Pune in Peninsular Zone, the effect of hydrogel was not significant.

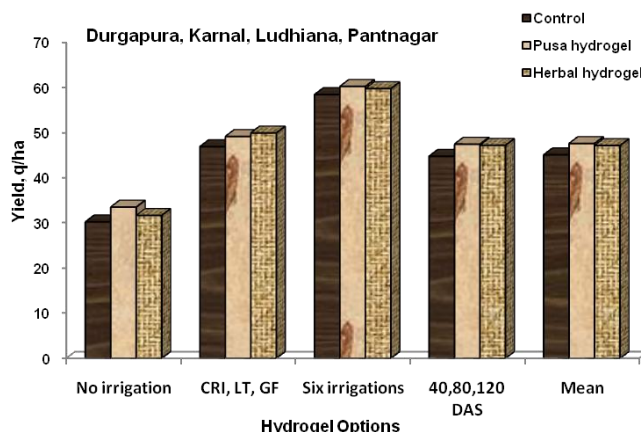


Figure 14. Performance of hydrogel in wheat-NWPZ

At Junagarh in Central Zone and at Pune in Peninsular Zone, the effect of hydrogel was not significant.

### SPL-7: Wheat yield maximization under different tillage options

To identify the effective varieties for Conservation Agriculture system an experiment was conducted at four locations (Hisar, Karnal, Ludhiana and Pantnagar) in NWPZ. Six timely sown varieties namely WH 1105, HD 2967, DPW 621-50, DBW 88, HD 3086 and PBW 550 were evaluated in CT and CA system. This experiment was under rice-wheat system except Hisar centre where cotton-wheat system was adopted. The effect of tillage options and varieties as well as their interactions were non-significant (Figure 15).

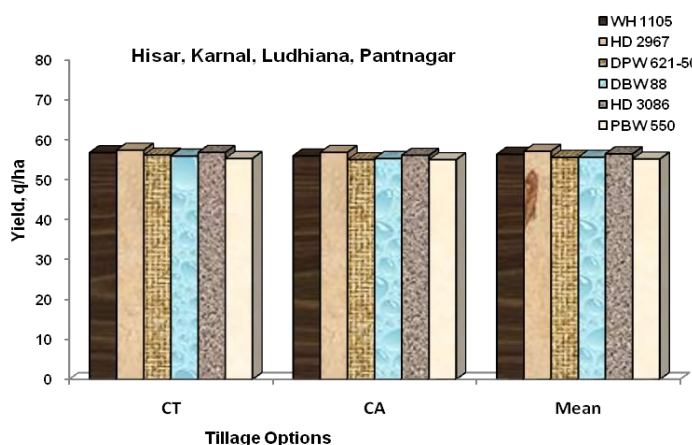


Figure 15. Wheat varieties under conservation agriculture (CA)-NWPZ

### SPL-8: Control of pre-harvest sprouting (PHS) in wheat

To control pre harvest sprouting in wheat, three chemicals (NaCl, paraquat and Na molybdate) with different doses were tried in two varieties (CBW 38 and K 0307) at Coochbehar and Shillongani. The trial at Shillongani centre failed because the crop was damaged by rain leading to pre-harvest sprouting and yield could not be recorded. The effect of varieties as well as of chemical spray was not significant.

### SPL-9: Effect of mulch with irrigation

The trial was conducted at Coochbehar and Shillongani centres in the NEPZ. The grain yield recorded in bed planting (34.72 q/ha) and conventional tillage (34.25q/ha) was at par grain but significantly higher than zero tillage (29.67 q/ha). Rice straw mulch application at 0, 1, and 3 irrigations recorded significantly higher grain yield than their respective counterpart without mulch application (Figure 16). Maximum grain yield (42.75 q/ha), earhead/m<sup>2</sup> (317), grains/earhead (36.00) and thousand grains weight (39.10) were obtained with straw mulch at 3 irrigation application which were significantly higher than other treatments.

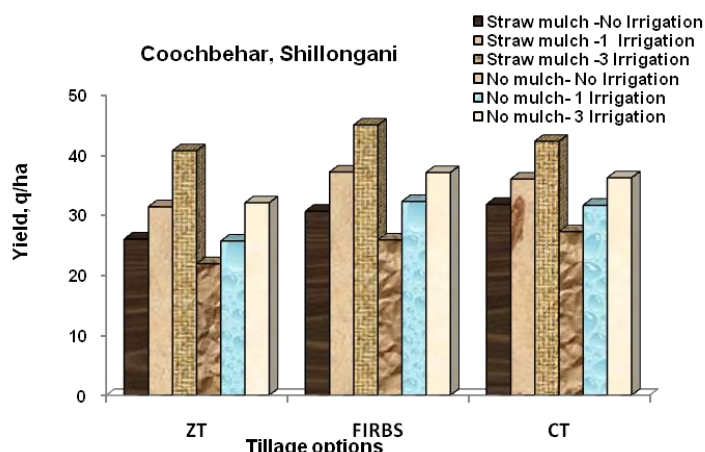


Figure 16. Tillage, irrigation and mulching effect on wheat -NEPZ

### SPL-10: Mulching to mitigate the climate change effect

This experiment was conducted in three zones (NWPZ, NEPZ and CZ) with the aim to mitigate the terminal heat effect using straw mulch and organic manure as well as the chemical sprays (ZnSO<sub>4</sub> and KCl).

In NWPZ, the pooled analysis (Figure 17) showed that timely sowing (62.29 q/ha) produced significantly higher grain yield than late sowing (46.93 q/ha). Delaying wheat sowing reduced the grain yield by 24.7 %. The reduction in yield was due to reduction in earhead density and grain weight. Application of 0.2 % KCl produced numerically higher grain yield (55.47 q/ha) than all other treatments. Application of FYM (10 t/ha) along with recommended fertiliser recorded higher grain yield (55.21 q/ha) than RDF alone (53.09 q/ha).

In NEPZ, timely sowing (44.50 q/ha) produced significantly higher grain yield (Figure 18)

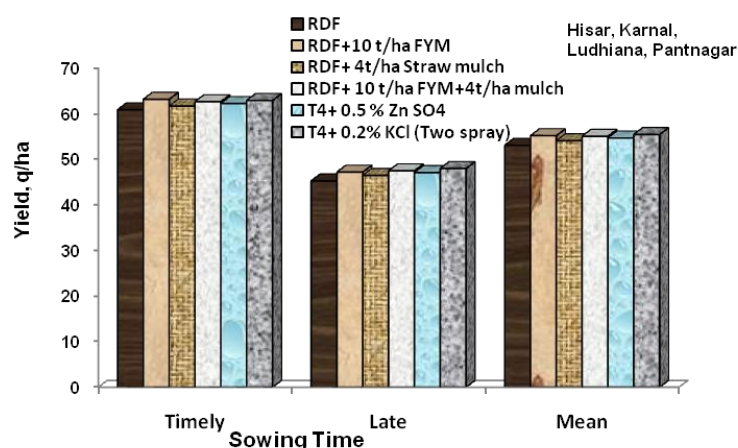


Figure 17. Organic manure and mulch on wheat yield in NWPZ

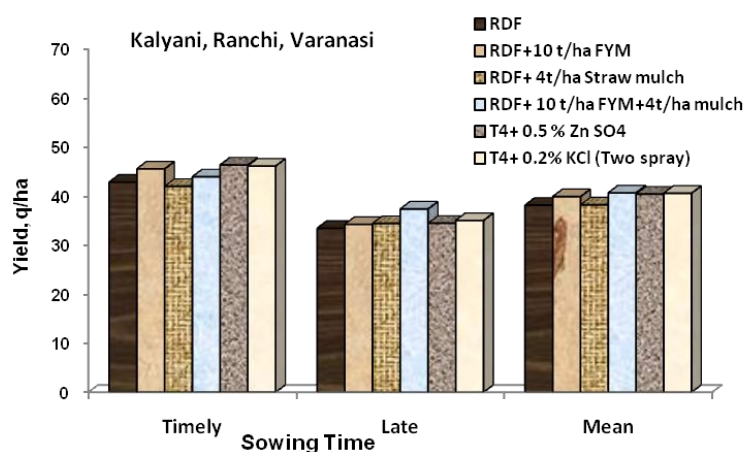


Figure 18. Organic manure and mulch on wheat yield in NEPZ



than late sowing (34.84 q/ha). Delaying wheat sowing reduced the grain yield by 21.7 %. Maximum grain yield was obtained at recommended dose of fertiliser along with FYM and mulch application (40.68 q/ha) followed by this treatment in combination with KCl (40.60 q/ha) and ZnSO<sub>4</sub> (40.43 q/ha) application.

In Central Zone, this experiment was conducted at Udaipur centre only. The data presented in Figure 19 showed that timely sowing yielded significantly higher (53.47 q/ha) as compared to late sowing (44.80 q/ha). Delay in wheat sowing reduced the grain yield by 16.2%. Application of recommended fertiliser along with FYM, mulch and 0.2% KCl produced highest mean yield (51.43 q/ha) which was at par with RDF+Mulch+FYM with and without 0.5% ZnSO<sub>4</sub> application.

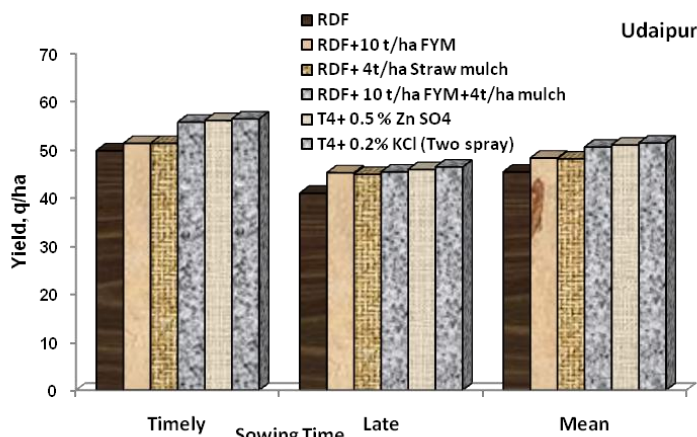


Figure 19. Organic manure and mulch on wheat productivity in CZ

### SPL-11: Comparative performance of line versus dibbling in wheat

In Central Zone, this trial was conducted to evaluate the effect of planting options and spacing on wheat productivity at eight locations (Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Kota, Powarkheda and Udaipur). The highest yield was obtained in dibbling 15x15 cm (50.13 q/ha) followed by line sowing @ 20 cm with seed rate of 100 kg/ha (49.54 q/ha) but the differences were not significant. The increment in yield may be attributed to higher number of earheads/sq. m. The other planting options recorded significantly lower yield as compared to these two methods. The cultivar HI 8737 yielded significantly higher (47.91q/ha) as compared to HI 1544 (46.43 q/ha).

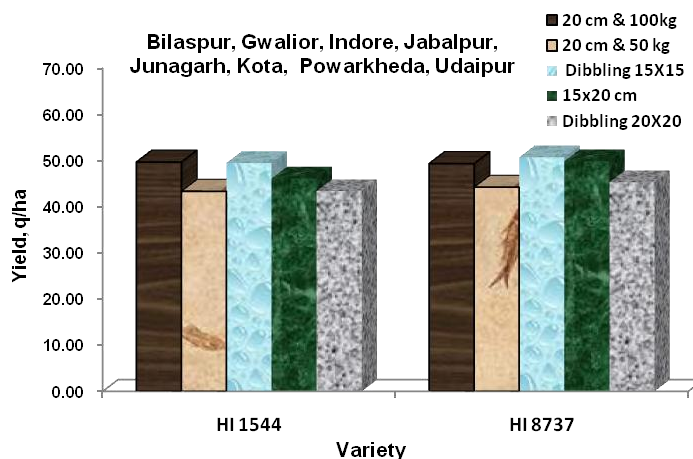


Figure 20. Comparative performance of line sowing and dibbling-CZ

In Peninsular Zone this trial was conducted at three locations (Akola, Dharwad and Niphad). The highest yield was obtained in line sowing at 20 cm spacing with seed rate of 100 kg/ha (46.63 q/ha) followed by dibbling at 15x15 cm (43.18 q/ha) and remained at par (Figure 21). Both the cultivars were statistically at par with UAS 304 giving marginally higher yield (40.30 q/ha) as compared to NIAW 301 (38.77 q/ha).

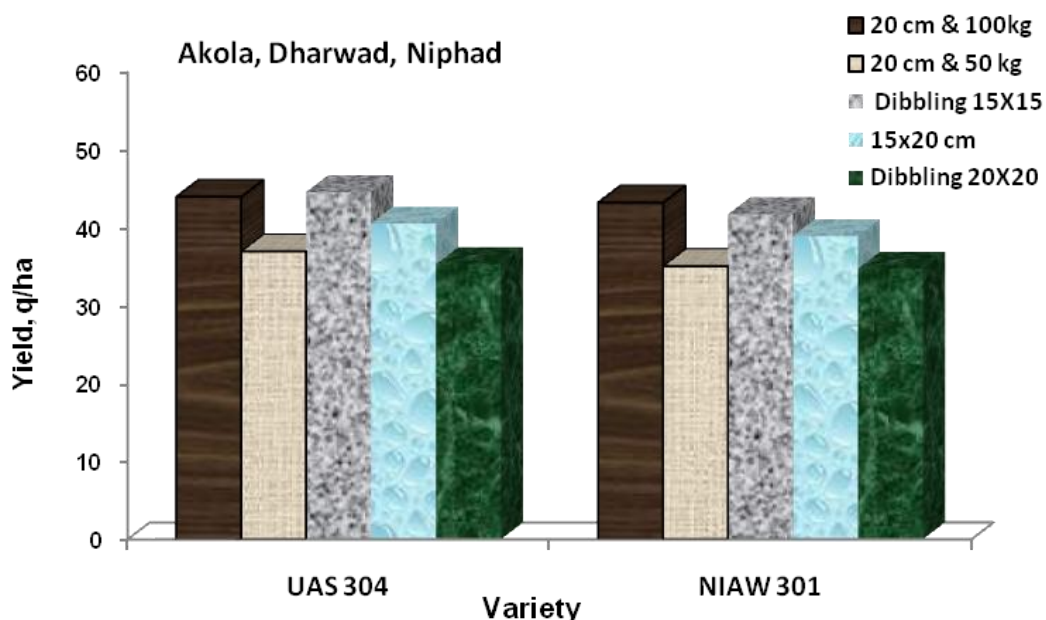


Figure 21. Comparative performance of line sowing and dibbling-PZ

### SPL-12: Precision nutrient management and validation of Nutrient expert in wheat

This experiment was conducted with seven fertiliser doses combination viz. control, Recommended Dose of Fertilizers (RDF), 150 % RDF, 150 % PK, 150 % NK, 150 % NP and nutrient expert in RBD at three locations (Almora, Bajaura and Malan) in NHZ, four location at NWPZ (Hisar, Karnal, Ludhiana, Pantnagar), one location each in NEPZ (Varanasi), CZ (Udiapur and PZ (Dharwad).

In NHZ, 150% RDF gave maximum and significantly higher grain yield (49.59 q/ha) and biomass (118.69 q/ha) as compared to other treatments (Figure 22). This was followed by nutrient expert treatment which was at par with 150% RDF and produced almost 6.45% higher grain yield than recommended dose of fertiliser (RDF) application. Omission of phosphorus and potash had marginal effect on productivity but the omission of nitrogen drastically reduced the productivity. This indicates that the nutrient recommendation

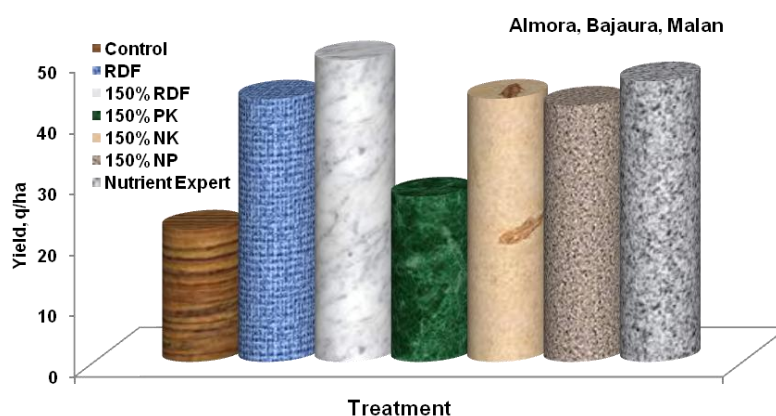


Figure 22. Validation of Nutrient expert in wheat-NHZ

for the northern hills needs a relook for achieving higher productivity. The targeted yield level of 6 t/ha could not be achieved and the yield level in nutrient expert was only 4.6 t/ha.

In NWPZ, highest grain yield was recorded with 150 % RDF (61.45 q/ha) which was at par with recommended fertilizer and nutrient expert treatments (Figure 23). The 150% RDF application

produced almost 3% higher grain yield than recommended dose of fertiliser (RDF) application. The targeted yield of 7 t/ha using nutrient expert could not be achieved even after applying more than recommended NPK and the yield level was almost similar.



Figure 23. Validation of Nutrient expert in wheat-NWPZ

In NEPZ, this experiment was conducted at Varanasi centre only. The data revealed that 150% RDF recorded maximum and significantly higher grain yield (59.34 q/ha) as compared to other treatments (Figure 24). This was followed by 150% NP and NK applications. 150% RDF application produced almost 10.8 % higher grain yield than recommended dose of fertiliser (RDF) application.

Nutrient expert based application for targeted yield of 6 t/ha produced significantly lower grain yield (48.42 q/ha) than RDF which seems mainly due to lower nitrogen calculation using nutrient expert.

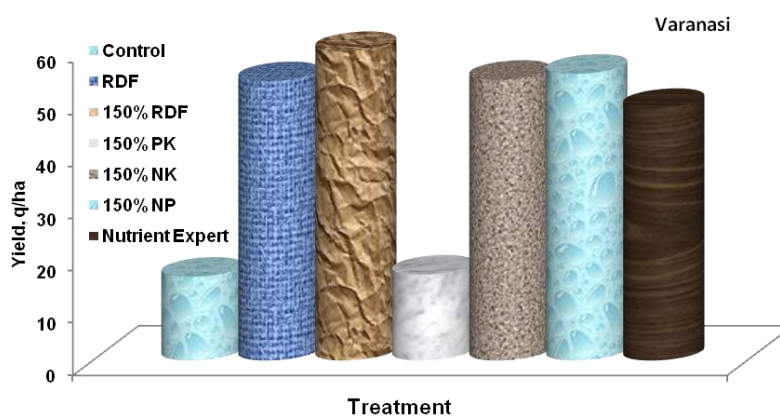


Figure 24. Validation of Nutrient expert in wheat-NEPZ

In Central Zone, the highest yield was obtained under Nutrient Expert treatment reaching 55.08 q/ha (Figure 25) followed by 150% RDF (53.38 q/ha) despite higher nutrient application compared to nutrient expert except potash. However, the targeted yield of 6 t/ha could not be achieved despite about 42% higher nitrogen, 10% higher phosphorus and 90% higher potash. The Nutrient Expert treatment also recorded highest biomass (130.22 q/ha).

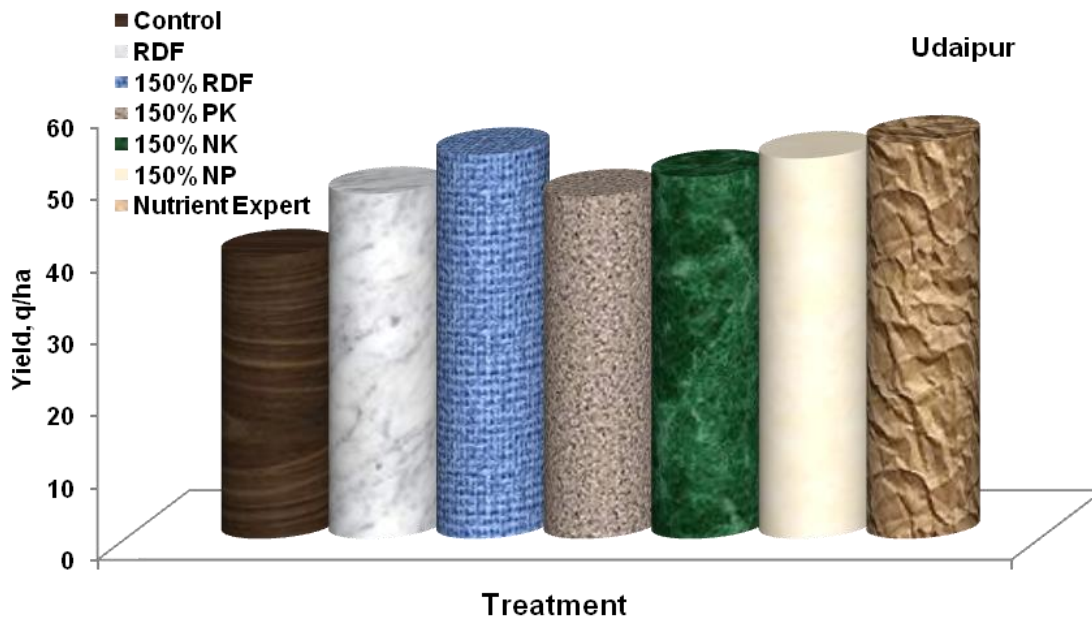


Figure 25. Validation of Nutrient expert in wheat-CZ

At Dharwad centre of Peninsular Zone, the highest yield was obtained under Nutrient Expert treatment with a yield level of 45.15 q/ha (Figure 26) followed by 150% of RDF (42.32 q/ha) and RDF (40.32 q/ha). The yield by nutrient expert was not significantly higher than recommended dose of fertilizers (40.32 q/ha) although the nutrient application was higher (about 16% N, 8% phosphorus and almost 50% more potash) than recommended doses of fertilisers. The yield obtained in nutrient expert treatment was the highest but was much below the targeted yield of 6 t/ha.

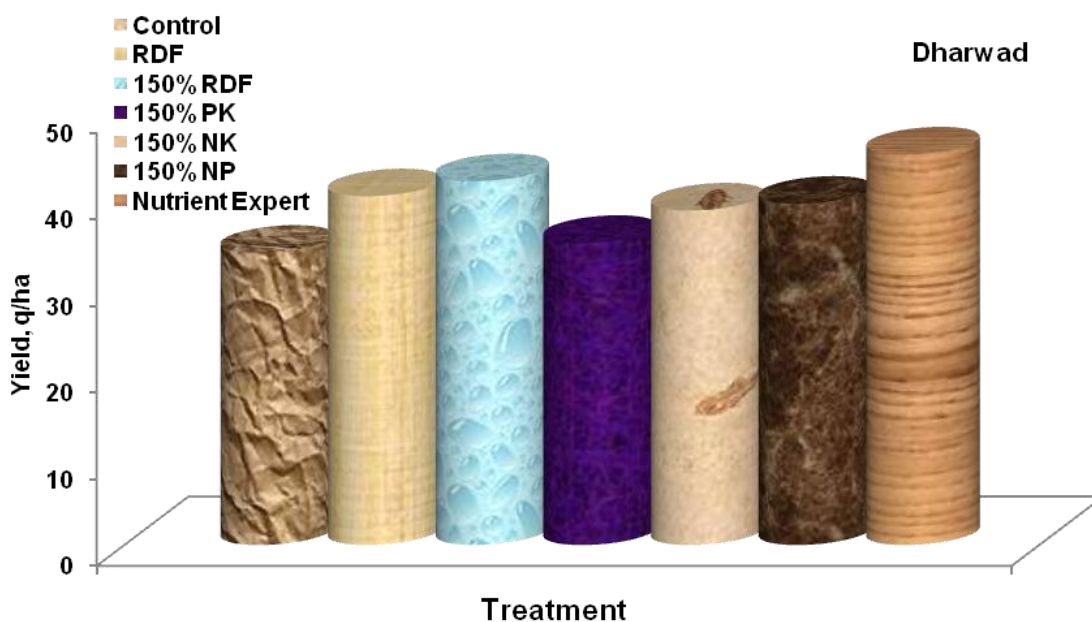


Figure 26. Validation of Nutrient expert in wheat-PZ

# ***Coordinated Trials***

## ***Northern Hills Zone***

The Northern Hills Zone represents Himachal Pradesh, parts of Jammu & Kashmir, Uttarakhand and North Eastern Hills. The six centres namely Almora, Bajaura, Imphal (Manipur), Khudwani (Anantnag), Malan (Palampur) and Shimla are engaged in wheat research under All India Coordinated Wheat and Barley Improvement Project. The soil data received from four centres (Almora, Bajaura, Khudwani and Malan) are presented in Annexure III. The texture at all the four centres varied from silty clay loam to silty clay and inceptisols. Imphal and Shimla centres did not conduct trials for their centre. The organic carbon content range of Almora, Bajaura, Khudwani and Malan centres was 1.02-1.09, 0.60-0.62, 1.01-1.20 and 0.60-0.80 per cent, respectively, with low to medium in nitrogen and medium to high in phosphorus and potash contents. The data on meteorological parameters received from various centres has been reported in Annexure II. The rainfall was well distributed at all the locations for which data were received and the highest rainfall of 366.2 mm was recorded at Bajaura during the crop growing period followed by 278.7 mm at Malan, 179.8 mm at Almora and 148.1 mm at Khudwani (Anantnag) from October, 2016 to May, 2017. The minimum and maximum temperatures were -1.6°C and 32.9°C at Almora, -2.3°C and 32.7°C at Bajaura, -6.0°C and 29.3°C at Khudwani, 5.4°C and 34.6°C at Malan, respectively.

Since, there was no new genotype in the final year of varietal evaluation, therefore coordinated trials to evaluate the performance of wheat genotypes under different growing conditions were not formulated and conducted.

## **North Western Plains Zone**

The North Western Plains Zone consists of the states of Haryana, Punjab, Delhi, western UP, northern parts of Rajasthan, Jammu area of J&K and plains of Himachal and Uttarakhand. Twelve centres in this zone namely Agra, Bikaner, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganaganagar are actively engaged in wheat research activities under All India Coordinated Wheat and Barley Improvement Project (AICW&BIP). The data on various meteorological and soil parameters for various centres are given in Annexure-II and Annexure-III, respectively. Soils of this zone are sandy loam to clay loam. The soil organic carbon at various locations varied from 0.28% at Durgapura to 0.71% at Pantnagar. Soils of this zone are generally low in available nitrogen, medium to high in available phosphorus and available potash. However, at Gurdaspur, available Potash was 80 kg/ha. During the growing season, the maximum rainfall was received at Jammu (239 mm), followed by Gurdaspur (171.8 mm), Delhi (104.1 mm), Karnal (95.6 mm), Ludhiana (74 mm), Pantnagar (79.2 mm), Nagina (63 mm), Hisar (49.7 mm), and Durgapura (35.8 mm). The weekly mean maximum and minimum temperatures at different locations were 39.5 & 4.2°C at Delhi, 42.1 & 5.7°C at Durgapura, 40.3 & 3.3°C at Gurdaspur, 42.9 & 3.2°C at Hisar, 38.8 & 2.4°C Jammu, 40.4 & 5.0 °C at Karnal, 38.9 & 4.9°C at Ludhiana, 33.1 & 2.5 at Nagina and 38.1 & 6.5°C at Pantnagar, respectively, during November 2016 to April 2017. In this zone one coordinated trial was conducted to evaluate second year genotypes for late sown conditions at various locations.

### **EVALUATION UNDER DIFFERENT SOWING CONDITIONS**

The performance of one test genotype was evaluated for late sown irrigated conditions at different locations and the results are summarized here under;

#### **Irrigated Late Sown**

The test genotype, DBW 173, was evaluated against four checks (HD 3059, DBW 90, WH 1021, WH 1124) at twelve centres *i.e.* Agra, Bikaner, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganaganagar under late and very late sown conditions. The late sowing was from 10<sup>th</sup> to 16<sup>th</sup> December and the very late sowing was from 1<sup>st</sup> January to 7<sup>th</sup> January. The trial was laid out in a split plot design with sowing time in main and genotypes in sub plots with three replications. The sowing was done using the normalized (adjusted considering 1000 grains weight of 38 g) seed rate of 125 kg/ha at a row-to-row spacing of 18 cm. Nitrogen (120 kg/ha) was applied in three splits (1/3 at sowing and remaining 2/3 nitrogen as 1/3<sup>rd</sup> at first irrigation *i.e.* at 20-25 days after sowing and 1/3<sup>rd</sup> at second irrigation *i.e.* 40-45 days after sowing), whereas full phosphorus (60 kg P<sub>2</sub>O<sub>5</sub>/ha) and potash (40 kg K<sub>2</sub>O/ha) were applied as basal.

The pooled analysis of data from ten centres is presented in Table 2.1 and the centre wise data are reported in Annexure-I as Table 2.1.1 to 2.1.10. The data from Agra and Nagina were not considered due to improper time of sowing. The perusal of data indicates that there was a significant decline in yield from 46.14 q/ha to 35.13 q/ha when sowing was delayed from late to very late sown conditions because of significant reduction in number of earheads/m<sup>2</sup>, and 1000 grains weight. The average yield decline due to delayed sowing was 23.9 per cent. On an average basis, the check variety HD 3059 produced the maximum grain yield (42.15 q/ha) followed by the test genotype DBW 173. The test genotype yielded at par to the best check HD 3059 and both these had significantly higher yield than other check varieties. The highest earhead/m<sup>2</sup>, grains/earhead and 1000 grains weight were observed in WH 1124 (C), HD 3059(C) and DBW 173, respectively. Interaction between genotype and sowing time was non-significant for yield and yield attributes. The centre wise data on yield and yield attributes are presented in Tables 2.1.1 to 2.1.12 in Annexure-I.

<b>Table 2.1. North Western Plains Zone</b>		<b>IR-LS-TAS-DOS</b>		<b>Pooled</b>	<b>2016-17</b>	
Varieties	Time of sowing				Mean	Rk
	Late	Rk	Very late	Rk		
<b>Yield, q/ha</b>						
DBW 173	47.78	1	36.03	2	41.91	2
HD 3059 (C)	47.39	2	36.91	1	42.15	1
DBW 90 (C)	45.38	4	35.16	3	40.27	4
WH 1021 (C)	43.83	5	33.25	5	38.54	5
WH 1124 (C)	46.34	3	34.30	4	40.32	3
Mean	46.14		35.13		40.64	
CD (0.05)	Sowing (A) 0.95		Genotype (B) 0.91		B within A NS	A within B NS
<b>Earhead/sq. m.</b>						
DBW 173	408	2	361	5	384	5
HD 3059 (C)	406	4	371	4	389	4
DBW 90 (C)	413	1	376	3	394	2
WH 1021 (C)	399	5	385	1	392	3
WH 1124 (C)	407	3	383	2	395	1
Mean	407		375		391	
CD (0.05)	Sowing (A) 19.07		Genotype (B) NS		B within A NS	A within B NS
<b>Grains/Earhead</b>						
DBW 173	32.56	2	32.48	2	32.52	2
HD 3059 (C)	32.67	1	33.11	1	32.89	1
DBW 90 (C)	30.24	5	31.56	3	30.90	5
WH 1021 (C)	31.47	4	30.98	4	31.22	3
WH 1124 (C)	31.74	3	30.35	5	31.04	4
Mean	31.74		31.70		31.72	
CD (0.05)	Sowing (A) NS		Genotype (B) 1.19		B within A NS	A within B NS
<b>1000 Grains Weight, g</b>						
DBW 173	36.75	3	30.75	1	33.75	1
HD 3059 (C)	36.36	4	30.15	2	33.25	4
DBW 90 (C)	37.38	2	30.01	4	33.69	3
WH 1021 (C)	35.67	5	28.62	5	32.14	5
WH 1124 (C)	37.39	1	30.07	3	33.73	2
Mean	36.71		29.92		33.31	
CD (0.05)	Sowing (A) 0.54		Genotype (B) 0.64		B within A NS	A within B NS
<b>Centres:</b> Bikaner, Durgapura, Delhi, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar, Sriganaganagar.						



## **North Eastern Plains Zone**

The North Eastern Plains Zone (NEPZ) is the second most important wheat growing zone of the country consisting of Assam, Bihar, Jharkhand, Orissa, eastern parts of UP and West Bengal. In all eleven centres namely Burdwan, Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RAU Pusa, RAU Sabour, Shillongani and Varanasi are actively involved in coordinated research activities. Soils of this zone are sandy loam to clay loam having organic carbon contents varying from 0.39 per cent at Varanasi to 1.12 per cent at Shillongani. The soils of this zone are low in available nitrogen, medium in available phosphorus and potash. Wheat production and productivity in this zone is more dependent on weather conditions during the crop season. The temperature is an important factor affecting the wheat productivity. Rainfall received varied from 5.1 mm at Varanasi to 415.7 mm at Shillongani during the wheat season of 2016-17. The rainfall was the highest at Shillongani (415.7 mm) followed by Burdwan (206.7 mm), IARI Pusa (197.4 mm), RAU Pusa (197.4 mm), Kanpur (69.4 mm), Sabour (53.9 mm), Faizabad (51.8 mm), Ranchi (29.4 mm), Coochbehar (17.0 mm), Kalyani (19.3 mm) and Varanasi (5.1 mm). The maximum and minimum temperatures at different locations were 43.3 °C and 8.0 °C at Burdwan, 34.7°C and 8.06°C at Coochbehar, 37.8°C and 4.9°C at Faizabad, 36.7 °C and 6.2 °C at IARI Pusa, 37.2°C and 8.8°C at Kalyani, 39.8°C and 5.9°C at Kanpur, 40.5°C and 3.5°C at Ranchi, 36.6 °C and 6.2 °C at RAU Pusa, 36.8°C and 6.0°C at Sabour, 34.8°C and 8.5°C at Shillongani and 40.1°C and 8.2°C at Varanasi, respectively.

### **EVALUATION UNDER DIFFERENT SOWING CONDITIONS**

The performance of one test genotype was evaluated under restricted irrigation conditions at different locations and the results are summarized here under;

#### **Restricted Irrigation**

In this trial, one test entry HI 1612 and five checks (HD 2888, C 306, K 8027, HD 3171 and K 1317) were evaluated at no irrigation, one irrigation (CRI stage) and two irrigations (CRI and boot stage) in split plot design and replicated thrice. Main plots comprised of irrigation level and the genotypes were in the sub plots. The trial was conducted at ten locations (Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RAU Pusa, Sabour, Shillongani and Varanasi). Full dose NPK (90:60:40) was applied as basal in no irrigation treatment and 1/3<sup>rd</sup> nitrogen, full phosphorus (60 kg P<sub>2</sub>O<sub>5</sub>/ha) and potash (40 kg K<sub>2</sub>O/ha) was applied at the time of sowing and remaining N was top dressed at 1st node stage in other two main plots. Weed control measures were followed as per the recommended practice. The normalized seed rate used was 100 kg/ha (considering the 1000 grains weight of 38 g). Centre wise data are given in Annexure I as Tables 3.1.1 to 3.1.10.

The pooled analysis presented in Table 3.1 showed that increasing number of irrigations successively gave significantly higher grain yield. One and two irrigation application gave 28.47 % and 40.50 % higher grain yield, respectively than no irrigation. All the yield attributing parameters were significantly increased as level of irrigation enhanced. So, the yield increase was due to cumulative effect of all the yield attributing parameters. Test entry HI 1612 ranked 1st and produced significantly higher grain yield (32.31 q/ha) than other varieties. This entry also ranked first in number of grains/earhead (31.88). Second ranking was identified variety K 1317 in terms of grain yield (31.54 q/ha) whereas it ranked first in terms of earhead/m<sup>2</sup> (253) and thousand grain weight (42.31 g) as compared to other genotypes.

<b>Table 3.1. North Eastern Plains Zone</b>		<b>RIR-TS-TAS</b>		<b>Pooled</b>		<b>2016-17</b>		
Variety	Number of Irrigations				Two	Rk	Mean	Rk
	Zero	Rk	One	Rk				
<b>Yield, q/ha</b>								
HI 1612	25.19	3	33.35	1	38.39	1	32.31	1
HD2888 (c)	24.29	5	29.76	6	31.86	6	28.64	6
C306 (c)	24.76	4	31.81	4	34.59	4	30.38	4
K8027 (c)	23.64	6	30.29	5	32.27	5	28.73	5
HD3171(l)	25.21	2	32.72	3	35.39	3	31.11	3
K1317(l)	25.46	1	32.93	2	36.22	2	31.54	2
MEAN	24.76		31.81		34.79		30.45	
CD (0.05)	Irrigation (A) 0.46		Variety (B) 0.68		B within A 1.18		A within B 1.17	
<b>Earhead/sq. m.</b>								
HI 1612	215	5	257	3	278	2	250	4
HD2888 (c)	232	1	252	5	272	3	252	2
C306 (c)	223	2	260	1	268	5	250	3
K8027 (c)	218	4	249	6	268	6	245	6
HD3171(l)	214	6	252	4	271	4	246	5
K1317(l)	221	3	257	2	279	1	253	1
MEAN	221		254		273		249	
CD (0.05)	Irrigation (A) 3.94		Variety (B) NS		B within A NS		A within B NS	
<b>Grains/Earhead</b>								
HI 1612	30.38	1	31.93	2	33.33	1	31.88	1
HD2888 (c)	28.14	6	29.81	6	29.94	5	29.30	6
C306 (c)	29.04	3	30.56	3	32.08	2	30.56	3
K8027 (c)	28.39	5	30.44	5	29.80	6	29.54	5
HD3171(l)	30.22	2	32.07	1	31.76	3	31.35	2
K1317(l)	28.51	4	30.49	4	30.64	4	29.88	4
MEAN	29.12		30.88		31.26		30.42	
CD (0.05)	Irrigation (A) 0.72		Variety (B) 1.01		B within A NS		A within B NS	
<b>1000 Grains Weight, g</b>								
HI 1612	39.63	3	40.89	4	41.40	4	40.64	3
HD2888 (c)	38.81	6	40.90	3	40.68	6	40.13	6
C306 (c)	39.17	4	40.78	5	40.85	5	40.26	5
K8027 (c)	39.80	2	41.07	2	41.71	2	40.86	2
HD3171(l)	39.01	5	40.38	6	41.45	3	40.28	4
K1317(l)	41.63	1	42.12	1	43.18	1	42.31	1
MEAN	39.67		41.02		41.55		40.75	
CD (0.05)	Irrigation (A) 0.51		Variety (B) 0.63		B within A NS		A within B NS	
<b>Centres:</b> Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RAU Pusa, Sabour, Shillongani, Varanasi								

## **Central Zone**

In the Central zone, nine centres, viz. Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Kota, Powarkheda, Udaipur and Vijapur are actively involved in the coordinated wheat programme. The data on soil and various meteorological parameters have been reported under Annexure II and Annexure III, respectively. Vertisols are primarily found in this zone and these soils vary between sandy loam, sandy clay loam to clay loam in texture. The organic carbon in these soils ranges between 0.31 to 0.8 per cent. Soils of this region are neutral in reaction, medium to high in available nitrogen (162.0 to 326.0 kg N/ha), low to high in phosphorus (12.35 to 41.16 kg P/ha) and high potash content (200 to 456.8 kg K/ha). Majority of rainfall received was in the month of October, and few showers were also received during later stages (January and February) of the crop season. The maximum rainfall received was 71.5 mm at Vijapur followed by 62.6 mm at Udaipur, 45.1 mm at Bilaspur, 43.6 mm at Jabalpur and 8.6 mm at Kota. Indore (2.4 mm) and Gwalior (0 mm) almost recorded nil precipitation. The average maximum and minimum temperatures recorded were 31.1°C and 15.2°C at Bilaspur, 30.3°C and 12.5°C at Gwalior, 30.7°C and 13.5°C at Indore, 31.0°C and 12.4°C at Jabalpur, 29.5°C and 12.4°C at Kota, 30.0°C and 12.3°C at Udaipur and 32.7°C and 16.2°C at Vijapur, respectively.

Since, there was no new genotype in the final year of varietal evaluation, therefore coordinated trials to evaluate the performance of wheat genotypes under different growing conditions were not formulated and conducted.

## **Peninsular Zone**

In Peninsular zone six centres (Akola, Dharwad, Niphad, Pune, Ugar Khurd and Washim), are actively engaged in research activities of coordinated wheat agronomy programme. The data of climatic and soil parameters received from the centres are reported in Annexure II and Annexure III, respectively. The soils of this zone fall under the order vertisols and predominantly clayey in nature with low to high organic carbon ranging from 0.39 to 0.65 per cent. The available soil nitrogen is low ranging between 147 to 272 kg/ha, phosphorus from low to high (9.76 to 41 kg/ha) whereas the potash content in soil was very high (259 to 419 kg/ha). The water is a limiting factor in this zone and productivity is mainly dependent on rainfall and also the temperature during the crop growing cycle (November to April). Majority of rainfall received was in the month of October-November, and some rainfall was received during later stages in the crop season. The maximum rainfall received was 116 mm at Washim followed by 80.2 mm at Niphad, 50.8 mm at Dharwad, 29 mm at Pune, 12 mm at Akola and 7 mm at Ugar Khurd. The weekly average maximum and minimum temperatures were varied from 27.3-36.4 and 8.4-24.5°C at Akola, 27.3-36.9 and 11.6-20.20°C at Dharwad, 26.0-39.6 and 6.5-22.3 °C at Niphad, 28.2-39.9 and 7.9-20.7°C at Pune, 31.12-41.0 and 11.37-21.66°C at Ugar Khurd and 25.3-34.9 and 15.1-24.7°C at Washim, respectively.

### **EVALUATION UNDER DIFFERENT GROWING CONDITIONS**

Two coordinated trials for evaluation of new genotypes for irrigated timely sown and rainfed conditions were conducted in this zone.

#### **Irrigated Timely Sown**

In this trial, one test genotype (DBW 168) was evaluated against four checks (MACS 6478, MACS 6222, GW 322 and UAS 304) under two sowing conditions *i.e.* timely and late sown conditions at all the six locations namely Akola, Dharwad, Niphad, Pune, Ugar Khurd and Washim. This trial was conducted in split plot design with sowing time in main plots and genotypes in the sub plots. The sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g) at a row to row spacing of 20 cm. NPK fertilizers were applied @ 120:60:40 kg N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O with 1/3 N, full P and K as basal application and the remaining 2/3 N as 1/3<sup>rd</sup> at first irrigation *i.e.* at 20-25 days after sowing

and 1/3<sup>rd</sup> at second irrigation *i.e.* 40-45 days after sowing. Irrigation and weed control measures were followed as per recommended package of practices for the zone.

<b>Table 5.1. Peninsular Zone</b>		<b>IR-TS-TAD-DOS</b>		<b>Pooled</b>	<b>2016-17</b>	
Genotypes	Sowing Time				Mean	Rk
	Timely	Rk	Late	Rk		
<b>Yield, q/ha</b>						
DBW 168	42.90	5	39.92	4	41.41	5
MACS6478 (c)	46.66	1	43.82	1	45.24	1
MACS6222 (c)	43.62	3	41.05	3	42.33	3
GW322 (c)	43.35	4	42.79	2	43.07	2
UAS304 (c)	44.17	2	39.44	5	41.80	4
Mean	44.14		41.40		42.77	
CD (0.05)	Sowing (A)		Varieties (B)	B within A	A within B	
	1.05		1.40	NS	NS	
<b>Earhead/sq. m.</b>						
DBW 168	340	4	319	4	329	3
MACS6478 (c)	346	1	333	1	339	1
MACS6222 (c)	334	5	320	3	327	5
GW322 (c)	342	2	324	2	333	2
UAS304 (c)	342	2	311	5	327	4
Mean	341		321		331	
CD (0.05)	Sowing (A)		Varieties (B)	B within A	A within B	
	6.04		NS	NS	NS	
<b>Grains/Earhead</b>						
DBW 168	30.55	5	32.30	3	31.43	4
MACS6478 (c)	32.08	1	32.33	2	32.21	2
MACS6222 (c)	31.18	3	31.67	5	31.42	5
GW322 (c)	31.47	2	34.05	1	32.76	1
UAS304 (c)	31.17	4	31.83	4	31.50	3
Mean	31.29		32.44		31.86	
CD (0.05)	Sowing (A)		Varieties (B)	B within A	A within B	
	0.97		NS	NS	NS	
<b>1000 Grains Weight, g</b>						
DBW 168	42.00	4	40.41	4	41.21	4
MACS6478 (c)	42.89	1	41.47	2	42.18	1
MACS6222 (c)	42.47	2	41.57	1	42.02	2
GW322 (c)	41.04	5	40.11	5	40.58	5
UAS304 (c)	42.33	3	41.27	3	41.80	3
Mean	42.15		40.97		41.56	
CD (0.05)	Sowing (A)		Varieties (B)	B within A	A within B	
	0.47		0.73	NS	NS	

**Centres:** Akola, Dharwad, Niphad, Pune, Ugar Khurd, Washim

The pooled analysis of data from six centres reveals significant effect of sowing time and genotypes on grain yield (Table 5.1). On average basis, timely sown produced 44.14 q/ha

which is significantly higher than late sown conditions (41.40 q/ha). The gain in grain yield may be attributed to significantly higher earheads/sq. m. and thousand grain weights. The test genotype DBW 168 ranked last among five genotypes in terms of grain yield (41.41 q/ha) as compared to the check varieties. The maximum grain yield was produced by check variety MACS 6478 (45.24 q/ha) followed by GW 322 (43.07 q/ha), MACS 6222 (42.33 q/ha) and UAS 304 (41.80 q/ha). The variety MACS 6478 having maximum yield also produced significantly higher earheads (341/sq.m.) and thousand grains weight (42.18 g). The lesser yield in test entry DBW 168 might be due to lesser thousand grain weight and grains/earhead compared to check varieties. The centre wise data are presented in Annexure-I in Tables 5.1.1 to 5.1.6.

### **Rainfed Conditions**

In this trial one *aestivum* (UAS 375) and two *durum* (HI 8777, MACS 4028) test entries were evaluated against two *aestivum* checks (NI 5439, NIAW 1415) and two *durum* checks (UAS 446, AKDW 2997-16) at three nitrogen levels (40, 60 and 80 kg/ha) in split plot design, replicated thrice. Main plots comprised the nitrogen levels and the genotypes were planted in the sub plots. The trial was conducted at three locations (Dharwad, Pune and Washim). Full nitrogen as per treatment, phosphorus 30 kg ( $P_2O_5$ ) and potash (20 kg  $K_2O$ /ha) were applied as basal dose at the time of sowing. Other management practices and weed control measures were followed as per the recommended package of practices for the zone. The normalized seed rate used was 125 kg/ha (considering the 1000 grains weight of 38 g). Centre wise data on yield and various yield attributes are given in Annexure –I as Table 5.2.1 to 5.2.3.

The pooled analysis of data received from three locations (Table 5.2) revealed significant effect of N level on yield and yield attributes except grains/earhead. On an average basis across genotypes, application of 80 kg N/ha produced maximum and significantly higher grain yield (17.70 q/ha) than 60 (15.54 q/ha) and 40 kg N/ha (13.86 kg/ha) application. The test genotype UAS 375 (*aestivum*) was ranked at 1<sup>st</sup> position and produced significantly higher grain yield (17.33 q/ha) than the other test genotypes and check varieties but remained statistically at par with check variety NI 5439. The *durum* entries *i.e.* HI 8777 ranked 7<sup>th</sup> (14.51 q/ha) and MACS 4028 ranked 6<sup>th</sup> (15.07 q/ha), where as both checks were yielded more than test entries *i.e.* UAS 446 (15.61 q/ha) and AKDW 2997-16 (15.12 q/ha). The higher grain yield in UAS 375 was mainly contributed by significantly higher number of grains/earhead (23.98)

compared to other test varieties and check genotypes. The lesser yield in durum entries are might be due to lesser number of earheads per square meter and grains/earhead.

Genotypes	RF-TAS-LON		Pooled		2016-17			
	40	Rk	60	Rk	80	Rk	Mean	Rk
Nitrogen levels, kg/ha								
<b>Yield, q/ha</b>								
UAS 375	15.41	1	17.62	1	18.97	1	17.33	1
HI 8777(d)	12.58	7	14.13	6	16.81	7	14.51	7
MACS 4028(d)	13.00	5	13.69	7	18.53	2	15.07	6
NI 5439 (c)	14.58	3	17.39	2	17.95	3	16.64	2
NIAW 1415 (c)	13.88	4	15.46	4	17.49	4	15.61	4
UAS 446(dc)	14.80	2	14.90	5	17.15	5	15.61	3
AKDW 2997-16(dc)	12.77	6	15.56	3	17.02	6	15.12	5
Mean	13.86		15.54		17.70		15.70	
CD (0.05)	Nitrogen (A)		Varieties (B)		B within A		A within B	
	1.27		1.09		NS		NS	
<b>Earhead/sq. m.</b>								
UAS 375	189	6	191	7	232	3	204	7
HI 8777(d)	175	7	214	5	231	4	207	6
MACS 4028(d)	193	5	215	4	216	7	208	5
NI 5439 (c)	262	1	229	2	264	1	252	1
NIAW 1415 (c)	224	2	243	1	231	5	233	2
UAS 446(dc)	200	4	209	6	259	2	223	3
AKDW 2997-16(dc)	217	3	227	3	218	6	221	4
Mean	209		218		236		221	
CD (0.05)	Nitrogen (A)		Varieties (B)		B within A		A within B	
	4.83		8.63		14.95		14.61	
<b>Grains/Earhead</b>								
UAS 375	23.25	1	26.48	1	22.23	2	23.98	1
HI 8777(d)	18.58	3	15.58	7	16.81	7	16.99	7
MACS 4028(d)	18.12	4	16.49	6	22.64	1	19.08	4
NI 5439 (c)	16.45	6	22.28	2	19.70	5	19.48	2
NIAW 1415 (c)	17.61	5	18.10	4	20.15	4	18.62	5
UAS 446(dc)	21.23	2	19.45	3	17.61	6	19.43	3
AKDW 2997-16(dc)	15.73	7	18.03	5	20.33	3	18.03	6
Mean	18.71		19.48		19.92		19.37	
CD (0.05)	Nitrogen (A)		Varieties (B)		B within A		A within B	
	NS		1.49		2.58		2.76	
<b>1000 Grains Weight, g</b>								
UAS 375	35.97	5	37.25	4	37.33	6	36.85	5
HI 8777(d)	42.84	1	43.17	1	43.80	1	43.27	1
MACS 4028(d)	39.30	2	39.56	2	40.16	2	39.67	2
NI 5439 (c)	34.28	7	34.72	7	35.28	7	34.76	7
NIAW 1415 (c)	35.97	6	35.83	6	37.33	5	36.38	6
UAS 446(dc)	36.91	4	37.34	3	38.13	3	37.46	3
AKDW 2997-16(dc)	37.28	3	37.19	5	37.74	4	37.41	4
Mean	37.51		37.87		38.54		37.97	
CD (0.05)	Nitrogen (A)		Varieties (B)		B within A		A within B	
	0.34		0.5		NS		NS	

**Centres:** Dharwad, Pune, Washim

***Production  
Technologies***



# PRODUCTION TECHNOLOGIES

The results of experiments on updating the package of practices are presented in this section. Various special coordinated trials on evaluation of herbicides for control of broad leaved weeds in wheat, control of lodging and yield maximization, efficient water management using micro-irrigation, evaluation of hydrogel under different irrigation levels, effect of organic manures and mulching effect on wheat productivity, evaluation of performance of line sowing against dibbling and validation of nutrient expert in wheat were conducted to address the various issues in different wheat growing zone.

## **SPL-1: Evaluation of herbicides for control of broadleaved weeds in wheat**

This trial was conducted in five wheat growing zones (NHZ, NWPZ, NEPZ, CZ and PZ) to identify effective herbicides for control of broad leaved weeds in wheat. The trial was conducted in RBD with eleven weed control treatments replicated thrice. The eleven weed control treatments were i) *Halaxifen-methyl ester+Florasulam 40.85% WG+surfactant Polyglycol 26-2 N (12.76 g a.i +750 ml./ha)*; ii) *Metsulfuron methyl 20 WG + surfactant (4.0 g a.i +625 ml./ha)*, iii) *Carfentrazone 40DF (20.0 g a.i./ha)*; iv) *2,4-D Na 80 WP (500 g a.i./ha)*; v) *2,4-D E 38 EC (500 g a.i./ha)*; vi) *Metsulfuron+carfentrazone +surfactant (4.0 g+20 g+625 ml/ha)*; vii) *2,4-D Na + Carfentrazone (400+20 g a.i./ha)*; viii) *2,4-D E + Carfentrazone (400+20 g a.i./ha)*; ix) *Halaxifen methyl + florasulam+ carfentrazone + surfactant (10.21+20 g a.i.+750 ml /ha)*; x) *Weedy check* and xi) *Weed free*. Broadleaved herbicides were applied at 30-35 days after sowing. A blanket dose of clodinafop 60 g/pinoxaden 50 g/fenoxaprop 100 g/ha was applied about 5 days before or after the broad leaf herbicide application to control grassy weeds. Observations on weed density and dry weight were recorded at 30, 60 and 90 days after herbicide spray. For irrigation and fertilization, the recommended package of practices for the zone was followed. The zone wise performance of herbicide is given hereunder.

In Northern Hills Zone, trial was conducted at four centres (Almora, Bajaura, Khudwani and Malan). The pooled analysis (Table 6.1) revealed that weed free treatment produced maximum and significantly higher grain yield (48.26 q/ha) as compared to other treatments. The next best treatment was combination of Halaxifen methy+florasulam+carfentrazone application ranked 2<sup>nd</sup> place on grain yield (46.97 q/ha). This treatment also reduced weed number and dry weight to great extent as compared to other treatments. Other herbicide combinations like Halaxifen+Florasulam and Metsulfuron+carfentrazone were also quite effective in controlling the weeds and gave similar yield. The earheads/sq. m. and the grain yield of wheat were also recorded significantly higher in these treatments as compared to other herbicide treatments.

<b>Table 6.1. Northern Hills Zone</b>	<b>SPL-1</b>					<b>2016-17</b>	
Herbicide treatments	Dose g a.i./ha	Almora	Bajaura	Khudwani	Malan	Pooled	
<b>Yield, q/ha</b>							
Halauxifen + Florasulam + S	12.76	61.33	44.58	34.97	44.54	46.36	
Metsulfuron + S	4	56.80	45.91	33.99	42.62	44.83	
Carfentrazone	20	59.70	40.49	32.84	40.51	43.38	
2,4-D Na	500	62.97	39.93	31.74	40.37	43.75	
2,4-D E	500	59.00	41.82	31.41	38.26	42.62	
Metsulfuron+Carfentrazone + S	4+20	56.50	47.47	34.78	40.05	44.70	
2,4-D Na + Carfentrazone	400+20	64.37	42.33	33.43	41.08	45.30	
2,4-D E + Carfentrazone	400+20	60.60	44.16	33.13	41.31	44.80	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	59.40	45.96	37.34	45.18	46.97	
Weedy check		58.70	36.62	21.63	32.69	37.41	
Weed free		67.07	46.29	37.58	42.12	48.26	
CD (0.05)		8.81	4.88	2.91	4.04	2.72	
<b>Earhead/sq. m.</b>							
Halauxifen + Florasulam + S	12.76	545	352	250	344	373	
Metsulfuron + S	4	520	338	245	323	356	
Carfentrazone	20	540	326	238	303	352	
2,4-D Na	500	550	304	233	308	349	
2,4-D E	500	537	293	232	288	337	
Metsulfuron+Carfentrazone + S	4+20	503	365	247	295	353	
2,4-D Na + Carfentrazone	400+20	552	331	242	295	355	
2,4-D E + Carfentrazone	400+20	545	298	240	319	350	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	540	367	261	327	374	
Weedy check		525	288	192	270	319	
Weed free		572	343	266	317	374	
CD (0.05)		47.1	50.4	22.6	39.8	20.0	
<b>Grains/Earhead</b>							
Halauxifen + Florasulam + S	12.76	25.24	28.27	40.04	29.69	30.81	
Metsulfuron + S	4	23.56	31.68	40.24	29.76	31.31	
Carfentrazone	20	25.89	31.09	40.66	30.49	32.03	
2,4-D Na	500	24.10	30.90	40.18	29.74	31.23	
2,4-D E	500	24.12	33.24	40.26	30.17	31.95	
Metsulfuron+Carfentrazone + S	4+20	25.08	29.56	40.79	30.57	31.50	
2,4-D Na + Carfentrazone	400+20	26.50	30.78	40.54	31.04	32.22	
2,4-D E + Carfentrazone	400+20	24.20	35.91	40.57	29.26	32.48	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	25.61	27.86	40.90	31.41	31.45	
Weedy check		24.80	30.81	43.23	28.34	31.79	
Weed free		26.30	28.49	39.59	30.36	31.19	
CD (0.05)		4.94	5.10	5.75	1.35	2.24	
<b>1000 Grains Weight, g</b>							
Halauxifen + Florasulam + S	12.76	44.84	44.93	35.00	43.62	42.10	
Metsulfuron + S	4	46.62	43.20	34.50	44.48	42.20	
Carfentrazone	20	42.91	41.00	34.00	43.87	40.44	
2,4-D Na	500	47.55	42.67	33.89	44.05	42.04	
2,4-D E	500	45.95	43.33	33.85	44.03	41.79	
Metsulfuron+Carfentrazone + S	4+20	44.66	44.20	34.61	44.40	41.97	
2,4-D Na + Carfentrazone	400+20	44.05	41.73	34.24	44.95	41.25	
2,4-D E + Carfentrazone	400+20	45.99	41.53	34.10	44.24	41.47	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	42.93	45.07	35.07	44.09	41.79	
Weedy check		45.24	41.47	26.20	42.75	38.91	
Weed free		44.98	47.53	35.80	43.88	43.05	
CD (0.05)		3.80	6.15	2.07	1.08	1.84	

The perusal of data presented in Tables 6.1 to 6.2 on broad leaf weed density and dry weight as well as wheat yield and yield attributes revealed that herbicide application caused a significant reduction in weed density and dry weight of weeds and as a result there was

significant improvement in wheat yield. Among herbicides, Halauxifen methyl + florasulam+ carfentrazone+surfactant (10.21+20+750 g a.i./ha) (T9) was found the best treatment in controlling broad leaf weeds density and dry weight in wheat crop on pooled basis followed by Metsulfuron+carfentrazone (4.0+20 g a.i./ha) and Halauxifen-methyl Ester+florasulam 40.85% WG (12.76 +750 g a.i./ha).

<b>Table 6.2. Northern Hills Zone</b>		<b>SPL-1</b>			<b>2016-17</b>	
Herbicide treatments	Dose g a.i./ha	Almora	Bajaura	Khudwani	Malan	Pooled
<b>Weed Density, No./sq. m. at 30 Days after spray</b>						
Halauxifen+Florasulam+S	12.76	7.13 (50.3)	6.70 (45.3)	2.28 (4.7)	4.14 (22.7)	5.06 (30.7)
Metsulfuron + S	4	8.07 (64.7)	5.97 (36.0)	3.63 (12.7)	4.95 (25.3)	5.65 (34.7)
Carfentrazone	20	7.69 (58.7)	8.65 (74.7)	4.02 (15.7)	5.99 (36.0)	6.59 (46.3)
2,4-D Na	500	7.24 (52.0)	8.35 (70.7)	4.23 (17.4)	5.98 (37.3)	6.45 (44.4)
2,4-D E	500	8.93 (79.3)	7.11 (50.7)	4.42 (19.0)	5.42 (29.3)	6.47 (44.6)
Metsulfuron+carfentrazone+S	4+20	7.77 (60.0)	3.84 (14.7)	2.35 (5.0)	5.03 (25.3)	4.75 (26.3)
2,4-D Na + Carfentrazone	400+20	6.31 (39.3)	6.56 (42.7)	3.72 (13.4)	5.45 (30.7)	5.51 (31.5)
2,4-D E + Carfentrazone	400+20	7.45 (55.0)	7.12 (50.7)	3.98 (15.4)	5.19 (26.7)	5.93 (36.9)
Halauxifen+Florasulam+carfentrazone+S	10.21+20	8.48 (71.3)	5.69 (32.00)	2.10 (4.0)	3.90 (20.0)	5.04 (31.8)
Weedy check		12.66 (160.0)	18.18 (333.3)	5.67 (31.7)	10.53 (110.7)	11.76 (158.9)
Weed free		0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)	0.71 (0.0)
CD (0.05)		0.43	1.89	0.29	2.79	0.83
<b>Weed Dry weight, g/sq. m. at 90 Days after spray</b>						
Halauxifen+Florasulam+S	12.76	1.92 (3.18)	3.87 (15.06)	4.19 (17.03)	3.50 (11.77)	3.37 (11.76)
Metsulfuron + S	4	2.46 (5.54)	3.05 (8.89)	6.52 (42.07)	3.77 (13.88)	3.95 (17.60)
Carfentrazone	20	2.26 (4.60)	5.66 (31.56)	7.25 (52.07)	3.80 (14.04)	4.74 (25.57)
2,4-D Na	500	1.88 (3.05)	5.65 (31.44)	7.49 (55.63)	4.57 (20.65)	4.90 (27.69)
2,4-D E	500	2.83 (7.51)	6.15 (37.81)	7.76 (59.70)	4.41 (19.37)	5.29 (31.10)
Metsulfuron+carfentrazone+S	4+20	2.35 (5.01)	2.48 (5.93)	4.85 (23.20)	3.18 (9.71)	3.22 (10.96)
2,4-D Na + Carfentrazone	400+20	1.73 (2.49)	3.83 (14.24)	6.65 (43.80)	3.84 (14.39)	4.01 (18.73)
2,4-D E + Carfentrazone	400+20	2.09 (3.87)	5.95 (35.96)	6.98 (48.23)	3.67 (13.00)	4.67 (25.27)
Halauxifen+Florasulam +carfentrazone+S	10.21+20	2.58 (6.19)	3.3 (10.65)	3.77 (13.73)	2.71 (6.88)	3.09 (9.36)
Weedy check		5.37 (28.36)	7.81 (61.31)	10.84 (117.03)	6.76 (45.63)	7.70 (63.08)
Weed free		0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)	0.71 (0.00)
CD (0.05)		0.12	1.11	0.36	0.87	0.35

In North Western Plains Zone, trial was conducted at seven centres (Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar). Perusal of the data presented in Tables 6.3 to 6.6 on broad leaf weed density and dry weight as well as wheat yield and yield attributes revealed significant reduction in weed density and dry weight of weeds as a result of herbicide application. The reduction in weed infestation was reflected in yield improvement. The weed competition during the growing season recorded the lowest wheat yield of 37.3 q/ha and season long weed free conditions resulted in maximum wheat yield of 60.8 q/ha. Among herbicides, Halauxifen methyl + florasulam+ carfentrazone+surfactant (10.21+20 g a.i.+750 ml/ha) was found the best treatment in controlling broad leaf weeds density and broadleaved weeds dry weight on pooled basis was minimum in tank mix combination of 2,4-D E and carfentrazone. At Karnal centre, the tank mix combination of ready mixture halauxifen + florasulam with carfentrazone was the most effective treatment in controlling the diverse weed flora in wheat. Carfentrazone alone was not effective against *Lathyrus aphaca*.

In North Eastern Plains Zone, this experiment was conducted at five locations viz. Coochbehar, Faizabad, Kalyani, Sabour and Varanasi. The pooled analysis of data from five locations (Table 6.7 and 6.8) revealed that weed free treatment produced maximum and significantly higher grain yield (51.20 q/ha) as compared to other treatments. The next best treatment was combination of Halauxifen methyl + florasulam + carfentrazone + Surfactant application ranked at 2<sup>nd</sup> place on grain yield (47.68 q/ha). This treatment also reduced weed number and dry weight to great extent as compared to other treatments. Other herbicide combinations like Halauxifen + Florasulam + Polyglycol and Metsulfuron + carfentrazone + surfactant were also quite effective in controlling the weeds and gave similar yield.

**Table 6.3. North Western Plains Zone**

Herbicide treatments	Dose g a.i./ha	SPL-1					2016-17			
		Durgapura	Gurdaspur	Hisar	Jammu	Karnal	Ludhiana	Pantnagar	Pooled	
		<b>Yield, q/ha</b>								
Halauxifen + Florasulam + S	12.76	50.0	62.6	58.2	41.8	60.1	69.4	62.6	57.8	
Metsulfuron + S	4	43.8	61.7	58.4	44.6	58.6	41.4	60.9	52.8	
Carfentrazone	20	45.8	60.9	54.0	43.1	61.5	70.1	60.7	56.6	
2,4-D Na	500	36.5	58.7	50.7	41.0	59.8	40.6	61.6	49.8	
2,4-D E	500	42.7	60.7	53.4	42.7	61.1	42.5	56.4	51.4	
Metsulfuron + Carfentrazone + S	4+20	45.8	60.1	60.3	50.9	62.7	72.4	60.7	59.0	
2,4-D Na + Carfentrazone	400+20	49.0	59.9	57.1	48.1	62.3	69.8	61.3	58.2	
2,4-D E + Carfentrazone	400+20	51.0	60.0	58.1	49.7	61.4	71.5	61.1	59.0	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	52.1	62.0	61.5	47.4	62.6	69.2	57.7	58.9	
Weedy check		27.1	45.4	42.3	34.4	43.3	13.9	54.6	37.3	
Weed free		54.2	62.9	62.3	51.3	61.0	74.8	59.3	60.8	
CD (0.05)		7.50	5.18	4.16	4.99	5.00	7.11	NS	1.81	
		<b>Earhead/sq. m.</b>								
Halauxifen + Florasulam + S	12.76	376.3	354.7	411.7	366.7	436.5	447.3	384.3	396.8	
Metsulfuron + S	4	348.0	356.8	405.0	376.7	424.8	373.3	331.7	373.8	
Carfentrazone	20	360.3	342.8	383.3	377.7	426.7	450.1	366.7	386.8	
2,4-D Na	500	340.3	338.0	376.7	360.0	426.7	356.7	381.0	368.5	
2,4-D E	500	346.3	342.3	371.7	370.0	425.8	371.7	341.0	367.0	
Metsulfuron + Carfentrazone + S	4+20	362.3	340.2	418.3	431.7	425.0	452.9	355.3	398.0	
2,4-D Na + Carfentrazone	400+20	369.3	334.2	401.7	415.0	435.0	434.5	394.7	397.8	
2,4-D E + Carfentrazone	400+20	381.3	341.1	398.3	411.7	442.5	453.3	313.7	391.7	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	384.3	350.4	430.0	407.3	419.2	435.4	382.7	401.3	
Weedy check		305.0	308.8	321.7	316.7	318.3	344.2	324.7	319.9	
Weed free		389.3	360.8	436.7	435.0	432.5	460.0	377.0	413.0	
CD (0.05)		35.4	22.8	42.9	52.3	36.0	29.9	NS	12.8	
		<b>1000 Grains Weight, g</b>								
Halauxifen + Florasulam + S	12.76	38.53	40.17	39.27	36.43	39.65	44.23	38.43	39.53	
Metsulfuron + S	4	38.47	39.21	39.12	36.74	39.92	42.54	41.20	39.60	
Carfentrazone	20	38.13	38.90	37.56	36.99	39.87	44.30	38.17	39.13	
2,4-D Na	500	37.87	39.89	37.02	36.60	39.66	42.17	41.43	39.24	
2,4-D E	500	38.83	40.06	37.61	36.85	40.13	43.39	41.27	39.73	
Metsulfuron + Carfentrazone + S	4+20	38.37	39.51	40.63	38.02	39.92	45.59	37.00	39.86	
2,4-D Na + Carfentrazone	400+20	39.10	39.96	38.88	37.98	40.33	44.35	38.70	39.90	
2,4-D E + Carfentrazone	400+20	39.20	38.61	39.52	37.80	40.44	45.29	38.60	39.92	
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	39.13	39.49	40.96	37.52	39.82	44.11	39.67	40.10	
Weedy check		35.80	39.06	36.18	34.90	37.69	35.97	40.90	37.21	
Weed free		39.53	40.59	41.15	38.06	40.03	46.80	39.43	40.80	
CD (0.05)		NS	NS	2.22	NS	NS	NS	NS	1.23	
Date of Sowing		16.11.2016	11.11.16	14.11.2016	14.11.2016	14.11.2016	3.11.2016	19.11.2016		
Date of Harvesting		09.04.2017	20.04.17	13.4.2017	27.04.2017	16.04.2017	21.04.2017	08.04.2017		

**Table 6.4. North Western Plains Zone**

Herbicide treatments	Dose g a.i./ha	SPL-1					2016-17		
		Durgapura	Gurdaspur	Hisar	Jammu	Karnal	Ludhiana	Pantnagar	Pooled
<b>Weed Population, No./sq. m. at 30 days after spray</b>									
Halauxifen + Florasulam + S	12.76	5.19(26.6)*	6.12(37.3)	3.30(10.7)	5.45(29.3)	3.33(10.7)	1.90(3.2)	3.49(16.0)	4.43(19.1)
Metsulfuron + S	4	8.06(64.6)	3.15(9.7)	3.12(9.3)	3.89(14.7)	4.85(23.3)	5.82(33.7)	6.00(37.3)	5.29(27.5)
Carfentrazone	20	7.56(57.2)	3.86(14.7)	3.84(14.7)	4.14(16.7)	5.40(28.7)	1.73(2.5)	10.34(149.3)	6.18(40.5)
2,4-D Na	500	8.85(77.9)	7.24(52.3)	4.22(17.3)	5.61(31.0)	7.02(49.3)	5.90(34.3)	17.75(362.7)	9.30(89.3)
2,4-D E	500	7.88(62.3)	5.45(29.3)	3.98(16.0)	4.10(16.3)	5.04(25.7)	5.88(34.2)	6.09(53.3)	5.85(33.9)
Metsulfuron + Carfentrazone + S	4+20	7.45(55.3)	1.80(3.3)	2.65(6.7)	2.26(4.7)	2.12(4.0)	1.73(2.5)	6.76(74.7)	4.52(21.6)
2,4-D Na + Carfentrazone	400+20	7.18(51.1)	2.16(4.3)	3.50(12.0)	2.91(8.0)	3.44(12.0)	2.05(3.8)	9.59(138.7)	5.56(32.9)
2,4-D E + Carfentrazone	400+20	4.68(21.9)	1.35(1.7)	3.12(9.3)	2.34(5.0)	2.79(7.3)	1.76(2.6)	3.15(21.3)	3.18(9.9)
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	4.38(18.7)	1.86(3.0)	1.91(4.0)	3.08(9.0)	1.00(0.7)	1.74(2.7)	2.37(10.7)	2.70(7.0)
Weedy check		14.17(200.5)	9.60(91.7)	8.57(73.3)	10.46(109.0)	14.16(200.0)	6.37(40.3)	22.03(490.7)	13.13(172.2)
Weed free		0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)
CD (0.05)		1.14	0.85	1.11	0.44	1.06	0.58	8.73	2.03
<b>Weed Dry Weight, g/sq. m. at 90 days after spray</b>									
Halauxifen + Florasulam + S	12.76	11.78(138.5)	0.77(0.1)	3.87(15.3)	8.37(69.8)	1.56(3.4)	11.8(139.0)	0.71(0.0)	7.26(52.3)
Metsulfuron + S	4	15.07(226.8)	0.71(0.0)	4.58(20.7)	6.19(38.0)	2.38(6.6)	14.29(290.7)	0.80(0.2)	8.85(83.3)
Carfentrazone	20	13.91(198.5)	1.17(1.0)	5.78(33.0)	6.39(40.3)	5.66(31.9)	10.74(115.0)	0.98(0.6)	7.76(60.0)
2,4-D Na	500	15.97(256.6)	2.51(5.9)	5.58(31.0)	8.30(68.4)	3.90(14.9)	16.35(302.3)	4.56(28.5)	9.97(101.1)
2,4-D E	500	14.98(225.6)	0.97(0.5)	5.58(30.7)	5.82(33.6)	3.02(8.7)	16.99(290.0)	3.63(13.0)	9.30(86.0)
Metsulfuron + Carfentrazone + S	4+20	14.23(201.9)	0.71(0.0)	3.83(15.2)	3.57(12.2)	0.92(0.4)	8.89(81.7)	1.09(1.0)	6.71(44.6)
2,4-D Na + Carfentrazone	400+20	13.71(187.6)	0.91(0.4)	4.89(23.6)	4.52(20.0)	1.79(3.0)	11.54(135.7)	1.85(5.5)	7.35(53.7)
2,4-D E + Carfentrazone	400+20	11.62(134.7)	0.94(0.4)	4.75(22.6)	3.85(14.4)	1.63(3.5)	9.48(94.3)	0.71(0.0)	6.23(38.6)
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	11.45(130.8)	0.71(0.0)	3.60(13.0)	4.80(22.6)	0.79(0.1)	15.39(283.3)	0.71(0.0)	7.79(64.3)
Weedy check		16.89(285.6)	3.49(11.7)	10.84(117.4)	16.34(266.7)	16.14(260.7)	23.3(543.3)	7.63(66.4)	14.90(221.7)
Weed free		0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)
CD (0.05)		2.07	0.32	1.35	0.65	1.54	8.39	2.95	2.15

\*Original values in parenthesis and square root transformed ( $\sqrt{X+0.5}$ ) value used for statistical analysis

**Table 6.5. North Western Plains Zone**

Herbicide treatments	Dose g a.i./ha	SPL-1					Karnal			2016-17
		<i>Rumex Sp.</i>	<i>Coronopus didymus</i>	<i>Medicago denticulata</i>	<i>Anagallis arvensis</i>	<i>Melilotus</i>	<i>Lathyrus aphaca</i>	<i>Malva</i>	Other weeds	Total weeds
<b>Weed Population, No./sq. m. at 30 days after spray</b>										
Halauxifen + Florasulam + S	12.76	2.34(4.7)*	1.24(0.7)	1.00(0.0)	1.66(2.0)	1.00(0.0)	1.00(0.0)	1.24(0.7)	1.67(2.7)	3.40(10.7)
Metsulfuron + S	4	1.66(2.0)	1.66(2.0)	3.11(8.7)	1.66(2.0)	1.00(0.0)	2.07(3.3)	1.90(2.7)	1.67(2.7)	4.90(23.3)
Carfentrazone	20	1.66(2.0)	2.18(4.7)	2.37(4.7)	1.00(0.0)	1.67(2.7)	3.92(14.7)	1.00(0.0)	1.00(0.0)	5.44(28.7)
2,4-D Na	500	4.03(15.3)	2.83(7.3)	2.20(4.0)	2.08(4.0)	1.00(0.0)	2.97(8.0)	1.66(2.0)	2.79(8.7)	7.06(49.3)
2,4-D E	500	2.02(4.0)	2.07(3.3)	2.31(4.3)	1.00(0.0)	1.00(0.0)	2.98(8.7)	1.49(1.3)	2.15(4.0)	5.09(25.7)
Metsulfuron + Carfentrazone + S	4+20	1.00(0.0)	1.00(0.0)	2.07(3.3)	1.00(0.0)	1.00(0.0)	1.24(0.7)	1.00(0.0)	1.00(0.0)	2.24(4.0)
2,4-D Na + Carfentrazone	400+20	1.41(1.3)	1.00(0.0)	1.66(2.0)	1.24(0.7)	1.00(0.0)	2.95(8.0)	1.00(0.0)	1.00(0.0)	3.51(12.0)
2,4-D E + Carfentrazone	400+20	1.24(0.7)	1.00(0.0)	2.24(4.0)	1.00(0.0)	1.00(0.0)	1.66(2.0)	1.00(0.0)	1.24(0.7)	2.88(7.3)
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	1.00(0.0)	1.00(0.0)	1.24(0.7)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.24(0.7)
Weedy check		8.97(80.0)	5.67(31.3)	5.69(31.3)	3.77(13.3)	2.20(4.0)	4.72(21.3)	1.90(2.7)	4.11(16.0)	14.17(200.0)
Weed free		1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)
		1.09	0.87	0.53	0.71	0.62	0.93	0.51	1.27	1.04

\*Original values in parenthesis and square root transformed ( $\sqrt{X+1.0}$ ) value used for statistical analysis

**Table 6.6. North Western Plains Zone**

Herbicide treatments	Dose g a.i./ha	SPL-1			Karnal		2016-17
		<i>Rumex Sp.</i>	<i>Coronopus didymus</i>	<i>Medicago denticulata</i>	<i>Lathyrus aphaca</i>	Other weeds	Total weeds
<b>Weed Dry Weight, g/sq. m. at 90 days after spray</b>							
Halauxifen + Florasulam + S	12.76	1.77(3.3)*	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.03(0.1)	1.78(3.4)
Metsulfuron + S	4	1.94(4.5)	1.14(0.3)	1.58(1.7)	1.03(0.1)	1.01(0.0)	2.51(6.6)
Carfentrazone	20	2.85(7.3)	1.24(0.7)	1.55(1.7)	1.09(0.2)	1.21(0.5)	5.71(31.9)
2,4-D Na	500	3.49(11.9)	1.14(0.3)	1.24(0.7)	1.11(0.3)	1.03(0.1)	3.97(14.9)
2,4-D E	500	2.85(7.3)	1.24(0.7)	2.47(5.5)	4.21(17.6)	1.28(0.8)	3.10(8.7)
Metsulfuron + Carfentrazone + S	4+20	1.00(0.0)	1.00(0.0)	1.06(0.1)	1.00(0.0)	1.00(0.0)	1.17(0.4)
2,4-D Na + Carfentrazone	400+20	1.66(2.0)	1.00(0.0)	1.14(0.3)	1.03(0.1)	1.00(0.0)	1.93(3.0)
2,4-D E + Carfentrazone	400+20	1.70(2.7)	1.00(0.0)	1.14(0.3)	1.25(0.7)	1.00(0.0)	1.83(3.5)
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	1.00(0.0)	1.00(0.0)	1.24(0.7)	1.05(0.1)	1.00(0.0)	1.06(0.1)
Weedy check		12.3(150.7)	2.07(3.3)	9.16(83.1)	4.36(19.3)	2.03(4.3)	16.16(260.7)
Weed free		1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)
		1.51	0.32	0.75	1.00	NS	1.46

\*Original values in parenthesis and square root transformed ( $\sqrt{X+1.0}$ ) value used for statistical analysis

**Table 6.7. North Eastern Plains Zone**

Herbicide treatments	Dose g/ha	SPL-1				2016-17	
		Coochbehar	Faizabad	Kalyani	Sabour	Varanasi	Pooled
		<b>Yield, q/ha</b>					
Halauxifen + Florasulam + S	12.76	43.93	50.10	35.51	48.63	55.70	46.77
Metsulfuron + S	4	46.30	49.50	33.79	51.03	40.38	44.20
Carfentrazone	20	38.97	45.20	27.51	47.63	38.13	39.49
2,4-D Na	500	36.90	45.00	26.00	51.00	42.42	40.26
2,4-D E	500	40.37	43.20	29.25	50.00	42.27	41.02
Metsulfuron + carfentrazone + S	4+20	50.07	51.20	33.53	47.97	49.43	46.44
2,4-D Na + Carfentrazone	400+20	46.43	48.00	34.03	49.67	46.37	44.90
2,4-D E + Carfentrazone	400+20	48.33	46.20	34.50	47.27	48.40	44.94
Halauxifen + florasulam + carfentrazone + S	10.21+20	48.30	49.30	33.77	48.30	58.72	47.68
Weedy check		12.53	32.10	18.52	36.73	29.27	25.83
Weed free		53.27	53.20	37.45	51.67	60.40	51.20
CD (0.05)		6.67	4.52	5.60	8.25	1.41	2.49
		<b>Earhead/sq. m.</b>					
Halauxifen + Florasulam + S	12.76	299	407	335	253	233	305
Metsulfuron + S	4	303	400	285	253	224	293
Carfentrazone	20	265	372	280	252	242	282
2,4-D Na	500	296	370	294	259	243	292
2,4-D E	500	312	357	321	257	246	299
Metsulfuron + carfentrazone + S	4+20	337	410	328	252	235	313
2,4-D Na + Carfentrazone	400+20	306	392	325	255	251	306
2,4-D E + Carfentrazone	400+20	320	383	348	250	255	311
Halauxifen + florasulam + carfentrazone + S	10.21+20	282	401	247	252	244	285
Weedy check		154	302	284	238	213	238
Weed free		352	421	307	261	266	321
CD (0.05)		34.49	29.01	25.12	8.76	14.59	10.47
		<b>1000 Grains Weight, g</b>					
Halauxifen + Florasulam + S	12.76	38.10	40.17	38.43	42.00	41.97	40.13
Metsulfuron + S	4	40.07	39.43	37.70	41.00	40.63	39.77
Carfentrazone	20	39.60	38.17	38.40	41.00	40.70	39.57
2,4-D Na	500	38.93	38.23	37.93	42.00	42.47	39.91
2,4-D E	500	38.37	37.47	37.97	42.00	42.47	39.65
Metsulfuron + carfentrazone + S	4+20	42.77	40.20	39.73	41.00	41.55	41.05
2,4-D Na + Carfentrazone	400+20	38.20	38.43	39.73	42.00	42.20	40.11
2,4-D E + Carfentrazone	400+20	42.27	38.40	38.50	41.00	40.53	40.14
Halauxifen + florasulam + carfentrazone + S	10.21+20	38.90	39.20	36.43	41.00	42.63	39.63
Weedy check		35.63	37.40	36.40	38.00	35.97	36.68
Weed free		43.17	41.23	39.10	42.00	41.40	41.38
CD (0.05)		2.18	1.94	7.40	3.38	1.32	1.68



**Table 6.8. North Eastern Plains Zone**

Herbicide treatments	Dose g a.i./ha	SPL-1				2016-17	
		Coochbehar	Faizabad	Kalyani	Sabour	Varanasi	Pooled
<b>Weed Population, No./sq. m. at 60 days after spray</b>							
Halauxifen + Florasulam + S	12.76	3.84(14.3)*	1.68(2.3)	5.06(26.0)	5.21(26.7)	4.79(22.7)	4.12(18.4)
Metsulfuron + S	4	3.38(11.0)	2.41(5.3)	6.50(43.7)	5.96(35.0)	6.65(44.3)	4.98(27.9)
Carfentrazone	20	4.38(18.7)	2.9(8.0)	6.90(47.7)	6.68(44.7)	6.77(45.7)	5.53(32.9)
2,4-D Na	500	4.52(20.0)	2.90(8.0)	7.51(57.3)	6.11(42.7)	8.05(64.3)	5.82(38.5)
2,4-D E	500	3.91(15.0)	3.07(9.0)	7.26(52.7)	4.95(24.0)	7.91(62.3)	5.42(32.6)
Metsulfuron + carfentrazone + S	4+20	0.71(0.0)	1.68(2.3)	6.34(40.3)	5.24(27.0)	6.12(37.3)	4.02(21.4)
2,4-D Na + Carfentrazone	400+20	3.61(12.7)	2.53(6.0)	6.59(43.3)	5.15(26.0)	6.15(37.3)	4.80(25.1)
2,4-D E + Carfentrazone	400+20	3.48(11.7)	2.72(7.0)	5.10(26.3)	5.24(27.0)	6.01(35.7)	4.51(21.5)
Halauxifen+florasulam+carfentrazone+S	10.21+20	4.41(19.0)	2.34(5.0)	5.06(25.7)	5.34(28.0)	4.36(18.7)	4.30(19.3)
Weedy check		13.33(177.7)	7.09(50.0)	11.15(126.3)	9.14(83.0)	11.7(136.7)	10.48(114.7)
Weed free		0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)
CD (0.05)		0.63	0.53	2.11	1.65	0.99	0.57
<b>Weed Dry Weight, g/sq. m. at 90 days after spray</b>							
Halauxifen + Florasulam + S	12.76	8.87(78.3)	1.86(3.2)	6.67(44.4)	6.28(39.0)	3.15(9.4)	5.37(34.9)
Metsulfuron + S	4	8.13(65.8)	2.51(5.8)	7.24(51.9)	6.52(42.0)	3.88(14.6)	5.66(36.0)
Carfentrazone	20	9.37987.3)	3.53(12.0)	7.21(51.6)	6.59(43.0)	3.7213.4)	6.08(41.4)
2,4-D Na	500	9.66(92.9)	3.53(12.0)	8.97(80.8)	5.15(26.0)	4.72(21.9)	6.41(46.7)
2,4-D E	500	8.96(79.8)	3.74(13.5)	8.34(71.4)	5.61(31.0)	4.13(16.5)	6.15(42.4)
Metsulfuron + carfentrazone + S	4+20	0.71(0.0)	2.13(4.1)	7.52(56.1)	6.36(40.0)	3.99(15.4)	4.14(23.1)
2,4-D Na + Carfentrazone	400+20	8.68(75.0)	2.85(7.7)	8.48(72.1)	6.12(37.0)	4.61(20.8)	6.15(42.5)
2,4-D E + Carfentrazone	400+20	8.34(69.2)	3.31(10.5)	8.11(66.4)	6.59(43.0)	4.39(18.8)	6.15(41.6)
Halauxifen+florasulam+carfentrazone+S	10.21+20	8.36(69.5)	2.85(7.7)	6.99(48.6)	6.2(38.0)	2.84(7.6)	5.45(34.3)
Weedy check		32(1024.0)	9.08(82.0)	16.68(277.9)	8.09(65.0)	6.70(44.5)	14.51(298.7)
Weed free		0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)
CD (0.05)		0.75	0.50	1.43	0.23	0.35	0.34

\*Original values in parenthesis and square root transformed ( $\sqrt{X+0.5}$ ) value used for statistical analysis

In Central Zone, this trial was conducted at three locations (Bilaspur, Indore and Udaipur). The pooled analysis showed significant effect of herbicide application on grain yield and yield attributes of wheat as well as on weeds (Table 6.9 and 6.10).

Herbicide treatments	Dose g a.i./ha	SPL-1			Pooled
		Bilaspur	Indore	Udaipur	
<b>Table 6.9. Central Zone</b>					
<b>Yield, q/ha</b>					
Halauxifen + Florasulam + S	12.76	33.28	64.60	51.51	49.80
Metsulfuron + S	4	38.21	64.20	49.30	50.57
Carfentrazone	20	39.12	59.43	47.43	48.66
2,4-D Na	500	35.15	61.80	47.09	48.01
2,4-D E	500	37.29	64.00	49.30	50.20
Metsulfuron + Carfentrazone + S	4+20	44.95	63.70	50.22	52.95
2,4-D Na + Carfentrazone	400+20	40.80	61.40	50.15	50.78
2,4-D E + Carfentrazone	400+20	42.02	63.70	51.17	52.30
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	44.56	57.40	51.17	51.04
Weedy check		30.65	56.10	40.97	42.57
Weed free		45.98	66.00	52.87	54.95
CD (0.05)		5.50	1.90	8.95	3.48
<b>Earhead/sq. m.</b>					
Halauxifen + Florasulam + S	12.76	240	422	453	372
Metsulfuron + S	4	269	421	418	370
Carfentrazone	20	293	404	438	378
2,4-D Na	500	248	416	430	365
2,4-D E	500	307	410	422	380
Metsulfuron + Carfentrazone + S	4+20	338	433	407	393
2,4-D Na + Carfentrazone	400+20	303	413	430	382
2,4-D E + Carfentrazone	400+20	314	399	425	379
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	324	402	435	387
Weedy check		232	407	375	338
Weed free		360	423	450	411
CD (0.05)		31.35	24.03	47.39	20.13
<b>Grains/Earhead</b>					
Halauxifen + Florasulam + S	12.76	36.42	36.55	22.76	31.91
Metsulfuron + S	4	33.39	35.76	23.42	30.86
Carfentrazone	20	31.67	34.55	21.56	29.26
2,4-D Na	500	35.61	35.00	22.90	31.17
2,4-D E	500	29.87	36.45	24.78	30.37
Metsulfuron + Carfentrazone + S	4+20	28.83	34.72	25.57	29.71
2,4-D Na + Carfentrazone	400+20	30.70	35.00	24.19	29.96
2,4-D E + Carfentrazone	400+20	30.76	37.28	25.21	31.08
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	30.08	33.31	23.32	28.90
Weedy check		35.87	32.46	22.65	30.33
Weed free		27.30	36.98	23.12	29.13
CD (0.05)		8.12	2.68	4.45	3.14
<b>1000 Grains Weight, g</b>					
Halauxifen + Florasulam + S	12.76	38.32	41.97	50.07	43.45
Metsulfuron + S	4	42.37	42.70	50.53	45.20
Carfentrazone	20	43.26	42.57	50.67	45.50
2,4-D Na	500	40.05	42.50	47.80	43.45
2,4-D E	500	41.26	42.83	47.33	43.81
Metsulfuron + Carfentrazone + S	4+20	46.06	42.47	48.27	45.60
2,4-D Na + Carfentrazone	400+20	44.21	42.53	48.20	44.98
2,4-D E + Carfentrazone	400+20	43.56	42.97	47.80	44.78
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	45.94	42.97	50.50	46.47
Weedy check		37.42	42.50	47.67	42.53
Weed free		46.86	42.23	51.07	46.72
CD (0.05)		5.48	1.26	2.12	1.96
Date of Sowing:		21.11.2016	14.11.2016	11.11.2016	
Date of Harvesting:		28.03.2017	04.04.2017	01.04.2017	

The highest yield was obtained under weed free situations (54.95 q/ha). A close comparison among herbicides shows better performance of Metsulfuron + carfentrazone (52.95 q/ha) followed by 2,4-D E + carfentrazone (52.30 q/ha). Gain in yield was due to better weed control as a result significantly higher number of earheads/sq. m. The performance of halauxifen + florasulam in combination with carfentrazone and 2,4-D in combination with carfentrazone was better compared to other herbicide treatments.

**Table 6.10. Central Zone**

Herbicide treatments	Dose g a.i./ha	SPL-1		2016-17	
		Bilaspur	Indore	Udaipur	Pooled
<b>Weed Population, No./sq. m. at 60 days after spray</b>					
Halauxifen + Florasulam + S	12.76	5.26(27.4)	2.73(7.0)	1.22(1.0)	3.50(11.8)
Metsulfuron + S	4	4.82(22.8)	3.93(15.0)	3.03(8.7)	4.00(15.5)
Carfentrazone	20	4.27(17.9)	7.16(50.8)	2.80(7.3)	5.08(25.3)
2,4-D Na	500	4.87(23.4)	6.41(41.0)	3.34(10.7)	5.05(25.0)
2,4-D E	500	4.74(22.0)	3.90(14.8)	2.97(8.3)	3.94(15.1)
Metsulfuron + Carfentrazone + S	4+20	3.78(14.0)	3.83(14.3)	3.03(8.7)	3.58(12.3)
2,4-D Na + Carfentrazone	400+20	4.82(22.8)	5.09(25.7)	2.41(5.3)	4.29(17.9)
2,4-D E + Carfentrazone	400+20	4.37(18.7)	2.31(4.8)	1.72(2.5)	3.03(8.7)
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	4.17(17.0)	4.07(16.2)	1.34(1.3)	3.46(11.5)
Weedy check		18.01(324.0)	12.98(168.7)	4.41(19.0)	13.08(170.6)
Weed free		0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)
CD (0.05)		0.68	0.93	0.17	0.36
<b>Weed Dry Weight, g/sq. m. at 90 days after spray</b>					
Halauxifen + Florasulam + S	12.76	2.65(7.0)	1.58(2.0)	0.94(0.7)	1.61(3.2)
Metsulfuron + S	4	2.70(6.8)	2.47(5.6)	2.13(7.4)	2.03(9.6)
Carfentrazone	20	3.07(9.1)	3.16(9.5)	2.20(8.3)	2.21(9.0)
2,4-D Na	500	2.66(7.2)	2.88(7.9)	2.29(9.1)	2.11(8.0)
2,4-D E	500	2.79(7.6)	2.16(4.2)	2.01(6.6)	1.91(6.1)
Metsulfuron + Carfentrazone + S	4+20	1.65(2.3)	1.48(1.7)	2.00(6.3)	1.53(3.4)
2,4-D Na + Carfentrazone	400+20	3.37(11.1)	2.14(4.1)	1.93(5.7)	2.15(7.0)
2,4-D E + Carfentrazone	400+20	2.73(7.1)	1.59(2.1)	0.80(0.2)	1.56(3.1)
Halauxifen+Florasulam+Carfentrazone+S	10.21+20	2.31(5.2)	1.47(1.7)	1.05(1.0)	1.35(2.6)
Weedy check		5.17(26.4)	6.66(44.3)	3.25(20.0)	3.88(30.2)
Weed free		0.71(0.0)	0.71(0.0)	0.71(0.0)	0.71(0.0)
CD (0.05)		0.76	0.46	1.17	1.20

\*Original values in parenthesis and square root transformed ( $\sqrt{X+0.5}$ ) value used for statistical analysis

In Peninsular Zone, this trial was conducted at only one centre *i.e.* Dharwad. The analysed data showed significant effect of herbicide application on grain yield and yield attributes (Table 6.11). The highest yield was obtained under weed free situations (44.10 q/ha). A close comparison among herbicides showed better performance of Halauxifen methyl + florasulam+ carfentrazone (42.20 q/ha) followed by Metsulfuron + carfentrazone +surfactant (41.50 q/ha). Gain in yield was due to significantly higher number of earheads/sq.m. and thousand grain weight. At Dharwad the weed pressure was low as compared to other centres but here also the Halauxifen methyl + florasulam+ carfentrazone was the best herbicide treatment in reducing the weed population and dry weight.

**Table 6.11. Peninsular Zone**

	<b>SPL-1</b>		<b>Dharwad 2016-17</b>				
Herbicide treatments	Dose, g a.i./ha	Earhead/ sq. m.	1000 Grains Weight, g	Grains/ Earhead	Yield q/ha	Weed density	Weed Dry weight, g
Halauxifen + Florasulam + S	12.76	258	41.84	36.75	39.65	4.43(19.3)	1.42(1.5)
Metsulfuron + S	4	238	40.76	37.65	36.54	3.97(16.0)	1.36(1.4)
Carfentrazone	20	251	40.28	37.70	38.13	4.10(17.7)	1.41(1.5)
2,4-D Na	500	246	40.75	37.74	37.78	3.98(16.0)	1.80(3.0)
2,4-D E	500	238	40.05	38.45	36.62	4.02(16.0)	1.41(1.5)
Metsulfuron + carfentrazone + S	4+20	264	42.39	37.15	41.50	3.56(13.0)	1.32(1.3)
2,4-D Na + Carfentrazone	400+20	261	41.80	37.04	40.36	5.05(25.3)	1.58(2.0)
2,4-D E + Carfentrazone	400+20	254	41.30	37.01	38.78	3.70(17.3)	1.40(1.9)
Halauxifen+florasulam+carfentrazone+S	10.21+20	272	41.20	37.79	42.20	2.83(9.3)	1.14(0.9)
Weedy check		232	35.86	40.40	33.51	6.62(43.7)	2.20(4.4)
Weed free		277	42.12	37.82	44.10	0.71(0.0)	0.71(0.0)
CD (0.05)		4.22	3.69	4.27	3.57	2.15	0.65
Date of Sowing: 10.11.2016				Date of Harvesting:		18.03.2017	

**SPL-2: Management of lodging and yield maximization in wheat**

This experiment was conducted to maximise wheat yield with target yield of 6 and 7 t/ha using crop growth regulators Chlormequat chloride (Lihocin) and tebuconazole (Folicur 430 SC). Experiment consists of four fertiliser treatments viz. control, RDF, 150 % RDF and 150 % RDF +15 t FYM/ha in main plots and four growth regulators viz control, two sprays of 0.2% Chlormequat chloride (CCC), two sprays of tebuconazole (0.1%) and two sprays of combination of CCC and tebuconazole in split plot design and replicated thrice. Growth regulators were used twice *i.e.* at first node and flag leaf stages. The sowing was done using the normalized seed rate of 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone. This trial was conducted in five zones and zone wise results are given here under

In Northern Hills Zone, this experiment was conducted at Almora (UttaraKhand), Bajaura (Kullu, HP), Khudwani (Anantnag, J&K) and Malan (Palampur, HP). The pooled analysis showed that increasing fertiliser doses enhanced grain yield significantly (Table 6.12). Application of 150% RDF has increased the grain yield (50.45 q/ha) to the tune of 10.0% over RDF (45.40 q/ha). Even 15 t/ha FYM application along with 150% RDF increased the grain yield (51.06 q/ha) numerically as compared to 150% RDF application. Two spray of tebuconazole produced maximum grain yield (45.30 q/ha) which was significantly higher than other treatments. Application of CCC @ 0.2 % + tebuconazole @ 0.1 % twice in crop season reduced the plant height significantly as compared to other treatments.

In NWPZ this trial was conducted at seven centres namely at Agra, Durgapura, Hisar, Jammu, Karnal, Ludhiana and Pantnagar. The data from Pantnagar was excluded from pooled analysis because of different trend. The pooled analysis showed significant effect of fertilizer application on grain yield and yield attributes (Table 6.13).

Table 6.12. Northern Hills Zone

SPL-2

Pooled

2016-17

Growth regulator (GR)	Fertilization				Mean
	Control	RDF	150% RDF	150%RDF+FYM	
<b>Yield, q/ha</b>					
Control	25.91	44.11	48.53	51.23	42.44
2 sprays of CCC (0.2%)	26.55	44.86	49.38	49.74	42.63
2 sprays of tebuconazole (0.1 %)	27.34	48.56	52.88	52.45	45.30
2 sprays of CCC + tebuconazole	23.70	44.05	51.01	50.84	42.40
Mean	25.87	45.4	50.45	51.06	43.2
	Fertiliser (A)	GR (B)	B within A	A within B	
CD (0.05)	1.69	1.38	NS	NS	
<b>Earhead/sq. m.</b>					
Control	252	307	324	344	306
2 sprays of CCC (0.2%)	250	307	334	351	310
2 sprays of tebuconazole (0.1 %)	265	335	344	353	324
2 sprays of CCC +tebuconazole	263	322	340	352	319
Mean	257	318	335	350	315
	Fertiliser (A)	GR (B)	B within A	A within B	
CD (0.05)	8.94	8.57	NS	NS	
<b>Grains/Earhead</b>					
Control	26.74	36.57	38.32	37.04	34.67
2 sprays of CCC (0.2%)	28.43	37.07	37.88	35.84	34.81
2 sprays of tebuconazole (0.1 %)	27.16	36.02	38.66	35.98	34.46
2 sprays of CCC + tebuconazole	24.32	34.78	39.74	35.62	33.61
Mean	26.66	36.11	38.65	36.12	34.39
	Fertiliser (A)	GR (B)	B within A	A within B	
CD (0.05)	1.28	NS	NS	NS	
<b>1000 Grains Weight, g</b>					
Control	39.59	40.82	40.53	41.23	40.54
2 sprays of CCC (0.2%)	37.84	39.89	39.99	40.49	39.55
2 sprays of tebuconazole (0.1 %)	38.87	40.64	40.93	41.61	40.51
2 sprays of CCC + tebuconazole	38.89	39.86	38.87	40.82	39.61
Mean	38.79	40.3	40.08	41.04	40.05
	Fertiliser (A)	GR (B)	B within A	A within B	
CD (0.05)	0.85	0.62	NS	NS	
<b>Plant Height (cm)</b>					
Control	73.34	82.64	89.31	94.44	84.93
2 sprays of CCC (0.2%)	69.68	79.19	83.49	90.05	80.60
2 sprays of tebuconazole (0.1 %)	75.13	82.75	87.62	94.85	85.09
2 sprays of CCC + tebuconazole	66.54	78.12	83.81	89.61	79.52
Mean	71.17	80.68	86.06	92.24	82.54
	Fertiliser (A)	GR (B)	B within A	A within B	
CD (0.05)	2.67	1.74	NS	NS	
<b>Biomass, q/ha</b>					
Control	68.02	114.13	122.36	135.34	109.97
2 sprays of CCC (0.2%)	73.24	112.90	121.92	131.37	109.86
2 sprays of tebuconazole (0.1 %)	77.99	121.04	129.36	135.54	115.98
2 sprays of CCC + tebuconazole	67.89	110.34	124.23	131.68	108.53
Mean	71.79	114.6	124.47	133.48	111.09
	Fertiliser (A)	GR (B)	B within A	A within B	
CD (0.05)	4.89	4.66	NS	NS	

**Centres:** Almora, Bajaura, Khudwani and Malan

**Table 6.13. North Western Plains Zone SPL-2 Pooled 2016-17**

Growth regulator (GR)	Fertilization				Mean
	Control	RDF	150% RDF	150%RDF+FYM	
<b>Yield, q/ha</b>					
Control	27.3	53.44	55.04	55.79	47.89
2 sprays of CCC (0.2%)	28.76	55.06	56.89	58.54	49.81
2 sprays of tebuconazole (0.1%)	29.09	55.17	55.84	57.79	49.47
2 sprays of CCC + tebuconazole	30.33	56.14	57.97	60.55	51.25
Mean	28.87	54.95	56.44	58.17	49.61
CD (0.05)	Fertiliser (A) 1.14	GR (B) 0.96	B within A NS	A within B NS	
<b>Earhead/sq. m.</b>					
Control	242	394	422	426	371
2 sprays of CCC (0.2%)	244	406	421	422	373
2 sprays of tebuconazole (0.1%)	247	406	414	427	373
2 sprays of CCC + tebuconazole	248	408	419	428	376
Mean	245	403	419	426	373
CD (0.05)	Fertiliser (A) 8.91	GR (B) NS	B within A NS	A within B NS	
<b>Grains/Earhead</b>					
Control	30.22	35.55	34.53	34.24	33.64
2 sprays of CCC (0.2%)	31.32	35.33	35.34	36.18	34.54
2 sprays of tebuconazole (0.1%)	31.65	35.88	35.18	35.64	34.59
2 sprays of CCC + tebuconazole	32.76	35.92	36.1	36.46	35.31
Mean	31.49	35.67	35.29	35.63	34.52
CD (0.05)	Fertiliser (A) 1.47	GR (B) 1.07	B within A NS	A within B NS	
<b>1000 Grains Weight, g</b>					
Control	37.48	38.75	38.14	38.55	38.23
2 sprays of CCC (0.2%)	37.95	38.82	38.68	38.85	38.58
2 sprays of tebuconazole (0.1%)	37.77	38.52	38.79	38.47	38.39
2 sprays of CCC + tebuconazole	37.74	38.61	38.83	39.29	38.62
Mean	37.73	38.67	38.61	38.79	38.45
CD (0.05)	Fertiliser (A) 0.49	GR (B) NS	B within A NS	A within B NS	
<b>Biomass, q/ha</b>					
Control	75.83	136.14	142.17	147.27	125.35
2 sprays of CCC (0.2%)	75.33	135.81	141	145.71	124.46
2 sprays of tebuconazole (0.1%)	78.24	137.84	142.05	150.99	127.28
2 sprays of CCC + tebuconazole	77.04	136.73	141.27	147.86	125.73
Mean	76.61	136.63	141.62	147.96	125.71
CD (0.05)	Fertiliser (A) 3.67	GR (B) NS	B within A NS	A within B NS	
<b>Plant Height, cm</b>					
Control	79.4	97.1	98.4	99.3	93.6
2 sprays of CCC (0.2%)	75.2	90.8	93	94	88.2
2 sprays of tebuconazole (0.1%)	79.3	93.8	96.4	96.9	91.6
2 sprays of CCC + tebuconazole	72.2	87.8	90.3	91.7	85.5
Mean	76.5	92.4	94.5	95.4	89.7
CD (0.05)	Fertiliser (A) 1.52	GR (B) 1.21	B within A NS	A within B NS	
<b>Lodging Score*</b>					
Control	0	4.41	12.6	12.87	7.47
2 sprays of CCC (0.2%)	0	1.09	4.44	5.88	2.85
2 sprays of tebuconazole (0.1%)	0	2.49	7.87	9.72	5.02
2 sprays of CCC + tebuconazole	0	0.38	2.38	2.06	1.20
Mean	0	2.09	6.82	7.63	

**Centres:** Agra, Durgapura, Hisar, Jammu, Karnal, Ludhiana

\*Mean of six centres (Agra, Hisar, Jammu, Karnal, Ludhiana, Pantnagar)

The grain yield enhanced significantly with increasing fertiliser doses. The application of 150 % RDF increased the grain yield (56.44 q/ha) to the tune of 2.7 % over RDF (54.95 q/ha). Also, the addition of 15 t/ha FYM application along with 150 % RDF increased the grain yield (58.17 q/ha) significantly as compared to 150 % RDF application. Two spray of Chloromequat chloride (Lihocin) 0.2 % + tebuconazole (Folicur 430 SC) 0.1% produced maximum grain yield (51.25 q/ha) which was significantly higher than other treatments. This showed that growth retardant in combination with fungicide tebuconazole is more effective rather alone application. CCC @ 0.2 % + tebuconazole @ 0.1 % twice in crop season application produced maximum yield attributing parameters but reduced the plant height significantly as compared to other treatments. There was drastic reduction in lodging when CCC was applied alone or in combination with fungicide. The reduction was more prominent, where combination of Lihocin and Folicur was applied. The reduction in lodging was due to reduction in plant height. Lodging score was reported by all the centres except Durgapura. The results showed that increasing the fertiliser rates in combination with growth retardant application increased the grain yield. Centre wise data are presented in Table 6.13.1 to 6.13.7.

In NEPZ, this experiment was conducted at ten centres namely Burdwan, Coochbehar, Faizabad, Kalyani, Kanpur, Ranchi, RAU Pusa, Sabour, Shillongani and Varanasi. The pooled analysis showed that increasing fertiliser doses enhanced grain yield significantly (Table 6.14). The application of 150 % RDF has increased the grain yield (49.39 q/ha) to the tune of 14.5 % over RDF (43.13 q/ha). Even 15 t/ha FYM application along with 150 % RDF increased the grain yield (50.66 q/ha) significantly as compared to 150 % RDF application. Two spray of CCC+tebuconazole produced maximum grain yield (41.82 q/ha) which was significantly higher than other treatments. This showed that growth retardant in combination with fungicide is more effective rather alone application. CCC @ 0.2 % +tebuconazole @ 0.1 % twice in crop season application produced maximum yield attributing parameters and biomass and simultaneously reduced the plant height significantly as compared to other treatments. It is interesting to note that growth retardant application reduced the plant height and at the same time increased the biomass indicate more vigour stem production which ultimately reduces the chances of lodging. Lodging score was mainly reported from Burdwan center and in few treatments at Coochbehar and Sabour. This confirms that increasing the fertiliser dose in combination with growth retardant application increases the grain yield.

**Table 6.14. North Eastern Plains Zone**

Growth regulator (GR)	SPL-2				Pooled	2016-17
	Fertilization					
	Control	RDF	150% RDF	150%RDF+FYM	Mean	
<b>Yield, q/ha</b>						
Control	17.82	40.37	46.61	48.54	38.33	
2 sprays of CCC (0.2%)	18.52	43.78	50.33	51.52	41.04	
2 sprays of tebuconazole (0.1 %)	18.14	43.15	49.81	50.88	40.5	
2 sprays of CCC +tebuconazole	19.56	45.2	50.79	51.71	41.82	
Mean	18.51	43.13	49.39	50.66	40.42	
CD (0.05)	Fertiliser (A) 0.63	GR (B) 0.7	B within A 1.39	A within B 1.36		
<b>Earhead/sq. m.</b>						
Control	184	287	301	315	272	
2 sprays of CCC (0.2%)	194	299	315	328	284	
2 sprays of tebuconazole (0.1 %)	194	296	323	329	285	
2 sprays of CCC +tebuconazole	200	306	321	324	288	
Mean	193	297	315	324	282	
CD (0.05)	Fertiliser (A) 7.06	GR (B) 5.17	B within A NS	A within B NS		
<b>Grains/Earhead</b>						
Control	26.57	36.2	39.05	38.86	35.17	
2 sprays of CCC (0.2%)	25.57	36.86	39.43	38.71	35.14	
2 sprays of tebuconazole (0.1 %)	25.16	36.68	37.92	38.81	34.64	
2 sprays of CCC +tebuconazole	26.15	36.67	39.16	39.55	35.38	
Mean	25.86	36.6	38.89	38.98	35.08	
CD (0.05)	Fertiliser (A) 1	GR (B) NS	B within A NS	A within B NS		
<b>1000 Grains Weight, g</b>						
Control	37.49	39.47	40.51	40.32	39.45	
2 sprays of CCC (0.2%)	37.66	40.54	41.11	41.32	40.16	
2 sprays of tebuconazole (0.1 %)	37.81	40.46	41.38	40.8	40.12	
2 sprays of CCC +tebuconazole	37.85	41.26	41.25	41.44	40.45	
Mean	37.7	40.43	41.06	40.97	40.04	
CD (0.05)	Fertiliser (A) 0.7	GR (B) 0.4	B within A NS	A within B NS		
<b>Height (cm)*</b>						
Control	73.9	93.79	97.67	99.24	91.15	
2 sprays of CCC (0.2%)	68.9	87.6	92.18	91.29	84.99	
2 sprays of tebuconazole (0.1 %)	71.44	91.71	94.59	94.02	87.94	
2 sprays of CCC +tebuconazole	67.79	87.42	89.43	89.23	83.47	
Mean	70.51	90.13	93.47	93.44	86.89	
CD (0.05)	Fertiliser (A) 2.3	GR (B) 0.87	B within A 1.75	A within B 2.75		
<b>Biomass, q/ha*</b>						
Control	46.14	95.37	113.22	117.1	92.96	
2 sprays of CCC (0.2%)	48.58	105.24	120.35	124.43	99.65	
2 sprays of tebuconazole (0.1 %)	47.12	102.3	120.32	125.06	98.7	
2 sprays of CCC +tebuconazole	51.11	106.56	121.13	126.66	101.36	
Mean	48.24	102.37	118.75	123.31	98.17	
CD (0.05)	Fertiliser (A) 1.81	GR (B) 1.73	B within A NS	A within B NS		

Centres: Burdwan, Coochbehar, Faizabad, Kalyani, Kanpur, Ranchi, RAU Pusa, Sabour, Shillongani, Varanasi  
 \* Height- Varanasi data is not present, Biomass -Burdwan data is not present

In Central Zone, this trial was conducted at eight locations (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Kota Udaipur and Vijapur). A perusal of pooled data analysis of the eight centres presented in Table 6.15 showed that the highest yield was recorded under the treatment 150%RDF+FYM (53.07 q/ha) as compared to all other treatments. The treatments two sprays of Lihocin and two sprays of Lihocin+Folicur are statistically at par whereas the treatment two sprays of Lihocin+Folicur (47.45 q/ha) is statistically higher than the treatment two sprays of Folicur (46.61 q/ha). The yield increment may be due to more earheads/sq. m.



and higher number of grains per earhead. Application of growth retardants reduced plant height drastically as compared to control. Minimum plant height is observed under two sprays of Lihocin (82.88 cm) followed by two sprays of Lihocin+Folicur (82.99 cm). Lodging was not reported at any centre from the Central zone. The centre wise data are presented in Annexure I as Tables 6.15.1- 6.15.8.

**Table 6.15. Central Zone** **SPL-2** **Pooled** **2016-17**

Growth regulator (GR)	Fertilization				Mean
	Control	RDF	150% RDF	150% RDF+ FYM	
<b>Yield, q/ha</b>					
Control	30.69	46.60	47.96	51.68	44.23
2 sprays of CCC (0.2%)	33.79	48.34	51.33	53.63	46.77
2 sprays of tebuconazole (0.1 %)	34.26	48.68	50.41	53.10	46.61
2 sprays of CCC +tebuconazole	33.97	49.38	52.60	53.84	47.45
Mean	33.18	48.25	50.57	53.07	46.27
CD (0.05)	Fertiliser (A) 0.88	GR (B) 0.71	B within A NS	A within B NS	
<b>Earhead/sq. m.</b>					
Control	296	376	371	384	357
2 sprays of CCC (0.2%)	313	373	384	401	368
2 sprays of tebuconazole (0.1 %)	311	383	380	387	365
2 sprays of CCC +tebuconazole	320	380	382	394	369
Mean	310	378	379	392	365
CD (0.05)	Fertiliser (A) 8.96	GR (B) 6.37	B within A NS	A within B NS	
<b>Grains/Earhead</b>					
Control	27.24	32.00	32.48	33.52	31.31
2 sprays of CCC (0.2%)	28.40	34.16	33.64	32.90	32.27
2 sprays of tebuconazole (0.1 %)	28.22	33.03	33.01	34.08	32.08
2 sprays of CCC +tebuconazole	27.71	33.43	34.71	34.32	32.54
Mean	27.89	33.15	33.46	33.70	32.05
CD (0.05)	Fertiliser (A) 0.82	GR (B) 0.69	B within A NS	A within B NS	
<b>1000 Grains Weight, g</b>					
Control	39.66	40.43	41.68	41.69	40.87
2 sprays of CCC (0.2%)	39.36	39.37	41.25	42.58	40.64
2 sprays of tebuconazole (0.1 %)	39.92	40.13	41.65	42.32	41.01
2 sprays of CCC +tebuconazole	39.35	40.57	41.70	41.57	40.79
Mean	39.58	40.13	41.57	42.04	40.83
CD (0.05)	Fertiliser (A) 0.70	GR (B) NS	B within A NS	A within B NS	
<b>Plant height, cm</b>					
Control	77.23	85.76	88.15	90.45	85.40
2 sprays of CCC (0.2%)	75.46	84.30	84.95	86.80	82.88
2 sprays of tebuconazole (0.1 %)	77.67	87.11	87.34	88.68	85.20
2 sprays of CCC +tebuconazole	76.72	84.50	84.41	86.34	82.99
Mean	76.77	85.42	86.21	88.07	84.12
CD (0.05)	Fertiliser (A) 1.27	GR (B) 0.70	B within A 1.41	A within B 1.75	
<b>Biomass, q/ha</b>					
Control	63.06	97.22	99.89	105.11	91.32
2 sprays of CCC (0.2%)	67.30	100.84	104.62	109.97	95.68
2 sprays of tebuconazole (0.1 %)	67.89	101.24	102.94	108.21	95.07
2 sprays of CCC +tebuconazole	67.35	100.02	105.94	108.66	95.50
Mean	66.40	99.83	103.35	107.99	94.39
CD (0.05)	Fertiliser (A) 1.82	GR (B) 1.36	B within A NS	A within B NS	

**Centres:** Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Kota, Udaipur, Vijapur

In Peninsular Zone this trial was conducted at Dharwad, Niphad, Pune and Ugar Khurd. The pooled data of four centres revealed that among main plot treatments 150% RDF + 15 t/ha FYM produced maximum yield (46.94 q/ha) followed by 150 % RDF (45.53 q/ha) and both the treatments remained statistically at par (Table 6.16). Among growth retardant treatments two sprays as tank mix -Lihocin@ 0.2% + Folicur 430 SC @0.1% produced maximum yield (42.71 q/ha) followed by two sprays of Folicur 430 SC@0.1% (41.31 q/ha) and remained statistically at par.

**Table 6.16. Peninsular Zone**

Growth regulators	SPL-2 Pooled				2016-17
	Fertility levels, kg/ha				
	Control	RDF	150 % RDF	150% RDF + FYM	Mean
<b>Yield, q/ha</b>					
Control	28.20	39.29	43.99	45.90	39.35
2 sprays of CCC (0.2%)	30.27	40.99	45.16	46.28	40.67
2 sprays of tebuconazole (0.1%)	30.53	42.15	45.93	46.64	41.31
2 sprays of CCC +tebuconazole	31.70	43.18	47.05	48.93	42.71
Mean	30.18	41.40	45.53	46.94	41.01
CD (0.05)	Fertiliser (A) 1.4	GR (B) 1.25	B within A NS	A within B NS	
<b>Earhead/sq. m.</b>					
Control	284	307	304	310	301
2 sprays of CCC (0.2%)	284	304	312	321	305
2 sprays of tebuconazole (0.1%)	282	315	313	317	307
2 sprays of CCC +tebuconazole	289	314	339	322	316
Mean	285	310	317	317	307
CD (0.05)	Fertiliser (A) 5.34	GR (B) 6.31	B within A 12.62	A within B 12.14	
<b>Grains/Earhead</b>					
Control	28.52	33.46	36.35	36.06	33.60
2 sprays of CCC (0.2%)	29.92	33.85	35.01	34.52	33.33
2 sprays of tebuconazole (0.1%)	30.11	32.97	35.33	34.70	33.28
2 sprays of CCC +tebuconazole	30.67	33.56	33.56	35.06	33.21
Mean	29.80	33.46	35.06	35.08	33.35
CD (0.05)	Fertiliser (A) 1.15	GR (B) NS	B within A NS	A within B NS	
<b>1000 Grains Weight, g</b>					
Control	37.76	41.00	41.41	42.27	40.61
2 sprays of CCC (0.2%)	37.98	42.60	43.07	43.13	41.70
2 sprays of tebuconazole (0.1%)	38.08	42.92	43.24	44.18	42.10
2 sprays of CCC +tebuconazole	39.02	43.38	43.21	44.79	42.60
Mean	38.21	42.48	42.73	43.59	41.75
CD (0.05)	Fertiliser (A) 0.66	GR (B) 0.73	B within A NS	A within B NS	
<b>Plant Height, cm</b>					
Control	77.26	83.09	85.02	83.42	82.19
2 sprays of CCC (0.2%)	73.19	78.40	78.28	77.66	76.88
2 sprays of tebuconazole (0.1%)	78.31	83.13	82.92	82.26	81.65
2 sprays of CCC +tebuconazole	76.57	78.78	78.98	80.14	78.62
Mean	76.33	80.85	81.30	80.87	79.84
CD (0.05)	Fertiliser (A) 1.12	GR (B) 1.11	B within A NS	A within B NS	
<b>Biomass, q/ha</b>					
Control	70.66	99.10	108.72	110.57	97.26
2 sprays of CCC (0.2%)	75.18	101.54	103.17	105.80	96.42
2 sprays of tebuconazole (0.1 %)	77.33	102.52	108.58	115.75	101.04
2 sprays of CCC +tebuconazole	80.88	108.67	115.85	114.47	104.97
Mean	76.01	102.96	109.08	111.65	99.92
CD (0.05)	Fertiliser (A) 3.02	GR (B) 2.55	B within A 5.11	A within B 5.34	

**Centres:** Dharwad, Niphad, Pune, Ugar Khurd

However, tank mix application of both growth retardants produced significantly higher yield than Lihocin @ 0.2% alone (40.67 q/ha) and control (39.35 q/ha). The gain in yield might be contributed by higher thousand grain weight and more number of earheads per square meter. The significantly least plant height was recorded in treatment Lihocin @ 0.2% (76.88 cm) followed by tank mix –Lihocin @ 0.2% + Folicur 430 SC @ 0.1% (78.62 cm), two sprays of Folicur 430 SC @ 0.1% (81.65 cm) and control (82.19 cm). Contrary to the plant height, maximum and significantly higher biomass was recorded in treatment tank mix –Lihocin @ 0.2% + Folicur 430 SC @ 0.1% (104.97 q/ha) followed by Folicur 430 SC@0.1% (101.4 q/ha). There is no significant difference was observed in control (97.26 q/ha) and Lihocin @ 0.2% (96.42 q/ha) as far as biomass production is the concern. Lodging was not reported from any centre.

### **SPL-3: Efficient nutrient management in maize/soybean-wheat system**

To study the precision nutrient management for maize-wheat cropping system in Peninsular Zone a special coordinated trial SPL-3 was conducted at Dharwad and Niphad centre. The experiment was conducted in randomized block design with ten treatment combinations (Wheat RDF, 125% of RDF, RDF for 4.0 t ha<sup>-1</sup> targeted yield, RDF for 5.0 t ha<sup>-1</sup> targeted yield, RDF for 6.0 t ha<sup>-1</sup> targeted yield, RDF for targeted yield - 4t ha<sup>-1</sup>, RDF for targeted yield-5t ha<sup>-1</sup>, RDF for targeted yield - 6t ha<sup>-1</sup>, Absolute control-Wheat, and Absolute control-Wheat) and each treatment was replicated thrice. In Kharif season Maize-soybean crops were planted in the field with 10 treatments (T1: Maize RDF, T2: 125% of RDF, T3: RDF for 6.0 t ha<sup>-1</sup> targeted yield, T4: RDF for 6.0 t ha<sup>-1</sup> targeted yield, T5: RDF for 6.0 t ha<sup>-1</sup> targeted yield, T6: RDF Soybean, T7: RDF Soybean, T8: RDF Soybean, T9: Absolute control-Soybean, T10: Absolute control-Maize) and replicated thrice.

The data presented in Table 6.17 illustrated that highest wheat yield (46.10 q/ha) was produced by RDF for targeted yield of 6 t/ha followed by 45.52 q/ha, T2 (44.27 q/ha), T7 (43.73 q/ha) and T4 (43.20 q/ha) and remained statistically at par. The highest yielder treatment (RDF for targeted yield – 6 t/ha) was significantly higher than recommended dose of wheat fertilizers which produced 41.98 q/ha. The gain in yield was contributed by grains per earhead, thousand grain weight and number of earheads per square meter. Centre wise wheat yield attributes are presented in Annexure-I as Table 6.17.1 and 6.17.2. For maize T5 (RDF for 6.0 t ha<sup>-1</sup> targeted yield) produced significantly higher grain yield (70.77 q/ha) than all other treatments. The increment in yield might be contributed by thousand grain weight (381 g). In case of soybean except control (17.34 q/ha) all other treatments produced similar grain yield (22.42 q/ha, 23.55 q/ha, 17.34 q/ha respectively).

Equivalent wheat yield for the Maize-Wheat and Soybean-Wheat systems were calculated and it was found that maximum wheat equivalent yield was obtained under 125% of recommended dose of fertilizers (131.63 q/ha) followed by RDF for 6.0 t ha<sup>-1</sup> targeted maize yield (127.83 q/ha) which were at par. Almost similar trend was observed at both the centres.

Table 6.17. Peninsular Zone	SPL-3		Pooled		2015-16
	Fertiliser, NPK kg/ha		Dharwad	Niphad	Pooled
	Dharwad	Niphad	<b>Wheat Productivity, q/ha</b>		
Wheat RDF	120:60:40	120:60:40	39.56	44.41	41.98
125% of RDF	150:75:50	150:75:50	41.57	46.97	44.27
RDF for 4.0 t ha <sup>-1</sup> targeted yield	95:44:33	191:17:23	35.16	40.63	37.90
RDF for 5.0 t ha <sup>-1</sup> targeted yield	95:50:39	264:35:20	40.16	46.23	43.20
RDF for 6.0 t ha <sup>-1</sup> targeted yield	95:55:45	327:40:20	42.97	48.07	45.52
RDF for targeted yield - 4t ha <sup>-1</sup>	95:44:33	183:05:21	38.51	42.73	40.62
RDF for targeted yield - 5t ha <sup>-1</sup>	95:50:39	250:19:20	40.36	47.10	43.73
RDF for targeted yield - 6t ha <sup>-1</sup>	95:55:45	321:27:20	43.56	48.64	46.10
Absolute control	Nil	0	32.48	28.07	30.27
Absolute control	Nil	0	30.72	23.92	27.32
CD (0.05)			4.08	5.31	3.35
			<b>Maize/Soybean Productivity, q/ha</b>		
Recommended Fertilizers(RDF)	150:65:65	120:60:40	49.44	50.00	49.72
125% of RDF	188:81:81	150:75:50	53.32	59.47	56.40
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	110:47:44	181:86:20	59.85	61.97	60.91
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	110:47:44	197:73:20	60.27	67.05	63.66
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	110:47:44	191:65:20	80.48	61.06	70.77
RDF Soybean	40:80:25	50:75:00	23.28	21.55	22.42
RDF Soybean	40:80:25	50:75:00	20.39	28.17	24.28
RDF Soybean	40:80:25	50:75:00	19.35	27.74	23.55
Absolute control-Soybean	Nil	0	16.33	18.36	17.34
Absolute control-Maize	Nil	0	39.44	41.06	40.25
			<b>Equivalent Wheat Productivity, q/ha</b>		
T1-Recommended Fertilizers(RDF)	Wheat RDF		119.40	121.87	120.67
T2-125% of RDF	125% of RDF		119.93	143.30	131.63
T3-RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 4.0 t ha <sup>-1</sup> targeted yield		117.27	138.33	127.83
T4-RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 5.0 t ha <sup>-1</sup> targeted yield		117.67	132.80	125.20
T5-RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 6.0 t ha <sup>-1</sup> targeted yield		110.57	99.33	104.97
T6-RDF Soybean	RDF for targeted yield - 4t ha <sup>-1</sup>		71.63	77.23	74.43
T7-RDF Soybean	RDF for targeted yield - 5t ha <sup>-1</sup>		40.40	47.10	43.73
T8-RDF Soybean	RDF for targeted yield - 6t ha <sup>-1</sup>		43.60	48.63	46.10
T9-Absolute control-Soybean	Absolute control-Wheat		32.47	28.07	30.27
T10-Absolute control-Maize	Absolute control-Wheat		30.73	23.90	27.33
CD (0.05)			7.45	6.27	4.96

**Centres:** Dharwad, Niphad

#### SPL-4: Validation of leaf colour chart (LCC) for different wheat varieties

An experiment was conducted to validate the leaf colour chart for different varieties for higher nitrogen use efficiency. The experiment was conducted in split plot design with three varieties in main plots and seven N management treatments in sub plots and each treatment was replicated thrice. Seven nitrogen management levels were (1) no nitrogen, (2) 150 kg N/ha, (3) N management by LCC- 1/3<sup>rd</sup> N as basal, 1/3<sup>rd</sup> N at first irrigation and the remaining based on LCC as application of 35 kg N/ha if LCC<4 and 25 kg N/ha if LCC ≥4, (4) N management by LCC-1/3 N as basal, 1/3<sup>rd</sup> N at first irrigation and the remaining based

on LCC as application of 45 kg N/ha if LCC<4 and 35 kg/ha if LCC ≥4, (5) N management by LCC-1/3<sup>rd</sup> N as basal, 1/3<sup>rd</sup> N at first irrigation and the remaining based on LCC as application of 55 kg N/ha if LCC<4 and 45 kg N/ha if LCC ≥4, (6) N management through green seeker, (7) N-Rich plot 225 kg/ha. The varieties used were HPW 349, VL 907 and HS 507 in NHZ and WH 1105, HD 2967 and DPW 621-50 in NWPZ. The sowing was done using the normalized seed rate of 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Nitrogen was applied as per the treatments and 60 kg P<sub>2</sub>O<sub>5</sub>/ha and 40 kg K<sub>2</sub>O/ha were applied as basal in all the treatments. Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone.

In NHZ, this trial was conducted at Almora (UttaraKhand), Bajaura (Kullu, HP), Khudwani (Anantnag, J&K) and Malan (Palampur, HP). Perusal of data presented in Table 6.18 revealed that application of nitrogen at 145 kg/ha in LCC based N application treatment number T5 recorded the highest yield (45.78 q/ha) which was significantly higher than all other treatments except N rich (225 kg N/ha) treatment (45.19 q/ha). In addition, the nitrogen saving in this treatment was about 3.3%. The highest biomass (121.78 q/ha) was recorded in N rich treatment which at par with treatment number 5 but significantly higher than rest of the treatments. Earhead density also showed the similar trend.

In North Western Plains Zone, the trial was conducted at six centres (Agra, Durgapura, Hisar, Jammu, Ludhiana and Pantnagar). The data of two centres where Green seeker treatment was not implemented were pooled separately. A perusal of pooled analysis of data showed that the N management had significant effect on wheat productivity as well as yield attributing characters. The significantly highest mean yield of 60.92 q/ha was recorded in N rich plots, where N was applied at 225 kg/ha and was followed by recommended N application treatment (150 kg/ha). In comparison to recommended blanket N application *i.e.* as 1/3<sup>rd</sup> N (50 kg/ha) as basal, 1/3<sup>rd</sup> N at first irrigation and 1/3<sup>rd</sup> N at second irrigation, N scheduling using LCC as 1/3<sup>rd</sup> N (50 kg/ha) as basal, 1/3<sup>rd</sup> N at first irrigation and the remaining LCC based – applied @ 55 kg N/ha if LCC<4 and 45 kg N/ha if LCC ≥4 produced similar yield and rest of the treatments were inferior. The nitrogen management by LCC (Apply 55 kg N/ha if LCC<4 and 45 kg N/ha if LCC ≥4) was significantly superior than N management by other LCC treatments (35 kg N/ha if LCC<4 and 25 kg N/ha if LCC ≥4 as well as 45 kg N/ha if LCC<4 and 35 kg N/ha). In addition, this treatment saved about 3.3% nitrogen compared to recommended practice with similar grain yield. Gain in yield was recorded due to higher earheads/sq. m. Among genotypes WH 1105 produced higher yield compared to DPW 621-50 and HD 2987. The highest grain yield (63.77 q/ha) was obtained with WH 1105 when N was applied at 225 kg/ha. Under no fertilizer application, mean wheat yield obtained was 33.63 q/ha.

Table 6.18. Northern Hills Zone

Nitrogen	SPL-4		Pooled		2016-17			
	HPW 349	Rk	Variety VL 907	Rk	HS 507	Rk	Mean	Rk
<b>Yield, q/ha</b>								
No N	23.44	7	25.33	7	20.47	7	23.08	7
N 150	44.20	4	45.48	2	44.53	2	44.73	3
N LCC 35, 25	40.41	5	41.60	5	41.51	6	41.17	6
N LCC 45, 35	44.32	3	43.43	4	44.40	3	44.05	4
N LCC 55, 45	45.69	2	45.20	3	46.45	1	45.78	1
N GreenSeeker	40.09	6	41.07	6	42.40	5	41.19	5
N Rich 225	45.76	1	45.75	1	44.04	4	45.19	2
Mean	40.56		41.12		40.54		40.74	
CD (0.05)	Variety (A) NS		Nitrogen (B) 1.55		B within A NS		A within B NS	
<b>Earhead/sq. m.</b>								
No N	237	7	242	7	230	7	236	7
N 150	337	3	322	3	331	3	330	3
N LCC 35, 25	317	6	313	6	306	6	312	6
N LCC 45, 35	330	4	319	4	320	4	323	4
N LCC 55, 45	342	2	330	2	331	2	334	2
N GreenSeeker	328	5	317	5	318	5	321	5
N Rich 225	356	1	347	1	340	1	348	1
Mean	321		313		311		315	
CD (0.05)	Variety (A) NS		Nitrogen (B) 9.13		B within A NS		A within B NS	
<b>Grains/Earhead</b>								
No N	27.15	7	28.16	7	25.99	7	27.10	7
N 150	31.10	4	33.22	1	32.84	5	32.38	4
N LCC 35, 25	31.20	3	32.29	4	33.75	2	32.41	3
N LCC 45, 35	32.01	1	32.49	2	33.50	3	32.67	2
N LCC 55, 45	31.90	2	32.39	3	33.85	1	32.71	1
N GreenSeeker	29.69	6	30.78	6	32.88	4	31.12	6
N Rich 225	30.33	5	31.11	5	31.99	6	31.14	5
Mean	30.48		31.49		32.11		31.36	
CD (0.05)	Variety (A) 0.87		Nitrogen (B) 1.18		B within A NS		A within B NS	
<b>1000 Grains Weight, g</b>								
No N	38.47	7	39.58	7	38.07	7	38.71	7
N 150	41.94	1	42.78	2	42.17	1	42.30	1
N LCC 35, 25	41.02	6	41.82	5	41.14	5	41.33	5
N LCC 45, 35	41.86	2	42.28	4	41.86	2	42.00	2
N LCC 55, 45	41.73	4	42.40	3	41.56	3	41.90	4
N GreenSeeker	41.77	3	42.80	1	41.43	4	42.00	3
N Rich 225	41.04	5	41.36	6	39.72	6	40.71	6
Mean	41.12		41.86		40.85		41.28	
CD (0.05)	Variety (A) 0.52		Nitrogen (B) 0.76		B within A NS		A within B NS	
<b>Biomass, q/ha</b>								
No N	62.08	7	67.70	7	57.54	7	62.44	7
N 150	113.94	3	119.01	2	115.32	3	116.09	3
N LCC 35, 25	106.85	6	104.70	5	106.61	6	106.05	6
N LCC 45, 35	113.48	4	109.81	4	111.91	5	111.73	4
N LCC 55, 45	116.14	2	117.39	3	117.19	2	116.91	2
N GreenSeeker	107.28	5	103.87	6	112.71	4	107.96	5
N Rich 225	120.49	1	124.42	1	120.43	1	121.78	1
Mean	105.75		106.70		105.96		106.14	
CD (0.05)	Variety (A) NS		Nitrogen (B) 3.55		B within A 6.14		A within B 6.89	
<b>Nitrogen Use, kg/ha</b>								
No N	0		0		0		0	
N 150	150		150		150		150	
N LCC 35, 25	126		125		125		125	
N LCC 45, 35	136		135		135		135	
N LCC 55, 45	145		145		145		145	
N GreenSeeker	114		121		121		121	
N Rich 225	225		225		225		225	

**Centres:** Almora, Bajaura, Khudwani and Malan

**Table 6.19. North Western Plains Zone SPL-4 Pooled 2016-17**

Nutrient Management	Variety				DPW 621-50	Rk	Mean	Rk
	WH 1105	Rk	HD 2967	Rk				
<b>Yield, q/ha</b>								
No N	32.99	7	33.98	7	33.93	7	33.63	7
N 150 kg/ha	60.42	2	59.18	2	59.18	3	59.59	2
N LCC 35, 25	54.35	6	53.82	6	55.34	6	54.50	6
N LCC 45, 35	59.22	4	57.16	5	57.40	4	57.93	4
N LCC 55, 45	60.25	3	59.25	1	59.27	2	59.59	3
N GreenSeeker	57.36	5	57.18	4	56.64	5	57.06	5
N Rich 225	63.77	1	58.85	3	60.13	1	60.92	1
Mean	55.48		54.20		54.56		54.75	
CD (0.05)	Variety (A) NS		Nutrient (B) 1.29		B within A NS		A within B NS	
<b>Earhead/sq. m.</b>								
No N	244	7	260	7	269	7	258	7
N 150 kg/ha	348	4	384	2	374	4	369	2
N LCC 35, 25	337	6	334	6	363	5	345	6
N LCC 45, 35	358	2	359	4	378	3	365	4
N LCC 55, 45	354	3	371	3	380	2	368	3
N GreenSeeker	347	5	348	5	347	6	347	5
N Rich 225	370	1	395	1	382	1	382	1
Mean	337		350		356		348	
CD (0.05)	Variety (A) 7.01		Nutrient (B) 8.43		B within A 14.60		A within B 15.17	
<b>Grains/Earhead</b>								
No N	35.09	7	35.07	7	33.82	7	34.66	7
N 150 kg/ha	43.79	1	38.26	5	40.01	3	40.68	2
N LCC 35, 25	41.91	4	40.91	1	39.04	6	40.62	3
N LCC 45, 35	41.81	5	39.80	3	39.10	5	40.23	5
N LCC 55, 45	42.26	3	38.82	4	39.44	4	40.17	6
N GreenSeeker	41.56	6	40.79	2	42.06	1	41.47	1
N Rich 225	43.67	2	37.02	6	40.29	2	40.33	4
Mean	41.44		38.67		39.11		39.74	
CD (0.05)	Variety (A) 1.12		Nutrient (B) 1.42		B within A 2.46		A within B 2.52	
<b>1000 Grains Weight, g</b>								
No N	38.73	7	38.51	7	38.20	7	38.48	7
N 150 kg/ha	40.09	3	40.50	4	39.75	2	40.11	2
N LCC 35, 25	39.40	6	39.82	6	39.39	3	39.54	6
N LCC 45, 35	39.88	4	40.17	5	39.33	4	39.79	4
N LCC 55, 45	40.53	1	41.33	1	39.76	1	40.54	1
N GreenSeeker	40.15	2	40.80	2	39.32	5	40.09	3
N Rich 225	39.57	5	40.51	3	39.28	6	39.79	5
Mean	39.76		40.23		39.29		39.76	
CD (0.05)	Variety (A) 0.71		Nutrient (B) 0.73		B within A NS		A within B NS	
<b>Nitrogen Use, kg/ha</b>								
No N	0		0		0		0	
N 150	150		150		150		150	
N LCC 35, 25	126		126		126		126	
N LCC 45, 35	136		136		136		136	
N LCC 55, 45	145		145		145		145	
N GreenSeeker	114		112		115		113	
N Rich 225	225		225		225		225	

**Centres:** Durgapura, Gurdaspur, Hisar, Ludhiana, Pantnagar.

Table 6.20. North Western Plains Zone SPL-4				Pooled		2016-17		
Nutrient Management	Variety				Mean	Rk		
	WH 1105	Rk	HD 2967	Rk				
<b>Yield, q/ha</b>								
No N	24.50	6	24.03	6	24.70	6	24.41	6
N 150 kg/ha	49.92	1	51.70	1	50.17	2	50.59	2
N LCC 35, 25	45.65	5	47.75	5	48.68	5	47.36	5
N LCC 45, 35	48.05	4	49.52	4	49.83	4	49.13	4
N LCC 55, 45	49.33	2	50.25	2	50.02	3	49.87	3
N Rich 225	49.22	3	50.15	3	53.70	1	51.02	1
Mean	44.44		45.57		46.18		45.40	
CD (0.05)	Variety (A)		Nutrient (B)		B within A		A within B	
	0.85		0.60		1.04		1.26	
<b>Earhead/sq. m.</b>								
No N	340.3	6	342.1	6	346.8	6	343.0	6
N 150 kg/ha	417.0	2	400.4	5	427.3	2	414.9	2
N LCC 35, 25	386.6	4	402.8	4	421.0	4	403.4	4
N LCC 45, 35	382.7	5	410.8	2	410.9	5	401.4	5
N LCC 55, 45	388.2	3	419.8	1	425.5	3	411.2	3
N Rich 225	424.0	1	404.8	3	429.2	1	419.3	1
Mean	389.8		396.8		410.1		398.9	
CD (0.05)	Variety (A)		Nutrient (B)		B within A		A within B	
	11.86		10.97		19.00		20.75	
<b>Grains/Earhead</b>								
No N	20.63	6	19.93	6	19.20	6	19.92	6
N 150 kg/ha	31.56	4	34.05	1	29.57	5	31.72	3
N LCC 35, 25	32.18	3	31.88	3	30.78	3	31.61	4
N LCC 45, 35	34.15	1	31.57	4	31.96	1	32.56	1
N LCC 55, 45	33.49	2	31.51	5	30.62	4	31.87	2
N Rich 225	29.47	5	31.98	2	31.76	2	31.07	5
Mean	30.25		30.16		28.98		29.79	
CD (0.05)	Variety (A)		Nutrient (B)		B within A		A within B	
	NS		1.25		2.17		2.43	
<b>1000 Grains Weight, g</b>								
No N	35.33	6	36.13	6	37.63	6	36.37	6
N 150 kg/ha	38.65	3	39.22	2	39.97	2	39.28	2
N LCC 35, 25	37.98	5	38.32	5	38.00	5	38.10	5
N LCC 45, 35	38.23	4	39.10	3	38.87	4	38.73	4
N LCC 55, 45	39.38	2	38.73	4	39.10	3	39.07	3
N Rich 225	39.50	1	39.81	1	40.10	1	39.80	1
Mean	38.18		38.55		38.94		38.56	
CD (0.05)	Variety (A)		Nutrient (B)		B within A		A within B	
	NS		0.52		0.89		1.02	

**Centres:** Agra, Jammu

### SPL-5: Efficient water management in wheat using micro-irrigation

Water management is the key issue for economising the irrigation water use efficiency of wheat crop. To optimize the water requirement for yield maximisation in wheat, a special coordinated trial was planned and conducted under irrigated timely sown conditions at three locations *i.e.* Durgapura and Karnal in NWPZ, Vijapur in CZ. The experiment was conducted in randomized block design with four replications. The sowing was done using a normalized seed rate of 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Fertiliser and weed control measures were followed as per recommended package of practices for the zone.



In North Western Plains Zone, the treatments comprised of seven irrigation treatments involving three irrigation systems namely conventional flood irrigation; drip irrigation and sprinkler irrigation. In flood method of irrigation water was applied at critical stages (CRI, T, JT, BL, M and D). The pooled analysis of two centres is presented in Table 6.21. Irrigation effects were significant on yield and yield attributes. The highest yield (57.10 q/ha) was recorded in drip irrigation with 100% PE, which was significantly higher than other irrigation treatments except six irrigations at critical growth stages. The better yield was mainly due to better effective earhead per metre square and bolder grains. Maximum water use was in sprinkler with 100% PE (430.5 mm) followed by check basin irrigation system (396.3 mm).

**Table 6.21. North Western Plains Zone**

Irrigation treatments	SPL-5			Pooled	2016-17
	Earheads/ sq. m.	1000 Grains Weight, g	Grains/ Earhead	Yield, q/ha	Water use, mm
60 mm check basin	454.7	39.52	30.28	55.20	396.3
Sprinkler-60% PE	433.3	35.25	30.48	46.21	293.7
Sprinkler-80% PE	459.8	37.35	29.81	50.44	357.8
Sprinkler-100% PE	454.0	38.32	30.66	53.00	430.5
Drip- 60% PE	424.9	38.97	30.97	50.37	221.5
Drip- 80% PE	459.9	39.65	29.64	52.88	274.9
Drip- 100% PE	518.0	40.09	31.17	57.10	327.2
CD (0.05)	31.6	1.58	2.18	3.14	

**Centres:** Durgapura, Karnal

In Central Zone, seven irrigation treatments followed were 60 mm check basin irrigation at critical growth stages (CRI, T, JT, BL, M and D), drip irrigation with 60%, 80% and 100% PE at 3 days interval, drip irrigation at 0.8, 1.0 and 1.2 IW/CPE i.e. 50 mm irrigation when cumulative Pan Evaporation (CPE) reaches 60 mm, 50 mm and 40 mm, respectively. Sowing was done using seed rate @ 100kg/ha (adjusted considering 1000 grains weight as 38 g). Fertilizer was applied as per recommendation (1/3<sup>rd</sup> N, full P & K as basal and the remaining 2/3<sup>rd</sup> nitrogen as 1/3<sup>rd</sup> at CRI and next 1/3<sup>rd</sup> at Jointing.

**Table 6.22. Central Zone**

Irrigation treatments	SPL-5			Vijapur	2016-17
	Earheads/ sq. m.	1000 Grains Weight, g	Grains/ Earhead	Yield, q/ha	Water use, mm
60 mm check basin	400	47.83	16.31	31.11	420.00
60% PE	433	52.48	16.75	37.72	212.58
80% PE	470	51.00	18.63	44.55	263.44
100% PE	505	45.38	19.63	44.81	314.30
0.8 IW/CPE	405	52.50	13.75	29.33	260.00
1.0 IW/CPE	458	53.48	17.38	42.34	310.00
1.2 IW/CPE	491	50.30	18.47	45.44	360.00
CD (0.05)	40.89	4.45	3.53	6.60	

The results presented in Table 6.22 revealed highest yield under drip irrigation at 1.2 IW/CPE (45.44 q/ha) followed by drip irrigation with 100% PE (44.81 q/ha) as compared to other irrigation treatments. The highest yield in drip irrigation at 1.2 IW/CPE may be

attributed to more earheads/sq. m. and higher number of grains per earhead. The treatment drip irrigation with 0.8 IW/CPE recorded lowest yield with respect to other irrigation treatments (29.33 q/ha). Maximum water use was in 60mm check basin irrigation treatment (420 mm).

**SPL-6: Evaluation of Pusa Hydrogel and herbal Hydrogel on in situ moisture conservation under different irrigation levels in wheat**

To improve the water use efficiency and wheat productivity a special coordinated trial SPL-6 was conducted in split plot design with three replications in North Western Plains Zone and Central Zone. The main plots comprised of four irrigation treatments (no irrigation, three irrigations (CRI, LT and GF), six irrigations (CRI, T, JT, BL, F, M) and three irrigations (at 35/40 DAS, 80 DAS and 120 DAS) while the hydrogel treatments (control, Pusa Hydrogel and herbal Hydrogel) were included in sub plots. Fertilizer was applied as per recommendation (1/2 N, full P & K as basal and the remaining 1/2 nitrogen at first irrigation in except in no irrigation treatment where full NPK was applied as basal).

Hydrogel Treatments	SPL-6			Pooled 40,80,120 DAS	2016-17 Mean
	Irrigation levels				
	No irrigation	CRI, LT, GF	Six irrigations		
<b>Yield, q/ha</b>					
Control	30.24	46.94	58.47	44.80	45.11
Pusa hydrogel	33.54	49.19	60.29	47.49	47.63
Herbal hydrogel	31.69	49.97	59.80	47.23	47.17
Mean	31.82	48.70	59.52	46.51	46.64
CD (0.05)	Irrigation (A) 1.50	Hydrogel (B) 1.43	B within A NS	A within B NS	
<b>Earhead/sq. m.</b>					
Control	300.4	398.8	444.8	372.8	379.2
Pusa hydrogel	313.0	416.3	454.5	378.5	390.6
Herbal hydrogel	302.7	416.6	452.1	374.7	386.5
Mean	305.3	410.6	450.4	375.4	385.4
CD (0.05)	Irrigation (A) 12.08	Hydrogel (B) NS	B within A NS	A within B NS	
<b>Grains/Earhead</b>					
Control	25.23	29.24	31.42	28.89	28.69
Pusa hydrogel	26.13	28.79	30.76	30.10	28.94
Herbal hydrogel	25.79	29.36	31.53	30.71	29.35
Mean	25.72	29.13	31.23	29.90	29.00
CD (0.05)	Irrigation (A) 1.67	Hydrogel (B) NS	B within A NS	A within B NS	
<b>1000 Grains Weight, g</b>					
Control	38.36	39.77	42.29	40.57	40.25
Pusa hydrogel	39.76	41.16	43.47	41.18	41.39
Herbal hydrogel	39.81	40.34	42.07	40.44	40.67
Mean	39.31	40.43	42.61	40.73	40.77
CD (0.05)	Irrigation (A) 1.00	Hydrogel (B) 0.77	B within A NS	A within B NS	

**Centres:** Durgapura, Karnal, Ludhiana, Pantnagar.

This trial was conducted at four locations in NWPZ *i.e.* Durgapura, Karnal, Ludhiana, Pantnagar. The pooled analysis data are presented in Table 6.23. The effect of irrigation and hydrogel was found significant on wheat productivity but their interactions were non significant. On mean basis, significantly highest yield (59.52 q/ha) was recorded where six irrigations were applied at critical growth stages of wheat. The better yield was due to better yield attributes in this treatment. The lowest mean yield of 31.82 q/ha was obtained where no irrigation was given. There was significant yield improvement with application of hydrogel either Pusa or herbal. The differences between two hydrogel (Pusa and Herbal) were non significant. The data of individual centres are given in the Annexure-I in Table 6.23.1 and 6.23.2.

In Central Zone, this trial was conducted at Junagarh centre only. The data presented in Table 6.24 illustrated that there is no significant difference between hydrogel treatments. The highest yield has been observed under six irrigation treatment (30.24 q/ha) and is statistically higher as compared to other treatments. The yield increment may be attributed to more earheads/sq. m. and higher number of grains per earhead.

<b>Table 6.24. Central Zone</b>	<b>SPL-6</b>		<b>Junagarh</b>	<b>2016-17</b>	
Hydrogel Treatments	Irrigation levels		Six irrigations	40,80,120	Mean
	No irrigation	CRI, LT, GF			
	<b>Yield, q/ha</b>				
Control	9.97	22.21	30.51	24.05	21.68
Pusa hydrogel	9.90	26.80	30.37	24.83	22.98
Herbal hydrogel	10.20	25.65	29.83	25.68	22.84
Mean	10.02	24.89	30.24	24.85	22.50
CD (0.05)	Irrigation (A) 1.52	Hydrogel (B) NS	B within A NS	A within B NS	
	<b>Earhead/sq. m.</b>				
Control	224	293	327	283	282
Pusa hydrogel	231	292	323	290	284
Herbal hydrogel	209	329	348	311	299
Mean	221	305	333	295	288
CD (0.05)	Irrigation (A) 18.99	Hydrogel (B) NS	B within A NS	A within B NS	
	<b>Grains/Earhead</b>				
Control	14.83	22.17	34.61	24.40	24.00
Pusa hydrogel	14.22	26.80	33.17	24.35	24.64
Herbal hydrogel	16.33	22.96	30.59	22.87	23.19
Mean	15.13	23.98	32.79	23.87	23.94
CD (0.05)	Irrigation (A) 2.27	Hydrogel (B) NS	B within A NS	A within B NS	
	<b>1000 Grains Weight, g</b>				
Control	30.20	34.20	27.40	35.00	31.70
Pusa hydrogel	30.20	34.40	28.40	35.20	32.05
Herbal hydrogel	30.00	34.00	28.00	36.20	32.05
Mean	30.13	34.20	27.93	35.47	31.93
CD (0.05)	Irrigation (A) 0.89	Hydrogel (B) NS	B within A NS	A within B NS	

In Peninsular Zone, the trial was conducted only at Pune centre. The data presented in Table 6.25 illustrated there is no significant difference between hydrogel treatments and control, all treatments produced statistically similar yield. Numerically maximum yield was recorded in treatment herbal hydrogel (37.90 q/ha) followed by Pusa hydrogel (36.76 q/ha) and control (35.57 q/ha). Among irrigation treatments maximum and significantly higher yield was recorded in treatment three irrigations at CRI, late tillering and grain filling stages (52.07 q/ha) followed by in six irrigations at critical growth stages (50.83 q/ha) and remained at par. The gain in yield was contributed by higher number of earhead/sq. m., grains/earhead and higher thousand grain weights.

<b>Table 6.25. Peninsular Zone</b>		<b>SPL-6 Pune 2016-17</b>			
Hydrogel	Irrigation Treatments				Mean
	No irrigation	CRI, LT, GF	Six irrigations	40,80,120	
<b>Yield, q/ha</b>					
Control	12.36	53.47	53.31	23.13	35.57
Pusa hydrogel	16.24	48.86	49.36	32.60	36.76
Herbal hydrogel	11.75	53.86	49.82	36.17	37.90
Mean	13.45	52.07	50.83	30.63	36.74
CD (0.05)	Irrigations (A) 2.83	Hydrogel (B) NS	B within A 2.86	A within B NS	
<b>Earhead/sq. m.</b>					
Control	245	343	317	240	286
Pusa hydrogel	233	305	355	292	296
Herbal hydrogel	215	388	342	278	306
Mean	231	346	338	270	296
CD (0.05)	Irrigations (A) 40.05	Hydrogel (B) NS	B within A NS	A within B NS	
<b>Grains/Earhead</b>					
Control	17.06	37.32	42.50	24.78	30.41
Pusa hydrogel	22.94	37.87	36.26	27.64	31.18
Herbal hydrogel	16.62	37.68	37.30	33.35	31.24
Mean	18.87	37.62	38.69	28.59	30.94
CD (0.05)	Irrigations (A) 6.35	Hydrogel (B) NS	B within A NS	A within B NS	
<b>1000 Grains Weight, g</b>					
Control	30.00	42.33	39.67	39.00	37.75
Pusa hydrogel	30.67	42.33	39.33	40.33	38.17
Herbal hydrogel	33.33	37.67	40.33	40.00	37.83
Mean	31.33	40.78	39.78	39.78	37.92
CD (0.05)	Irrigations (A) 4.25	Hydrogel (B) NS	B within A NS	A within B NS	

### **SPL-7: Wheat yield maximization under different tillage options**

To identify the effective varieties for Conservation Agriculture system an experiment was conducted at four locations (Hisar, Karnal, Ludhiana and Pantnagar) in NWPZ. The experiment was conducted in split plot design with two tillage options (Conventional tillage and Conservation Agriculture) in main plots and six timely sown varieties (WH 1105, HD 2967, DPW 621-50, DBW 88, HD 3086 and PBW 550) in sub plots and each treatment was replicated thrice. The conservation agriculture treatment consisted of zero tillage with

residue retention. This experiment was under rice-wheat system except Hisar centre where cotton-wheat system was adopted. Recommended dose of fertilizers 150 kg N/ha, 60 kg P<sub>2</sub>O<sub>5</sub>/ha, and 40 kg K<sub>2</sub>O/ha was applied as 1/3<sup>rd</sup> N and full dose of P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O as basal dose. The remaining nitrogen was applied in two equal splits at just before first and second irrigations. The sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Irrigation measures were followed as per recommended package of practices for the zone.

The pooled analysis data of four centres are presented in Table 6.26. The effect of tillage options and varieties as well as their interactions were non-significant. Except grains/earhead differences among varieties. On mean basis among varieties, the highest yield was recorded with cultivar HD 2967 (57.18 q/ha) and between two tillage options, conservation agriculture treatment recorded better yield (56.45 q/ha) than the conventional tillage treatment (55.76 q/ha). The highest yield (57.46 q/ha) was recorded in conservation agriculture treatment with HD 2967 cultivar and this variety was also top yielder under CT system. The second best cultivar under both systems was HD 3086, which also yielded higher in CA compared to CT system. The non-significant interaction effects mean that varieties good under CT are also good under CA system. The centre wise data have been given as Table 6.26.1 to 6.26.4 in Annexure I.

#### **SPL-8: Control of pre-harvest sprouting (PHS) in wheat**

To control pre harvest sprouting in wheat, three chemicals (NaCl, paraquat and Na molybdate) at different doses were tried in two varieties (CBW 38 and K 0307) at Coochbehar and Shillongani. Shillongani centre data was rejected due to unable to record yield data. The experiment was conducted in split plot design with varieties in main plots and chemicals (NaCl-5, and 7.5% Paraquat 120 and 240 g and Na molybdate-150 and 200 ppm) in sub-plots with three replications. The sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Fertilization and irrigation measures were followed as per recommended package of practices for the zone. Spraying NaCl and Na-molybdate was done at milk and maturity stage whereas paraquat at maturity stage only. Data analysis showed that there was no significant difference in grain yield and yield attributes between two varieties as well as different treatments application (Table 6.27). Though CBW 38 (37.62 q/ha) produced higher grain yield than K 0307 (34.87 q/ha). Paraquat @ 240 g/ha application at maturity stage recorded maximum grain yield (37.38 q/ha) and remain at par with control (Table 6.27).

**Table 6.26. North Western Plains Zone SPL-7 Pooled 2016-17**

Varieties	Tillage				Mean	Rk
	Conservation Agriculture Rk		Conventional Tillage Rk			
<b>Yield, q/ha</b>						
WH 1105	56.82	3	56.02	3	56.42	3
HD 2967	57.46	1	56.90	1	57.18	1
DPW 621-50	56.23	4	55.06	6	55.64	5
DBW 88	55.97	5	55.36	4	55.67	4
HD 3086	56.89	2	56.16	2	56.53	2
PBW 550	55.36	6	55.06	5	55.21	6
Mean	56.45		55.76		56.11	
CD (0.05)	Tillage (A)		Variety (B)	B within A	A within B	
	NS		NS	NS	NS	
<b>Earhead/sq. m.</b>						
WH 1105	373	6	378	6	375	6
HD 2967	404	2	396	4	400	2
DPW 621-50	390	4	401	3	395	4
DBW 88	393	3	401	2	397	3
HD 3086	419	1	425	1	422	1
PBW 550	380	5	379	5	380	5
Mean	393		397		395	
CD (0.05)	Tillage (A)		Variety (B)	B within A	A within B	
	NS		15.90	NS	NS	
<b>Grains/Earhead</b>						
WH 1105	36.36	1	35.72	1	36.04	1
HD 2967	33.34	5	33.56	3	33.45	4
DPW 621-50	35.31	2	32.85	4	34.08	3
DBW 88	33.65	4	32.80	5	33.23	5
HD 3086	31.44	6	31.22	6	31.33	6
PBW 550	34.72	3	34.86	2	34.79	2
Mean	34.14		33.50		33.82	
CD (0.05)	Tillage (A)		Variety (B)	B within A	A within B	
	NS		2.11	NS	NS	
<b>1000 Grains Weight, g</b>						
WH 1105	42.06	4	41.83	5	41.95	4
HD 2967	42.87	3	43.01	1	42.94	3
DPW 621-50	41.34	6	41.85	4	41.59	6
DBW 88	43.41	2	42.81	2	43.11	1
HD 3086	43.47	1	42.55	3	43.01	2
PBW 550	41.96	5	41.61	6	41.78	5
Mean	42.52		42.27		42.40	
CD (0.05)	Tillage (A)		Variety (B)	B within A	A within B	
	NS		NS	NS	NS	

**Centres:** Hisar, Karnal, Ludhiana, Pantnagar.

**Table 6.27. North Eastern Plains Zone SPL -8 Coochbehar 2016-17**

Treatments	Varieties		K0307	Rk	Mean	Rk
	CBW 38	Rk				
<b>Yield, q/ha</b>						
5 % Nacl	35.60	7	35.13	3	35.37	7
7.5 % Nacl	37.17	5	33.87	7	35.52	6
120 g Paraquat	37.87	4	34.60	5	36.23	4
240 g Paraquat	39.40	1	35.37	2	37.38	1
150 ppm Na - Molybdate	38.07	3	36.17	1	37.12	2
200 ppm Na - Molybdate	36.80	6	34.63	4	35.72	5
Control	38.87	2	34.33	6	36.60	3
Mean	37.68		34.87		36.28	
CD (0.05)	Varieties (A) NS	Treatments (B) NS	B within A NS	A within B NS		
<b>Earhead/sq. m.</b>						
5 % Nacl	212	4	204	4	208	3
7.5 % Nacl	217	2	218	1	218	1
120 g Paraquat	210	5	194	5	202	5
240 g Paraquat	201	6	191	7	196	7
150 ppm Na - Molybdate	218	1	193	6	205	4
200 ppm Na - Molybdate	191	7	207	3	199	6
Control	217	2	218	1	218	1
Mean	209		204		206	
CD (0.05)	Varieties (A) NS	Treatments (B) NS	B within A NS	A within B NS		
<b>Grains/Earhead</b>						
5 % Nacl	42.13	7	43.95	4	43.04	5
7.5 % Nacl	42.85	6	39.09	7	40.97	7
120 g Paraquat	44.96	3	45.49	3	45.22	4
240 g Paraquat	49.45	2	47.03	2	48.24	1
150 ppm Na - Molybdate	44.28	5	47.32	1	45.80	3
200 ppm Na - Molybdate	50.37	1	42.16	5	46.27	2
Control	44.91	4	39.61	6	42.26	6
Mean	45.56		43.52		44.54	
CD (0.05)	Varieties (A) NS	Treatments (B) NS	B within A NS	A within B NS		
<b>1000 Grains Weight, g</b>						
5 % Nacl	40.13	2	39.17	7	39.65	6
7.5 % Nacl	40.03	3	39.77	2	39.90	2
120 g Paraquat	40.37	1	39.43	6	39.90	2
240 g Paraquat	39.63	6	39.73	3	39.68	5
150 ppm Na - Molybdate	39.57	7	39.73	4	39.65	6
200 ppm Na - Molybdate	39.80	5	39.73	4	39.77	4
Control	40.00	4	40.13	1	40.07	1
Mean	39.93		39.67		39.80	
CD (0.05)	Varieties (A) NS	Treatments (B) NS	B within A NS	A within B NS		

### SPL-9: Effect of mulch with irrigation

In this experiment both mulch (4 t/ha) and without mulch treatments at 0, 1 and 3 irrigations were tried in three tillage options (ZT, Bed, CT) in split plot design with three replications at Coochbehar and Shillongani. Tillage options were in main plot and mulch treatments were in subplot. The sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Fertilization measures were followed as per

recommended package of practices for the zone. Pooled analysis data presented in Table 6.28 showed that bed planting (34.72 q/ha) and conventional tillage (34.25q/ha) produced at par grain yield but significantly higher than zero tillage (29.67 q/ha). Rice straw mulch application at 0, 1, and 3 irrigations recorded significantly higher grain yield than their respective counterpart without mulch application. Maximum grain yield (42.75 q/ha), earhead/m<sup>2</sup> (317), grains/earhead (36.00) and thousand grains weight (39.10) were obtained with straw mulch at 3 irrigation application which were significantly higher than other treatments.

Treatments	SPL-9		Pooled		2016-17			
	ZT	Rk	Bed	Rk	CT	Rk	Mean	Rk
<b>Yield, q/ha</b>								
Straw mulch -No Irrigation	26.05	4	30.69	5	31.85	4	29.53	5
Straw mulch -1 Irrigation	31.43	3	37.22	2	36.05	3	34.90	3
Straw mulch -3 Irrigation	40.80	1	45.08	1	42.36	1	42.75	1
No mulch- No Irrigation	21.92	6	25.88	6	27.30	6	25.03	6
No mulch- 1 Irrigation	25.71	5	32.32	4	31.69	5	29.91	4
No mulch- 3 Irrigation	32.10	2	37.15	3	36.28	2	35.18	2
Mean	29.67		34.72		34.25		32.88	
CD (0.05)	Tillage (A) 0.69		Treatments (B) 1.79		B within A NS		A within B NS	
<b>Earhead/sq. m.</b>								
Straw mulch -No Irrigation	248	4	242	5	262	5	250	4
Straw mulch -1 Irrigation	270	3	284	3	296	2	284	3
Straw mulch -3 Irrigation	303	1	328	1	320	1	317	1
No mulch- No Irrigation	200	6	207	6	215	6	207	6
No mulch- 1 Irrigation	229	5	258	4	263	4	250	5
No mulch- 3 Irrigation	278	2	301	2	287	3	288	2
Mean	254		270		274		266	
CD (0.05)	Tillage (A) 3.85		Treatments (B) 12.06		B within A NS		A within B NS	
<b>Grains/Earhead</b>								
Straw mulch -No Irrigation	29.19	6	32.38	5	33.99	4	31.85	5
Straw mulch -1 Irrigation	31.56	3	34.56	2	33.13	5	33.08	2
Straw mulch -3 Irrigation	35.69	1	35.92	1	36.40	1	36.00	1
No mulch- No Irrigation	30.62	5	33.74	3	34.78	2	33.05	3
No mulch- 1 Irrigation	31.74	2	32.24	6	31.54	6	31.84	6
No mulch- 3 Irrigation	31.46	4	32.74	4	34.35	3	32.85	4
Mean	31.71		33.60		34.03		33.11	
CD (0.05)	Tillage (A) 0.98		Treatments (B) 2.06		B within A NS		A within B NS	
<b>1000 Grains Weight, g</b>								
Straw mulch -No Irrigation	36.48	4	40.08	1	36.17	6	37.58	5
Straw mulch -1 Irrigation	37.30	3	39.83	3	37.75	2	38.29	3
Straw mulch -3 Irrigation	39.50	1	40.05	2	37.75	2	39.10	1
No mulch- No Irrigation	35.67	6	37.28	6	36.72	5	36.56	6
No mulch- 1 Irrigation	36.12	5	39.30	5	38.27	1	37.89	4
No mulch- 3 Irrigation	37.63	2	39.70	4	37.58	4	38.31	2
Mean	37.12		39.38		37.37		37.95	
CD (0.05)	Tillage (A) 0.34		Treatments (B) 0.72		B within A 1.24		A within B 1.18	

**Centres:** Coochbehar, Shillongani



### **SPL-10: Mulching to mitigate the effect of climate change**

An experiment was conducted with the aim to mitigate the terminal heat effect using straw and organic manure mulch as well as the chemical spray ( $ZnSO_4$  and KCl). This experiment was conducted in split plot design at four centres (Hisar, Karnal, Ludhiana and Pantnagar) in NWPZ, three centres (Kalyani, Ranchi and Varanasi) in NEPZ and one centre *i.e.* Udaipur in CZ. The two sowing time (timely and late) were in the main plot and sub plot treatments consisted of six fertiliser applications. The six fertilizer application treatments were recommended fertilizer dose (RDF), RDF+10 t/ha FYM, RDF+ 4t/ha rice straw mulch, RDF+ 10 t/ha FYM+4t/ha rice straw mulch, T4+ 0.5 %  $ZnSO_4$  and T4+ 0.2% KCl (Two spray). The conventional sowing was done using the normalized seed rate of 100 kg/ha (adjusted considering 1000 grains weight as 38 g) and the fertilisation practices were followed as per treatment. The weed control and irrigation measures were followed as per recommended package of practices for the respective zone.

In NWPZ, the pooled analysis (Table 6.29) showed that timely sowing (62.29 q/ha) produced significantly higher grain yield than late sowing (46.93 q/ha). Delaying wheat sowing reduced the grain yield by 24.7 %. The reduction in yield was due to reduction in earhead density and grain weight. Application of 0.2 % KCl produced numerically higher grain yield (55.47 q/ha) than all other treatments. Application of FYM (10 t/ha) along with recommended fertiliser recorded higher grain yield (55.21 q/ha) than RDF alone (53.09 q/ha). Individual centre data are given in Table 6.29.1 and 6.29.2 in Annexure-I.

In NEPZ, this experiment was conducted with recommended fertiliser doses alone and in combination with FYM (10 t/ha), 4t/ha straw mulch and combination of all these along with  $ZnSO_4$  (0.5 %) and KCl (0.2 %) application separately under timely and late sown condition. This experiment was conducted in split plot design at Kalyani, Ranchi and Varanasi. Main plot treatments were sowing time and sub plot treatments were six fertiliser applications. The conventional sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g) and other as per treatment. Fertilization and irrigation measures were followed as per recommended package of practices for the zone.

Pooled analysis showed that timely sowing (44.50 q/ha) produced significantly higher grain yield (Table 6.30) than late sowing (34.84 q/ha). Delaying wheat sowing reduced the grain yield by 21.7 %. Maximum grain yield was obtained at recommended dose of fertiliser along with FYM and mulch application (40.68 q/ha) followed by this treatment in combination with KCl (40.60 q/ha) and  $ZnSO_4$  (40.43 q/ha) application. Yield attributing parameters were significantly influenced by sowing time.

Table 6.29. North Western Plains Zone

SPL-10

Pooled

2016-17

Fertiliser	Time of sowing				Mean	Rk
	Timely	Rk	Late	Rk		
<b>Yield, q/ha</b>						
RDF	60.90	6	45.28	6	53.09	6
RDF+10 t/ha FYM	63.21	1	47.21	3	55.21	2
RDF+ 4t/ha Straw mulch	61.73	5	46.49	5	54.11	5
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	62.68	3	47.48	2	55.08	3
T4+ 0.5 % Zn SO4	62.26	4	47.11	4	54.69	4
T4+ 0.2% KCl (2 Spray)	62.94	2	48.00	1	55.47	1
Mean	62.29		46.93		54.61	
CD (0.05)	Sowing (A) Fertilizer (B) B within A A within B					
	1.23	NS	NS	NS		
<b>Earhead/sq. m.</b>						
RDF	406		4	364	6	385
RDF+10 t/ha FYM	407		3	367	4	387
RDF+ 4t/ha Straw mulch	402		5	367	5	384
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	417		1	385	1	401
T4+ 0.5 % Zn SO4	398		6	371	3	385
T4+ 0.2% KCl (2 Spray)	408		2	372	2	390
Mean	406			371		389
CD (0.05)	Sowing (A) Fertilizer (B) B within A A within B					
	1.23	NS	NS	NS		
<b>Grains/Earhead</b>						
RDF	37.66	2	38.56	3	38.11	3
RDF+10 t/ha FYM	36.96	3	38.48	4	37.72	4
RDF+ 4t/ha Straw mulch	36.39	5	38.34	5	37.37	5
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	35.61	6	37.38	6	36.49	6
T4+ 0.5 % Zn SO4	37.84	1	40.34	2	39.09	1
T4+ 0.2% KCl (2 Spray)	36.80	4	40.58	1	38.69	2
Mean	36.88		38.95		37.91	
CD (0.05)	Sowing (A) Fertilizer (B) B within A A within B					
	1.18	NS	NS	NS		
<b>1000 Grains Weight, g</b>						
RDF	40.52	6	32.60	4	36.56	6
RDF+10 t/ha FYM	42.23	3	33.70	1	37.96	2
RDF+ 4t/ha Straw mulch	42.30	2	33.24	3	37.77	3
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	42.40	1	33.64	2	38.02	1
T4+ 0.5 % Zn SO4	41.50	5	31.98	6	36.74	5
T4+ 0.2% KCl (2 Spray)	42.20	4	32.15	5	37.18	4
Mean	41.86		32.88		37.37	
CD (0.05)	Sowing (A) Fertilizer (B) B within A A within B					
	1.25	0.93	NS	NS		

Centres: Hisar, Karnal, Ludhiana, Pantnagar

Table 6.30. North Eastern Plains Zone	SPL-10		Pooled		2016-17	
	Timely	Rk	Late	Rk	Mean	Rk
Treatments	Yield, q/ha		Sowing time			
RDF	42.88	5	33.45	6	38.17	6
RDF+10 t/ha FYM	45.58	3	34.25	5	39.92	4
RDF+ 4 t/ha Straw mulch	42.02	6	34.43	4	38.23	5
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	43.96	4	37.39	1	40.68	1
T4+ 0.5 % Zn SO <sub>4</sub>	46.38	1	34.48	3	40.43	3
T4+ 0.2% KCl (Two spray)	46.15	2	35.05	2	40.60	2
Mean	44.50		34.84		39.67	
	Sowing (A)	Fertiliser (B)	B within A	A within B		
CD (0.05)	1.66	1.78	2.52	2.76		
	Earhead/sq. m.					
RDF	272	6	269	3	270	6
RDF+10 t/ha FYM	280	5	264	4	272	4
RDF+ 4t/ha Straw mulch	290	4	254	6	272	5
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	298	3	257	5	277	3
T4+ 0.5 % Zn SO <sub>4</sub>	300	2	273	2	287	2
T4+ 0.2% KCl (Two spray)	302	1	287	1	294	1
Mean	290		267		279	
	Sowing (A)	Fertiliser (B)	B within A	A within B		
CD (0.05)	14.27	17.05	NS	NS		
	Grains/ Earhead					
RDF	40.20	3	34.62	5	37.41	5
RDF+10 t/ha FYM	42.13	1	35.73	3	38.93	2
RDF+ 4t/ha Straw mulch	38.34	5	37.81	2	38.08	3
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	38.25	6	40.53	1	39.39	1
T4+ 0.5 % Zn SO <sub>4</sub>	38.94	4	35.23	4	37.08	6
T4+ 0.2% KCl (Two spray)	40.37	2	34.49	6	37.43	4
Mean	39.70		36.40		38.05	
	Sowing (A)	Fertiliser (B)	B within A	A within B		
CD (0.05)	2.79	NS	NS	NS		
	1000 Grains Weight, g					
RDF	39.87	3	36.00	6	37.93	5
RDF+10 t/ha FYM	39.71	4	37.04	1	38.38	3
RDF+ 4t/ha Straw mulch	38.87	6	36.15	5	37.51	6
RDF+ 10 t/ha FYM+4 t/ha Straw mulch	39.94	2	37.00	2	38.47	2
T4+ 0.5 % Zn SO <sub>4</sub>	40.93	1	36.52	4	38.73	1
T4+ 0.2% KCl (Two spray)	39.44	5	36.58	3	38.01	4
Mean	39.79		36.55		38.17	
	Sowing (A)	Fertiliser (B)	B within A	A within B		
CD (0.05)	1.78	NS	NS	NS		
<b>Centres:</b>	Kalyani, Ranchi, Varanasi					

In Central Zone, this experiment was conducted at Udaipur centre only. The data presented in Table 6.31 showed that timely sowing yielded significantly higher (53.47 q/ha) as compared to late sowing (44.80 q/ha). Delay in wheat sowing reduced the grain yield by 16.2%. Application of 0.2% KCl produced significantly higher yield (51.43 q/ha) with respect to all other fertilizer treatments except at par with 0.5% ZnSO<sub>4</sub> application (51.0 q/ha). The increase in yield may be because of more earheads/ sq. m. and higher 1000 grains weight in case of RDF+ 10t/ha FYM+ 4t/ha rice straw mulch+ 0.2% KCl spray. As far as mulches are considered; application of both organic manures and rice straw mulch in addition to recommended fertilizer dose (RDF + 10t/ha FYM + 4t/ha rice straw mulch) yielded significantly higher grain yield (50.58 q/ha) than all other treatments except at par with chemical sprays.

**Table 6.31. Central Zone**

Fertilizer treatments	SPL-10		Udaipur		2016-17	
	Sowing time				Mean	Rk
	Timely	Rk	Late	Rk		
<b>Yield, q/ha</b>						
RDF	49.81	6	40.97	6	45.39	6
RDF+ 10t/ha FYM	51.34	4	45.22	4	48.28	4
RDF+ 4t/ha rice straw mulch	51.34	4	44.88	5	48.11	5
RDF+ 10t/ha FYM+ 4t/ha rice straw mulch	55.76	3	45.39	3	50.58	3
RDF+ FYM+ Mulch+ 0.5% ZnSO <sub>4</sub> spray	56.10	2	45.90	2	51.00	2
RDF+ FYM+ Mulch + 0.2% KCl spray	56.44	1	46.41	1	51.43	1
Mean	53.47		44.80		49.13	
CD (0.05)	Sowing (A) 5.79		Fertilizer (B) 3.18		B within A NS	A within B NS
<b>Earhead/sq. m.</b>						
RDF	457	6	432	5	444	6
RDF+ 10t/ha FYM	472	3	435	4	453	4
RDF+ 4t/ha rice straw mulch	463	5	432	5	448	5
RDF+ 10t/ha FYM+ 4t/ha rice straw mulch	470	4	460	3	465	3
RDF+ FYM+ Mulch+ 0.5% ZnSO <sub>4</sub> spray	475	2	463	2	469	2
RDF+ FYM+ Mulch + 0.2% KCl spray	483	1	477	1	480	1
Mean	470		450		460	
CD (0.05)	Sowing (A) NS		Fertilizer (B) 23.73		B within A NS	A within B NS
<b>Grains/Earhead</b>						
RDF	22.40	4	25.55	4	23.97	5
RDF+ 10t/ha FYM	21.98	6	27.25	2	24.62	3
RDF+ 4t/ha rice straw mulch	22.37	5	27.74	1	25.06	1
RDF+ 10t/ha FYM+ 4t/ha rice straw mulch	24.07	1	25.96	3	25.01	2
RDF+ FYM+ Mulch+ 0.5% ZnSO <sub>4</sub> spray	23.87	2	25.28	5	24.58	4
RDF+ FYM+ Mulch + 0.2% KCl spray	22.94	3	24.00	6	23.47	6
Mean	22.94		25.96		24.45	
CD (0.05)	Sowing (A) NS		Fertilizer (B) NS		B within A NS	A within B NS
<b>1000 Grains Weight, g</b>						
RDF	48.77	6	37.22	6	42.99	6
RDF+ 10t/ha FYM	49.53	3	38.20	3	43.87	3
RDF+ 4t/ha rice straw mulch	49.53	3	37.58	5	43.56	5
RDF+ 10t/ha FYM+ 4t/ha rice straw mulch	49.40	5	38.12	4	43.76	4
RDF+ FYM+ Mulch+ 0.5% ZnSO <sub>4</sub> spray	49.54	2	39.35	2	44.45	2
RDF+ FYM+ Mulch + 0.2% KCl spray	50.96	1	40.65	1	45.81	1
Mean	49.62		38.52		44.07	
CD (0.05)	Sowing (A) 0.74		Fertilizer (B) 1.58		B within A NS	A within B NS

**SPL-11: Comparative performance of line versus dibbling in wheat**

This trial was conducted in split plot design to evaluate the effect of planting options and spacing on wheat productivity at eight locations in Central Zone (Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Kota, Powarkheda and Udaipur). The main plots comprised spacing and dibbling whereas sub plot included genotypes (HI 1544, HI 8737). NPK was applied in the ratio of 120:60:40 (1/3<sup>rd</sup> N, full P & K as basal and the remaining 2/3<sup>rd</sup> nitrogen as 1/3<sup>rd</sup> at first irrigation and next 1/3<sup>rd</sup> at second irrigation).

A perusal of pooled data analysis of the eight centres presented in Table 6.32 revealed that there was significant difference in grain yield and yield attributes between the two varieties. The highest yield was obtained in dibbling 15x15 cm (50.13 q/ha) followed by line sowing @ 20 cm with seed rate of 100 kg/ha (49.54 q/ha) but the differences were not significant. The increment in yield may be attributed to higher number of earheads/sq. m. The other planting options recorded significantly lower yield as compared to these two methods. Though HI 8737 yielded significantly higher (47.91q/ha) as compared to HI 1544 (46.43 q/ha); higher number of earheads/sq.m., more grains/earhead and were recorded in genotype HI 1544. HI 8737 recorded higher 1000 grain weight (49.11g) as compared to HI 1544 (42.78g). The centre wise data are presented in Annexure I as Tables 6.32.1- 6.32.8.

Genotypes	SPL-11				Pooled	2016-17
	Seeding methods					
	20 cm-100 kg	20 cm-50 kg	15x15 cm	15x20 cm	20x20 cm	Mean
<b>Yield, q/ha</b>						
HI 1544	49.71	43.37	49.52	46.13	43.41	46.43
HI 8737	49.38	44.25	50.74	49.88	45.32	47.91
Mean	49.54	43.81	50.13	48.01	44.37	47.17
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	1.47	0.48	1.06	1.65		
<b>Earhead/sq. m.</b>						
HI 1544	350	334	378	356	340	352
HI 8737	341	323	361	348	322	339
Mean	345	329	370	352	331	345
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	10.05	2.55	5.71	10.83		
<b>Grains/Earhead</b>						
HI 1544	34.79	31.56	32.98	31.32	31.11	32.35
HI 8737	30.77	29.48	29.77	30.02	29.18	29.84
Mean	32.78	30.52	31.37	30.67	30.15	31.10
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	1.47	0.34	0.77	1.57		
<b>1000 Grains Weight, g</b>						
HI 1544	42.45	42.50	42.61	43.21	43.16	42.78
HI 8737	48.89	47.93	49.46	49.42	49.85	49.11
Mean	45.67	45.22	46.03	46.31	46.50	45.95
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	0.71	0.23	0.52	0.79		

**Centres:** Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Kota, Powarkheda, Udaipur.

In Peninsular Zone this trial was conducted at three locations (Akola, Dharwad and Niphad). The main plots comprised spacing and dibbling whereas sub plot included genotypes (UAS 304, NIAW 301). NPK was applied in the ratio of 120:60:40 (1/3<sup>rd</sup> N, full P & K as basal and the remaining 2/3<sup>rd</sup> nitrogen as 1/3<sup>rd</sup> at first irrigation and next 1/3<sup>rd</sup> at second irrigation. A perusal of pooled data analysis of the three centres presented in Table 6.33 revealed that there was no significant difference in grain yield and yield attributes. The highest yield was obtained in line sowing @ 20 cm with seed rate of 100 kg/ha (46.63 q/ha) followed by dibbling @ 15x15 cm (43.18 q/ha) and remained at par. The increment in yield may be

attributed to higher number of earheads/sq. m. The other planting options recorded significantly lower yield as compared to these two methods. UAS 304 yielded higher (40.30 q/ha) as compared to NIAW 301 (38.77 q/ha) with all higher yield attributing characters. The centre wise data are presented in Annexure-I as Tables 6.33.1- 6.33.3.

Genotypes	SPL-11				Pooled	2016-17
	Seeding methods					
	20 cm-100 kg	20 cm-50 kg	15x15 cm	15x20 cm	20x20 cm	Mean
<b>Yield, q/ha</b>						
UAS 304	44.00	36.99	44.61	40.57	35.33	40.30
NIAW301	43.26	35.10	41.76	38.97	34.76	38.77
Mean	43.63	36.04	43.18	39.77	35.05	39.53
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	2.19	NS	NS	NS		
<b>Earhead/sq. m.</b>						
UAS 304	342	316	348	311	306	325
NIAW301	335	315	356	303	301	322
Mean	339	316	352	307	304	323
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	NS	NS	NS	NS		
<b>Grains/Earhead</b>						
UAS 304	32.75	28.76	29.93	32.14	29.19	30.55
NIAW301	31.38	27.66	28.71	32.26	30.05	30.01
Mean	32.07	28.21	29.32	32.20	29.62	30.28
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	1.78	NS	NS	NS		
<b>1000 Grains Weight, g</b>						
UAS 304	40.67	42.09	44.02	41.89	41.40	42.01
NIAW301	41.81	41.72	42.50	40.96	40.63	41.53
Mean	41.24	41.91	43.26	41.43	41.02	41.77
CD (0.05)	Seeding (A)	Genotype (B)	B within A	A within B		
	0.96	NS	NS	NS		

**Centres:** Akola, Dharwad, Niphad

### SPL-12: Precision nutrient management and validation of Nutrient expert in wheat

This experiment was conducted with seven fertiliser doses combination viz. control, Recommended Dose of Fertilizers (RDF), 150 % RDF, 150 % PK, 150 % NK, 150 % NP and nutrient expert in RBD at three locations (Almora, Bajaura and Malan) in NHZ, four location at NWPZ (Hisar, Karnal, Ludhiana, Pantnagar), one location each in NEPZ (Varanasi), CZ (Udiapur and PZ (Dharwad). The conventional sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Weed control and irrigation measures were followed as per recommended package of practices for the zone.

The data presented in Table 6.34 showed that 150% RDF gave maximum and significantly higher grain yield (49.59 q/ha) and biomass (118.69 q/ha) as compared to other treatments. This was followed by nutrient expert treatment which was at par with 150% RDF and produced almost 6.45% higher grain yield than recommended dose of fertiliser (RDF) application. Omission of phosphorus and potash had marginal effect on productivity but the omission of nitrogen drastically reduced the productivity. Therefore, it could be said that the major response was to the nitrogen application alone and the response was significant even up to 150% N application. This indicates that the nutrient recommendation for the northern

hills needs a relook for achieving higher productivity. The targeted yield level of 6 t/ha could not be achieved and the yield level in nutrient expert was only 4.6 t/ha.

**Table 6.34. Northern Hills Zone**

Treatments	SPL-12		Pooled		2016-17			
	Earhead/ sq. m.	Grain/ Earhead	1000 Grains Weight, g	Biomass s, q/ha	Nitrogen, kg/ha	Phosphorus, kg/ha	Potash, kg/ha	Yield, q/ha
Control	257	19.01	42.91	55.46	0	0	0	21.77
RDF	349	28.04	44.43	106.96	120	60	40	43.17
150% RDF	378	30.21	44.85	118.69	180	90	60	49.59
150% PK	304	19.01	45.48	69.32	0	90	60	27.18
150% NK	368	28.2	42.48	107.52	180	0	60	43.27
150% NP	368	26.76	43.12	106.34	180	90	0	42.12
Nutrient Expert	378	28.33	43.68	113.05	150	55	72	46.15
CD (0.05)	24.52	1.61	1.75	7.38				3.46

**Centres:** Almora, Bajaura, Malan

For NWPZ, the pooled analysis data are presented in Table 6.35. The data revealed that 150 % RDF recorded maximum and the highest grain yield (61.45 q/ha) and was at par with recommended fertilizer and nutrient expert treatments. The 150% RDF application produced almost 3% higher grain yield than recommended dose of fertiliser (RDF) application. The lowest yield was recorded in control plots and over control, the 150% PK application produced yield increase of 5.56 q/ha only. Therefore, it could be said that major response was due to N application only. The centre wise performance is given in Tables 6.35.1. to 6.35.3 in annexure I. The targeted yield of 7 t/ha using nutrient expert could not be achieved even after applying more than recommended NPK and the yield level was almost similar.

**Table 6.35. North Western Plains Zone**

Treatments	SPL-12		Pooled		2016-17			
	Earheads/ sq. m.	1000 Grains Weight, g	Grains/ Earhead	Biomass, q/ha	Nitrogen, kg/ha	Phosphorus, kg/ha	Potash, kg/ha	Yield, q/ha
Control	238	39.06	33.09	94.72	0	0	0	28.11
Rec. NPK	413	40.32	36.49	155.08	150	60	40	59.73
150 % RDF	463	40.29	33.21	161.24	225	90	60	61.45
150 % PK	283	39.01	31.41	104.21	0	90	60	33.67
150 % NK	435	39.16	34.41	154.86	225	0	60	57.82
150 % NP	441	38.52	33.71	156.13	225	90	0	56.19
Nutrient Expert	433	39.58	34.87	158.24	170	69	83	59.09
CD (0.05)	22.44	1.51	3.37	7.58				2.45

**Centres:** Hisar, Karnal, Ludhiana, Pantnagar

In NEPZ, this experiment was conducted at Varanasi centre only. The data revealed that 150 % RDF recorded maximum and significantly higher grain yield (59.34 q/ha) and earhead/sq. m. (368) as compared to other treatments (Table 6.36). This was followed by 150 % NP and NK applications. 150% RDF application produced almost 10.8 % higher grain yield than recommended dose of fertiliser (RDF) application. Interestingly, 150 % PK application produced almost similar yield as of control. Therefore, it could be said that response was due to N application only. Nutrient expert based application for targeted yield of 6 t/ha produced significantly lower grain yield (48.42 q/ha) than RDF which seems mainly due to lower nitrogen calculation using nutrient expert.

<b>Table 6.36. North Eastern Plains Zone</b>				<b>SPL-12</b>	<b>Varanasi</b>	<b>2016-17</b>	
Treatments	Earhead/ sq. m.	Grain/ Earhead	1000 Grains Weight, g	Nitrogen, kg/ha	Phosphorus, kg/ha	Potash, kg/ha	Yield, q/ha
Control	173	22.49	41.53	0	0	0	16.05
RDF	314	41.35	41.9	150	60	40	53.55
150% RDF	368	38.51	42.07	225	90	60	59.34
150% PK	199	20.64	40.63	0	90	60	16.47
150% NK	303	44.07	43.7	225	0	60	53.83
150% NP	353	39.49	39.57	225	90	0	54.98
Nutrient Expert	314	38.28	42.67	125	60	40	48.42
CD (0.05)	66	9.69	3.16				2.11

In Central Zone, the highest yield was obtained under Nutrient Expert treatment reaching 55.08 q/ha (Table 6.37) followed by 150% RDF (53.38 q/ha). However, the targeted yield of 6 t/ha could not be achieved. All the yield attributing factors also followed the same trend. The Nutrient Expert treatment also recorded highest biomass (130.22 q/ha).

<b>Table 6.37. Central Zone</b>				<b>SPL-12</b>	<b>Udaipur</b>	<b>2016-17</b>		
Treatments	Earheads/ sq. m.	1000 Grains Weight, g	Grains/ Earhead	Biomass, q/ha	Nitrogen, kg/ha	Phosphorus, kg/ha	Potash, kg/ha	Yield, q/ha
Control	403	40.13	24.35	96.90	0	0	0	39.27
Rec. NPK	422	43.75	25.99	119.00	120	60	40	47.94
150 % RDF	423	45.09	28.08	127.50	180	90	60	53.38
150 % PK	415	44.83	25.66	117.30	0	90	60	47.60
150 % NK	425	44.17	26.68	122.40	180	0	60	50.32
150 % NP	420	44.58	28.32	125.29	180	90	0	52.87
Nutrient expert	430	45.28	28.29	130.22	170	66	76	55.08
CD (0.05)	28.15	2.87	5.18	14.10				9.31

At Dharwad centre of Peninsular Zone, the highest yield was obtained under Nutrient Expert treatment with a yield level of 45.15 q/ha (Table 6.38) followed by 150% of RDF (42.32 q/ha) and RDF (40.32 q/ha). The yield by nutrient expert was not significantly higher than recommended dose of fertilizers (40.32 q/ha). Earhead per square meter and thousand grain weight contributed to enhanced yield. In the absence of nitrogen, the least number of earheads/sq. m. were produced whereas in the absence of phosphorus lesser thousand grain weight was recorded. The yield obtained in nutrient expert treatment was the highest but was much below the targeted yield of 6 t/ha.

<b>Table 6.38. Peninsular Zone</b>				<b>SPL 12</b>	<b>Dharwad</b>	<b>2016-17</b>	
Treatments	Earhead/ sq. m.	1000 Grains Weight, g	Grains/ Earhead	Nitrogen, kg/ha	Phosphorus, kg/ha	Potash, kg/ha	Yield q/ha
control	236	40.22	35.59	0	0	0	33.78
RDF	278	41.80	34.77	120	60	40	40.32
150% RDF	284	42.35	35.1	180	90	60	42.05
150% PK	245	40.16	35.52	0	90	60	34.92
150% NK	258	37.98	39.51	180	0	60	38.67
150% NP	266	40.14	37.86	180	90	0	39.45
Nutrient Expert	298	43.57	34.93	140	65	59	45.15
CD (0.05)	26.91	3.96	8.98				5.65



# ***Annexures***

# CENTRE-WISE

## ANNEXURE-I

Table 2.1.1. North Western Plains Zone						IR-LS-TAS-DOS		Bikaner 2016-17				
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk		
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 173	41.56	1	32.21	2	36.89	1	448	5	413	5	431	5
HD 3059 (C)	35.62	4	32.47	1	34.05	2	450	4	431	2	441	4
DBW 90 (C)	37.42	2	26.75	3	32.09	3	498	2	419	4	458	3
WH 1021 (C)	30.83	5	25.34	4	28.08	5	461	3	522	1	492	1
WH 1124 (C)	35.65	3	22.20	5	28.93	4	522	1	422	3	472	2
Mean	36.22		27.79		32.01		476		441		459	
Sowing (A)	F. Test *		SEm 1.03		CD(0.05) 6.30		F. Test N.S.		SEm 54.89		CD(0.05) 334.03	
Genotype (B)	**		1.33		4.00		N.S.		29.81		89.38	
B within A	N.S.		1.88		5.65		N.S.		42.16		126.40	
A within B			1.98		5.93				66.60		199.66	
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>						
DBW 173	25.62	1	30.44	1	28.03	1	37.69	3	27.04	2	32.37	3
HD 3059 (C)	21.95	2	29.66	2	25.80	2	37.08	4	25.63	3	31.36	4
DBW 90 (C)	20.03	3	23.25	3	21.64	3	38.52	2	27.91	1	33.22	2
WH 1021 (C)	19.85	4	21.58	4	20.71	4	33.96	5	22.97	5	28.47	5
WH 1124 (C)	15.39	5	21.10	5	18.25	5	45.75	1	24.96	4	35.35	1
Mean	20.57		25.21		22.89		38.60		25.70		32.15	
Sowing (A)	N.S.		1.72		10.45		F. Test *		1.01		6.12	
Genotype (B)	**		1.45		4.33		**		1.05		3.15	
B within A	N.S.		2.04		6.13		*		1.49		4.45	
A within B			2.51		7.52				1.67		5.00	
Date of sowing:	14.12.2016		03.01.2017				Date of harvesting:	03.04.2017		14.04.2017		

Table 2.1.2. North Western Plains Zone						IR-LS-TAS-DOS		Delhi 2016-17				
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk		
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 173	53.40	1	49.66	1	51.53	1	495	3	415	5	455	5
HD 3059 (C)	51.70	3	48.64	2	50.17	3	487	4	480	3	484	3
DBW 90 (C)	50.00	5	47.62	4	48.81	5	536	1	481	2	509	1
WH 1021 (C)	52.72	2	47.96	3	50.34	2	499	2	495	1	497	2
WH 1124 (C)	51.70	3	46.26	5	48.98	4	449	5	473	4	461	4
Mean	51.90		48.03		49.97		493		469		481	
Sowing (A)	**		0.14		0.88		F. Test N.S.		21.69		131.98	
Genotype (B)	**		0.47		1.42		N.S.		13.84		41.48	
B within A	N.S.		0.67		2.01		N.S.		19.57		58.67	
A within B			0.62		1.85				27.87		83.55	
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>						
DBW 173	29.29	2	34.82	1	32.06	1	37.59	3	34.34	1	35.97	1
HD 3059 (C)	29.29	3	31.13	3	30.21	2	36.47	5	32.62	4	34.55	4
DBW 90 (C)	25.30	5	30.62	4	27.96	5	37.23	4	32.85	3	35.04	3
WH 1021 (C)	27.71	4	31.61	2	29.66	4	38.20	1	30.75	5	34.48	5
WH 1124 (C)	30.84	1	29.43	5	30.14	3	37.79	2	33.24	2	35.52	2
Mean	28.49		31.52		30.00		37.46		32.76		35.11	
Sowing (A)	N.S.		1.37		8.35		F. Test **		0.01		0.06	
Genotype (B)	N.S.		0.99		2.97		**		0.11		0.34	
B within A	N.S.		1.40		4.20		**		0.16		0.48	
A within B			1.86		5.58				0.14		0.43	
Date of sowing:	14.12.2016		03.01.2017				Date of harvesting:	20.04.2017		25.04.2017		

Table 2.1.3. North Western Plains Zone						IR-LS-TAS-DOS Durgapura 2016-17						
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk		
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 173	42.71	1	23.96	1	33.33	1	405	1	325	1	365	1
HD 3059 (C)	41.67	2	20.00	3	30.83	2	389	2	305	2	347	2
DBW 90 (C)	33.33	5	19.17	5	26.25	5	359	5	290	5	325	5
WH 1021 (C)	36.46	4	19.58	4	28.02	4	372	4	296	4	334	4
WH 1124 (C)	39.58	3	21.88	2	30.73	3	388	3	304	3	346	3
Mean	38.75		20.92		29.83		383		304		343	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	**		0.56	3.42	7.30		**		2.66	16.16	3.00	
Genotype (B)	*		1.55	4.64	12.71		**		5.30	15.90	3.78	
B within A	N.S.		2.19	6.56		N.S.		7.50	22.49			
A within B			2.04	6.11				7.22	21.63			
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>						
DBW 173	28.48	2	28.60	2	28.54	2	37.00	2	25.90	2	31.45	2
HD 3059 (C)	28.32	3	26.02	4	27.17	3	37.90	1	25.27	3	31.58	1
DBW 90 (C)	26.13	5	26.50	3	26.31	5	35.63	3	24.80	4	30.22	4
WH 1021 (C)	27.58	4	25.12	5	26.35	4	35.63	3	26.33	1	30.98	3
WH 1124 (C)	28.91	1	29.38	1	29.15	1	35.47	5	24.43	5	29.95	5
Mean	27.89		27.12		27.50		36.33		25.35		30.84	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	N.S.		0.49	3.00	6.94		**		0.38	2.34	4.83	
Genotype (B)	N.S.		1.36	4.08	12.13		N.S.		0.79	2.37	6.28	
B within A	N.S.		1.93	5.78		N.S.		1.12	3.35			
A within B			1.79	5.37				1.07	3.21			
Date of sowing:	10.12.2016			03.01.2017		Date of harvesting:	14.04.2017			20.04.2017		

Table 2.1.4. North Western Plains Zone						IR-LS-TAS-DOS Gurdaspur 2016-17						
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk		
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 173	54.04	2	45.33	2	49.69	2	413	3	387	2	400	3
HD 3059 (C)	56.59	1	48.65	1	52.62	1	420	2	395	1	407	1
DBW 90 (C)	51.61	3	44.05	3	47.83	3	427	1	378	3	403	2
WH 1021 (C)	49.86	4	39.78	4	44.82	4	393	4	353	4	373	4
WH 1124 (C)	46.93	5	38.71	5	42.82	5	337	5	331	5	334	5
Mean	51.81		43.30		47.55		398		369		383	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	*		0.97	5.88	7.87		*		3.70	22.53	3.74	
Genotype (B)	**		0.66	1.97	3.38		**		4.82	14.44	3.08	
B within A	N.S.		0.93	2.78		N.S.		6.81	20.42			
A within B			1.27	3.82				7.13	21.37			
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>						
DBW 173	33.88	4	37.37	5	35.63	4	38.68	1	31.37	1	35.03	1
HD 3059 (C)	35.01	3	39.44	1	37.22	2	38.53	2	31.26	2	34.90	2
DBW 90 (C)	32.46	5	38.19	4	35.32	5	37.26	4	30.53	3	33.90	3
WH 1021 (C)	35.21	2	38.40	3	36.81	3	36.04	5	29.60	5	32.82	5
WH 1124 (C)	37.41	1	39.37	2	38.39	1	37.28	3	29.76	4	33.52	4
Mean	34.79		38.55		36.67		37.56		30.51		34.03	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	**		0.26	1.59	2.75		*		0.77	4.68	8.76	
Genotype (B)	N.S.		0.96	2.88	6.42		*		0.49	1.48	3.55	
B within A	N.S.		1.36	4.08		N.S.		0.70	2.09			
A within B			1.24	3.73				0.99	2.97			
Date of sowing:	13.12.2016			02.01.2017		Date of harvesting:	04.05.2017			05.05.2017		

Table 2.1.5. North Western Plains Zone						IR-LS-TAS-DOS						Hisar		2016-17			
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk					
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk							
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>											
DBW 173	52.97	3	37.04	2	45.01	2	335	2	317	2	326	2					
HD 3059 (C)	55.10	1	41.51	1	48.31	1	343	1	322	1	333	1					
DBW 90 (C)	51.25	4	31.98	5	41.62	4	313	4	300	5	307	4					
WH 1021 (C)	47.28	5	32.91	4	40.09	5	310	5	302	4	306	5					
WH 1124 (C)	53.57	2	35.79	3	44.68	3	332	3	312	3	322	3					
Mean	52.04		35.85		43.94		327		310		319						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	**		1.07	6.52	9.45		*		2.32	14.13	2.82						
Genotype (B)	**		0.58	1.73	3.21		*		6.67	20.00	5.13						
B within A	*		0.81	2.44			N.S.		9.43	28.28							
A within B			1.30	3.88					8.75	26.23							
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>											
DBW 173	44.28	2	39.97	4	42.12	3	35.76	5	29.31	1	32.54	2					
HD 3059 (C)	43.98	3	45.79	1	44.89	1	36.51	3	28.22	2	32.37	3					
DBW 90 (C)	41.33	4	39.59	5	40.46	5	39.64	1	26.95	3	33.30	1					
WH 1021 (C)	39.96	5	43.53	2	41.75	4	38.22	2	25.19	5	31.70	4					
WH 1124 (C)	44.38	1	43.12	3	43.75	2	36.43	4	26.62	4	31.53	5					
Mean	42.79		42.40		42.59		37.31		27.26		32.29						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		0.12	0.71	1.07		**		0.49	3.00	5.92						
Genotype (B)	N.S.		1.01	3.02	5.79		*		0.37	1.10	2.79						
B within A	N.S.		1.42	4.27			**		0.52	1.56							
A within B			1.28	3.83					0.68	2.03							
Date of sowing:	10.12.2016		07.01.2017				Date of harvesting:	17.04.2017		27.04.2017							

Table 2.1.6. North Western Plains Zone						IR-LS-TAS-DOS						Jammu		2016-17			
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk					
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk							
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>											
DBW 173	34.76	4	28.53	3	31.64	3	377	1	317	3	347	2					
HD 3059 (C)	34.99	3	28.19	4	31.59	4	369	4	314	4	342	3					
DBW 90 (C)	39.37	2	33.60	2	36.49	2	372	3	307	5	340	5					
WH 1021 (C)	31.07	5	27.76	5	29.41	5	351	5	330	2	341	4					
WH 1124 (C)	40.29	1	34.53	1	37.41	1	375	2	338	1	356	1					
Mean	36.09		30.52		33.31		369		321		345						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	*		0.76	4.66	8.90		*		4.48	27.28	5.03						
Genotype (B)	**		1.02	3.07	7.53		N.S.		6.80	20.39	4.83						
B within A	N.S.		1.45	4.34			N.S.		9.62	28.84							
A within B			1.50	4.51					9.70	29.09							
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>											
DBW 173	24.67	5	25.18	3	24.93	4	37.40	4	35.86	4	36.63	4					
HD 3059 (C)	25.27	3	24.81	4	25.04	3	37.46	3	36.14	3	36.80	3					
DBW 90 (C)	27.54	2	28.99	1	28.27	1	38.54	2	37.82	2	38.18	2					
WH 1021 (C)	24.68	4	23.52	5	24.10	5	36.11	5	35.73	5	35.92	5					
WH 1124 (C)	27.69	1	26.89	2	27.29	2	38.79	1	38.16	1	38.47	1					
Mean	25.97		25.88		25.92		37.66		36.74		37.20						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		1.12	6.81	16.73		N.S.		0.41	2.52	4.30						
Genotype (B)	*		0.90	2.69	8.47		**		0.42	1.26	2.76						
B within A	N.S.		1.27	3.80			N.S.		0.59	1.78							
A within B			1.59	4.78					0.67	2.02							
Date of sowing:	13.12.2016		03.01.2017				Date of harvesting:	27.04.2017		03.05.2017							

Table 2.1.7. North Western Plains Zone						IR-LS-TAS-DOS						Karnal		2016-17			
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk					
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk							
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>											
DBW 173	55.15	3	50.49	3	52.82	3	439	4	424	5	431	4					
HD 3059 (C)	55.80	2	51.99	2	53.90	2	446	3	465	3	456	3					
DBW 90 (C)	54.71	4	48.69	4	51.70	4	487	1	546	1	517	1					
WH 1021 (C)	52.53	5	44.61	5	48.57	5	411	5	444	4	428	5					
WH 1124 (C)	56.94	1	52.37	1	54.65	1	485	2	541	2	513	2					
Mean	55.03		49.63		52.33		454		484		469						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		1.98	12.07	14.67		N.S.		16.86	102.59	13.93						
Genotype (B)	**		0.93	2.80	4.37		**		13.91	41.71	7.27						
B within A	N.S.		1.32	3.96			N.S.		19.67	58.99							
A within B			2.31	6.92					24.37	73.06							
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>											
DBW 173	34.59	3	34.97	1	34.78	1	36.44	2	34.42	2	35.43	1					
HD 3059 (C)	35.32	2	32.58	3	33.95	3	35.70	4	34.70	1	35.20	3					
DBW 90 (C)	30.32	5	26.62	5	28.47	5	37.07	1	33.49	3	35.28	2					
WH 1021 (C)	36.53	1	32.80	2	34.67	2	35.02	5	30.72	5	32.87	5					
WH 1124 (C)	32.32	4	29.85	4	31.09	4	36.32	3	32.58	4	34.45	4					
Mean	33.82		31.36		32.59		36.11		33.18		34.65						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		0.95	5.79	11.32		N.S.		0.97	5.92	10.87						
Genotype (B)	**		0.97	2.90	7.27		*		0.54	1.63	3.84						
B within A	N.S.		1.37	4.10			N.S.		0.77	2.31							
A within B			1.55	4.65					1.19	3.57							
Date of sowing:	16.12.2016		02.01.2017				Date of harvesting:	26.04.2017		26.04.2017							

Table 2.1.8. North Western Plains Zone						IR-LS-TAS-DOS						Ludhiana		2016-17			
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk					
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk							
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>											
DBW 173	48.79	3	35.98	5	42.38	4	392	3	358	3	375	4					
HD 3059 (C)	49.23	1	39.87	2	44.55	1	400	1	352	5	376	2					
DBW 90 (C)	44.60	5	41.90	1	43.25	2	380	4	358	3	369	5					
WH 1021 (C)	44.70	4	35.98	4	40.34	5	396	2	378	1	387	1					
WH 1124 (C)	48.97	2	36.41	3	42.69	3	379	5	373	2	376	2					
Mean	47.26		38.03		42.64		389		364		377						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	**		0.49	2.98	4.44		N.S.		8.83	53.71	9.08						
Genotype (B)	N.S.		0.92	2.76	5.30		N.S.		6.17	18.49	4.01						
B within A	**		1.30	3.91			N.S.		8.72	26.15							
A within B			1.26	3.79					11.78	35.32							
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>											
DBW 173	33.68	4	33.43	3	33.55	3	37.09	3	30.26	2	33.67	3					
HD 3059 (C)	37.05	1	40.25	1	38.65	1	33.63	4	28.31	5	30.97	5					
DBW 90 (C)	30.85	5	39.45	2	35.15	2	38.24	1	29.65	3	33.94	2					
WH 1021 (C)	33.80	3	32.72	4	33.26	4	33.53	5	29.47	4	31.50	4					
WH 1124 (C)	34.50	2	29.12	5	31.81	5	37.51	2	34.02	1	35.77	1					
Mean	33.98		34.99		34.48		36.00		30.34		33.17						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		0.44	2.68	4.95		**		0.24	1.44	2.76						
Genotype (B)	N.S.		1.59	4.76	11.28		N.S.		1.17	3.51	8.64						
B within A	N.S.		2.25	6.73			N.S.		1.65	4.96							
A within B			2.06	6.17					1.50	4.49							
Date of sowing:	10.12.2016		03.01.2017				Date of harvesting:	04.05.2017		06.05.2017							

Table 2.1.9. North Western Plains Zone					IR-LS-TAS-DOS		Pantnagar 2016-17					
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk		
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 173	48.37	2	29.57	5	38.97	4	410	3	361	4	386	4
HD 3059 (C)	46.13	5	29.73	4	37.93	5	388	5	351	5	369	5
DBW 90 (C)	49.10	1	31.80	2	40.45	1	407	4	390	3	399	3
WH 1021 (C)	46.20	4	31.93	1	39.07	3	427	2	441	2	434	2
WH 1124 (C)	48.23	3	30.73	3	39.48	2	459	1	471	1	465	1
Mean	47.61		30.75		39.18		418		403		411	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	*		1.39	8.45	13.73		N.S.		16.86	102.61	15.91	
Genotype (B)	N.S.		1.18	3.54	7.39		N.S.		26.16	78.44	15.61	
B within A	N.S.		1.67	5.01			N.S.		37.00	110.94		
A within B			2.04	6.12					37.14	111.36		
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>						
DBW 173	33.52	1	27.96	3	30.74	2	35.77	4	29.33	2	32.55	3
HD 3059 (C)	31.90	3	29.20	2	30.55	3	37.33	3	29.63	1	33.48	1
DBW 90 (C)	32.43	2	31.78	1	32.10	1	38.10	2	26.47	5	32.28	4
WH 1021 (C)	28.99	5	26.59	4	27.79	4	38.40	1	27.97	3	33.18	2
WH 1124 (C)	30.18	4	23.84	5	27.01	5	35.17	5	27.83	4	31.50	5
Mean	31.40		27.87		29.64		36.95		28.25		32.60	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	N.S.		1.97	12.01	25.79		**		0.41	2.51	4.90	
Genotype (B)	N.S.		2.10	6.31	17.39		N.S.		1.02	3.06	7.67	
B within A	N.S.		2.98	8.92			N.S.		1.44	4.33		
A within B			3.31	9.93					1.36	4.06		
Date of sowing:	14.12.2016			04.01.2017			Date of harvesting:	26.04.2017			30.04.2017	

Table 2.1.10. North Western Plains Zone					IR-LS-TAS-DOS		Sriganganagar 2016-17					
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk		
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 173	46.06	3	27.54	2	36.80	2	362	3	290	2	326	3
HD 3059 (C)	47.07	1	28.01	1	37.54	1	370	1	293	1	332	1
DBW 90 (C)	42.44	4	26.06	4	34.25	4	352	4	288	3	320	4
WH 1021 (C)	46.68	2	26.62	3	36.65	3	367	2	286	4	327	2
WH 1124 (C)	41.51	5	24.15	5	32.83	5	348	5	265	5	307	5
Mean	44.75		26.48		35.61		360		284		322	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	**		0.35	2.14	3.82		**		1.75	10.62	2.10	
Genotype (B)	N.S.		1.17	3.50	8.03		**		3.88	11.63	2.95	
B within A	N.S.		1.65	4.95			N.S.		5.49	16.45		
A within B			1.52	4.55					5.21	15.62		
<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>						
DBW 173	37.58	3	32.10	3	34.84	3	34.11	1	29.71	2	31.91	1
HD 3059 (C)	38.63	2	32.25	2	35.44	2	32.97	4	29.72	1	31.35	3
DBW 90 (C)	36.04	4	30.60	5	33.32	5	33.53	2	29.60	3	31.57	2
WH 1021 (C)	40.36	1	33.96	1	37.16	1	31.54	5	27.43	5	29.49	5
WH 1124 (C)	35.80	5	31.36	4	33.58	4	33.37	3	29.11	4	31.24	4
Mean	37.68		32.05		34.87		33.10		29.11		31.11	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	*		0.47	2.88	5.25		**		0.04	0.23	0.48	
Genotype (B)	N.S.		1.59	4.76	11.16		*		0.52	1.57	4.13	
B within A	N.S.		2.25	6.73			N.S.		0.74	2.22		
A within B			2.06	6.19					0.66	1.99		
Date of sowing:	16.12.2016			07.01.2017			Date of harvesting:	22.04.2017			26.04.2017	

Table 2.1.11. North Western Plains Zone							IR-LS-TAS-DOS							Agra		2016-17	
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk					
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk							
<b>Yield, q/ha</b>													<b>Earhead/sq.m</b>				
DBW 173	51.69	5	34.68	4	43.19	5	457	5	336	4	396	5					
HD 3059 (C)	57.52	3	35.90	2	46.71	3	521	3	350	4	436	3					
DBW 90 (C)	58.96	1	37.03	1	47.99	1	537	1	388	3	463	1					
WH 1021 (C)	58.27	2	35.52	3	46.89	2	526	2	344	3	437	2					
WH 1124 (C)	52.77	4	33.91	5	43.34	4	472	4	336	5	399	4					
Mean	55.84		35.41		45.62		503		350		426						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	**		0.58	3.51	4.89		**		0.30	1.85	0.28						
Genotype (B)	**		0.70	2.08	3.73		**		0.74	2.23	0.43						
B within A	N.S.		0.98	2.95			**		1.05	3.15							
A within B			1.05	3.15					0.99	2.96							
<b>Grains/earhead</b>													<b>1000 Grains weight, g</b>				
DBW 173	28.62	1	27.44	2	28.03	1	39.55	5	37.60	3	38.58	5					
HD 3059 (C)	27.43	3	26.74	4	27.08	3	40.22	3	38.32	1	39.27	2					
DBW 90 (C)	32.56	5	26.62	5	26.58	5	41.37	2	36.25	5	38.81	3					
WH 1021 (C)	26.56	4	26.84	3	26.70	4	41.72	1	38.11	2	39.91	1					
WH 1124 (C)	28.05	2	27.87	1	27.96	2	39.88	4	37.29	4	38.59	4					
Mean	27.44		27.10		27.27		40.55		37.51		39.03						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		0.55	3.34	7.99		*		0.47	2.83	4.62						
Genotype (B)	N.S.		0.64	1.91	3.99		N.S.		0.69	2.07	4.33						
B within A	N.S.		0.90	2.70			N.S.		0.98	2.93							
A within B			0.97	2.92					0.99	2.97							
Date of sowing:	17.11.2016			05.01.2017			Date of harvesting:			02.04.2017		20.04.2017					

Table 2.1.12. North Western Plains Zone							IR-LS-TAS-DOS							Nagina		2016-17	
Genotype	Sowing time				Mean	Rk	Sowing time				Mean	Rk					
	Late	Rk	V. Late	Rk			Late	Rk	V. Late	Rk							
<b>Yield, q/ha</b>													<b>Earhead/sq.m</b>				
DBW 173	46.49	1	33.45	5	39.97	4	371	1	242	5	306	2					
HD 3059 (C)	41.08	5	36.27	1	40.08	2	342	4	265	1	304	4					
DBW 90 (C)	44.72	2	38.57	2	41.65	1	367	2	265	1	316	1					
WH 1021 (C)	41.63	4	37.00	4	38.32	5	342	5	257	4	299	5					
WH 1124 (C)	43.88	3	36.12	3	40.00	3	351	3	258	3	305	3					
Mean	43.56		36.44		40.00		355		257		306						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	*		0.68	4.14	6.58		**		5.98	36.39	7.57						
Genotype (B)	N.S.		0.76	2.28	4.67		N.S.		6.07	18.21	4.86						
B within A			1.08	3.23			N.S.		8.59	25.75							
A within B			1.18	3.54					9.74	29.19							
<b>Grains/earhead</b>													<b>1000 Grains weight, g</b>				
DBW 173	31.71	1	37.43	5	34.57	4	39.59	1	37.11	1	38.35	1					
HD 3059 (C)	30.56	5	40.58	1	35.57	1	39.53	4	36.45	5	37.99	5					
DBW 90 (C)	30.78	4	39.51	2	35.15	2	39.56	2	36.95	2	38.26	2					
WH 1021 (C)	30.88	3	37.46	4	34.17	5	39.53	4	36.66	3	38.10	3					
WH 1124 (C)	31.61	2	38.35	3	34.98	3	39.55	3	36.47	4	38.01	4					
Mean	31.11		38.67		34.89		39.55		36.73		38.14						
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)						
Sowing (A)	N.S.		1.32	8.06	14.70		**		0.11	0.67	1.12						
Genotype (B)	N.S.		0.91	2.73	6.39		N.S.		0.16	0.47	1.00						
B within A	N.S.		1.29	3.86			N.S.		0.22	0.66							
A within B			1.76	5.26					0.23	0.68							
Date of sowing:	15.12.2016			16.01.2017			Date of harvesting:										

Table 3.1.1. North Eastern Plains Zone								RIR-TS-TAS								Coochbehar								2016-17							
Genotype	Number of irrigation								Number of irrigation																						
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk															
<b>Yield, q/ha</b>																<b>Earhead/sqm</b>															
HI 1612	23.43	1	28.03	1	31.3	1	27.6	1	170	2	194	1	224	1	196	1															
HD2888 (c)	20.73	5	25.50	4	30.50	4	25.58	5	161	6	186	3	209	5	185	5															
C306 (c)	21.88	3	26.27	2	30.82	3	26.32	2	171	1	183	4	213	3	189	3															
K8027 (c)	21.25	4	26.13	3	31.23	2	26.21	3	170	3	179	5	211	4	187	4															
HD3171(I)	18.33	6	21.17	6	27.83	6	22.44	6	164	5	178	6	207	6	183	6															
K1317(I)	22.82	2	25.33	5	29.72	5	25.96	4	170	3	189	2	223	2	194	2															
Mean	21.41		25.41		30.24		25.68		168		185		215		189																
Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)															
Genotype (B)	*		1.06		3.05		12.36		Genotype (B)	N.S.		5.40		21.20		12.12															
B within A	N.S.		1.83		5.29				B within A	N.S.		9.03		26.09																	
A within B			1.76		5.09				A within B			9.86		28.46																	
<b>Grains/earhead</b>																<b>1000 Grains weight, g</b>															
HI 1612	36.66	2	35.26	4	34.16	6	35.36	5	37.93	1	40.97	1	40.97	1	39.96	1															
HD2888 (c)	36.56	3	34.24	5	37.05	2	35.95	3	35.97	4	40.33	2	39.67	3	38.66	2															
C306 (c)	36.81	1	36.63	2	36.76	3	36.73	2	34.87	6	39.37	3	40.00	2	38.08	3															
K8027 (c)	33.40	5	39.24	1	39.50	1	37.38	1	37.43	3	37.60	4	37.93	6	37.66	5															
HD3171(I)	31.43	6	33.14	6	34.32	5	32.96	6	35.67	5	36.33	6	39.43	4	37.14	6															
K1317(I)	32.56	4	35.72	3	34.56	4	35.38	4	37.67	2	37.37	5	38.70	5	37.91	4															
Mean	35.12		35.70		36.06		35.63		36.59		38.66		39.45		38.23																
Irrigation (A)	N.S.		1.02		4.02		12.18		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)															
Genotype (B)	N.S.		1.80		5.21		15.18		Genotype (B)	*		0.55		2.16		6.09															
B within A	N.S.		3.12		9.02				B within A	N.S.		0.57		1.64		4.46															
A within B			3.03		8.75				A within B	N.S.		0.99		2.85																	
Date of Sowing:	12.11.2016								Date of harvesting:	31.3.2017																					

Table 3.1.2. North Eastern Plains Zone								RIR-TS-TAS								Faizabad								2016-17							
Genotype	Number of irrigation								Number of irrigation																						
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk															
<b>Yield, q/ha</b>																<b>Earhead/sqm</b>															
HI 1612	24.25	2	32.16	2	41.42	1	32.61	2	235	1	290	1	335	2	287	2															
HD2888 (c)	20.45	6	27.82	5	29.83	5	26.03	6	217	5	280	4	301	5	266	4															
C306 (c)	22.81	4	29.48	4	31.40	4	27.90	4	215	6	270	6	293	6	259	6															
K8027 (c)	22.43	5	27.21	6	29.42	6	26.35	5	218	4	275	5	302	4	265	5															
HD3171(I)	23.28	3	30.20	3	35.43	3	29.64	3	220	3	285	3	320	3	275	3															
K1317(I)	25.10	1	34.21	1	40.23	2	33.18	1	235	1	290	1	336	1	287	1															
Mean	23.05		30.18		34.62		29.28		223		282		315		273																
Irrigation (A)	**		0.21		0.84		3.09		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)															
Genotype (B)	**		0.80		2.32		8.23		Genotype (B)	**		2.51		9.87		3.90															
B within A	*		1.39		4.02				B within A	**		4.03		11.63		4.42															
A within B			1.29		3.72				A within B	N.S.		6.98		20.15																	
<b>Grains/earhead</b>																<b>1000 Grains weight, g</b>															
HI 1612	26.98	5	28.46	3	30.63	1	28.69	3	38.27	1	39.27	1	40.33	1	39.29	1															
HD2888 (c)	25.95	6	26.36	6	26.64	5	26.31	6	36.30	4	37.67	4	37.30	4	37.09	4															
C306 (c)	30.09	1	30.15	1	29.53	3	29.92	1	35.30	6	36.30	6	36.20	6	35.93	6															
K8027 (c)	28.29	3	26.54	5	26.13	6	26.99	5	36.30	4	37.27	5	37.27	5	36.94	5															
HD3171(I)	28.53	2	27.62	4	28.94	4	28.36	4	37.23	3	38.30	3	38.17	3	37.90	3															
K1317(I)	27.87	4	30.04	2	29.85	2	29.25	2	38.27	2	39.23	2	40.17	2	39.22	2															
Mean	27.95		28.19		28.62		28.25		36.94		38.01		38.24		37.73																
Irrigation (A)	N.S.		0.50		1.97		7.55		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)															
Genotype (B)	**		0.53		1.52		5.60		Genotype (B)	*		0.30		1.17		3.36															
B within A	N.S.		0.91		2.64				B within A	**		0.51		1.47		4.04															
A within B			0.97		2.81				A within B	N.S.		0.88		2.54																	
Date of Sowing:	10.11.2016								Date of harvesting:	05.05.2017																					



Table 3.1.3. North Eastern Plains Zone								RIR-TS-TAS				IARI Pusa				2016-17	
Genotype	Number of irrigation							Number of irrigation									
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	
	<b>Yield, q/ha</b>								<b>Earhead/sqm</b>								
HI 1612	43.29	3	55.81	2	58.73	1	52.61	2	243	5	309	3	325	1	292	3	
HD2888 (c)	37.72	5	41.32	6	35.53	6	38.19	6	290	1	286	4	291	5	289	4	
C306 (c)	40.10	4	47.20	4	47.27	4	44.86	4	259	3	318	1	315	2	297	1	
K8027 (c)	36.08	6	45.00	5	43.12	5	41.40	5	222	6	281	5	293	4	265	6	
HD3171(I)	48.53	1	61.12	1	57.75	2	55.80	1	253	4	276	6	290	6	273	5	
K1317(I)	44.01	2	53.81	3	55.51	3	51.11	3	273	2	317	2	299	3	296	2	
Mean	41.62		50.71		49.65		47.33		257		298		302		285		
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)		
Irrigation (A)	**		1.06		4.17		9.53		**		5.88		23.10		8.75		
Genotype (B)	**		1.01		2.92		6.40		N.S.		9.77		28.20		10.26		
B within A	**		1.75		5.05				N.S.		16.92		48.85				
A within B			1.92		5.54						16.52		47.72				
	<b>Grains/earhead</b>								<b>1000 Grains weight, g</b>								
HI 1612	39.16	2	41.33	2	39.86	1	40.12	2	47.38	2	44.32	5	45.45	4	45.71	4	
HD2888 (c)	30.45	6	36.19	3	31.41	5	32.68	6	42.63	6	43.01	6	40.42	6	42.02	6	
C306 (c)	36.51	4	33.62	6	36.09	4	35.41	4	43.85	5	45.00	4	41.92	5	43.59	5	
K8027 (c)	38.43	3	34.09	4	27.95	6	33.49	5	45.34	3	47.66	2	52.95	1	48.65	2	
HD3171(I)	43.94	1	47.80	1	39.72	2	43.82	1	44.89	4	46.62	3	50.90	2	47.47	3	
K1317(I)	35.67	5	34.03	5	39.42	3	36.37	3	48.12	1	50.28	1	48.17	3	48.86	1	
Mean	37.36		37.84		35.74		36.98		45.37		46.15		46.64		46.05		
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)		
Irrigation (A)	N.S.		1.18		4.64		13.56		N.S.		0.84		3.30		7.75		
Genotype (B)	**		1.90		5.48		15.39		**		1.28		3.69		8.32		
B within A	N.S.		3.29		9.49				N.S.		2.21		6.39				
A within B			3.22		9.31						2.19		6.32				
Date of Sowing:	26.11.2016							Date of harvesting:								10.04.2017	

Table 3.1.4. North Eastern Plains Zone								RIR-TS-TAS				Kalyani				2016-17	
Genotype	Number of irrigation							Number of irrigation									
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	
	<b>Yield, q/ha</b>								<b>Earhead/sqm</b>								
HI 1612	14.25	5	20.22	5	27.79	1	20.75	4	207	5	278	4	298	3	261	5	
HD2888 (c)	12.81	6	18.90	6	21.57	6	17.76	6	265	1	289	3	323	1	292	1	
C306 (c)	18.93	1	22.95	2	27.25	2	23.04	1	217	4	308	1	272	5	266	4	
K8027 (c)	15.59	4	24.34	1	25.23	3	21.72	2	245	3	303	2	308	2	285	2	
HD3171(I)	16.33	3	21.43	4	24.79	4	20.85	3	192	6	277	5	264	6	244	6	
K1317(I)	17.02	2	21.64	3	22.99	5	20.55	5	254	2	272	6	277	4	267	3	
Mean	15.82		21.58		24.94		20.78		230		288		290		269		
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)		
Irrigation (A)	**		0.34		1.33		6.89		**		7.43		29.17		11.71		
Genotype (B)	*		1.01		2.91		14.52		N.S.		13.68		39.52		15.25		
B within A	N.S.		1.74		5.03				N.S.		23.70		68.45				
A within B			1.63		4.70						22.88		66.07				
	<b>Grains/earhead</b>								<b>1000 Grains weight, g</b>								
HI 1612	19.10	3	17.61	2	25.64	1	20.78	1	36.87	5	41.53	6	37.17	6	38.52	6	
HD2888 (c)	13.63	6	14.68	6	16.51	6	14.94	6	36.87	5	45.10	4	42.17	4	41.38	5	
C306 (c)	20.94	2	16.01	5	24.02	2	20.33	3	42.20	2	46.93	1	44.10	2	44.41	1	
K8027 (c)	15.17	5	17.08	3	19.16	4	17.14	5	42.00	3	46.87	2	43.50	3	44.12	3	
HD3171(I)	22.00	1	16.83	4	22.22	3	20.35	2	39.10	4	46.17	3	42.17	4	42.48	4	
K1317(I)	15.67	4	18.64	1	18.08	5	17.46	4	43.50	1	42.93	5	46.00	1	44.14	2	
Mean	17.75		16.81		20.94		18.50		40.09		44.92		42.52		42.51		
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)		
Irrigation (A)	*		0.78		3.04		17.78		*		1.03		4.03		10.25		
Genotype (B)	*		1.23		3.56		19.98		*		1.22		3.53		8.63		
B within A	N.S.		2.13		6.16				N.S.		2.12		6.12				
A within B			2.10		6.05						2.19		6.32				
Date of Sowing:	06.11.16							Date of harvesting:								11.03.2017	

Table 3.1.5. North Eastern Plains Zone								RIR-TS-TAS				Kanpur				2016-17			
Genotype	Number of irrigation								Number of irrigation										
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk			
<b>Yield, q/ha</b>																			
HI 1612	26.04	1	41.87	1	46.31	2	38.07	1	328	2	351	1	362	1	347	1			
HD2888 (c)	25.63	3	36.30	3	40.55	3	34.16	3	326	3	344	4	355	4	342	3			
C306 (c)	23.15	4	35.80	4	38.19	4	32.38	4	321	4	342	5	352	5	338	5			
K8027 (c)	19.72	6	30.70	6	34.02	6	28.15	6	300	6	336	6	352	6	329	6			
HD3171(I)	22.92	5	32.88	5	34.72	5	30.17	5	318	5	346	3	357	3	340	4			
K1317(I)	25.93	2	40.70	2	46.52	1	37.72	2	329	1	348	2	360	2	346	2			
Mean	23.90		36.38		40.05		33.44		320		345		356		340				
<b>Earhead/sqm</b>																			
Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)			
Genotype (B)	**		0.13		0.50		1.61		Genotype (B)	*		1.74		6.82		2.17			
B within A	**		0.59		1.69		5.26		B within A	N.S.		3.56		10.29		3.14			
A within B	**		1.02		2.93				A within B	N.S.		6.17		17.83					
			0.94		2.70							5.90		17.03					
<b>Grains/earhead</b>																			
HI 1612	21.26	3	30.24	1	31.26	1	27.59	1	37.40	1	39.40	1	41.10	2	39.30	1			
HD2888 (c)	21.30	1	28.36	4	28.32	3	25.99	3	36.90	3	37.20	3	40.30	3	38.13	3			
C306 (c)	20.48	5	28.43	3	27.15	4	25.35	4	35.60	4	36.80	5	39.90	4	37.43	4			
K8027 (c)	18.93	6	24.92	6	25.24	5	23.03	6	34.90	6	36.73	6	38.40	6	36.68	6			
HD3171(I)	20.54	4	25.80	5	24.85	6	23.73	5	35.20	5	36.93	4	39.20	5	37.11	5			
K1317(I)	21.29	2	29.96	2	31.20	2	27.48	2	37.10	2	39.03	2	41.47	1	39.20	2			
Mean	20.63		27.95		28.01		25.53		36.18		37.68		40.06		37.98				
<b>1000 Grains weight, g</b>																			
Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)			
Genotype (B)	**		0.18		0.71		3.01		Genotype (B)	**		0.09		0.34		0.96			
B within A	N.S.		0.64		1.84		7.47		B within A	**		0.48		1.37		3.76			
A within B	N.S.		1.10		3.18				A within B	N.S.		0.82		2.38					
			1.02		2.95							0.76		2.19					
Date of Sowing:	09.11.2016								Date of harvesting:	18.04.2017									

Table 3.1.6. North Eastern Plains Zone								RIR-TS-TAS				Ranchi				2016-17			
Genotype	Number of irrigation								Number of irrigation										
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk			
<b>Yield, q/ha</b>																			
HI 1612	12.60	4	18.53	1	24.33	1	18.49	1	180	2	203	1	232	1	205	1			
HD2888 (c)	16.07	1	15.93	2	20.60	4	17.53	2	177	4	197	2	203	4	192	2			
C306 (c)	13.20	2	14.63	6	20.27	6	16.03	6	192	1	183	6	193	6	189	5			
K8027 (c)	13.10	3	15.73	3	20.40	5	16.41	4	180	2	187	5	203	4	190	4			
HD3171(I)	12.60	4	15.67	4	22.73	2	17.00	3	167	5	193	3	210	2	190	3			
K1317(I)	11.93	6	15.07	5	21.67	3	16.22	5	153	6	193	4	210	3	185	6			
Mean	13.25		15.93		21.67		16.95		175		193		209		192				
<b>Earhead/sqm</b>																			
Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)			
Genotype (B)	**		0.48		1.89		12.06		Genotype (B)	**		2.49		9.77		5.50			
B within A	N.S.		0.73		2.10		12.86		B within A	N.S.		6.34		18.31		9.90			
A within B	N.S.		1.26		3.63				A within B	N.S.		10.98		31.71					
			1.25		3.60							10.33		29.82					
<b>Grains/earhead</b>																			
HI 1612	20.01	5	24.58	1	25.91	6	23.50	5	35.00	4	37.53	1	40.60	1	37.71	1			
HD2888 (c)	26.91	1	22.59	3	27.90	3	25.80	1	33.90	6	36.20	3	36.77	5	35.62	6			
C306 (c)	19.46	6	21.73	6	28.23	2	23.14	6	35.53	2	36.80	2	37.17	4	36.50	2			
K8027 (c)	21.31	4	23.82	2	25.97	5	23.70	4	34.73	5	35.70	5	38.87	2	36.43	3			
HD3171(I)	21.50	3	22.49	4	29.78	1	24.59	2	35.67	1	36.07	4	36.60	6	36.11	4			
K1317(I)	22.31	2	22.31	5	27.53	4	24.05	3	35.03	3	35.50	6	37.43	3	35.99	5			
Mean	21.91		22.92		27.55		24.13		34.98		36.30		37.91		36.39				
<b>1000 Grains weight, g</b>																			
Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)		Irrigation (A)	F. Test		SEm		CD(0.05)		CV(%)			
Genotype (B)	*		0.92		3.60		16.12		Genotype (B)	**		0.34		1.33		3.95			
B within A	N.S.		1.29		3.72		16.02		B within A	**		0.35		1.02		2.90			
A within B	N.S.		2.23		6.44				A within B	*		0.61		1.76					
			2.23		6.45							0.65		1.88					
Date of Sowing:	26.10.2016								Date of harvesting:	30.03.2017									

Table 3.1.7. North Eastern Plains Zone										RIR-TS-TAS				RAU Pusa				2016-17	
Genotype	Number of irrigation								Number of irrigation										
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk			
	<b>Yield, q/ha</b>								<b>Earhead/sqm</b>										
HI 1612	28.43	6	36.75	6	38.65	6	34.61	6	209	6	235	6	251	6	232	6			
HD2888 (c)	31.52	4	37.82	4	40.82	4	36.72	4	222	4	248	4	266	4	245	4			
C306 (c)	32.48	2	40.63	2	43.23	2	38.78	2	235	2	259	2	277	2	257	2			
K8027 (c)	30.32	5	37.15	5	40.15	5	35.87	5	215	5	242	5	259	5	239	5			
HD3171(I)	33.81	1	41.36	1	44.52	1	39.90	1	240	1	265	1	283	1	263	1			
K1317(I)	31.95	3	39.29	3	42.26	3	37.83	3	229	3	252	3	273	3	251	3			
Mean	31.42		38.83		41.61		37.29		225		250		268		248				
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)				
Irrigation (A)	**		0.52		2.04		5.92		**		0.68		2.68		1.17				
Genotype (B)	**		0.48		1.38		3.84		**		1.02		2.94		1.23				
B within A	N.S.		0.83		2.39				N.S.		1.76		5.08						
A within B			0.92		2.65						1.75		5.04						
	<b>Grains/earhead</b>								<b>1000 Grains weight, g</b>										
HI 1612	36.41	3	40.85	1	38.22	1	38.49	1	37.63	6	38.28	6	40.29	6	38.73	6			
HD2888 (c)	36.91	2	38.74	5	36.76	3	37.47	3	38.45	4	39.39	4	41.74	4	39.86	4			
C306 (c)	35.25	6	39.08	4	36.25	5	36.86	5	39.15	2	40.22	2	43.05	2	40.81	2			
K8027 (c)	37.11	1	39.20	2	37.45	2	37.92	2	38.12	5	39.18	5	41.39	5	39.56	5			
HD3171(I)	35.65	5	38.43	6	35.88	6	36.65	6	39.62	1	40.65	1	43.84	1	41.37	1			
K1317(I)	35.94	4	39.16	3	36.31	4	37.14	4	38.85	3	39.87	3	42.65	3	40.46	3			
Mean	36.21		39.25		36.81		37.42		38.64		39.60		42.16		40.13				
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)				
Irrigation (A)	N.S.		1.12		4.41		12.74		*		0.72		2.82		7.58				
Genotype (B)	N.S.		0.58		1.67		4.63		**		0.29		0.84		2.18				
B within A	N.S.		1.00		2.89				N.S.		0.50		1.46						
A within B			1.45		4.18						0.85		2.46						
Date of Sowing:	04.12.2016								Date of harvesting:	03.04.2017									

Table 3.1.8. North Eastern Plains Zone										RIR-TS-TAS				Sabour				2016-17	
Genotype	Number of irrigation								Number of irrigation										
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk			
	<b>Yield, q/ha</b>								<b>Earhead/sqm</b>										
HI 1612	30.30	1	37.40	1	38.80	1	35.50	1	225	1	242	1	245	1	237	1			
HD2888 (c)	28.57	4	35.70	4	35.37	4	33.21	4	217	4	235	4	234	4	229	4			
C306 (c)	27.57	6	34.40	6	34.00	6	31.99	6	213	6	230	6	230	6	224	6			
K8027 (c)	27.90	5	35.40	5	35.03	5	32.78	5	215	5	233	5	232	5	227	5			
HD3171(I)	28.93	3	36.40	3	37.43	3	34.26	3	219	3	237	3	240	3	232	3			
K1317(I)	29.60	2	37.07	2	38.43	2	35.03	2	221	2	239	2	243	2	234	2			
Mean	28.81		36.06		36.51		33.79		218		236		237		231				
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)				
Irrigation (A)	**		0.35		1.38		4.42		**		0.46		1.81		0.85				
Genotype (B)	*		0.79		2.28		7.02		**		1.63		4.71		2.12				
B within A	N.S.		1.37		3.96				N.S.		2.82		8.15						
A within B			1.30		3.75						2.62		7.56						
	<b>Grains/earhead</b>								<b>1000 Grains weight, g</b>										
HI 1612	34.51	5	37.65	5	37.75	5	36.64	4	39.00	1	41.00	1	42.00	1	40.67	1			
HD2888 (c)	34.56	4	37.06	6	37.77	4	36.47	6	38.00	3	41.00	1	40.00	4	39.67	3			
C306 (c)	34.95	2	38.31	2	38.87	1	37.38	1	37.00	5	39.00	6	38.00	6	38.00	6			
K8027 (c)	35.01	1	37.93	3	38.72	2	37.22	2	37.00	5	40.00	4	39.00	5	38.67	5			
HD3171(I)	34.76	3	38.34	1	38.07	3	37.05	3	38.00	3	40.00	4	41.00	3	39.67	3			
K1317(I)	34.32	6	37.82	4	37.63	6	36.59	5	39.00	1	41.00	1	42.00	1	40.67	1			
Mean	34.69		37.85		38.14		36.89		38.00		40.33		40.33		39.56				
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)				
Irrigation (A)	**		0.20		0.77		2.26		**		0.26		1.02		2.79				
Genotype (B)	N.S.		0.36		1.04		2.92		**		0.50		1.45		3.80				
B within A	N.S.		0.62		1.80				N.S.		0.87		2.50						
A within B			0.60		1.74						0.83		2.41						
Date of Sowing:	03.11.2016								Date of harvesting:	28.03.2017									

Table 3.1.9. North Eastern Plains Zone								RIR-TS-TAS		Shillongani				2016-17		
Genotype	Number of irrigation						Number of irrigation									
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk
	<b>Yield, q/ha</b>								<b>Earhead/sqm</b>							
HI 1612	25.25	2	33.57	6	45.66	1	34.83	1	130	6	216	3	259	1	202	2
HD2888 (c)	26.47	1	35.44	5	39.38	3	33.77	2	161	1	205	6	229	4	198	3
C306 (c)	22.35	4	36.75	2	41.63	2	33.58	3	149	2	229	1	239	2	206	1
K8027 (c)	23.73	3	36.26	4	37.01	6	32.33	5	148	3	214	4	229	3	197	4
HD3171(I)	21.53	5	37.66	1	38.44	4	32.54	4	138	4	222	2	228	5	196	5
K1317(I)	21.35	6	36.60	3	37.32	5	31.76	6	131	5	210	5	223	6	188	6
Mean	23.45		36.05		39.91		33.13		143		216		235		198	
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Irrigation (A)	**		0.38		1.48		4.83		**		1.75		6.85		3.74	
Genotype (B)	**		0.56		1.63		5.10		**		3.01		8.69		4.56	
B within A	**		0.97		2.82				**		5.21		15.05			
A within B			0.97		2.79						5.07		14.64			
	<b>Grains/earhead</b>								<b>1000 Grains weight, g</b>							
HI 1612	43.73	1	35.60	6	40.60	1	39.98	1	44.57	3	43.77	5	43.50	5	43.94	5
HD2888 (c)	37.47	2	38.67	2	39.00	4	38.38	3	44.17	6	45.03	2	44.23	2	44.48	3
C306 (c)	33.93	5	35.80	5	39.47	3	36.40	5	44.40	4	44.77	3	44.17	3	44.44	4
K8027 (c)	34.73	4	38.54	3	36.67	5	36.65	4	46.23	2	44.03	4	44.07	4	44.78	2
HD3171(I)	35.33	3	40.33	1	39.67	2	38.44	2	44.23	5	42.07	6	42.50	6	42.93	6
K1317(I)	32.05	6	37.00	4	34.93	6	34.66	6	51.00	1	47.20	1	47.87	1	48.69	1
Mean	36.21		37.66		38.39		37.42		45.77		44.48		44.39		44.88	
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Irrigation (A)	*		0.59		2.32		6.70		N.S.		0.47		1.84		4.44	
Genotype (B)	**		0.88		2.54		7.04		**		0.78		2.25		5.20	
B within A	**		1.52		4.39				N.S.		1.35		3.89			
A within B			1.51		4.36						1.32		3.80			
Date of Sowing:	11.11.2016								Date of harvesting: 17.03.2017							

Table 3.1.10. North Eastern Plains Zone								RIR-TS-TAS		Varanasi				2016-17		
Genotype	Number of irrigation						Number of irrigation									
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	Zero	Rk	One	Rk	Two	Rk	Mean	Rk
	<b>Yield, q/ha</b>								<b>Earhead/sqm</b>							
HI 1612	24.09	5	29.16	3	30.90	2	28.05	3	224	5	248	3	250	6	241	6
HD2888 (c)	22.93	6	22.82	6	24.47	6	23.41	6	289	1	247	4	310	3	282	1
C306 (c)	25.11	3	29.96	1	31.80	1	28.96	1	263	3	273	1	296	4	277	2
K8027 (c)	26.28	1	25.00	5	27.04	5	26.11	4	267	2	239	6	292	5	266	4
HD3171(I)	25.80	2	29.32	2	30.23	3	28.45	2	226	4	245	5	314	2	262	5
K1317(I)	24.91	4	25.63	4	27.55	4	26.03	5	216	6	261	2	351	1	276	3
Mean	24.85		26.98		28.67		26.83		247		252		302		267	
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Irrigation (A)	*		0.50		1.97		7.93		*		7.19		28.24		11.42	
Genotype (B)	**		0.42		1.20		4.64		*		9.36		27.04		10.51	
B within A	**		0.72		2.08				*		16.22		46.84			
A within B			0.83		2.39						16.46		47.54			
	<b>Grains/earhead</b>								<b>1000 Grains weight, g</b>							
HI 1612	25.98	2	27.70	2	29.32	1	27.67	1	42.21	5	42.80	4	42.55	5	42.52	5
HD2888 (c)	17.68	6	21.18	5	18.06	5	18.97	6	44.88	3	44.01	3	44.23	2	44.38	3
C306 (c)	21.95	4	25.82	3	24.41	2	24.06	3	43.77	4	42.57	5	44.00	3	43.44	4
K8027 (c)	21.55	5	23.02	4	21.23	4	21.93	4	45.97	2	45.70	2	43.77	4	45.15	2
HD3171(I)	28.56	1	29.89	1	24.15	3	27.53	2	40.50	6	40.66	6	40.67	6	40.61	6
K1317(I)	24.15	3	20.26	6	16.92	6	20.45	5	47.80	1	48.83	1	47.38	1	48.00	1
Mean	23.31		24.65		22.35		23.44		44.19		44.10		43.77		44.02	
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Irrigation (A)	N.S.		0.78		3.06		14.12		N.S.		0.26		1.03		2.52	
Genotype (B)	**		1.11		3.20		14.19		**		0.41		1.19		2.80	
B within A	N.S.		1.92		5.55				N.S.		0.71		2.06			
A within B			1.92		5.54						0.70		2.02			
Date of Sowing:	27.11.2016								Date of harvesting: 15.04.2017							

Table 5.1.1. Peninsular Zone

Genotype	IR-TS-TAD-DOS					Akola										
	Sowing Time					Sowing Time										
	Timely	Rk	Late	Rk	Mean	Rk	Timely	Rk	Late	Rk	Mean	Rk				
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>										
DBW 168	32.14	5	37.37	4	34.75	5	274	5	311	5	292	5				
MACS6478 (c)	41.51	1	44.87	1	43.19	1	342	1	354	1	348	1				
MACS6222 (c)	37.52	4	41.02	2	39.27	3	285	4	338	3	312	4				
GW322 (c)	41.03	2	40.11	3	40.57	2	323	2	344	2	334	2				
UAS304 (c)	39.30	3	36.14	5	37.72	4	308	3	321	4	315	3				
Mean	38.30		39.90		39.102		306		334		320					
Sowing (A)	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Genotype (B)	N.S.		1.57		9.56		15.56		*		3.77		22.97		4.57	
B within A	N.S.		1.62		4.86		10.15		**		6.20		18.59		4.75	
A within B	N.S.		2.29		6.87				N.S.		8.77		26.29			
			2.58		7.74						8.71		26.10			
<b>Grains/earhead</b>						<b>1000 Grains wight, g</b>										
DBW 168	25.80	4	26.29	3	26.04	4	45.60	2	45.90	4	45.75	3				
MACS6478 (c)	25.77	5	26.29	2	26.03	5	47.27	1	48.33	1	47.80	1				
MACS6222 (c)	28.80	3	25.63	4	27.22	2	45.50	3	47.50	2	46.50	2				
GW322 (c)	29.36	2	26.37	1	27.87	1	43.33	4	44.27	5	43.80	5				
UAS304 (c)	29.83	1	24.17	5	27.00	3	42.77	5	46.57	3	44.67	4				
Mean	27.91		25.75		26.83		44.89		46.51		45.70					
Sowing (A)	32.55899		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Genotype (B)	N.S.		1.16		7.09		16.81		N.S.		0.41		2.51		3.49	
B within A	N.S.		1.22		3.64		11.10		**		0.29		0.88		1.57	
A within B	N.S.		1.72		5.15				**		0.41		1.24			
			1.93		5.78						0.55		1.66			
Date of Sowing :	10.11.2016			28.11.2016			Date of Harvesting:			22.3.2017			27.3.2017			

Table 5.1.2. Peninsular Zone

Genotype	IR-TS-TAS-DOS					Dharwad										
	Sowing Time					Sowing Time										
	Timely	Rk	Late	Rk	Mean	Rk	Timely	Rk	Late	Rk	Mean	Rk				
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>										
DBW 168	45.62	1	40.06	1	42.84	1	294	1	276	1	285	1				
MACS6478 (c)	44.23	2	38.62	2	41.43	2	288	2	272	2	280	2				
MACS6222 (c)	42.57	4	35.14	5	38.86	5	273	5	256	5	265	5				
GW322 (c)	43.16	3	37.64	3	40.40	3	284	3	266	3	275	3				
UAS304 (c)	42.36	5	36.92	4	39.64	4	278	4	262	4	270	4				
Mean	43.59		37.68		40.632		283		266		275					
Sowing (A)	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Genotype (B)	*		0.43		2.62		4.10		*		1.59		9.70		2.25	
B within A	N.S.		0.90		2.70		5.43		**		2.74		8.21		2.44	
A within B	N.S.		1.27		3.82				N.S.		3.87		11.61			
			1.22		3.65						3.81		11.43			
<b>Grains/earhead</b>						<b>1000 Grains wight, g</b>										
DBW 168	35.69	4	35.83	2	35.76	3	43.57	1	40.49	1	42.03	1				
MACS6478 (c)	35.70	3	35.34	5	35.52	5	43.12	2	40.28	2	41.70	2				
MACS6222 (c)	37.70	1	35.56	4	36.63	2	41.45	4	38.65	5	40.05	5				
GW322 (c)	35.45	5	35.62	3	35.53	4	42.90	3	39.75	3	41.33	3				
UAS304 (c)	37.20	2	36.24	1	36.72	1	41.20	5	38.98	4	40.09	4				
Mean	36.35		35.72		36.03		42.45		39.63		41.04					
Sowing (A)	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)	
Genotype (B)	N.S.		0.33		2.01		3.56		*		0.38		2.29		3.55	
B within A	N.S.		1.28		3.82		8.67		N.S.		0.78		2.34		4.67	
A within B	N.S.		1.80		5.41				N.S.		1.11		3.31			
			1.65		4.94						1.06		3.17			
Date of Sowing :	10.11.2016			26.11.2016			Date of Harvesting:			14.03.2017			18.03.2017			

Table 5.1.3. Peninsular Zone

Genotype	IR-TS-TAS-DOS					Niphad				2016-17		
	Sowing Time				Mean	Rk	Sowing Time				Mean	Rk
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	<b>Yield, q/ha</b>					<b>Earhead/sq.m.</b>						
DBW 168	38.91	4	35.17	5	37.04	4	399	5	409	2	404	4
MACS6478 (c)	45.34	1	43.01	1	44.18	1	405	4	399	5	402	5
MACS6222 (c)	43.59	2	39.30	2	41.44	2	410	1	410	1	410	1
GW322 (c)	35.41	5	38.60	3	37.00	5	410	1	401	4	406	3
UAS304 (c)	42.79	3	36.44	4	39.62	3	409	3	405	3	407	2
Mean	41.21		38.50		39.856		407		405		406	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	*		0.31	1.91	3.05		*		0.25	1.52	0.24	
Genotype (B)	**		0.98	2.93	6.02		N.S.		2.99	8.98	1.81	
B within A	*		1.38	4.15			N.S.		4.23	12.69		
A within B			1.28	3.83					3.80	11.38		
	<b>Grains/earhead</b>					<b>1000 Grains wight, g</b>						
DBW 168	23.51	5	21.28	5	22.39	5	41.56	2	40.45	2	41.01	2
MACS6478 (c)	25.62	3	25.81	2	25.71	3	43.73	1	41.90	1	42.82	1
MACS6222 (c)	26.59	2	24.28	4	25.44	4	40.28	3	39.45	3	39.87	3
GW322 (c)	24.00	4	27.48	1	25.74	2	36.00	5	35.03	5	35.52	5
UAS304 (c)	26.60	1	25.30	3	25.95	1	39.38	4	35.54	4	37.46	4
Mean	25.26		24.83		25.05		40.19		38.48		39.33	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	N.S.		0.39	2.39	6.08		N.S.		0.39	2.36	3.81	
Genotype (B)	*		0.81	2.42	7.89		**		0.49	1.46	3.03	
B within A	N.S.		1.14	3.42			N.S.		0.69	2.07		
A within B			1.09	3.28					0.73	2.18		
Date of Sowing :	06.11.2016		30.11.2016				Date of Harvesting:	23.03.2017		30.03.2017		

Table 5.1.4. Peninsular Zone

Genotype	IR-TS-TAS-DOS					Pune				2016-17		
	Sowing Time				Mean	Rk	Sowing Time				Mean	Rk
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	<b>Yield, q/ha</b>					<b>Earhead/sq.m.</b>						
DBW 168	53.40	4	47.39	5	50.40	4	358	3	343	1	351	3
MACS6478 (c)	59.16	1	55.74	1	57.45	1	400	1	338	2	369	1
MACS6222 (c)	52.46	5	48.33	4	50.40	4	380	2	325	3	353	2
GW322 (c)	55.31	2	54.49	2	54.90	2	355	4	312	4	333	4
UAS304 (c)	54.29	3	48.34	3	51.31	3	337	5	282	5	309	5
Mean	54.93		50.86		52.893		366		320		343	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	N.S.		1.06	6.44	7.75		*		3.34	20.34	3.77	
Genotype (B)	**		1.32	3.96	6.12		*		11.39	34.14	8.13	
B within A	N.S.		1.87	5.61			N.S.		16.11	48.29		
A within B			1.98	5.94					14.79	44.33		
	<b>Grains/earhead</b>					<b>1000 Grains wight, g</b>						
DBW 168	34.17	4	34.62	5	34.40	4	43.67	1	39.67	3	41.67	3
MACS6478 (c)	34.38	3	39.27	3	36.82	3	43.33	2	42.00	2	42.67	2
MACS6222 (c)	31.91	5	35.42	4	33.67	5	43.33	2	42.67	1	43.00	1
GW322 (c)	40.08	1	48.40	1	44.24	1	39.00	5	36.33	5	37.67	5
UAS304 (c)	39.69	2	43.91	2	41.80	2	40.67	4	39.67	3	40.17	4
Mean	36.05		40.32		38.18		42.00		40.07		41.03	
	F. Test		SEm	CD(0.05)	CV(%)		F. Test		SEm	CD(0.05)	CV(%)	
Sowing (A)	*		0.63	3.82	6.38		N.S.		0.46	2.83	4.38	
Genotype (B)	**		1.53	4.58	9.80		**		0.76	2.27	4.51	
B within A	N.S.		2.16	6.47			N.S.		1.07	3.20		
A within B			2.03	6.09					1.06	3.19		
Date of Sowing :	09.11.2016		30.11.2016				Date of Harvesting:	09.03.2017		23.03.2017		

Table 5.1.5. Peninsular Zone

Genotype	IR-TS-TAS-DOS						Ugar Khurd					
	Sowing Time						Sowing Time					
	Timely	Rk	Late	Rk	Mean	Rk	Timely	Rk	Late	Rk	Mean	Rk
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 168	52.13	1	43.05	1	47.59	1	364	1	304	1	334	1
MACS6478 (c)	50.34	2	42.15	3	46.25	2	356	2	298	2	327	2
MACS6222 (c)	45.55	5	41.37	4	43.46	5	332	5	286	4	309	4
GW322 (c)	47.49	3	43.00	2	45.25	3	348	3	296	3	322	3
UAS304 (c)	46.66	4	40.36	5	43.51	4	339	4	278	5	309	5
Mean	48.43		41.99		45.21		348		292		320	
F. Test						F. Test						
SEm						SEm						
CD(0.05)						CD(0.05)						
CV(%)						CV(%)						
Sowing (A)	**		0.23		1.39		**		0.14		0.86	
Genotype (B)	*		0.99		2.97		**		0.91		2.74	
B within A	N.S.		1.40		4.21		**		1.29		3.87	
A within B			1.28		3.82				1.16		3.49	
<b>Grains/earhead</b>						<b>1000 Grains wight, g</b>						
DBW 168	30.46	4	31.41	5	30.94	5	46.99	1	45.23	1	46.11	1
MACS6478 (c)	31.19	2	33.67	3	32.43	3	45.34	2	42.00	4	43.67	3
MACS6222 (c)	30.99	3	35.06	1	33.02	1	44.38	4	41.29	5	42.84	5
GW322 (c)	31.81	1	33.57	4	32.69	2	42.91	5	43.26	2	43.09	4
UAS304 (c)	30.45	5	34.29	2	32.37	4	45.30	3	42.39	3	43.85	2
Mean	30.98		33.60		32.29		44.98		42.83		43.91	
F. Test						F. Test						
SEm						SEm						
CD(0.05)						CD(0.05)						
CV(%)						CV(%)						
Sowing (A)	**		0.17		1.04		N.S.		0.40		2.42	
Genotype (B)	N.S.		0.71		2.13		N.S.		0.97		2.90	
B within A	N.S.		1.01		3.02		N.S.		1.37		4.10	
A within B			0.92		2.75				1.29		3.85	
Date of Sowing :	11.11.2016		26.11.2016		Date of Harvesting:		15.03.2017		22.03.2017			

Table 5.1.6. Peninsular Zone

Genotype	IR-TS-TAS-DOS						Washim					
	Sowing Time						Sowing Time					
	Timely	Rk	Late	Rk	Mean	Rk	Timely	Rk	Late	Rk	Mean	Rk
<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>						
DBW 168	35.17	5	36.46	5	35.82	5	348	2	268	5	308	5
MACS6478 (c)	39.35	3	38.54	3	38.95	4	286	5	334	1	310	4
MACS6222 (c)	40.02	1	41.13	2	40.58	1	323	4	303	4	313	3
GW322 (c)	37.70	4	42.92	1	40.31	2	334	3	323	2	329	2
UAS304 (c)	39.61	2	38.43	4	39.02	3	384	1	321	3	352	1
Mean	38.37		39.50		38.933		335		310		322	
F. Test						F. Test						
SEm						SEm						
CD(0.05)						CD(0.05)						
CV(%)						CV(%)						
Sowing (A)	N.S.		0.53		3.23		N.S.		10.50		63.87	
Genotype (B)	N.S.		1.35		4.05		N.S.		15.66		46.94	
B within A	N.S.		1.91		5.73		N.S.		22.14		66.38	
A within B			1.79		5.37				22.41		67.19	
<b>Grains/earhead</b>						<b>1000 Grains wight, g</b>						
DBW 168	33.69	2	44.38	1	39.04	1	30.64	5	30.72	5	30.68	5
MACS6478 (c)	39.81	1	33.63	3	36.72	2	34.58	4	34.32	4	34.45	4
MACS6222 (c)	31.07	3	34.06	2	32.57	3	39.89	3	39.85	3	39.87	3
GW322 (c)	28.10	4	32.89	4	30.49	4	42.11	2	42.02	2	42.07	2
UAS304 (c)	23.23	5	27.05	5	25.14	5	44.65	1	44.47	1	44.56	1
Mean	31.18		34.40		32.79		38.37		38.28		38.32	
F. Test						F. Test						
SEm						SEm						
CD(0.05)						CD(0.05)						
CV(%)						CV(%)						
Sowing (A)	N.S.		1.23		7.46		N.S.		0.03		0.16	
Genotype (B)	**		2.28		6.85		**		0.18		0.53	
B within A	N.S.		3.23		9.69		N.S.		0.25		0.75	
A within B			3.14		9.41				0.23		0.68	
Date of Sowing :	8.11.2016		26.11.2016		Date of Harvesting:		13.03.2017		20.03.2017			

**Table 5.2.1. Peninsular Zone**

Genotype	RF-TAS-LON							Dharwad								
	Nitrogen levels, kg/ha							Nitrogen levels, kg/ha								
	40	Rk	60	Rk	80	Rk	Mean	40	Rk	60	Rk	80	Rk	Mean	Rk	
	<b>Yield, q/ha</b>							<b>Earhead/sq.m.</b>								
UAS 375	14.95	1	15.79	1	16.4	1	15.71	1	174	5	184	2	191	1	183	1
HI 8777(d)	11.59	3	12.36	5	13.6	4	12.50	4	186	1	175	5	181	4	181	2
MACS 4028(d)	10.76	6	11.42	7	12.8	6	11.67	6	178	3	174	7	177	6	176	7
NI 5439 (c)	11.01	5	12.63	3	13.0	5	12.22	5	180	2	175	6	180	5	178	5
NIAW 1415 (c)	12.39	2	13.69	2	14.8	2	13.62	2	173	7	181	3	185	2	180	4
UAS 446(dc)	11.34	4	12.54	4	14.0	3	12.61	3	174	6	178	4	182	3	178	6
AKDW 2997-16(dc)	10.52	7	11.53	6	12.5	7	11.53	7	177	4	186	1	177	6	180	3
Mean	11.79		12.85		13.87		12.84		178		179		182		179	
	F. Test		SEm		CD(0.05)		CV(%)	F. Test		SEm		CD(0.05)		CV(%)		
Nitrogen (A)	**		0.15		0.60		5.49	*		1.35		5.31		3.45		
Genotype (B)	**		0.42		1.20		9.79	N.S.		2.87		8.25		4.80		
B within A	N.S.		0.73		2.08			N.S.		4.98		14.28				
A within B			0.69		1.98					4.80		13.78				
	<b>Grains/earhead</b>							<b>1000 Grains weight, g</b>								
UAS 375	22.22	1	21.57	1	21.37	1	21.72	1	38.75	1	39.86	1	40.16	1	39.59	1
HI 8777(d)	17.58	4	19.26	4	19.81	5	18.88	4	35.43	3	36.78	5	37.94	3	36.72	3
MACS 4028(d)	17.41	6	18.62	6	19.84	4	18.62	6	34.92	6	35.26	7	36.58	7	35.59	7
NI 5439 (c)	17.46	5	19.69	3	19.38	6	18.85	5	35.16	5	36.94	3	37.27	5	36.46	5
NIAW 1415 (c)	32.56	2	20.16	2	20.70	2	20.25	2	36.39	2	37.54	2	38.63	2	37.52	2
UAS 446(dc)	18.60	3	19.15	5	20.35	3	19.37	3	35.29	4	36.84	4	37.82	4	36.65	4
AKDW 2997-16(dc)	17.11	7	17.53	7	19.23	7	17.96	7	34.78	7	35.39	6	36.84	6	35.67	6
Mean	18.61		19.43		20.10		19.38		35.82		36.94		37.89		36.88	
	F. Test		SEm		CD(0.05)		CV(%)	F. Test		SEm		CD(0.05)		CV(%)		
Nitrogen (A)	*		0.26		1.01		6.09	**		0.24		0.94		2.99		
Genotype (B)	*		0.79		2.26		12.21	**		0.36		1.05		2.97		
B within A	N.S.		1.37		3.92			N.S.		0.63		1.81				
A within B			1.29		3.70					0.63		1.82				
Date of Sowing :	20.10.2016							Date of Harvesting: 08.02.2017								

**Table 5.2.2. Peninsular Zone**

Genotype	RF-TAS-LON							Pune								
	Nitrogen levels, kg/ha							Nitrogen levels, kg/ha								
	40	Rk	60	Rk	80	Rk	Mean	40	Rk	60	Rk	80	Rk	Mean	Rk	
	<b>Yield, q/ha</b>							<b>Earhead/sq.m.</b>								
UAS 375	14.20	2	15.90	2	16.26	2	15.45	2	227	4	242	3	273	3	247	3
HI 8777(d)	9.91	7	11.45	7	12.96	7	11.44	7	217	6	228	5	255	4	233	5
MACS 4028(d)	12.48	4	13.86	3	14.55	3	13.63	3	228	3	237	4	250	5	238	4
NI 5439 (c)	14.67	1	16.33	1	19.00	1	16.67	1	287	1	290	1	338	1	305	1
NIAW 1415 (c)	12.73	3	12.80	4	14.19	5	13.24	4	225	5	228	5	247	6	233	5
UAS 446(dc)	12.34	5	11.67	6	13.33	6	12.45	6	258	2	247	2	288	2	264	2
AKDW 2997-16(dc)	11.32	6	12.64	5	14.29	4	12.75	5	207	7	215	7	222	7	214	7
Mean	12.52		13.52		14.94		13.66		235		241		268		248	
	F. Test		SEm		CD(0.05)		CV(%)	F. Test		SEm		CD(0.05)		CV(%)		
Nitrogen (A)	*		0.50		1.96		16.78	**		1.92		7.53		3.54		
Genotype (B)	**		0.34		0.97		7.42	**		7.07		20.29		8.55		
B within A	N.S.		0.59		1.68			N.S.		12.25		35.15				
A within B			0.74		2.12					11.50		33.00				
	<b>Grains/earhead</b>							<b>1000 Grains wight, g</b>								
UAS 375	19.61	1	19.99	1	17.97	2	19.19	1	32.00	5	34.00	5	33.33	5	33.11	5
HI 8777(d)	10.01	7	11.05	7	11.17	7	10.74	7	45.67	2	45.33	2	45.67	2	45.56	2
MACS 4028(d)	11.75	6	12.65	5	12.60	5	12.33	6	46.33	1	46.33	1	46.33	1	46.33	1
NI 5439 (c)	16.53	3	19.39	2	18.48	1	18.13	2	31.00	7	29.33	7	30.67	7	30.33	7
NIAW 1415 (c)	17.91	2	18.13	3	17.77	3	17.94	3	31.67	6	31.00	6	32.33	6	31.67	6
UAS 446(dc)	12.70	5	12.62	6	12.28	6	12.54	5	37.67	4	37.33	3	37.67	3	37.56	3
AKDW 2997-16(dc)	14.20	4	15.96	4	17.52	4	15.89	4	38.67	3	37.00	4	37.00	4	37.56	3
Mean	14.67		15.68		15.40		15.25		37.57		37.19		37.57		37.44	
	F. Test		SEm		CD(0.05)		CV(%)	F. Test		SEm		CD(0.05)		CV(%)		
Nitrogen (A)	N.S.		0.62		2.45		18.76	N.S.		0.21		0.82		2.56		
Genotype (B)	**		0.64		1.84		12.59	**		0.34		0.96		2.69		
B within A	N.S.		1.11		3.18			N.S.		0.58		1.67				
A within B			1.20		3.45					0.58		1.66				
Date of Sowing :	24.10.2016							Date of Harvesting: 16.02.2017								



Table 5.2.3. Peninsular Zone

RF-TAS-LON

Washim 2016-17

Genotype	Nitrogen levels, kg/ha								Nitrogen levels, kg/ha								
	40	Rk	60	Rk	80	Rk	Mean	Rk	40	Rk	60	Rk	80	Rk	Mean	Rk	
	<b>Yield, q/ha</b>								<b>Earhead/sq.m.</b>								
UAS 375	17.08	3	21.16	3	24.3	2	20.83	4	165	6	147	7	231	6	181	7	
HI 8777(d)	16.23	6	18.58	6	23.9	5	19.58	7	122	7	239	3	256	4	206	6	
MACS 4028(d)	15.75	7	15.79	7	28.2	1	19.91	6	172	4	235	4	220	7	209	5	
NI 5439 (c)	18.07	2	23.22	1	21.8	7	21.04	3	320	1	221	5	275	2	272	2	
NIAW 1415 (c)	16.52	4	19.90	5	23.5	6	19.98	5	275	2	319	1	260	3	285	1	
UAS 446(dc)	20.72	1	20.48	4	24.2	4	21.78	1	169	5	204	6	307	1	227	4	
AKDW 2997-16(dc)	16.47	5	22.52	2	24.2	3	21.07	2	268	3	281	2	254	5	268	3	
Mean	17.26		20.24		24.30		20.60		213		235		258		235		
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)		
Nitrogen (A)	*		1.12		4.38		24.84		**		4.08		16.01		7.94		
Genotype (B)	N.S.		1.04		2.98		15.12		**		5.21		14.94		6.64		
B within A	N.S.		1.80		5.16				**		9.02		25.87				
A within B			2.00		5.75						9.29		26.66				
	<b>Grains/earhead</b>								<b>1000 Grains wight, g</b>								
UAS 375	27.91	3	37.87	1	27.35	2	31.05	1	37.16	5	37.89	5	38.50	5	37.85	5	
HI 8777(d)	28.16	2	16.43	6	19.46	7	21.35	5	47.43	1	47.41	1	47.80	1	47.55	1	
MACS 4028(d)	25.19	4	18.19	5	35.48	1	26.29	3	36.64	7	37.1	7	37.56	7	37.10	7	
NI 5439 (c)	15.36	6	27.75	2	21.23	5	21.45	4	36.67	6	37.9	4	37.91	6	37.49	6	
NIAW 1415 (c)	15.02	7	16.01	7	21.98	4	17.67	7	39.85	2	38.95	3	41.03	2	39.94	2	
UAS 446(dc)	32.39	1	26.57	3	20.21	6	26.39	2	37.78	4	37.84	6	38.91	4	38.17	4	
AKDW 2997-16(dc)	15.88	5	20.59	4	24.22	3	20.23	6	38.41	3	39.19	2	39.38	3	38.99	3	
Mean	22.85		23.34		24.28		23.49		39.13		39.47		40.15		39.59		
	F. Test		SEm		CD(0.05)		CV(%)		F. Test		SEm		CD(0.05)		CV(%)		
Nitrogen (A)	N.S.		1.21		4.76		23.68		**		0.07		0.29		0.85		
Genotype (B)	**		1.23		3.52		15.67		**		0.21		0.61		1.62		
B within A	**		2.13		6.10				N.S.		0.37		1.06				
A within B			2.31		6.63						0.35		1.01				
Date of Sowing :	28.10.2016								Date of Harvesting:	22.02.2017							

**Table 6.12.1. Northern Hills Zone SPL-2 Almora 2016-17**

Growth Regulator (GR)	Fertilization				Rk	Mean	Rk
	Control	Rk	RDF	150% RDF			
<b>Yield, q/ha</b>							
Control	37.80	3	59.80	4	67.10	4	68.63
Two sprays of CCC (0.2%)	43.83	1	68.07	2	69.73	3	64.40
Two sprays of tebuconazole (0.1 %)	39.77	2	74.97	1	75.90	1	72.27
Two sprays of CCC + tebuconazole	33.80	4	65.50	3	69.87	2	68.17
Mean	38.80		67.08		70.65		68.37
	F. Test		SEm		CD (0.05)		CV (%)
Fertilization (A)	**		1.74		6.01		9.82
Growth regulator (B)	**		1.38		4.03		7.81
B within A	N.S.		2.76		8.05		
A within B			2.95		8.62		
<b>Earhead/sqm</b>							
Control	320	4	390	4	433	4	437
Two sprays of CCC (0.2%)	330	3	408	3	443	3	453
Two sprays of tebuconazole (0.1 %)	342	2	445	1	467	1	468
Two sprays of CCC + tebuconazole	355	1	423	2	450	2	443
Mean	337		417		448		450
	F. Test		SEm		CD (0.05)		CV (%)
Fertilization (A)	**		5.96		20.63		5.00
Growth regulator (B)	**		6.73		19.66		5.65
B within A	N.S.		13.47		39.32		
A within B			13.10		38.24		
<b>Grains/earhead</b>							
Control	24.33	3	32.47	4	34.55	2	33.69
Two sprays of CCC (0.2%)	30.33	1	35.78	1	34.21	4	29.86
Two sprays of tebuconazole (0.1 %)	25.58	2	35.40	2	34.26	3	33.09
Two sprays of CCC + tebuconazole	20.45	4	33.45	3	36.67	1	33.46
Mean	25.17		34.28		34.92		32.52
	F. Test		SEm		CD (0.05)		CV (%)
Fertilization (A)	**		0.62		2.15		6.77
Growth regulator (B)	N.S.		0.75		2.20		8.22
B within A	*		1.50		4.39		
A within B			1.44		4.21		
<b>1000 grains weight, g</b>							
Control	48.48	1	47.34	2	45.00	3	46.56
Two sprays of CCC (0.2%)	43.86	4	46.63	3	45.88	2	47.73
Two sprays of tebuconazole (0.1 %)	45.52	3	47.55	1	47.52	1	46.71
Two sprays of CCC + tebuconazole	46.80	2	46.23	4	42.28	4	46.03
Mean	46.16		46.94		45.17		46.76
	F. Test		SEm		CD (0.05)		CV (%)
Fertilization (A)	N.S.		0.49		1.69		3.65
Growth regulator (B)	N.S.		0.60		1.74		4.46
B within A	N.S.		1.19		3.48		
A within B			1.14		3.33		
<b>Biomass. q/ha</b>							
Control	90.27	4	142.93	4	155.67	4	155.07
Two sprays of CCC (0.2%)	118.07	2	156.83	2	162.63	3	152.80
Two sprays of tebuconazole (0.1 %)	122.67	1	167.83	1	170.73	1	166.63
Two sprays of CCC + tebuconazole	105.93	3	152.23	3	163.83	2	158.00
Mean	109.23		154.96		163.22		158.13
	F. Test		SEm		CD (0.05)		CV (%)
Fertilization (A)	**		5.28		18.29		12.51
Growth regulator (B)	N.S.		5.85		17.06		13.83
B within A	N.S.		11.69		34.12		
A within B			11.42		33.34		
<b>Plant ht., cm</b>							
Control	87.20	1	93.87	2	99.33	1	97.13
Two sprays of CCC (0.2%)	78.07	3	88.20	4	91.73	4	94.53
Two sprays of tebuconazole (0.1 %)	87.13	2	94.60	1	94.87	2	96.93
Two sprays of CCC + tebuconazole	73.27	4	88.60	3	92.73	3	89.27
Mean	81.42		91.32		94.67		94.47
	F. Test		SEm		CD (0.05)		CV (%)
Fertilization (A)	**		1.87		6.46		7.15
Growth regulator (B)	**		1.43		4.17		5.48
B within A	N.S.		2.86		8.35		
A within B			3.10		9.05		
Date of Sowing:	08.11.2016		Date of Harvesting:		15.05.2017		

**Table 6.12.2. Northern Hills Zone SPL-2 Bajaura 2016-17**

Growth Regulator (GR)	Control				Fertilization				Mean	Rk
	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	150%RDF+FYM		
<b>Yield, q/ha</b>										
Control	31.99	2	49.23	1	53.56	2	55.98	1	47.69	2
Two sprays of CCC (0.2%)	27.43	3	45.95	3	51.95	3	52.53	3	44.47	3
Two sprays of tebuconazole (0.1 %)	32.71	1	48.81	2	54.28	1	55.64	2	47.86	1
Two sprays of CCC + tebuconazole	25.24	4	44.64	4	50.95	4	51.42	4	43.06	4
Mean	29.34		47.16		52.69		53.90		45.77	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.72		2.49		5.45			
B within A	**		1.01		2.95		7.64			
A within B	N.S.		2.02		5.89					
			1.89		5.52					
<b>Earhead/sqm</b>										
Control	254	1	330	3	343	3	373	1	325	2
Two sprays of CCC (0.2%)	220	4	330	3	357	1	372	2	320	4
Two sprays of tebuconazole (0.1 %)	251	2	359	1	352	2	368	3	333	1
Two sprays of CCC + tebuconazole	233	3	348	2	340	4	366	4	322	3
Mean	239		342		348		370		325	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		6.27		21.70		6.69			
B within A	N.S.		8.71		25.42		9.29			
A within B	N.S.		17.42		50.85					
			16.34		47.69					
<b>Grains/earhead</b>										
Control	30.20	3	34.91	1	37.35	3	35.63	3	34.52	3
Two sprays of CCC (0.2%)	31.67	1	34.65	2	36.65	4	36.64	1	34.90	1
Two sprays of tebuconazole (0.1 %)	31.43	2	33.17	3	38.53	2	35.68	2	34.70	2
Two sprays of CCC + tebuconazole	27.05	4	33.15	4	39.93	1	34.47	4	33.65	4
Mean	30.09		33.97		38.11		35.60		34.44	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	*		1.29		4.48		13.01			
B within A	N.S.		1.24		3.62		12.46			
A within B	N.S.		2.48		7.23					
			2.51		7.32					
<b>1000 grains weight, g</b>										
Control	41.60	1	42.73	1	41.93	1	42.27	2	42.13	1
Two sprays of CCC (0.2%)	39.80	4	40.40	3	40.00	3	38.60	4	39.70	4
Two sprays of tebuconazole (0.1 %)	41.53	2	41.07	2	40.73	2	42.43	1	41.44	2
Two sprays of CCC + tebuconazole	40.40	3	39.20	4	38.33	4	40.87	3	39.70	3
Mean	40.83		40.85		40.25		41.04		40.74	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	N.S.		0.92		3.17		7.79			
B within A	**		0.45		1.32		3.84			
A within B	N.S.		0.90		2.64					
			1.21		3.52					
<b>Biomass, q/ha</b>										
Control	80.75	2	124.73	1	132.39	2	149.86	1	121.93	1
Two sprays of CCC (0.2%)	72.25	3	115.54	3	124.17	3	131.51	3	110.87	3
Two sprays of tebuconazole (0.1 %)	80.83	1	119.12	2	136.67	1	138.39	2	118.75	2
Two sprays of CCC + tebuconazole	60.34	4	104.43	4	123.79	4	126.79	4	103.84	4
Mean	73.54		115.96		129.26		136.64		113.85	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		1.18		4.09		3.59			
B within A	**		1.96		5.71		5.95			
A within B	N.S.		3.91		11.42					
			3.59		10.47					
<b>Plant ht., cm</b>										
Control	85.71	1	93.37	1	100.09	1	100.89	1	95.01	1
Two sprays of CCC (0.2%)	71.77	3	84.89	2	85.46	3	85.28	3	81.85	3
Two sprays of tebuconazole (0.1 %)	79.51	2	84.61	3	90.63	2	94.35	2	87.27	2
Two sprays of CCC + tebuconazole	60.67	4	74.03	4	81.01	4	81.89	4	74.40	4
Mean	74.41		84.22		89.30		90.60		84.63	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		1.69		5.84		6.90			
B within A	**		0.82		2.39		3.36			
A within B	N.S.		1.64		4.79					
			2.21		6.44					
Date of Sowing:	05.11.2016		Date of Harvesting:	26.05.2017						

**Table 6.12.3. Northern Hills Zone SPL-2 Khudwani 2016-17**

Growth Regulator (GR)	Fertilization									
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	Mean	Rk
<b>Yield, q/ha</b>										
Control	20.64	1	32.58	4	34.56	4	32.80	3	30.15	4
Two sprays of CCC (0.2%)	20.64	1	32.67	3	35.30	3	32.63	4	30.31	3
Two sprays of tebuconazole (0.1 %)	20.64	1	33.63	2	39.00	2	33.63	2	31.73	2
Two sprays of CCC + tebuconazole	20.64	1	33.83	1	41.00	1	34.03	1	32.38	1
Mean	20.64		33.18		37.46		33.28		31.14	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.75		2.59		8.31			
Growth regulator (B)	N.S.		0.68		1.99		7.58			
B within A	N.S.		1.36		3.98					
A within B			1.40		4.08					
<b>Earhead/sqm</b>										
Control	193	4	198	4	200	4	205	4	199	4
Two sprays of CCC (0.2%)	200	3	204	3	209	3	217	3	208	3
Two sprays of tebuconazole (0.1 %)	206	2	214	2	220	2	225	2	216	2
Two sprays of CCC + tebuconazole	214	1	224	1	228	1	234	1	225	1
Mean	203		210		215		220		212	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	*		2.32		8.03		3.79			
Growth regulator (B)	**		3.33		9.71		5.43			
B within A	N.S.		6.65		19.41					
A within B			6.21		18.12					
<b>Grains/earhead</b>										
Control	39.18	1	51.53	1	52.35	1	47.80	1	47.71	1
Two sprays of CCC (0.2%)	37.56	2	49.37	2	49.18	4	43.79	2	44.97	2
Two sprays of tebuconazole (0.1 %)	36.37	3	47.53	3	51.24	3	42.91	3	44.51	3
Two sprays of CCC + tebuconazole	35.05	4	45.23	4	51.38	2	41.07	4	43.18	4
Mean	37.04		48.42		51.04		43.89		45.10	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.91		3.16		7.01			
Growth regulator (B)	N.S.		1.19		3.48		9.15			
B within A	N.S.		2.38		6.95					
A within B			2.26		6.58					
<b>1000 grains weight, g</b>										
Control	27.40	4	31.87	4	33.08	4	33.57	4	31.48	4
Two sprays of CCC (0.2%)	27.53	2	32.55	3	34.35	3	34.38	3	32.20	3
Two sprays of tebuconazole (0.1 %)	27.53	2	33.08	2	34.63	2	34.90	2	32.54	2
Two sprays of CCC + tebuconazole	27.60	1	33.57	1	35.02	1	35.53	1	32.93	1
Mean	27.52		32.77		34.27		34.60		32.29	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.45		1.56		4.83			
Growth regulator (B)	N.S.		0.43		1.24		4.57			
B within A	N.S.		0.85		2.49					
A within B			0.86		2.52					
<b>Biomass. q/ha</b>										
Control	62.45	1	88.61	4	89.49	4	101.00	4	85.39	4
Two sprays of CCC (0.2%)	62.45	1	88.75	3	90.03	3	104.67	3	86.48	3
Two sprays of tebuconazole (0.1 %)	62.45	1	93.76	2	94.69	2	105.65	2	89.14	2
Two sprays of CCC + tebuconazole	62.45	1	95.00	1	96.33	1	107.00	1	90.20	1
Mean	62.45		91.53		92.64		104.58		87.80	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		2.41		8.35		9.52			
Growth regulator (B)	N.S.		1.59		4.63		6.26			
B within A	N.S.		3.17		9.26					
A within B			3.66		10.67					
<b>Plant ht., cm</b>										
Control	53.73	4	60.20	4	72.00	4	85.67	4	67.90	4
Two sprays of CCC (0.2%)	66.27	3	69.59	3	81.67	3	95.67	3	78.30	3
Two sprays of tebuconazole (0.1 %)	68.03	2	74.80	2	84.67	2	101.33	2	82.21	2
Two sprays of CCC + tebuconazole	71.27	1	78.30	1	88.67	1	106.33	1	86.14	1
Mean	64.82		70.72		81.75		97.25		78.64	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		2.31		8.00		10.18			
Growth regulator (B)	**		1.74		5.07		7.65			
B within A	N.S.		3.47		10.13					
A within B			3.79		11.07					
Date of Sowing:	29.10.2016		Date of Harvesting:		03.06.2017					

<b>Table 6.12.4. Northern Hills Zone</b>		<b>SPL-2</b>		<b>Malan</b>		<b>2016-17</b>				
Growth Regulator (GR)	Fertilization									
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	Mean	Rk
<b>Yield, q/ha</b>										
Control	13.19	4	34.84	2	38.88	4	47.51	4	33.61	4
Two sprays of CCC (0.2%)	14.30	3	32.74	3	40.55	3	49.38	2	34.24	3
Two sprays of tebuconazole (0.1 %)	16.22	1	36.82	1	42.32	1	48.24	3	35.90	1
Two sprays of CCC + tebuconazole	15.12	2	32.24	4	42.21	2	49.73	1	34.82	2
Mean	14.71		34.16		40.99		48.72		34.64	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.12		3.86		11.16			
Growth regulator (B)	N.S.		0.70		2.05		7.02			
B within A	N.S.		1.40		4.10					
A within B			1.65		4.82					
<b>Earhead/sqm</b>										
Control	242	4	308	2	318	4	359	3	307	3
Two sprays of CCC (0.2%)	250	3	288	4	325	3	362	2	306	4
Two sprays of tebuconazole (0.1 %)	259	1	323	1	338	2	353	4	318	1
Two sprays of CCC + tebuconazole	252	2	293	3	342	1	363	1	312	2
Mean	251		303		331		359		311	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		8.36		28.93		9.32			
Growth regulator (B)	N.S.		4.15		12.11		4.63			
B within A	N.S.		8.30		24.23					
A within B			11.02		32.18					
<b>Grains/earhead</b>										
Control	13.26	4	27.37	3	29.05	4	31.06	4	25.18	4
Two sprays of CCC (0.2%)	14.18	3	28.50	1	31.48	1	33.07	2	26.81	1
Two sprays of tebuconazole (0.1 %)	15.27	1	27.96	2	30.63	3	32.26	3	26.53	3
Two sprays of CCC + tebuconazole	14.73	2	27.28	4	30.98	2	33.48	1	26.62	2
Mean	14.36		27.78		30.53		32.47		26.28	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.41		1.44		5.47			
Growth regulator (B)	**		0.28		0.81		3.67			
B within A	N.S.		0.56		1.62					
A within B			0.64		1.86					
<b>1000 grains weight, g</b>										
Control	40.87	2	41.34	1	42.11	1	42.54	1	41.72	1
Two sprays of CCC (0.2%)	40.16	4	39.96	4	39.72	4	41.24	3	40.27	4
Two sprays of tebuconazole (0.1 %)	40.88	1	40.87	2	40.85	2	42.39	2	41.25	2
Two sprays of CCC + tebuconazole	40.76	3	40.42	3	39.85	3	40.86	4	40.47	3
Mean	40.67		40.65		40.63		41.76		40.93	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		0.27		0.92		2.26			
Growth regulator (B)	**		0.19		0.56		1.63			
B within A	N.S.		0.38		1.12					
A within B			0.43		1.25					
<b>Biomass. q/ha</b>										
Control	38.63	4	100.26	2	111.90	3	135.45	2	96.56	2
Two sprays of CCC (0.2%)	40.21	3	90.47	3	110.85	4	136.51	1	94.51	4
Two sprays of tebuconazole (0.1 %)	46.03	1	103.44	1	115.35	1	131.48	4	99.07	1
Two sprays of CCC + tebuconazole	42.86	2	89.68	4	112.96	2	134.92	3	95.11	3
Mean	41.93		95.96		112.77		134.59		96.31	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		3.11		10.77		11.20			
Growth regulator (B)	N.S.		1.92		5.60		6.90			
B within A	N.S.		3.84		11.20					
A within B			4.55		13.29					
<b>Plant ht., cm</b>										
Control	66.73	1	83.13	1	85.83	1	94.07	1	82.44	1
Two sprays of CCC (0.2%)	62.60	3	74.10	3	75.10	3	84.73	3	74.13	3
Two sprays of tebuconazole (0.1 %)	65.87	2	77.00	2	80.33	2	86.77	2	77.49	2
Two sprays of CCC + tebuconazole	60.97	4	71.57	4	72.83	4	80.97	4	71.58	4
Mean	64.04		76.45		78.53		86.63		76.41	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.31		4.54		5.95			
Growth regulator (B)	**		0.64		1.88		2.92			
B within A	N.S.		1.29		3.76					
A within B			1.72		5.02					
Date of Sowing:	25.11.2016		Date of Harvesting:		20.05.2017					

**Table 6.13.1. North Western Plains Zone SPL-2 Agra 2016-17**

Growth Regulator (GR)	Fertilization				Agra					
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	Mean	Rk
<b>Yield, g/ha</b>										
Control	22.53	4	54.61	4	56.63	4	58.70	4	48.12	4
Two sprays of CCC (0.2%)	23.65	2	55.76	2	57.88	2	59.72	2	49.25	2
Two sprays of tebuconazole (0.1 %)	23.42	3	55.42	3	57.71	3	59.26	3	48.95	3
Two sprays of CCC + tebuconazole	25.09	1	56.94	1	58.81	1	61.30	1	50.53	1
Mean	23.67		55.68		57.76		59.75		49.21	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.07		0.25		0.51			
B within A	N.S.		0.07		0.22		0.52			
A within B			0.15		0.43					
<b>Earhead/sqm</b>										
Control	250	4	402	4	471	4	475	4	400	4
Two sprays of CCC (0.2%)	256	2	469	2	474	2	476	2	419	2
Two sprays of tebuconazole (0.1 %)	255	3	469	3	473	3	476	2	418	3
Two sprays of CCC + tebuconazole	258	1	472	1	476	1	477	1	421	1
Mean	255		453		473		476		414	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		8.47		29.30		7.08			
B within A	N.S.		8.31		24.25		6.95			
A within B	N.S.		16.61		48.49					
<b>Grains/earhead</b>										
Control	21.45	4	36.03	1	30.34	2	30.93	4	29.69	1
Two sprays of CCC (0.2%)	21.47	3	28.73	4	30.20	3	30.99	3	27.85	4
Two sprays of tebuconazole (0.1 %)	21.52	2	29.10	2	30.41	1	31.17	2	28.05	3
Two sprays of CCC + tebuconazole	22.25	1	29.07	3	29.90	4	31.29	1	28.13	2
Mean	21.67		30.73		30.21		31.10		28.43	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.85		2.95		10.41			
B within A	N.S.		0.94		2.75		11.48			
A within B	N.S.		1.88		5.50					
<b>1000 grains weight, g</b>										
Control	41.97	4	40.46	4	39.62	4	39.95	3	40.50	4
Two sprays of CCC (0.2%)	43.11	2	41.36	2	40.46	2	40.48	2	41.35	2
Two sprays of tebuconazole (0.1 %)	42.72	3	40.63	3	40.10	3	39.93	4	40.84	3
Two sprays of CCC + tebuconazole	43.66	1	41.48	1	41.37	1	41.12	1	41.91	1
Mean	42.86		40.98		40.39		40.37		41.15	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.18		0.61		1.48			
B within A	N.S.		0.10		0.29		0.84			
A within B	N.S.		0.20		0.58					
<b>Biomass, q/ha</b>										
Control	55.21	3	133.79	1	138.74	1	143.82	1	117.89	1
Two sprays of CCC (0.2%)	55.57	2	131.04	2	136.02	2	140.35	3	115.74	3
Two sprays of tebuconazole (0.1 %)	55.04	4	130.21	4	135.63	3	139.26	4	115.03	4
Two sprays of CCC + tebuconazole	57.71	1	130.95	3	135.26	4	141.00	2	116.23	2
Mean	55.88		131.50		136.41		141.11		116.22	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		5.48		18.97		16.73			
B within A	N.S.		5.42		15.81		16.53			
A within B	N.S.		10.83		31.61					
<b>Plant ht., cm</b>										
Control	65.42	1	85.08	1	86.00	1	86.75	1	80.81	1
Two sprays of CCC (0.2%)	64.00	3	83.92	2	84.33	2	85.08	2	79.33	2
Two sprays of tebuconazole (0.1 %)	64.25	2	83.75	3	84.08	3	84.58	3	79.17	3
Two sprays of CCC + tebuconazole	62.58	4	82.75	4	82.67	4	82.42	4	77.60	4
Mean	64.06		83.88		84.27		84.71		79.23	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.12		0.43		0.54			
B within A	**		0.06		0.18		0.26			
A within B	**		0.12		0.35					
<b>Lodging</b>										
Control	0.00		3.00		5.00		4.67		3.17	
Two sprays of CCC (0.2%)	0.00		0.00		0.00		0.00		0.00	
Two sprays of tebuconazole (0.1 %)	0.00		0.00		0.00		0.00		0.00	
Two sprays of CCC + tebuconazole	0.00		0.00		0.00		0.00		0.00	
Mean	0.00		0.75		1.25		1.17			
Date of Sowing:	15.11.2016				Date of Harvesting:				05.04.2017	

**Table 6.13.2. North Western Plains Zone SPL-2 Durgapura 2016-17**

Growth Regulator (GR)	Fertilization				150% RDF + FYM	Rk	Mean	Rk	
	Control	Rk	RDF	Rk					
<b>Yield, q/ha</b>									
Control	22.92	4	47.92	4	52.08	3	52.29	4	
Two sprays of CCC (0.2%)	27.92	2	51.04	2	53.13	2	56.25	2	
Two sprays of tebuconazole (0.1 %)	27.08	3	50.00	3	52.08	3	55.21	3	
Two sprays of CCC + tebuconazole	30.21	1	52.08	1	55.21	1	57.29	1	
Mean	27.03		50.26		53.13		55.26	46.42	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		1.08		3.72		8.02		
B within A	N.S.		1.55		4.53		11.59		
A within B	N.S.		3.10		9.06				
			2.90		8.45				
<b>Earhead/sqm</b>									
Control	256	4	381	4	408	3	409	4	
Two sprays of CCC (0.2%)	271	3	392	2	412	2	428	1	
Two sprays of tebuconazole (0.1 %)	273	2	392	3	407	4	417	3	
Two sprays of CCC + tebuconazole	284	1	403	1	421	1	423	2	
Mean	271		392		412		419	374	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		4.38		15.14		4.06		
B within A	N.S.		6.48		18.91		6.01		
A within B	N.S.		12.96		37.82				
			12.04		35.15				
<b>Grains/earhead</b>									
Control	29.74	4	33.30	3	35.07	1	33.01	2	
Two sprays of CCC (0.2%)	31.90	2	33.76	1	32.36	3	32.67	4	
Two sprays of tebuconazole (0.1 %)	31.77	3	32.73	4	32.00	4	32.75	3	
Two sprays of CCC + tebuconazole	32.42	1	33.52	2	32.47	2	33.84	1	
Mean	31.46		33.33		32.97		33.07	32.71	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	N.S.		0.41		1.42		4.35		
B within A	N.S.		0.71		2.06		7.49		
A within B	N.S.		1.41		4.13				
			1.29		3.77				
<b>1000 grains weight, g</b>									
Control	30.07	4	37.73	4	36.47	4	38.67	4	
Two sprays of CCC (0.2%)	32.17	2	38.57	2	39.83	3	40.23	2	
Two sprays of tebuconazole (0.1 %)	31.10	3	38.97	1	40.03	2	40.37	1	
Two sprays of CCC + tebuconazole	32.67	1	38.47	3	40.33	1	40.00	3	
Mean	31.50		38.43		39.17		39.82	37.23	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.58		2.02		5.43		
B within A	*		0.50		1.46		4.66		
A within B	N.S.		1.00		2.92				
			1.05		3.05				
<b>Biomass, q/ha</b>									
Control	53.96	4	107.57	4	116.56	3	119.23	4	
Two sprays of CCC (0.2%)	61.81	2	112.80	2	116.81	2	123.80	1	
Two sprays of tebuconazole (0.1 %)	59.96	3	111.40	3	115.61	4	122.56	3	
Two sprays of CCC + tebuconazole	64.75	1	115.00	1	119.58	1	123.37	2	
Mean	60.12		111.69		117.14		122.24	102.80	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		2.29		7.94		7.73		
B within A	N.S.		3.44		10.03		11.58		
A within B	N.S.		6.87		20.06				
			6.38		18.61				
<b>Plant ht., cm</b>									
Control	96.3	1	108.7	1	111.7	1	107.7	1	
Two sprays of CCC (0.2%)	88.5	3	104.3	2	108.9	2	105.1	3	
Two sprays of tebuconazole (0.1 %)	93.7	2	104.0	3	108.5	3	105.5	2	
Two sprays of CCC + tebuconazole	86.7	4	100.5	4	105.1	4	103.8	4	
Mean	91.3		104.4		108.6		105.5	102.4	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		1.05		3.64		3.56		
B within A	**		1.27		3.71		4.30		
A within B	N.S.		2.54		7.42				
			2.44		7.12				
<b>Lodging</b>									
Control	0.00		0.00		0.00		0.00	0.00	
Two sprays of CCC (0.2%)	0.00		0.00		0.00		0.00	0.00	
Two sprays of tebuconazole (0.1 %)	0.00		0.00		0.00		0.00	0.00	
Two sprays of CCC + tebuconazole	0.00		0.00		0.00		0.00	0.00	
Mean	0.00		0.00		0.00		0.00	0.00	
Date of Sowing:	15.11.2016				Date of Harvesting:	08.04.2017			

**Table 6.13.3. North Western Plains Zone SPL-2 Hisar 2016-17**

Growth Regulator (GR)	Fertilization				150% RDF Rk	150%RDF+FYM Rk	Mean	Rk
	Control	Rk	RDF	Rk				
<b>Yield,q/ha</b>								
Control	40.83	2	55.13	4	57.63	4	52.82	4
Two sprays of CCC (0.2%)	39.54	4	57.92	3	60.00	1	54.38	2
Two sprays of tebuconazole (0.1 %)	41.31	1	58.04	2	58.01	3	54.02	3
Two sprays of CCC + tebuconazole	40.22	3	58.81	1	58.08	2	54.71	1
Mean	40.48		57.48		58.43		53.98	
F. Test			SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		0.96		3.34		6.19	
Growth regulator (B)	*		0.43		1.26		2.77	
B within A	N.S.		0.86		2.52			
A within B			1.22		3.56			
<b>Earhead/sqm</b>								
Control	247	4	397	3	425	3	377	4
Two sprays of CCC (0.2%)	248	3	385	4	432	1	378	3
Two sprays of tebuconazole (0.1 %)	257	2	408	2	427	2	383	2
Two sprays of CCC + tebuconazole	258	1	415	1	425	3	385	1
Mean	253		401		427		381	
F. Test			SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		11.22		38.83		10.21	
Growth regulator (B)	N.S.		6.55		19.11		5.96	
B within A	N.S.		13.09		38.22			
A within B			15.95		46.56			
<b>Grains/earhead</b>								
Control	42.39	1	35.17	4	34.39	3	36.42	4
Two sprays of CCC (0.2%)	40.68	4	39.48	1	37.29	1	38.28	1
Two sprays of tebuconazole (0.1 %)	41.08	3	36.02	3	33.67	4	36.49	3
Two sprays of CCC + tebuconazole	41.32	2	36.58	2	36.68	2	37.74	2
Mean	41.37		36.81		35.51		37.23	
F. Test			SEm		CD (0.05)		CV (%)	
Fertilization (A)	N.S.		1.97		6.83		18.37	
Growth regulator (B)	N.S.		0.90		2.64		8.42	
B within A	N.S.		1.81		5.28			
A within B			2.52		7.36			
<b>1000 grains weight, g</b>								
Control	39.86	1	39.52	2	39.60	2	39.48	1
Two sprays of CCC (0.2%)	39.52	3	38.41	4	37.39	3	38.30	3
Two sprays of tebuconazole (0.1 %)	39.66	2	39.74	1	40.49	1	39.47	2
Two sprays of CCC + tebuconazole	38.36	4	38.94	3	37.35	4	38.29	4
Mean	39.35		39.15		38.71		38.88	
F. Test			SEm		CD (0.05)		CV (%)	
Fertilization (A)	N.S.		0.40		1.37		3.52	
Growth regulator (B)	**		0.29		0.86		2.61	
B within A	N.S.		0.59		1.71			
A within B			0.64		1.88			
<b>Biomass. q/ha</b>								
Control	110.58	2	143.59	2	149.04	1	138.86	2
Two sprays of CCC (0.2%)	97.76	4	139.74	4	146.15	3	131.97	4
Two sprays of tebuconazole (0.1 %)	112.18	1	145.51	1	148.40	2	140.22	1
Two sprays of CCC + tebuconazole	100.96	3	141.99	3	143.91	4	133.17	3
Mean	105.37		142.71		146.88		136.06	
F. Test			SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		2.01		6.94		5.11	
Growth regulator (B)	**		0.90		2.62		2.28	
B within A	N.S.		1.79		5.23			
A within B			2.54		7.41			
<b>Plant ht., cm</b>								
Control	83.5	2	102.1	1	102.5	2	97.7	2
Two sprays of CCC (0.2%)	76.3	3	89.1	3	92.7	3	88.3	3
Two sprays of tebuconazole (0.1 %)	89.8	1	100.2	2	103.9	1	99.3	1
Two sprays of CCC + tebuconazole	72.9	4	83.5	4	87.1	4	83.1	4
Mean	80.6		93.7		96.5		92.1	
F. Test			SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		1.65		5.70		6.20	
Growth regulator (B)	**		0.77		2.26		2.91	
B within A	N.S.		1.55		4.52			
A within B			2.13		6.20			
<b>Lodging</b>								
Control	0.00		3.00		4.00		2.75	
Two sprays of CCC (0.2%)	0.00		0.00		0.67		0.42	
Two sprays of tebuconazole (0.1 %)	0.00		1.67		4.33		2.50	
Two sprays of CCC + tebuconazole	0.00		0.00		0.00		0.08	
Mean	0.00		1.17		2.25		2.33	
Date of Sowing:	12.11.2016				Date of Harvesting: 10.04.2017			



**Table 6.13.4. North Western Plains Zone SPL-2 Jammu 2016-17**

Growth Regulator (GR)	Fertilization				150% RDF Rk	150%RDF+FYM Rk	Mean	Rk	
	Control	Rk	RDF	Rk					
<b>Yield,q/ha</b>									
Control	23.10	4	42.00	4	44.87	4	48.18	4	
Two sprays of CCC (0.2%)	27.77	3	43.93	3	46.70	3	51.10	3	
Two sprays of tebuconazole (0.1 %)	27.87	2	44.40	2	47.97	2	53.63	2	
Two sprays of CCC + tebuconazole	28.93	1	45.33	1	48.40	1	54.53	1	
Mean	26.92		43.92		46.98		51.86	42.42	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		1.21		4.19		9.88		
B within A	*		1.09		3.18		8.90		
A within B	N.S.		2.18		6.36				
			2.24		6.55				
<b>Earhead/sqm</b>									
Control	237	1	377	1	383	1	388	1	
Two sprays of CCC (0.2%)	222	3	372	2	376	2	383	2	
Two sprays of tebuconazole (0.1 %)	225	2	368	4	374	4	378	4	
Two sprays of CCC + tebuconazole	219	4	370	3	375	3	381	3	
Mean	226		372		377		383	339	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		8.80		30.46		8.99		
B within A	N.S.		8.57		25.03		8.76		
A within B	N.S.		17.15		50.05				
			17.26		50.39				
<b>Grains/earhead</b>									
Control	28.16	4	29.39	4	29.99	4	31.17	4	
Two sprays of CCC (0.2%)	35.60	2	32.21	3	32.98	3	33.66	3	
Two sprays of tebuconazole (0.1 %)	35.58	3	33.68	1	34.64	1	37.44	1	
Two sprays of CCC + tebuconazole	37.66	1	33.67	2	34.53	2	36.84	2	
Mean	34.25		32.24		33.03		34.78	33.57	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	N.S.		1.42		4.91		14.64		
B within A	*		1.45		4.24		14.97		
A within B	N.S.		2.90		8.47				
			2.89		8.42				
<b>1000 grains weight, g</b>									
Control	35.58	1	38.00	1	39.16	1	40.15	1	
Two sprays of CCC (0.2%)	35.29	2	37.13	2	38.13	2	39.66	2	
Two sprays of tebuconazole (0.1 %)	35.07	4	36.15	4	37.17	4	38.20	4	
Two sprays of CCC + tebuconazole	35.17	3	36.33	3	37.59	3	39.63	3	
Mean	35.28		36.90		38.01		39.41	37.40	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.28		0.99		2.64		
B within A	N.S.		0.57		1.68		5.32		
A within B	N.S.		1.15		3.36				
			1.04		3.02				
<b>Biomass. q/ha</b>									
Control	48.98	4	93.24	4	104.09	4	117.55	4	
Two sprays of CCC (0.2%)	58.87	3	97.53	3	108.34	3	124.68	3	
Two sprays of tebuconazole (0.1 %)	59.15	2	98.57	2	111.28	2	130.86	2	
Two sprays of CCC + tebuconazole	61.34	1	100.64	1	112.29	1	133.06	1	
Mean	57.08		97.50		109.00		126.54	97.53	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		2.43		8.40		8.62		
B within A	*		2.23		6.52		7.93		
A within B	N.S.		4.46		13.03				
			4.57		13.33				
<b>Plant ht., cm</b>									
Control	67.6	1	86.0	1	90.7	1	92.1	1	
Two sprays of CCC (0.2%)	62.2	2	77.2	2	84.4	2	85.7	2	
Two sprays of tebuconazole (0.1 %)	61.6	3	74.5	4	82.4	4	83.9	4	
Two sprays of CCC + tebuconazole	61.0	4	76.1	3	83.1	3	84.5	3	
Mean	63.1		78.5		85.2		86.5	78.3	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		1.19		4.12		5.27		
B within A	**		1.81		5.28		8.00		
A within B	N.S.		3.62		10.56				
			3.35		9.79				
<b>Lodging</b>									
Control	0.00		9.64		18.37		19.92	11.98	
Two sprays of CCC (0.2%)	0.00		0.00		0.00		0.00	0.00	
Two sprays of tebuconazole (0.1 %)	0.00		0.00		0.00		0.00	0.00	
Two sprays of CCC + tebuconazole	0.00		0.00		0.00		0.00	0.00	
Mean	0.00		2.41		4.59		4.98		
Date of Sowing:	15.11.2016				Date of Harvesting:	01.05.2017			

**Table 6.13.5. North Western Plains Zone SPL-2 Karnal 2016-17**

Growth Regulator (GR)	Fertilization									
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	Mean	Rk
<b>Yield, q/ha</b>										
Control	14.94	4	57.78	4	56.84	4	60.47	3	47.51	4
Two sprays of CCC (0.2%)	15.22	3	58.39	3	59.90	2	62.35	2	48.97	2
Two sprays of tebuconazole (0.1 %)	15.33	2	59.40	2	57.09	3	59.46	4	47.82	3
Two sprays of CCC + tebuconazole	15.92	1	60.59	1	60.42	1	62.96	1	49.97	1
Mean	15.35		59.04		58.56		61.31		48.57	
F. Test			SEm			CD (0.05)			CV (%)	
Fertilization (A)			**			0.64			2.20	4.54
Growth regulator (B)			**			0.41			1.20	2.93
B within A			N.S.			0.82			2.40	
A within B						0.95			2.79	
<b>Earhead/sqm</b>										
Control	190	4	409	1	440	1	438	1	369	1
Two sprays of CCC (0.2%)	195	3	407	2	421	2	385	4	352	4
Two sprays of tebuconazole (0.1 %)	198	1	389	3	393	4	435	2	354	2
Two sprays of CCC + tebuconazole	198	2	378	4	406	3	428	3	352	3
Mean	195		396		415		422		357	
F. Test			SEm			CD (0.05)			CV (%)	
Fertilization (A)			**			6.70			23.18	6.50
Growth regulator (B)			N.S.			8.20			23.93	7.96
B within A			N.S.			16.40			47.86	
A within B						15.70			45.82	
<b>Grains/earhead</b>										
Control	18.92	2	33.33	4	32.07	4	34.37	3	29.67	4
Two sprays of CCC (0.2%)	18.75	3	34.64	3	34.30	3	40.88	1	32.14	2
Two sprays of tebuconazole (0.1 %)	18.73	4	36.30	2	35.36	2	33.68	4	31.02	3
Two sprays of CCC + tebuconazole	19.79	1	39.32	1	35.75	1	36.62	2	32.87	1
Mean	19.05		35.90		34.37		36.39		31.43	
F. Test			SEm			CD (0.05)			CV (%)	
Fertilization (A)			**			0.99			3.41	10.86
Growth regulator (B)			N.S.			0.84			2.44	9.22
B within A			N.S.			1.67			4.88	
A within B						1.75			5.11	
<b>1000 grains weight, g</b>										
Control	41.37	3	42.46	2	40.31	4	40.21	2	41.09	3
Two sprays of CCC (0.2%)	41.61	2	41.47	3	41.57	2	40.20	3	41.21	2
Two sprays of tebuconazole (0.1 %)	42.72	1	42.61	1	41.27	3	40.69	1	41.82	1
Two sprays of CCC + tebuconazole	40.92	4	41.09	4	41.97	1	40.17	4	41.04	4
Mean	41.66		41.91		41.28		40.32		41.29	
F. Test			SEm			CD (0.05)			CV (%)	
Fertilization (A)			N.S.			0.63			2.17	5.25
Growth regulator (B)			N.S.			0.29			0.86	2.46
B within A			N.S.			0.59			1.71	
A within B						0.81			2.35	
<b>Biomass. q/ha</b>										
Control	40.28	4	149.65	2	148.61	3	151.39	3	122.48	4
Two sprays of CCC (0.2%)	42.71	1	149.31	3	152.78	1	151.39	4	124.05	3
Two sprays of tebuconazole (0.1 %)	42.71	1	151.39	1	146.18	4	158.68	1	124.74	1
Two sprays of CCC + tebuconazole	42.01	3	149.31	3	149.31	2	156.60	2	124.31	2
Mean	41.93		149.91		149.22		154.51		123.89	
F. Test			SEm			CD (0.05)			CV (%)	
Fertilization (A)			**			1.66			5.74	4.64
Growth regulator (B)			N.S.			1.12			3.25	3.12
B within A			N.S.			2.23			6.51	
A within B						2.55			7.43	
<b>Plant ht., cm</b>										
Control	72.1	2	108.6	2	108.8	1	109.9	1	99.8	1
Two sprays of CCC (0.2%)	70.6	3	103.9	3	100.5	3	102.7	4	94.4	3
Two sprays of tebuconazole (0.1 %)	74.9	1	108.6	1	105.8	2	108.3	2	99.4	2
Two sprays of CCC + tebuconazole	64.1	4	98.6	4	97.8	4	103.4	3	91.0	4
Mean	70.4		104.9		103.2		106.1		96.2	
F. Test			SEm			CD (0.05)			CV (%)	
Fertilization (A)			**			1.48			5.14	5.35
Growth regulator (B)			**			0.79			2.30	2.83
B within A			N.S.			1.57			4.59	
A within B						2.01			5.88	
<b>Lodging</b>										
Control	0.00		7.50		24.44		20.00		12.99	
Two sprays of CCC (0.2%)	0.00		4.54		14.86		23.06		10.61	
Two sprays of tebuconazole (0.1 %)	0.00		10.42		19.44		26.67		14.13	
Two sprays of CCC + tebuconazole	0.00		1.13		7.22		8.33		4.17	
Mean	0.00		5.90		16.49		19.51			
Date of Sowing:	03.11.2016				Date of Harvesting:				12.04.2017	

**Table 6.13.6. North Western Plains Zone SPL-2 Ludhiana 2016-17**

Growth Regulator (GR)	Fertilization				150%RDF Rk	150%RDF+FYM Rk	Mean	Rk
	Control	Rk	RDF	Rk				
<b>Yield,q/ha</b>								
Control	39.49	3	63.20	3	62.16	3	57.40	4
Two sprays of CCC (0.2%)	38.46	4	63.29	2	63.75	2	61.73	2
Two sprays of tebuconazole (0.1 %)	39.52	2	63.73	1	62.16	4	60.47	3
Two sprays of CCC + tebuconazole	41.60	1	63.07	4	66.93	1	65.50	1
Mean	39.77		63.32		63.75		61.27	57.03
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)	
Growth regulator (B)	**		1.33		4.59		8.06	
B within A	*		0.54		1.57		3.27	
A within B			1.08		3.14			
			1.62		4.73			
<b>Earhead/sqm</b>								
Control	270	4	400	4	407	4	408	4
Two sprays of CCC (0.2%)	271	2	408	2	410	3	412	2
Two sprays of tebuconazole (0.1 %)	272	1	407	3	411	2	413	1
Two sprays of CCC + tebuconazole	271	2	412	1	412	1	412	2
Mean	271		407		410		411	375
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)	
Growth regulator (B)	**		2.82		9.76		2.61	
B within A	N.S.		2.30		6.70		2.12	
A within B	N.S.		4.59		13.41			
			4.88		14.23			
<b>Grains/earhead</b>								
Control	40.65	3	46.08	2	45.35	2	42.25	4
Two sprays of CCC (0.2%)	39.50	4	43.14	4	44.88	4	43.24	3
Two sprays of tebuconazole (0.1 %)	41.24	2	47.45	1	45.03	3	43.60	2
Two sprays of CCC + tebuconazole	43.10	1	43.38	3	47.30	1	43.81	1
Mean	41.12		45.01		45.64		43.22	43.75
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)	
Growth regulator (B)	N.S.		1.30		4.50		10.29	
B within A	*		0.45		1.32		3.58	
A within B			0.91		2.64			
			1.52		4.43			
<b>1000 grains weight, g</b>								
Control	36.00	1	34.33	3	33.67	3	33.33	4
Two sprays of CCC (0.2%)	36.00	1	36.00	1	34.67	1	34.67	2
Two sprays of tebuconazole (0.1 %)	35.33	4	33.00	4	33.67	3	33.67	3
Two sprays of CCC + tebuconazole	35.67	3	35.33	2	34.33	2	36.33	1
Mean	35.75		34.67		34.08		34.50	34.75
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)	
Growth regulator (B)	*		0.26		0.88		2.55	
B within A	*		0.36		1.06		3.61	
A within B	N.S.		0.72		2.11			
			0.68		1.97			
<b>Biomass. q/ha</b>								
Control	145.98	1	189.00	2	195.96	1	199.37	2
Two sprays of CCC (0.2%)	135.29	4	184.46	3	185.90	4	189.79	3
Two sprays of tebuconazole (0.1 %)	140.40	2	189.94	1	195.21	2	199.79	1
Two sprays of CCC + tebuconazole	135.47	3	182.51	4	187.30	3	187.30	4
Mean	139.29		186.48		191.09		194.06	177.73
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)	
Growth regulator (B)	**		3.31		11.46		6.46	
B within A	**		1.37		4.00		2.67	
A within B	N.S.		2.74		8.00			
			4.07		11.89			
<b>Plant ht., cm</b>								
Control	91.7	2	92.0	1	90.6	2	96.8	1
Two sprays of CCC (0.2%)	89.6	3	86.2	3	86.9	3	90.3	3
Two sprays of tebuconazole (0.1 %)	91.7	1	91.9	2	93.7	1	95.8	2
Two sprays of CCC + tebuconazole	86.1	4	85.5	4	86.2	4	86.8	4
Mean	89.8		88.9		89.3		92.4	90.1
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)	
Growth regulator (B)	N.S.		1.63		5.65		6	
B within A	**		0.75		2.17		3	
A within B	N.S.		1.49		4.35			
			2.08		6.07			
<b>Lodging</b>								
Control	0.00		3.33		5.67		7.17	4.04
Two sprays of CCC (0.2%)	0.00		2.00		4.67		6.83	3.38
Two sprays of tebuconazole (0.1 %)	0.00		2.83		5.33		7.00	3.79
Two sprays of CCC + tebuconazole	0.00		1.17		2.50		3.67	1.83
Mean	0.00		2.33		4.54		6.17	
Date of Sowing:	09.11.2016				Date of Harvesting: 22.04.2017			

**Table 6.13.7. North Western Plains Zone SPL-2 Pantnagar 2016-17**

Growth Regulator (GR)	Fertilization						150%RDF+FYM	Rk	Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk				
<b>Yield, q/ha</b>										
Control	30.43	3	53.30	3	41.97	4	38.77	4	41.12	4
Two sprays of CCC (0.2%)	27.50	4	52.40	4	44.77	2	49.37	2	43.51	2
Two sprays of tebuconazole (0.1 %)	31.83	2	54.90	1	42.23	3	41.20	3	42.54	3
Two sprays of CCC + tebuconazole	32.37	1	54.80	2	50.37	1	51.03	1	47.14	1
<b>Mean</b>	<b>30.53</b>		<b>53.85</b>		<b>44.83</b>		<b>45.09</b>		<b>43.58</b>	
F. Test	**		SEM		CD (0.05)		CV (%)			
Fertilization (A)	**		2.00		6.92		15.90			
Growth regulator (B)	*		1.32		3.87		10.53			
B within A	N.S.		2.65		7.73					
A within B			3.04		8.89					
<b>Earhead/sqm</b>										
Control	306	1	364	4	433	2	448		388	2
Two sprays of CCC (0.2%)	271	3	393	2	389	4	435		372	4
Two sprays of tebuconazole (0.1 %)	284	2	381	3	440	1	452		389	1
Two sprays of CCC + tebuconazole	245	4	419	1	420	3	447	3	383	3
<b>Mean</b>	<b>277</b>		<b>389</b>		<b>420</b>		<b>446</b>		<b>383</b>	
F. Test	**		SEM		CD (0.05)		CV (%)			
Fertilization (A)	**		14.38		49.76		15.04			
Growth regulator (B)	N.S.		11.06		32.27		12.00			
B within A	N.S.		22.11		64.54					
A within B			23.94		69.89					
<b>Grains/earhead</b>										
Control	23.58	4	38.17	1	24.00	4	21.02	4	26.69	4
Two sprays of CCC (0.2%)	24.44	3	33.84	4	31.13	1	28.51	1	29.48	2
Two sprays of tebuconazole (0.1 %)	26.31	2	34.25	3	24.49	3	21.78	3	26.71	3
Two sprays of CCC + tebuconazole	32.72	1	34.95	2	30.33	2	28.33	2	31.58	1
<b>Mean</b>	<b>26.76</b>		<b>35.30</b>		<b>27.49</b>		<b>24.91</b>		<b>28.62</b>	
F. Test	*		SEM		CD (0.05)		CV (%)			
Fertilization (A)	*		1.53		4.28		18.47			
Growth regulator (B)	N.S.		1.49		4.36		18.08			
B within A	N.S.		2.99		8.72					
A within B			3.00		8.77					
<b>1000 grains weight, g</b>										
Control	43.57	1	39.27	3	41.20	1	41.57	2	41.40	2
Two sprays of CCC (0.2%)	42.00	3	40.10	2	36.80	4	39.83	4	39.70	4
Two sprays of tebuconazole (0.1 %)	42.63	2	42.37	1	38.93	3	42.00	1	41.48	1
Two sprays of CCC + tebuconazole	41.60	4	37.98	4	40.23	2	40.50	3	40.07	3
<b>Mean</b>	<b>42.45</b>		<b>39.98</b>		<b>39.29</b>		<b>40.98</b>		<b>40.66</b>	
F. Test	N.S.		SEM		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		0.77		2.68		6.59			
Growth regulator (B)	N.S.		0.70		2.05		5.99			
B within A	N.S.		1.41		4.11					
A within B			1.44		4.21					
<b>Biomass. q/ha</b>										
Control	82.9	1	148.30	2	136.07	4	144.23	2	127.89	2
Two sprays of CCC (0.2%)	72.10	3	141.57	4	146.30	2	142.50	3	125.62	4
Two sprays of tebuconazole (0.1 %)	76.20	2	157.17	1	144.33	3	139.47	4	129.29	1
Two sprays of CCC + tebuconazole	68.70	4	143.57	3	146.97	1	146.93	1	126.54	3
<b>Mean</b>	<b>74.99</b>		<b>147.65</b>		<b>143.42</b>		<b>143.28</b>		<b>127.34</b>	
F. Test	**		SEM		CD (0.05)		CV (%)			
Fertilization (A)	**		5.82		20.13		15.82			
Growth regulator (B)	N.S.		2.66		7.75		7.22			
B within A	N.S.		5.31		15.50					
A within B			7.42		21.64					
<b>Plant ht., cm</b>										
Control	82.7	1	97.6	2	92.6	1	93.3	2	91.6	2
Two sprays of CCC (0.2%)	69.0	3	88.3	3	88.5	3	90.7	3	84.1	3
Two sprays of tebuconazole (0.1 %)	81.5	2	97.7	1	92.4	2	99.7	1	92.8	1
Two sprays of CCC + tebuconazole	62.6	4	85.0	4	79.9	4	83.9	4	77.9	4
<b>Mean</b>	<b>73.9</b>		<b>92.2</b>		<b>88.4</b>		<b>91.9</b>		<b>86.6</b>	
F. Test	**		SEM		CD (0.05)		CV (%)			
Fertilization (A)	**		2.05		7.10		8.21			
Growth regulator (B)	**		1.59		4.65		6.37			
B within A	N.S.		3.19		9.30					
A within B			3.44		10.03					
<b>Lodging</b>										
Control	0.0		0.0		18.1		21.5		9.9	
Two sprays of CCC (0.2%)	0.0		0.0		6.5		4.4		2.7	
Two sprays of tebuconazole (0.1 %)	0.0		0.0		18.1		20.7		9.7	
Two sprays of CCC + tebuconazole	0.0		0.0		4.5		0.0		1.1	
<b>Mean</b>	<b>0.0</b>		<b>0.0</b>		<b>11.8</b>		<b>11.6</b>			
Date of Sowing:	16.11.2016				Date of Harvesting:				11.04.2017	

**Table 6.14.1. North Eastern Plains Zone** **SPL-2** **Burdwan** **2016-17**

Growth regulator	Fertilization				150% RDF + FYM				Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk		
<b>Yield, q/ha</b>										
Control	11.56	4	39.28	4	41.22	4	41.94	4	33.50	4
2 sprays of CCC (0.2%)	12.48	2	41.02	2	42.82	2	44.15	2	35.12	2
2 sprays of tebuconazole (0.1 %)	12.25	3	40.00	3	41.87	3	42.45	3	34.14	3
2 sprays of CCC +tebuconazole	12.86	1	41.19	1	43.00	1	44.25	1	35.32	1
<b>MEAN</b>	<b>12.29</b>		<b>40.37</b>		<b>42.23</b>		<b>43.20</b>		<b>34.52</b>	
<b>Fertilization (A)</b>										
F. Test **										
SEm 0.48										
CD (0.05) 1.67										
CV (%) 4.83										
<b>Growth regulator (B)</b>										
* 0.47										
1.37										
4.72										
<b>B within A</b>										
N.S. 0.94										
2.75										
<b>A within B</b>										
0.95 2.76										
<b>Earhead/sqm</b>										
Control	157	4	270	4	280	4	282	4	247	4
2 sprays of CCC (0.2%)	165	2	278	2	293	2	298	2	259	2
2 sprays of tebuconazole (0.1 %)	163	3	275	3	285	3	285	3	252	3
2 sprays of CCC +tebuconazole	167	1	283	1	295	1	302	1	262	1
<b>MEAN</b>	<b>163</b>		<b>277</b>		<b>288</b>		<b>292</b>		<b>255</b>	
<b>Fertilization (A)</b>										
F. Test **										
SEm 2.89										
CD (0.05) 9.99										
CV (%) 3.92										
<b>Growth regulator (B)</b>										
N.S. 3.93										
11.47										
5.34										
<b>B within A</b>										
N.S. 7.86										
22.94										
<b>A within B</b>										
7.39 21.58										
<b>Grains/Earhead</b>										
Control	20.39	4	37.31	1	37.53	1	37.54	1	33.19	1
2 sprays of CCC (0.2%)	20.46	2	36.90	3	36.37	3	36.75	3	32.62	3
2 sprays of tebuconazole (0.1 %)	20.40	3	37.28	2	36.86	2	37.19	2	32.93	2
2 sprays of CCC +tebuconazole	20.85	1	36.32	4	36.15	4	36.25	4	32.39	4
<b>MEAN</b>	<b>20.53</b>		<b>36.95</b>		<b>36.73</b>		<b>36.93</b>		<b>32.79</b>	
<b>Fertilization (A)</b>										
F. Test **										
SEm 0.25										
CD (0.05) 0.86										
CV (%) 2.62										
<b>Growth regulator (B)</b>										
N.S. 0.34										
1.01										
3.64										
<b>B within A</b>										
N.S. 0.69										
2.01										
<b>A within B</b>										
0.65 1.89										
<b>1000 grains weight, g</b>										
Control	36.13	4	39.00	4	39.23	4	39.70	4	38.52	4
2 sprays of CCC (0.2%)	36.97	2	39.97	2	40.17	2	40.30	2	39.35	2
2 sprays of tebuconazole (0.1 %)	36.73	3	39.07	3	39.93	3	40.10	3	38.96	3
2 sprays of CCC +tebuconazole	37.00	1	40.03	1	40.33	1	40.47	1	39.46	1
<b>MEAN</b>	<b>36.71</b>		<b>39.52</b>		<b>39.92</b>		<b>40.14</b>		<b>39.07</b>	
<b>Fertilization (A)</b>										
F. Test **										
SEm 0.17										
CD (0.05) 0.60										
CV (%) 1.53										
<b>Growth regulator (B)</b>										
* 0.24										
0.71										
2.15										
<b>B within A</b>										
N.S. 0.48										
1.41										
<b>A within B</b>										
0.45 1.32										
<b>Height, cm</b>										
Control	61.67	1	92.00	1	99.00	1	101.00	1	88.42	1
2 sprays of CCC (0.2%)	57.67	3	84.67	3	89.33	3	92.67	3	81.08	3
2 sprays of tebuconazole (0.1 %)	59.00	2	90.00	2	94.67	2	98.00	2	85.42	2
2 sprays of CCC +tebuconazole	56.67	4	83.33	4	87.00	4	90.00	4	79.25	4
<b>MEAN</b>	<b>58.75</b>		<b>87.50</b>		<b>92.50</b>		<b>95.42</b>		<b>83.54</b>	
<b>Fertilization (A)</b>										
F. Test **										
SEm 1.27										
CD (0.05) 4.39										
CV (%) 5.25										
<b>Growth regulator (B)</b>										
** 0.39										
1.15										
1.63										
<b>B within A</b>										
** 0.79										
2.30										
<b>A within B</b>										
1.44 4.20										
<b>Lodging Score</b>										
Control	0.00	1	11.83	1	29.89	1	39.53	1	20.31	1
2 sprays of CCC (0.2%)	0.00	1	3.40	3	9.71	3	10.92	3	6.01	3
2 sprays of tebuconazole (0.1 %)	0.00	1	6.99	2	22.30	2	22.37	2	12.92	2
2 sprays of CCC +tebuconazole	0.00	1	2.80	4	8.65	4	10.77	4	5.55	4
<b>MEAN</b>	<b>0.00</b>		<b>6.25</b>		<b>17.64</b>		<b>20.90</b>		<b>11.20</b>	
<b>Fertilization (A)</b>										
F. Test **										
SEm 0.40										
CD (0.05) 1.37										
CV (%) 12.27										
<b>Growth regulator (B)</b>										
** 0.73										
2.12										
22.45										
<b>B within A</b>										
** 1.45										
4.24										
<b>A within B</b>										
1.32 3.85										
Date of Sowing:	25.11.2016				Date of Harvesting				27.03.2017	

**Table 6.14.2. North Eastern Plains Zone SPL-2 Coochbehar 2016-17**

Growth regulator	Fertilization				Yield, q/ha				Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk		
Control	10.53	3	36.20	4	51.93	4	53.87	4	38.13	4
2 sprays of CCC (0.2%)	10.80	2	38.13	2	58.83	2	59.67	2	41.86	2
2 sprays of tebuconazole (0.1 %)	10.00	4	41.67	1	60.17	1	60.27	1	43.03	1
2 sprays of CCC +tebuconazole	11.10	1	36.37	3	55.47	3	56.97	3	39.98	3
<b>MEAN</b>	<b>10.61</b>		<b>38.09</b>		<b>56.60</b>		<b>57.69</b>		<b>40.75</b>	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)		**			0.72		2.48		6.10	
Growth regulator (B)		**			0.84		2.47		7.18	
B within A		N.S.			1.69		4.93			
A within B					1.63		4.76			
		<b>Earhead/sqm</b>								
Control	124	4	288	3	338	3	349	3	275	3
2 sprays of CCC (0.2%)	136	2	292	2	353	2	355	2	284	2
2 sprays of tebuconazole (0.1 %)	141	1	298	1	362	1	366	1	292	1
2 sprays of CCC +tebuconazole	133	3	283	4	321	4	337	4	268	4
<b>MEAN</b>	<b>133</b>		<b>290</b>		<b>344</b>		<b>352</b>		<b>280</b>	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)		**			8.08		27.98		10.01	
Growth regulator (B)		N.S.			6.76		19.72		8.37	
B within A		N.S.			13.51		39.44			
A within B					14.22		41.52			
		<b>Grains/Earhead</b>								
Control	26.17	2	33.96	2	40.51	1	39.97	3	35.15	1
2 sprays of CCC (0.2%)	24.53	3	32.94	3	38.92	3	40.18	2	34.14	3
2 sprays of tebuconazole (0.1 %)	22.02	4	34.25	1	38.55	4	38.11	4	33.23	4
2 sprays of CCC +tebuconazole	26.49	1	30.77	4	40.03	2	40.19	1	34.37	2
<b>MEAN</b>	<b>24.80</b>		<b>32.98</b>		<b>39.50</b>		<b>39.61</b>		<b>34.22</b>	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)		**			1.35		4.68		13.68	
Growth regulator (B)		N.S.			1.11		3.24		11.25	
B within A		N.S.			2.22		6.49			
A within B					2.35		6.87			
		<b>1000 grains weight, g</b>								
Control	32.57	1	37.03	4	38.37	4	38.90	4	36.72	4
2 sprays of CCC (0.2%)	32.53	2	40.07	3	42.77	3	41.93	3	39.33	3
2 sprays of tebuconazole (0.1 %)	32.47	3	40.93	2	43.23	2	43.17	2	39.95	2
2 sprays of CCC +tebuconazole	31.63	4	42.03	1	43.27	1	43.53	1	40.12	1
<b>MEAN</b>	<b>32.30</b>		<b>40.02</b>		<b>41.91</b>		<b>41.88</b>		<b>39.03</b>	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)		**			0.21		0.73		1.88	
Growth regulator (B)		**			0.25		0.72		2.20	
B within A		**			0.49		1.44			
A within B					0.48		1.40			
		<b>Height, cm</b>								
Control	70.63	1	98.10	2	103.33	1	105.67	1	94.43	1
2 sprays of CCC (0.2%)	60.33	3	93.27	3	97.20	3	95.00	3	86.45	3
2 sprays of tebuconazole (0.1 %)	64.17	2	99.87	1	103.33	1	103.53	2	92.73	2
2 sprays of CCC +tebuconazole	54.57	4	89.43	4	94.40	4	92.63	4	82.76	4
<b>MEAN</b>	<b>62.43</b>		<b>95.17</b>		<b>99.57</b>		<b>99.21</b>		<b>89.09</b>	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)		**			0.51		1.77		1.99	
Growth regulator (B)		**			0.64		1.85		2.47	
B within A		N.S.			1.27		3.71			
A within B					1.21		3.54			
		<b>Biomass, q/ha</b>								
Control	45.25	3	91.14	4	121.72	4	126.26	4	96.09	4
2 sprays of CCC (0.2%)	46.43	2	95.89	2	137.92	2	139.96	2	105.05	2
2 sprays of tebuconazole (0.1 %)	42.98	4	104.90	1	141.28	1	141.59	1	107.69	1
2 sprays of CCC +tebuconazole	47.59	1	91.57	3	130.03	3	133.65	3	100.71	3
<b>MEAN</b>	<b>45.56</b>		<b>95.88</b>		<b>132.74</b>		<b>135.36</b>		<b>102.38</b>	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)		**			1.11		3.84		3.76	
Growth regulator (B)		**			2.10		6.13		7.10	
B within A		N.S.			4.20		12.25			
A within B					3.80		11.09			
Date of Sowing:	18.11.2016				Date of Harvesting				31.03.2017	

**Table 6.14.3. North Eastern Plains Zone**

Growth regulator	Fertilization				SPL-2		Faizabad		2016-17	
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk	Mean	Rk
<b>Yield, q/ha</b>										
Control	15.45	3	42.17	4	46.20	4	49.43	4	38.32	4
2 sprays of CCC (0.2%)	18.29	2	50.23	2	54.44	2	56.39	2	44.84	2
2 sprays of tebuconazole (0.1 %)	15.15	4	45.87	3	49.28	3	50.13	3	40.11	3
2 sprays of CCC +tebuconazole	19.17	1	52.38	1	57.47	1	59.87	1	47.22	1
MEAN	17.02		47.66		51.85		53.96		42.62	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			0.45	1.56		3.65	
B within A			N.S.			0.78	2.29		6.37	
A within B						1.57	4.57			
<b>Earhead/sqm</b>										
Control	210	4	300	4	315	4	325	4	288	4
2 sprays of CCC (0.2%)	223	2	345	2	365	2	425	2	340	2
2 sprays of tebuconazole (0.1 %)	215	3	325	3	345	3	415	3	325	3
2 sprays of CCC +tebuconazole	235	1	365	1	395	1	435	1	358	1
MEAN	221		334		355		400		327	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			2.07	7.17		2.19	
B within A			**			3.87	11.30		4.09	
A within B						7.74	22.59			
<b>Grains/Earhead</b>										
Control	20.85	3	38.86	1	38.36	1	38.70	1	34.19	1
2 sprays of CCC (0.2%)	22.55	1	38.17	2	38.11	2	32.17	3	32.75	2
2 sprays of tebuconazole (0.1 %)	19.98	4	38.14	3	37.29	3	30.03	4	31.36	4
2 sprays of CCC +tebuconazole	22.50	2	37.27	4	36.84	4	32.72	2	32.33	3
MEAN	21.47		38.11		37.65		33.41		32.66	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			0.58	2.02		6.19	
B within A			**			0.38	1.11		4.04	
A within B						0.76	2.22			
<b>1000 grains weight, g</b>										
Control	35.20	4	36.27	4	38.23	4	39.30	4	37.25	4
2 sprays of CCC (0.2%)	36.27	1	38.30	2	39.23	2	41.30	2	38.78	2
2 sprays of tebuconazole (0.1 %)	35.27	3	37.00	3	38.30	3	40.23	3	37.70	3
2 sprays of CCC +tebuconazole	36.23	2	38.57	1	39.50	1	42.07	1	39.09	1
MEAN	35.74		37.53		38.82		40.73		38.20	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			*			0.60	2.08		5.45	
B within A			N.S.			0.43	1.27		3.93	
A within B						0.87	2.53			
<b>Height, cm</b>										
Control	73.90	1	90.67	2	93.23	1	95.80	1	88.40	1
2 sprays of CCC (0.2%)	71.13	3	86.33	3	87.90	3	88.00	3	83.34	3
2 sprays of tebuconazole (0.1 %)	72.13	2	91.33	1	91.67	2	91.90	2	86.76	2
2 sprays of CCC +tebuconazole	69.00	4	82.90	4	84.00	4	85.13	4	80.26	4
MEAN	71.54		87.81		89.20		90.21		84.69	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			0.60	2.08		2.46	
B within A			N.S.			0.61	1.79		2.50	
A within B						1.22	3.57			
<b>Biomass, q/ha</b>										
Control	37.09	3	103.33	4	115.57	4	126.07	4	95.51	4
2 sprays of CCC (0.2%)	43.97	2	123.08	2	136.12	2	143.83	2	111.75	2
2 sprays of tebuconazole (0.1 %)	36.40	4	112.43	3	123.22	3	127.83	3	99.97	3
2 sprays of CCC +tebuconazole	46.03	1	128.31	1	143.65	1	152.60	1	117.65	1
MEAN	40.87		116.79		129.64		137.58		106.22	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			1.11	3.84		3.62	
B within A			N.S.			1.95	5.69		6.36	
A within B						3.90	11.38			
Date of Sowing:	20.11.2016				Date of Harvesting					

Table 6.14.4. North Eastern Plains Zone			SPL-2		Kalyani		2016-17			
Growth regulator	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk		
<b>Yield, q/ha</b>										
Control	10.40	4	30.77	3	34.14	4	33.64	4	27.24	4
2 sprays of CCC (0.2%)	12.03	2	32.82	2	34.82	2	34.56	2	28.56	2
2 sprays of tebuconazole (0.1 %)	13.30	1	29.45	4	34.24	3	36.72	1	28.43	3
2 sprays of CCC +tebuconazole	11.00	3	35.92	1	37.12	1	33.71	3	29.44	1
MEAN	11.68		32.24		35.08		34.66		28.41	
			F. Test	SEm	CD (0.05)		CV (%)			
Fertilization (A)			**	1.01			12.31			
Growth regulator (B)			N.S.	1.14			13.91			
B within A			N.S.	2.28			6.66			
A within B				2.22			6.48			
<b>Earhead/sqm</b>										
Control	226	4	286	4	277	4	293	4	270	4
2 sprays of CCC (0.2%)	236	2	308	3	285	3	305	3	283	3
2 sprays of tebuconazole (0.1 %)	229	3	319	1	325	2	319	1	298	2
2 sprays of CCC +tebuconazole	278	1	312	2	327	1	314	2	308	1
MEAN	242		306		303		308		290	
			F. Test	SEm	CD (0.05)		CV (%)			
Fertilization (A)			N.S.	18.35			63.51			
Growth regulator (B)			N.S.	11.05			32.26			
B within A			N.S.	22.10			64.51			
A within B				26.52			77.40			
<b>Grains/Earhead</b>										
Control	13.21	3	28.45	2	32.13	1	34.86	2	27.16	1
2 sprays of CCC (0.2%)	15.67	1	29.14	1	31.53	2	30.06	4	26.60	2
2 sprays of tebuconazole (0.1 %)	14.74	2	23.59	4	26.18	4	35.00	1	24.88	3
2 sprays of CCC +tebuconazole	10.90	4	26.58	3	27.13	3	31.44	3	24.01	4
MEAN	13.63		26.94		29.24		32.84		25.66	
			F. Test	SEm	CD (0.05)		CV (%)			
Fertilization (A)			**	1.88			6.49			
Growth regulator (B)			N.S.	1.72			5.03			
B within A			N.S.	3.45			10.07			
A within B				3.53			10.29			
<b>1000 grains weight, g</b>										
Control	34.90	3	37.97	3	40.23	3	34.90	3	37.00	4
2 sprays of CCC (0.2%)	34.27	4	37.00	4	40.13	4	38.27	1	37.42	3
2 sprays of tebuconazole (0.1 %)	39.27	1	40.50	2	40.37	2	33.17	4	38.33	2
2 sprays of CCC +tebuconazole	37.23	2	43.63	1	42.73	1	35.33	2	39.73	1
MEAN	36.42		39.78		40.87		35.42		38.12	
			F. Test	SEm	CD (0.05)		CV (%)			
Fertilization (A)			N.S.	2.17			7.52			
Growth regulator (B)			N.S.	0.78			2.28			
B within A			N.S.	1.56			4.56			
A within B				2.56			7.47			
<b>Height, cm</b>										
Control	56.87	1	100.83	1	104.33	1	98.50	1	90.13	1
2 sprays of CCC (0.2%)	54.60	3	93.33	4	94.40	3	87.07	2	82.35	3
2 sprays of tebuconazole (0.1 %)	55.95	2	93.83	2	97.67	2	84.83	3	83.07	2
2 sprays of CCC +tebuconazole	50.63	4	93.43	3	90.40	4	78.20	4	78.17	4
MEAN	54.51		95.36		96.70		87.15		83.43	
			F. Test	SEm	CD (0.05)		CV (%)			
Fertilization (A)			*	7.03			24.33			
Growth regulator (B)			**	1.88			5.48			
B within A			N.S.	3.76			10.97			
A within B				7.75			22.61			
<b>Biomass, q/ha</b>										
Control	31.22	3	77.42	4	87.59	4	84.21	4	70.11	4
2 sprays of CCC (0.2%)	32.89	2	90.67	1	89.38	2	89.14	3	75.52	2
2 sprays of tebuconazole (0.1 %)	37.65	1	79.25	3	90.12	1	95.87	1	75.73	1
2 sprays of CCC +tebuconazole	30.86	4	84.88	2	89.23	3	90.81	2	73.94	3
MEAN	33.16		83.05		89.08		90.01		73.82	
			F. Test	SEm	CD (0.05)		CV (%)			
Fertilization (A)			**	2.30			7.96			
Growth regulator (B)			N.S.	2.64			7.71			
B within A			N.S.	5.28			15.41			
A within B				5.12			14.94			
Date of Sowing:	18.11.2016				Date of Harvesting				20.03.2017	



Table 6.14.5. North Eastern Plains Zone			SPL-2			Kanpur			2016-17	
Growth regulator	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk		
<b>Yield, q/ha</b>										
Control	18.62	4	52.95	4	57.93	4	59.10	4	47.15	4
2 sprays of CCC (0.2%)	20.64	2	54.09	2	65.34	2	66.35	2	51.60	2
2 sprays of tebuconazole (0.1 %)	20.12	3	53.18	3	62.71	3	63.90	3	49.98	3
2 sprays of CCC +tebuconazole	22.50	1	56.18	1	65.74	1	67.20	1	52.91	1
MEAN	20.47		54.10		62.93		64.14		50.41	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			0.39	1.35		2.67	
B within A			**			0.39	1.13		2.66	
A within B			**			0.77	2.26			
<b>Earhead/sqm</b>										
Control	265	4	390	4	400	4	408	4	366	4
2 sprays of CCC (0.2%)	270	1	396	3	408	2	418	2	373	2
2 sprays of tebuconazole (0.1 %)	269	2	396	2	407	3	412	3	371	3
2 sprays of CCC +tebuconazole	269	3	402	1	410	1	420	1	375	1
MEAN	268		396		406		415		371	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			N.S.			4.09	14.14		3.81	
B within A			N.S.			4.91	14.35		4.58	
A within B			N.S.			9.83	28.69			
<b>Grains/Earhead</b>										
Control	18.20	4	33.93	2	36.11	4	33.58	4	30.45	4
2 sprays of CCC (0.2%)	19.61	2	33.53	3	38.51	2	36.82	1	32.12	2
2 sprays of tebuconazole (0.1 %)	18.62	3	33.41	4	37.03	3	36.69	2	31.44	3
2 sprays of CCC +tebuconazole	20.77	1	34.07	1	39.37	1	36.65	3	32.71	1
MEAN	19.30		33.73		37.76		35.93		31.68	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			*			0.52	1.80		5.69	
B within A			N.S.			0.45	1.33		4.97	
A within B			N.S.			0.91	2.65			
<b>1000 grains weight, g</b>										
Control	38.60	4	40.10	4	40.23	4	43.20	2	40.53	4
2 sprays of CCC (0.2%)	39.00	3	40.80	2	41.60	1	43.10	3	41.13	2
2 sprays of tebuconazole (0.1 %)	40.20	2	40.20	3	41.60	1	42.30	4	41.08	3
2 sprays of CCC +tebuconazole	40.40	1	41.00	1	40.80	3	43.70	1	41.48	1
MEAN	39.55		40.53		41.06		43.08		41.05	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			N.S.			0.18	0.63		1.54	
B within A			N.S.			0.23	0.68		1.96	
A within B			N.S.			0.46	1.36			
<b>Height, cm</b>										
Control	71.67	1	86.33	1	89.00	1	90.33	1	84.33	1
2 sprays of CCC (0.2%)	64.67	2	83.00	3	84.67	3	85.33	3	79.42	3
2 sprays of tebuconazole (0.1 %)	63.00	3	85.00	2	86.00	2	86.67	2	80.17	2
2 sprays of CCC +tebuconazole	61.67	4	81.33	4	82.33	4	83.33	4	77.17	4
MEAN	65.25		83.92		85.50		86.42		80.27	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			0.58	2.00		2.49	
B within A			**			0.47	1.37		2.02	
A within B			N.S.			0.94	2.73			
<b>Biomass, q/ha</b>										
Control	40.35	4	115.83	4	147.19	4	148.96	4	113.08	4
2 sprays of CCC (0.2%)	44.58	2	119.52	2	163.67	2	167.20	2	123.74	2
2 sprays of tebuconazole (0.1 %)	43.49	3	117.51	3	157.40	3	161.06	3	119.87	3
2 sprays of CCC +tebuconazole	48.60	1	124.16	1	164.67	1	169.65	1	126.77	1
MEAN	44.26		119.26		158.23		161.72		120.87	
<b>F. Test</b>										
Fertilization (A)			**			SEm	CD (0.05)		CV (%)	
Growth regulator (B)			**			1.12	3.88		3.21	
B within A			**			0.90	2.61		2.57	
A within B			**			1.79	5.23			
<b>Date of Sowing:</b>										
			19.11.2016			<b>Date of Harvesting</b>			20.04.2017	

**Table 6.14.6. North Eastern Plains Zone** **SPL-2** **Ranchi** **2016-17**

Growth regulator	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk		
<b>Yield, q/ha</b>										
Control	4.63	4	40.73	4	43.47	4	48.00	4	34.21	4
2 sprays of CCC (0.2%)	6.67	2	41.73	3	46.73	2	49.23	3	36.09	3
2 sprays of tebuconazole (0.1 %)	8.00	1	42.67	1	46.27	3	49.93	2	36.72	2
2 sprays of CCC +tebuconazole	6.60	3	42.00	2	48.33	1	50.73	1	36.92	1
<b>MEAN</b>	<b>6.48</b>		<b>41.78</b>		<b>46.20</b>		<b>49.48</b>		<b>35.98</b>	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		0.69		2.38		6.61	
Growth regulator (B)			*		0.66		1.92		6.32	
B within A			N.S.		1.31		3.83			
A within B					1.33		3.88			
<b>Earhead/sqm</b>										
Control	167	3	340	2	353	3	373	2	308	2
2 sprays of CCC (0.2%)	172	2	336	3	347	4	357	4	303	4
2 sprays of tebuconazole (0.1 %)	172	1	313	4	360	1	377	1	306	3
2 sprays of CCC +tebuconazole	165	4	366	1	357	2	363	3	313	1
<b>MEAN</b>	<b>169</b>		<b>339</b>		<b>354</b>		<b>368</b>		<b>307</b>	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		7.35		25.43		8.28	
Growth regulator (B)			N.S.		7.08		20.67		7.98	
B within A			N.S.		14.16		41.34			
A within B					14.30		41.73			
<b>Grains/Earhead</b>										
Control	7.86	4	30.94	3	32.28	4	33.62	4	26.17	4
2 sprays of CCC (0.2%)	10.97	3	32.66	2	34.45	2	35.60	1	28.42	2
2 sprays of tebuconazole (0.1 %)	13.08	1	35.37	1	33.02	3	34.12	3	28.90	1
2 sprays of CCC +tebuconazole	11.68	2	29.86	4	34.75	1	35.07	2	27.84	3
<b>MEAN</b>	<b>10.90</b>		<b>32.21</b>		<b>33.63</b>		<b>34.60</b>		<b>27.83</b>	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		0.98		3.38		12.15	
Growth regulator (B)			N.S.		0.92		2.69		11.48	
B within A			N.S.		1.84		5.38			
A within B					1.87		5.46			
<b>1000 grains weight, g</b>										
Control	35.47	1	38.73	2	38.53	4	38.67	4	37.85	4
2 sprays of CCC (0.2%)	35.33	3	38.17	4	39.20	1	38.93	3	37.91	3
2 sprays of tebuconazole (0.1 %)	35.40	2	38.73	1	39.03	3	39.03	2	38.05	1
2 sprays of CCC +tebuconazole	34.27	4	38.53	3	39.13	2	39.90	1	37.96	2
<b>MEAN</b>	<b>35.12</b>		<b>38.54</b>		<b>38.98</b>		<b>39.13</b>		<b>37.94</b>	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		0.16		0.54		1.42	
Growth regulator (B)			N.S.		0.27		0.77		2.42	
B within A			N.S.		0.53		1.55			
A within B					0.48		1.42			
<b>Height, cm</b>										
Control	72.00	1	101.67	1	109.33	1	111.00	1	98.50	1
2 sprays of CCC (0.2%)	58.33	3	81.67	4	92.67	2	84.00	3	79.17	2
2 sprays of tebuconazole (0.1 %)	60.00	2	83.33	2	86.33	3	83.67	4	78.33	3
2 sprays of CCC +tebuconazole	56.67	4	82.00	3	82.67	4	86.00	2	76.83	4
<b>MEAN</b>	<b>61.75</b>		<b>87.17</b>		<b>92.75</b>		<b>91.17</b>		<b>83.21</b>	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		0.98		3.41		4.10	
Growth regulator (B)			**		1.74		5.08		7.25	
B within A			N.S.		3.48		10.17			
A within B					3.17		9.26			
<b>Biomass, q/ha</b>										
Control	11.07	4	84.13	4	95.80	3	91.93	4	70.73	4
2 sprays of CCC (0.2%)	13.93	3	87.00	3	85.33	4	100.93	2	71.80	3
2 sprays of tebuconazole (0.1 %)	17.13	1	88.87	2	96.57	2	108.27	1	77.71	2
2 sprays of CCC +tebuconazole	15.07	2	100.40	1	97.80	1	98.27	3	77.88	1
<b>MEAN</b>	<b>14.30</b>		<b>90.10</b>		<b>93.88</b>		<b>99.85</b>		<b>74.53</b>	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		1.63		5.63		7.56	
Growth regulator (B)			**		1.53		4.45		7.09	
B within A			*		3.05		8.91			
A within B					3.10		9.06			
Date of Sowing:	20.11.2016				Date of Harvesting				15.04.2017	

Table 6.14.7. North Eastern Plains Zone

Growth regulator	SPL-2				RAU Pusa				2016-17	
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk	Mean	Rk
<b>Fertilization</b>										
<b>Yield, q/ha</b>										
Control	22.35	4	40.33	4	44.66	4	49.63	3	39.24	4
2 sprays of CCC (0.2%)	23.21	1	42.35	1	46.39	1	50.22	1	40.54	1
2 sprays of tebuconazole (0.1 %)	23.01	2	42.08	2	45.98	2	49.75	2	40.21	2
2 sprays of CCC +tebuconazole	22.95	3	41.66	3	44.82	3	49.32	4	39.69	3
MEAN	22.88		41.61		45.46		49.73		39.92	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**							
Growth regulator (B)			*							
B within A			N.S.							
A within B										
<b>Earhead/sqm</b>										
Control	196	4	285	4	301	4	311	4	273	4
2 sprays of CCC (0.2%)	203	1	292	1	306	1	318	1	280	1
2 sprays of tebuconazole (0.1 %)	201	2	289	2	304	2	315	2	277	2
2 sprays of CCC +tebuconazole	199	3	287	3	302	3	313	3	275	3
MEAN	200		288		303		314		276	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**							
Growth regulator (B)			**							
B within A			N.S.							
A within B										
<b>Grains/Earhead</b>										
Control	31.53	2	37.02	3	37.08	1	37.93	1	35.89	1
2 sprays of CCC (0.2%)	30.13	4	36.87	4	36.28	3	36.34	4	34.90	4
2 sprays of tebuconazole (0.1 %)	31.32	3	37.40	2	36.31	2	36.80	3	35.46	3
2 sprays of CCC +tebuconazole	31.75	1	37.58	1	36.21	4	37.15	2	35.67	2
MEAN	31.18		37.22		36.47		37.05		35.48	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**							
Growth regulator (B)			**							
B within A			N.S.							
A within B										
<b>1000 grains weight, g</b>										
Control	36.15	4	38.21	4	40.02	4	42.08	4	39.12	4
2 sprays of CCC (0.2%)	37.92	1	39.33	1	41.82	1	43.48	1	40.64	1
2 sprays of tebuconazole (0.1 %)	36.52	2	38.92	2	41.65	2	42.91	2	40.00	2
2 sprays of CCC +tebuconazole	36.28	3	38.63	3	40.98	3	42.41	3	39.58	3
MEAN	36.72		38.77		41.12		42.72		39.83	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**							
Growth regulator (B)			**							
B within A			N.S.							
A within B										
<b>Height, cm</b>										
Control	74.21	4	80.15	4	85.66	4	90.18	4	82.55	4
2 sprays of CCC (0.2%)	76.88	1	84.25	1	88.22	1	93.62	1	85.74	1
2 sprays of tebuconazole (0.1 %)	76.35	2	82.68	2	87.63	2	92.55	2	84.80	2
2 sprays of CCC +tebuconazole	75.29	3	81.38	3	86.75	3	91.43	3	83.71	3
MEAN	75.68		82.12		87.07		91.95		84.20	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**							
Growth regulator (B)			**							
B within A			N.S.							
A within B										
<b>Biomass, q/ha</b>										
Control	50.46	4	88.63	4	96.22	4	110.18	4	86.37	4
2 sprays of CCC (0.2%)	54.75	1	94.58	1	102.44	1	115.25	1	91.76	1
2 sprays of tebuconazole (0.1 %)	53.85	2	92.85	2	99.65	2	111.69	3	89.51	2
2 sprays of CCC +tebuconazole	51.47	3	90.78	3	98.28	3	112.25	2	88.20	3
MEAN	52.63		91.71		99.15		112.34		88.96	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**							
Growth regulator (B)			**							
B within A			N.S.							
A within B										
Date of Sowing:	28.11.2016				Date of Harvesting				06.04.2017	

Table 6.14.8. North Eastern Plains Zone			SPL-2		Sabour		2016-17			
Growth regulator	Fertilization				150% RDF Rk	150%RDF+ FYM Rk	Mean	Rk		
	Control	Rk	RDF	Rk						
<b>Yield, q/ha</b>										
Control	28.83	4	30.30	4	48.30	4	47.27	4	38.68	4
2 sprays of CCC (0.2%)	29.27	2	49.00	2	50.67	2	50.83	2	44.94	2
2 sprays of tebuconazole (0.1 %)	28.90	3	48.63	3	50.00	3	50.33	3	44.47	3
2 sprays of CCC +tebuconazole	29.60	1	53.00	1	51.00	1	52.03	1	46.41	1
MEAN	29.15		45.23		49.99		50.12		43.62	
<b>F. Test</b>										
Fertilization (A)					SEm	CD (0.05)		CV (%)		
Growth regulator (B)					0.44	1.53		3.52		
B within A					1.34	3.92		10.67		
A within B					2.69	7.85				
<b>Earhead/sqm</b>										
Control	190	4	230	4	260	4	260	4	235	4
2 sprays of CCC (0.2%)	226	2	265	2	269	2	270	2	258	2
2 sprays of tebuconazole (0.1 %)	224	3	262	3	268	3	269	3	256	3
2 sprays of CCC +tebuconazole	228	1	267	1	270	1	272	1	259	1
MEAN	217		256		267		268		252	
<b>F. Test</b>										
Fertilization (A)					SEm	CD (0.05)		CV (%)		
Growth regulator (B)					4.13	14.30		5.68		
B within A					4.73	13.80		6.50		
A within B					N.S.	27.61				
<b>Grains/Earhead</b>										
Control	44.57	1	34.61	4	44.18	1	43.22	4	41.64	1
2 sprays of CCC (0.2%)	34.92	2	43.97	3	43.73	3	43.71	2	41.58	3
2 sprays of tebuconazole (0.1 %)	34.77	3	44.11	2	43.31	4	43.45	3	41.41	4
2 sprays of CCC +tebuconazole	34.09	4	44.15	1	43.87	2	44.44	1	41.64	2
MEAN	37.09		41.71		43.77		43.71		41.57	
<b>F. Test</b>										
Fertilization (A)					SEm	CD (0.05)		CV (%)		
Growth regulator (B)					1.29	4.46		10.75		
B within A					1.39	4.05		11.56		
A within B					N.S.	8.10				
<b>1000 grains weight, g</b>										
Control	37.00	2	38.00	4	42.00	4	42.00	4	39.75	4
2 sprays of CCC (0.2%)	37.00	2	42.00	2	43.00	1	43.00	1	41.25	2
2 sprays of tebuconazole (0.1 %)	37.00	2	42.00	2	43.00	1	43.00	1	41.25	2
2 sprays of CCC +tebuconazole	38.00	1	45.33	1	43.00	1	43.00	1	42.33	1
MEAN	37.25		41.83		42.75		42.75		41.15	
<b>F. Test</b>										
Fertilization (A)					SEm	CD (0.05)		CV (%)		
Growth regulator (B)					0.35	1.21		2.96		
B within A					0.53	1.56		4.49		
A within B					N.S.	3.12				
<b>Height, cm</b>										
Control	92.00	3	95.67	3	94.00	2	98.33	2	95.00	2
2 sprays of CCC (0.2%)	83.00	4	85.67	4	92.33	4	94.67	3	88.92	4
2 sprays of tebuconazole (0.1 %)	98.67	1	100.67	1	101.00	1	102.33	1	100.67	1
2 sprays of CCC +tebuconazole	92.33	2	96.00	2	94.00	2	94.33	4	94.17	3
MEAN	91.50		94.50		95.33		97.42		94.69	
<b>F. Test</b>										
Fertilization (A)					SEm	CD (0.05)		CV (%)		
Growth regulator (B)					0.32	1.11		1.18		
B within A					0.38	1.11		1.39		
A within B					0.76	2.22				
<b>Biomass, q/ha</b>										
Control	68.73	4	72.27	4	115.10	4	112.63	4	92.18	4
2 sprays of CCC (0.2%)	69.80	2	116.73	2	120.67	2	114.33	3	105.38	3
2 sprays of tebuconazole (0.1 %)	68.93	3	115.87	3	119.10	3	119.87	2	105.94	2
2 sprays of CCC +tebuconazole	72.93	1	118.27	1	121.37	1	123.87	1	109.11	1
MEAN	70.10		105.78		119.06		117.68		103.15	
<b>F. Test</b>										
Fertilization (A)					SEm	CD (0.05)		CV (%)		
Growth regulator (B)					0.79	2.72		2.64		
B within A					3.02	8.82		10.15		
A within B					6.04	17.64				
<b>Date of Sowing:</b>										
16.11.2016					<b>Date of Harvesting</b>					
02.04.2017										

**Table 6.14.9. North Eastern Plains Zone**

Growth regulator	SPL-2						Shillongani		2016-17	
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk	Mean	Rk
<b>Fertilization</b>										
<b>Yield, q/ha</b>										
Control	29.07	3	39.55	4	39.77	4	45.42	4	38.45	4
2 sprays of CCC (0.2%)	29.78	2	43.70	2	47.11	3	47.16	3	41.94	3
2 sprays of tebuconazole (0.1 %)	26.08	4	39.75	3	50.22	1	52.10	1	42.04	2
2 sprays of CCC +tebuconazole	37.38	1	44.09	1	47.76	2	50.10	2	44.83	1
MEAN	30.58		41.77		46.21		48.70		41.82	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**			1.17		4.05		9.71
Growth regulator (B)			**			0.73		2.13		6.04
B within A			**			1.46		4.25		
A within B						1.72		5.03		
<b>Earhead/sqm</b>										
Control	141	4	192	4	198	4	237	2	192	4
2 sprays of CCC (0.2%)	151	2	205	3	220	2	231	4	202	2
2 sprays of tebuconazole (0.1 %)	142	3	212	2	216	3	233	3	201	3
2 sprays of CCC +tebuconazole	166	1	221	1	226	1	238	1	213	1
MEAN	150		207		215		235		202	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**			1.02		3.52		1.75
Growth regulator (B)			**			1.30		3.78		2.22
B within A			**			2.59		7.56		
A within B						2.46		7.19		
<b>Grains/Earhead</b>										
Control	45.93	2	46.40	3	45.67	4	46.13	4	46.03	4
2 sprays of CCC (0.2%)	44.00	4	47.27	2	51.56	2	48.97	3	47.95	3
2 sprays of tebuconazole (0.1 %)	44.08	3	43.46	4	53.07	1	54.95	1	48.89	2
2 sprays of CCC +tebuconazole	48.87	1	47.74	1	48.87	3	50.40	2	48.97	1
MEAN	45.72		46.22		49.79		50.11		47.96	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			*			1.02		3.54		7.39
Growth regulator (B)			*			0.64		1.87		4.63
B within A			**			1.28		3.74		
A within B						1.51		4.41		
<b>1000 grains weight, g</b>										
Control	44.93	2	44.43	2	44.07	1	41.50	3	43.73	1
2 sprays of CCC (0.2%)	44.73	3	45.23	1	41.40	4	41.57	2	43.23	2
2 sprays of tebuconazole (0.1 %)	41.73	4	43.03	3	43.87	2	40.73	4	42.34	4
2 sprays of CCC +tebuconazole	46.07	1	41.77	4	43.13	3	41.80	1	43.19	3
MEAN	44.37		43.62		43.12		41.40		43.13	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			N.S.			0.65		2.26		5.24
Growth regulator (B)			N.S.			0.74		2.16		5.94
B within A			N.S.			1.48		4.32		
A within B						1.44		4.20		
<b>Height, cm</b>										
Control	92.17	4	98.67	1	101.17	4	102.33	2	98.58	3
2 sprays of CCC (0.2%)	93.50	2	96.20	4	102.90	3	101.23	4	98.46	4
2 sprays of tebuconazole (0.1 %)	93.67	1	98.67	1	103.00	2	102.70	1	99.51	1
2 sprays of CCC +tebuconazole	93.27	3	96.93	3	103.33	1	101.97	3	98.88	2
MEAN	93.15		97.62		102.60		102.06		98.86	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**			0.35		1.21		1.22
Growth regulator (B)			*			0.24		0.70		0.83
B within A			**			0.48		1.39		
A within B						0.54		1.58		
<b>Biomass, q/ha</b>										
Control	72.69	3	95.14	3	97.90	4	111.51	4	94.31	4
2 sprays of CCC (0.2%)	75.68	2	109.24	1	109.58	3	112.42	3	101.73	2
2 sprays of tebuconazole (0.1 %)	65.21	4	93.22	4	117.22	1	128.30	1	100.99	3
2 sprays of CCC +tebuconazole	93.46	1	104.20	2	113.75	2	125.24	2	109.16	1
MEAN	76.76		100.45		109.61		119.37		101.55	
		F. Test		SEm		CD (0.05)		CV (%)		
Fertilization (A)			**			1.43		4.94		4.87
Growth regulator (B)			**			1.05		3.08		3.59
B within A			**			2.11		6.15		
A within B						2.32		6.76		
Date of Sowing:	18.11.2016				Date of Harvesting				26.03.207	

Table 6.14.10. North Eastern Plains Zone			SPL-2			Varanasi			2016-17	
Growth regulator	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+ FYM	Rk		
<b>Yield, q/ha</b>										
Control	26.72	1	51.44	1	58.46	1	57.09	1	48.43	1
2 sprays of CCC (0.2%)	22.04	4	44.67	4	56.19	4	56.68	2	44.89	4
2 sprays of tebuconazole (0.1 %)	24.63	2	48.23	3	57.38	2	53.22	3	45.87	2
2 sprays of CCC +tebuconazole	22.47	3	49.24	2	57.18	3	52.94	4	45.46	3
MEAN	23.96		48.39		57.30		54.98		46.16	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		0.76		2.63		5.70	
Growth regulator (B)			**		0.66		1.93		4.96	
B within A			N.S.		1.32		3.86			
A within B					1.37		4.01			
<b>Earhead/sqm</b>										
Control	166	2	286	1	287	4	313	1	263	2
2 sprays of CCC (0.2%)	158	4	272	3	300	3	299	2	257	3
2 sprays of tebuconazole (0.1 %)	178	1	274	2	358	1	294	3	276	1
2 sprays of CCC +tebuconazole	162	3	271	4	302	2	245	4	245	4
MEAN	166		276		312		288		260	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		10.91		37.77		14.52	
Growth regulator (B)			*		7.18		20.94		9.55	
B within A			N.S.		14.35		41.89			
A within B					16.54		48.28			
<b>Grains/Earhead</b>										
Control	37.00	1	40.49	2	46.63	2	43.04	3	41.79	2
2 sprays of CCC (0.2%)	32.86	3	37.13	4	44.81	3	46.53	2	40.33	3
2 sprays of tebuconazole (0.1 %)	32.56	4	39.83	3	37.52	4	41.77	4	37.92	4
2 sprays of CCC +tebuconazole	33.60	2	42.35	1	48.38	1	51.21	1	43.88	1
MEAN	34.00		39.95		44.34		45.64		40.98	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			*		2.06		7.12		17.39	
Growth regulator (B)			**		1.00		2.91		8.43	
B within A			N.S.		2.00		5.82			
A within B					2.69		7.84			
<b>1000 grains weight, g</b>										
Control	43.93	1	44.95	1	44.14	1	42.95	2	43.99	1
2 sprays of CCC (0.2%)	42.61	3	44.50	2	41.83	3	41.27	4	42.55	3
2 sprays of tebuconazole (0.1 %)	43.56	2	44.25	3	42.84	2	43.40	1	43.51	2
2 sprays of CCC +tebuconazole	41.34	4	43.09	4	39.63	4	42.20	3	41.57	4
MEAN	42.86		44.20		42.11		42.46		42.91	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		0.26		0.90		2.11	
Growth regulator (B)			**		0.43		1.24		3.43	
B within A			N.S.		0.85		2.48			
A within B					0.78		2.28			
<b>Biomass, q/ha</b>										
Control	58.39	1	130.42	1	141.85	1	142.17	1	118.21	1
2 sprays of CCC (0.2%)	55.22	3	110.43	4	138.04	3	136.77	2	110.11	3
2 sprays of tebuconazole (0.1 %)	58.39	1	115.83	3	138.36	2	131.06	4	110.91	2
2 sprays of CCC +tebuconazole	53.95	4	116.46	2	131.38	4	133.60	3	108.85	4
MEAN	56.49		118.29		137.41		135.90		112.02	
			F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)			**		4.24		14.68		13.12	
Growth regulator (B)			**		1.57		4.60		4.87	
B within A			N.S.		3.15		9.19			
A within B					5.04		14.72			
Date of Sowing:	28.11.2016				Date of Harvesting				16.4.2017	

**Table 6.15.1. Central Zone** **SPL-2** **Bilaspur** **2016-17**

Growth Regulator (GR)	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk		
<b>Yield,q/ha</b>										
Control	15.41	4	34.83	4	37.65	4	39.95	4	31.96	4
Two sprays of CCC (0.2%)	19.98	2	39.34	2	44.36	2	48.50	2	38.04	2
Two sprays of tebuconazole (0.1 %)	17.77	3	37.51	3	42.30	3	45.41	3	35.75	3
Two sprays of CCC + tebuconazole	20.15	1	42.03	1	48.65	1	49.45	1	40.07	1
Mean	18.33		38.43		43.24		45.83		36.46	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.70		5.89		16.17			
Growth regulator (B)	**		0.77		2.24		7.29			
B within A	N.S.		1.54		4.48					
A within B			2.16		6.30					
<b>Earhead/sqm</b>										
Control	218	4	253	4	263	4	293	4	257	4
Two sprays of CCC (0.2%)	225	3	258	2	290	3	313	3	271	3
Two sprays of tebuconazole (0.1 %)	232	2	256	3	293	2	316	2	274	2
Two sprays of CCC + tebuconazole	236	1	268	1	304	1	330	1	285	1
Mean	227		259		287		313		272	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		5.21		18.03		6.64			
Growth regulator (B)	**		1.75		5.11		2.23			
B within A	*		3.50		10.21					
A within B			6.03		17.59					
<b>Grains/earhead</b>										
Control	20.81	4	37.44	4	35.11	1	34.30	1	31.91	2
Two sprays of CCC (0.2%)	23.42	1	38.59	1	34.36	3	33.03	2	32.35	1
Two sprays of tebuconazole (0.1 %)	20.98	3	38.51	2	32.81	4	32.85	3	31.29	4
Two sprays of CCC + tebuconazole	21.05	2	37.72	3	35.00	2	31.85	4	31.41	3
Mean	21.56		38.07		34.32		33.01		31.74	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.18		4.07		12.85			
Growth regulator (B)	N.S.		0.73		2.14		8.01			
B within A	N.S.		1.47		4.28					
A within B			1.73		5.06					
<b>1000 grains weight, g</b>										
Control	33.67	4	36.86	4	40.80	4	39.81	4	37.78	4
Two sprays of CCC (0.2%)	37.76	2	39.93	2	44.54	2	46.89	2	42.28	2
Two sprays of tebuconazole (0.1 %)	36.11	3	38.38	3	44.27	3	43.89	3	40.66	3
Two sprays of CCC + tebuconazole	40.35	1	41.68	1	45.68	1	47.12	1	43.71	1
Mean	36.97		39.21		43.82		44.43		41.11	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.13		3.91		9.52			
Growth regulator (B)	**		0.69		2.03		5.85			
B within A	N.S.		1.39		4.05					
A within B			1.65		4.82					
<b>Biomass. q/ha</b>										
Control	33.33	4	70.91	4	77.70	4	80.93	4	65.72	4
Two sprays of CCC (0.2%)	39.36	2	79.11	2	87.88	2	96.51	2	75.71	2
Two sprays of tebuconazole (0.1 %)	36.65	3	78.62	3	80.02	3	91.32	3	71.65	3
Two sprays of CCC + tebuconazole	43.11	1	86.74	1	92.31	1	99.50	1	80.41	1
Mean	38.11		78.84		84.48		92.06		73.37	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		2.60		9.00		12.28			
Growth regulator (B)	**		1.17		3.40		5.51			
B within A	N.S.		2.33		6.81					
A within B			3.29		9.61					
<b>Plant ht., cm</b>										
Control	69.72	4	82.93	4	84.83	4	86.78	4	81.07	4
Two sprays of CCC (0.2%)	73.24	3	84.20	3	89.22	2	89.72	2	84.09	3
Two sprays of tebuconazole (0.1 %)	73.92	2	86.83	2	88.39	3	88.00	3	84.29	2
Two sprays of CCC + tebuconazole	81.02	1	89.42	1	92.18	1	92.37	1	88.75	1
Mean	74.48		85.84		88.66		89.22		84.55	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.30		4.49		5.31			
Growth regulator (B)	**		1.06		3.09		4.34			
B within A	N.S.		2.12		6.18					
A within B			2.25		6.56					
Date of Sowing:	16.11.2016				Date of Harvesting:		11.04.2017			

Table 6.15.2. Central Zone

Growth Regulator (GR)	SPL-2				Gwalior				2016-17	
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	Mean	Rk
<b>Fertilization</b>										
<b>Yield,q/ha</b>										
Control	41.89	4	55.35	4	57.11	4	57.35	4	52.92	4
Two sprays of CCC (0.2%)	48.99	1	65.08	1	62.56	1	61.45	1	59.52	1
Two sprays of tebuconazole (0.1 %)	47.26	2	62.42	2	61.17	2	59.26	3	57.53	2
Two sprays of CCC + tebuconazole	43.83	3	59.36	3	58.54	3	60.18	2	55.48	3
Mean	45.49		60.55		59.85		59.56		56.36	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.29		0.99		1.75			
B within A	**		0.61		1.78		3.74			
A within B	N.S.		1.22		3.55					
			1.09		3.19					
<b>Earhead/sqm</b>										
Control	340	4	432	4	437	4	439	4	412	4
Two sprays of CCC (0.2%)	358	2	479	1	477	1	446	3	440	1
Two sprays of tebuconazole (0.1 %)	342	3	476	2	462	2	451	2	433	2
Two sprays of CCC + tebuconazole	370	1	442	3	446	3	456	1	429	3
Mean	352		457		456		448		428	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		2.76		9.56		2.24			
B within A	**		5.07		14.81		4.10			
A within B	N.S.		10.15		29.61					
			9.21		26.89					
<b>Grains/earhead</b>										
Control	32.65	3	32.82	4	33.10	4	34.52	4	33.27	4
Two sprays of CCC (0.2%)	37.03	1	37.77	1	34.58	3	35.51	3	36.22	1
Two sprays of tebuconazole (0.1 %)	36.84	2	35.58	3	35.49	1	35.86	2	35.94	2
Two sprays of CCC + tebuconazole	31.85	4	36.19	2	35.13	2	37.88	1	35.26	3
Mean	34.59		35.59		34.57		35.94		35.17	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	N.S.		0.73		2.53		7.21			
B within A	*		0.70		2.03		6.85			
A within B	N.S.		1.39		4.06					
			1.41		4.11					
<b>1000 grains weight, g</b>										
Control	37.91	1	39.01	1	39.49	1	37.85	2	38.56	1
Two sprays of CCC (0.2%)	37.21	4	36.01	4	37.94	2	38.85	1	37.50	2
Two sprays of tebuconazole (0.1 %)	37.51	2	36.97	3	37.73	3	36.85	3	37.27	3
Two sprays of CCC + tebuconazole	37.32	3	37.15	2	37.47	4	34.91	4	36.71	4
Mean	37.49		37.28		38.16		37.11		37.51	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	N.S.		0.81		2.79		7.44			
B within A	N.S.		0.55		1.60		5.07			
A within B	N.S.		1.10		3.21					
			1.25		3.64					
<b>Biomass. q/ha</b>										
Control	64.09	4	85.42	4	87.39	4	87.73	4	81.16	4
Two sprays of CCC (0.2%)	74.63	1	100.25	1	96.97	1	94.03	1	91.47	1
Two sprays of tebuconazole (0.1 %)	71.97	2	96.33	2	95.21	2	91.06	3	88.64	2
Two sprays of CCC + tebuconazole	67.35	3	90.83	3	89.96	3	92.08	2	85.05	3
Mean	69.51		93.21		92.39		91.23		86.58	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.53		1.85		2.14			
B within A	**		0.99		2.88		3.95			
A within B	N.S.		1.98		5.77					
			1.79		5.23					
<b>Plant ht., cm</b>										
Control	81.27	1	81.73	2	86.23	1	84.20	1	83.36	1
Two sprays of CCC (0.2%)	77.47	4	80.87	3	80.20	4	81.47	4	80.00	4
Two sprays of tebuconazole (0.1 %)	78.67	2	81.93	1	83.40	2	81.80	2	81.45	2
Two sprays of CCC + tebuconazole	78.47	3	80.67	4	82.47	3	81.53	3	80.78	3
Mean	78.97		81.30		83.08		82.25		81.40	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)			
Growth regulator (B)	**		0.44		1.54		1.89			
B within A	**		0.58		1.70		2.47			
A within B	N.S.		1.16		3.39					
			1.10		3.21					
Date of Sowing:	18.11.2016				Date of Harvesting:	06.04.2017				



**Table 6.15.3. Central Zone**

Growth Regulator (GR)	SPL-2				Indore				2016-17	
	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk		
<b>Yield,q/ha</b>										
Control	35.87	1	62.57	1	61.83	1	65.67	1	56.48	1
Two sprays of CCC (0.2%)	32.80	3	60.50	4	60.83	3	63.40	4	54.38	3
Two sprays of tebuconazole (0.1 %)	33.67	2	61.50	2	61.00	2	64.50	2	55.17	2
Two sprays of CCC + tebuconazole	31.30	4	61.00	3	60.07	4	63.83	3	54.05	4
Mean	33.41		61.39		60.93		64.35		55.02	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.48		1.65		3.00			
Growth regulator (B)	**		0.47		1.36		2.93			
B within A	N.S.		0.93		2.72					
A within B			0.94		2.73					
<b>Earhead/sqm</b>										
Control	270	1	445	1	435	1	448	1	400	1
Two sprays of CCC (0.2%)	259	3	427	4	421	3	427	4	383	4
Two sprays of tebuconazole (0.1 %)	268	2	437	2	423	2	439	2	392	2
Two sprays of CCC + tebuconazole	254	4	432	3	418	4	430	3	383	3
Mean	263		435		424		436		389	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		6.30		21.79		5.60			
Growth regulator (B)	N.S.		5.61		16.38		4.99			
B within A	N.S.		11.22		32.76					
A within B			11.58		33.81					
<b>Grains/earhead</b>										
Control	31.47	1	33.05	3	34.22	4	35.08	4	33.45	4
Two sprays of CCC (0.2%)	30.01	2	32.91	4	34.74	3	36.23	2	33.47	3
Two sprays of tebuconazole (0.1 %)	29.94	3	33.32	2	35.62	1	35.58	3	33.62	2
Two sprays of CCC + tebuconazole	29.54	4	34.06	1	35.39	2	36.96	1	33.99	1
Mean	30.24		33.33		34.99		35.96		33.63	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.57		1.96		5.82			
Growth regulator (B)	N.S.		0.52		1.52		5.38			
B within A	N.S.		1.04		3.05					
A within B			1.07		3.11					
<b>1000 grains weight, g</b>										
Control	42.27	2	42.57	2	41.63	2	41.77	1	42.06	2
Two sprays of CCC (0.2%)	42.30	1	43.13	1	41.73	1	41.10	3	42.07	1
Two sprays of tebuconazole (0.1 %)	42.10	3	42.40	3	40.60	4	41.30	2	41.60	3
Two sprays of CCC + tebuconazole	41.83	4	41.53	4	40.67	3	40.17	4	41.05	4
Mean	42.13		42.41		41.16		41.08		41.69	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	*		0.29		1.00		2.41			
Growth regulator (B)	*		0.24		0.69		1.95			
B within A	N.S.		0.47		1.37					
A within B			0.50		1.46					
<b>Biomass. q/ha</b>										
Control	71.17	1	147.97	1	142.23	1	158.33	1	129.93	1
Two sprays of CCC (0.2%)	67.70	4	139.53	4	140.07	3	150.20	4	124.38	4
Two sprays of tebuconazole (0.1 %)	68.47	2	141.03	2	140.93	2	154.30	2	126.18	2
Two sprays of CCC + tebuconazole	68.00	3	140.60	3	138.93	4	150.77	3	124.58	3
Mean	68.83		142.28		140.54		153.40		126.26	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.96		3.31		2.63			
Growth regulator (B)	**		1.14		3.34		3.14			
B within A	N.S.		2.29		6.68					
A within B			2.20		6.42					
<b>Plant ht., cm</b>										
Control	84.67	1	94.67	1	95.87	1	97.33	1	93.13	1
Two sprays of CCC (0.2%)	81.27	3	91.07	3	88.43	3	89.87	3	87.66	3
Two sprays of tebuconazole (0.1 %)	82.93	2	93.47	2	92.73	2	94.07	2	90.80	2
Two sprays of CCC + tebuconazole	80.07	4	89.53	4	86.60	4	88.13	4	86.08	4
Mean	82.23		92.18		90.91		92.35		89.42	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.32		1.11		1.25			
Growth regulator (B)	**		0.38		1.11		1.48			
B within A	*		0.76		2.23					
A within B			0.74		2.15					
Date of Sowing:	14.11.2016				Date of Harvesting:				04.04.2017	

Table 6.15.4. Central Zone

Growth Regulator (GR)	SPL-2				Jabalpur				2016-17	
	Fertilization								Mean	Rk
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk		
<b>Yield,q/ha</b>										
Control	30.47	4	38.43	4	43.67	4	49.78	4	40.59	4
Two sprays of CCC (0.2%)	32.73	3	39.23	3	45.90	2	51.97	3	42.46	3
Two sprays of tebuconazole (0.1 %)	36.10	2	40.13	2	45.37	3	53.96	2	43.89	2
Two sprays of CCC + tebuconazole	36.40	1	41.68	1	48.00	1	55.67	1	45.44	1
Mean	33.93		39.87		45.74		52.84		43.09	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.42		1.45		3.38			
Growth regulator (B)	**		0.34		1.00		2.76			
B within A	N.S.		0.69		2.01					
A within B			0.73		2.13					
<b>Earhead/sqm</b>										
Control	223	4	284	4	306	4	345	4	290	4
Two sprays of CCC (0.2%)	262	2	294	3	308	3	359	3	306	3
Two sprays of tebuconazole (0.1 %)	258	3	298	2	309	2	361	2	307	2
Two sprays of CCC + tebuconazole	268	1	302	1	316	1	366	1	313	1
Mean	253		294		310		358		304	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.60		5.55		1.83			
Growth regulator (B)	**		1.65		4.82		1.88			
B within A	**		3.30		9.64					
A within B			3.28		9.57					
<b>Grains/earhead</b>										
Control	44.19	1	38.75	1	38.45	4	37.81	1	39.80	1
Two sprays of CCC (0.2%)	38.55	4	38.11	2	39.98	2	37.64	2	38.57	3
Two sprays of tebuconazole (0.1 %)	41.10	2	35.96	4	38.94	3	37.52	3	38.38	4
Two sprays of CCC + tebuconazole	38.66	3	37.85	3	40.42	1	37.37	4	38.57	2
Mean	40.62		37.67		39.45		37.59		38.83	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	*		0.55		1.91		4.92			
Growth regulator (B)	N.S.		0.43		1.25		3.81			
B within A	**		0.85		2.49					
A within B			0.92		2.69					
<b>1000 grains weight, g</b>										
Control	30.93	4	34.97	4	37.07	4	38.23	4	35.30	4
Two sprays of CCC (0.2%)	32.45	3	35.17	3	37.23	3	38.43	3	35.82	3
Two sprays of tebuconazole (0.1 %)	34.03	2	37.47	1	37.73	1	39.83	2	37.27	2
Two sprays of CCC + tebuconazole	35.10	1	36.53	2	37.63	2	40.70	1	37.49	1
Mean	33.13		36.04		37.42		39.30		36.47	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.33		1.14		3.14			
Growth regulator (B)	**		0.29		0.85		2.77			
B within A	N.S.		0.58		1.70					
A within B			0.60		1.76					
<b>Biomass. q/ha</b>										
Control	57.85	4	66.37	4	71.68	4	75.96	4	67.96	4
Two sprays of CCC (0.2%)	60.60	3	68.47	3	72.44	3	76.24	3	69.44	3
Two sprays of tebuconazole (0.1 %)	62.80	2	68.84	2	74.04	2	77.96	2	70.91	2
Two sprays of CCC + tebuconazole	64.37	1	69.30	1	74.87	1	79.08	1	71.91	1
Mean	61.41		68.25		73.26		77.31		70.05	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.24		0.82		1.17			
Growth regulator (B)	**		0.32		0.93		1.58			
B within A	N.S.		0.64		1.87					
A within B			0.60		1.76					
<b>Plant ht., cm</b>										
Control	60.93	4	81.01	4	87.49	4	91.94	4	80.34	4
Two sprays of CCC (0.2%)	66.39	3	82.76	3	88.82	2	92.09	3	82.52	3
Two sprays of tebuconazole (0.1 %)	68.30	2	82.94	2	88.69	3	94.11	2	83.51	2
Two sprays of CCC + tebuconazole	71.11	1	86.26	1	89.58	1	94.89	1	85.46	1
Mean	66.68		83.24		88.65		93.26		82.96	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.54		1.86		2.24			
Growth regulator (B)	**		0.27		0.79		1.14			
B within A	**		0.54		1.59					
A within B			0.71		2.09					
Date of Sowing:	16.11.2016				Date of Harvesting:		27.03.2017			

**Table 6.15.5. Central Zone** **SPL-2** **Junagadh** **2016-17**

Growth Regulator (GR)	Fertilization				150% RDF Rk	150%RDF+FYM Rk	Mean	Rk	
	Control	Rk	RDF	Rk					
<b>Yield,q/ha</b>									
Control	31.90	4	45.65	2	46.05	1	43.72	4	
Two sprays of CCC (0.2%)	36.63	1	43.10	4	45.92	2	44.12	2	
Two sprays of tebuconazole (0.1 %)	35.75	2	43.64	3	45.51	3	43.90	3	
Two sprays of CCC + tebuconazole	35.71	3	46.80	1	45.41	4	44.67	1	
Mean	35.00		44.80		45.72		44.10		
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.80		2.77		6.29		
B within A	N.S.		0.70		2.05		5.53		
A within B	N.S.		1.41		4.11				
			1.46		4.26				
<b>Earhead/sqm</b>									
Control	292	4	352	4	351	2	340	3	
Two sprays of CCC (0.2%)	311	2	377	1	341	3	346	2	
Two sprays of tebuconazole (0.1 %)	305	3	354	3	338	4	334	4	
Two sprays of CCC + tebuconazole	333	1	370	2	353	1	348	1	
Mean	310		363		346		342		
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		6.88		23.82		6.97		
B within A	N.S.		7.18		20.96		7.28		
A within B	N.S.		14.36		41.93				
			14.22		41.50				
<b>Grains/earhead</b>									
Control	23.74	4	30.80	2	30.06	3	29.66	4	
Two sprays of CCC (0.2%)	26.23	1	28.75	4	33.22	1	30.46	3	
Two sprays of tebuconazole (0.1 %)	26.17	2	29.34	3	31.87	2	31.15	2	
Two sprays of CCC + tebuconazole	25.87	3	32.46	1	30.03	4	31.63	1	
Mean	25.50		30.34		31.30		30.73		
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.84		2.90		9.45		
B within A	N.S.		0.69		2.01		7.78		
A within B	N.S.		1.38		4.03				
			1.46		4.26				
<b>1000 grains weight, g</b>									
Control	46.20	1	42.40	1	43.80	1	43.45	1	
Two sprays of CCC (0.2%)	45.00	2	39.80	3	40.80	4	42.05	3	
Two sprays of tebuconazole (0.1 %)	45.00	2	42.00	2	42.40	3	42.45	2	
Two sprays of CCC + tebuconazole	42.00	4	39.20	4	42.80	2	40.85	4	
Mean	44.55		40.85		42.45		42.20		
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.35		1.21		2.87		
B within A	**		0.28		0.83		2.33		
A within B	**		0.57		1.65				
			0.60		1.76				
<b>Biomass, q/ha</b>									
Control	70.51	4	101.02	1	108.54	2	100.02	2	
Two sprays of CCC (0.2%)	77.93	2	99.32	3	109.05	1	101.24	1	
Two sprays of tebuconazole (0.1 %)	78.23	1	99.22	4	106.70	3	98.86	4	
Two sprays of CCC + tebuconazole	75.31	3	101.02	1	105.41	4	99.26	3	
Mean	75.49		100.14		107.42		99.84		
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		2.17		7.49		7.51		
B within A	N.S.		1.05		3.07		3.65		
A within B	N.S.		2.10		6.14				
			2.83		8.26				
<b>Plant ht., cm</b>									
Control	70.67	1	81.67	2	82.67	1	80.17	1	
Two sprays of CCC (0.2%)	63.67	3	71.00	3	71.67	3	70.58	3	
Two sprays of tebuconazole (0.1 %)	68.67	2	83.00	1	81.00	2	78.17	2	
Two sprays of CCC + tebuconazole	59.67	4	69.67	4	68.00	4	68.00	4	
Mean	65.67		76.33		75.83		74.23		
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	*		1.97		6.80		9.18		
B within A	**		0.82		2.41		3.85		
A within B	N.S.		1.65		4.82				
			2.43		7.09				
Date of Sowing:	23.11.2016				Date of Harvesting:	16.03.2017			

**Table 6.15.6. Central Zone** **SPL-2** **Kota** **2016-17**

Growth Regulator (GR)	Fertilization				150% RDF Rk	150%RDF+FYM Rk	Mean	Rk		
	Control	Rk	RDF	Rk						
<b>Yield, q/ha</b>										
Control	32.07	2	57.33	4	62.03	4	63.89	1	53.83	4
Two sprays of CCC (0.2%)	31.08	4	59.62	2	62.25	3	63.39	2	54.09	2
Two sprays of tebuconazole (0.1 %)	32.08	1	59.33	3	63.36	1	62.91	3	54.42	1
Two sprays of CCC + tebuconazole	31.13	3	60.08	1	62.32	2	62.50	4	54.01	3
Mean	31.59		59.09		62.49		63.17		54.09	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.46		1.57		2.91			
Growth regulator (B)	N.S.		0.39		1.14		2.50			
B within A	N.S.		0.78		2.28					
A within B			0.81		2.38					
<b>Earhead/sqm</b>										
Control	288	3	325	1	286	3	294	3	298	3
Two sprays of CCC (0.2%)	281	4	291	4	311	2	312	1	299	2
Two sprays of tebuconazole (0.1 %)	300	1	312	2	327	1	286	4	306	1
Two sprays of CCC + tebuconazole	292	2	305	3	281	4	309	2	297	4
Mean	290		308		301		300		300	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		2.20		7.60		2.53			
Growth regulator (B)	N.S.		2.82		8.23		3.25			
B within A	**		5.64		16.45					
A within B			5.35		15.62					
<b>Grains/earhead</b>										
Control	26.90	1	41.58	4	48.77	2	49.24	2	41.63	3
Two sprays of CCC (0.2%)	26.28	2	47.62	1	46.69	3	46.88	4	41.87	2
Two sprays of tebuconazole (0.1 %)	25.79	3	44.05	3	43.96	4	51.51	1	41.33	4
Two sprays of CCC + tebuconazole	25.17	4	47.09	2	53.89	1	47.77	3	43.48	1
Mean	26.03		45.08		48.33		48.85		42.08	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.80		2.76		6.57			
Growth regulator (B)	N.S.		0.57		1.68		4.73			
B within A	**		1.15		3.35					
A within B			1.28		3.72					
<b>1000 grains weight, g</b>										
Control	41.40	4	42.53	3	44.50	1	44.23	1	43.17	1
Two sprays of CCC (0.2%)	42.13	2	43.10	2	43.07	3	43.50	2	42.95	3
Two sprays of tebuconazole (0.1 %)	41.43	3	43.30	1	44.33	2	42.87	3	42.98	2
Two sprays of CCC + tebuconazole	42.43	1	41.90	4	41.20	4	42.47	4	42.00	4
Mean	41.85		42.71		43.28		43.27		42.78	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	*		0.29		1.01		2.37			
Growth regulator (B)	**		0.21		0.61		1.69			
B within A	**		0.42		1.22					
A within B			0.47		1.36					
<b>Biomass. q/ha</b>										
Control	75.75	2	130.35	4	133.74	2	133.29	4	118.28	4
Two sprays of CCC (0.2%)	75.20	3	133.93	2	137.16	1	134.31	3	120.15	1
Two sprays of tebuconazole (0.1 %)	77.60	1	134.96	1	132.22	4	135.67	1	120.11	2
Two sprays of CCC + tebuconazole	71.77	4	133.39	3	133.10	3	135.50	2	118.44	3
Mean	75.08		133.16		134.05		134.69		119.25	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.71		2.47		2.08			
Growth regulator (B)	N.S.		0.96		2.79		2.78			
B within A	N.S.		1.91		5.58					
A within B			1.80		5.27					
<b>Plant ht., cm</b>										
Control	91.33	3	93.67	4	93.67	4	102.00	1	95.17	4
Two sprays of CCC (0.2%)	93.33	1	99.67	2	94.33	3	100.67	3	97.00	2
Two sprays of tebuconazole (0.1 %)	92.00	2	100.33	1	97.67	1	101.67	2	97.92	1
Two sprays of CCC + tebuconazole	90.33	4	96.33	3	95.33	2	99.33	4	95.33	3
Mean	91.75		97.50		95.25		100.92		96.35	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		0.46		1.59		1.65			
Growth regulator (B)	**		0.27		0.80		0.99			
B within A	**		0.55		1.60					
A within B			0.66		1.93					
Date of Sowing:	10.11.2016				Date of Harvesting:	27.03.2017				

Table 6.15.7. Central Zone

SPL-2

Udaipur

2016-17

Growth Regulator (GR)	Fertilization				150% RDF Rk	150%RDF+FYM Rk	Mean	Rk
	Control	Rk	RDF	Rk				
<b>Yield,q/ha</b>								
Control	24.42	4	41.90	4	35.98	4	45.48	4
Two sprays of CCC (0.2%)	34.70	3	45.55	3	49.67	2	52.04	1
Two sprays of tebuconazole (0.1 %)	40.17	1	46.72	2	47.45	3	49.34	2
Two sprays of CCC + tebuconazole	36.60	2	48.79	1	56.67	1	48.56	3
Mean	33.97		45.74		47.44		48.85	
	F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		0.81		2.79		6.35	
Growth regulator (B)	**		0.62		1.81		4.88	
B within A	**		1.24		3.62			
A within B			1.34		3.92			
<b>Earhead/sqm</b>								
Control	377	4	499	4	506	4	518	4
Two sprays of CCC (0.2%)	391	3	514	1	520	3	529	2
Two sprays of tebuconazole (0.1 %)	427	1	507	3	531	2	522	3
Two sprays of CCC + tebuconazole	420	2	514	1	534	1	542	1
Mean	404		509		523		528	
	F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		9.14		31.65		6.45	
Growth regulator (B)	*		5.94		17.33		4.19	
B within A	N.S.		11.87		34.65			
A within B			13.76		40.16			
<b>Grains/earhead</b>								
Control	20.07	4	23.52	3	18.46	4	19.72	4
Two sprays of CCC (0.2%)	28.48	1	25.89	2	23.68	2	20.30	2
Two sprays of tebuconazole (0.1 %)	25.56	3	28.15	1	22.65	3	20.11	3
Two sprays of CCC + tebuconazole	27.00	2	21.95	4	25.73	1	20.74	1
Mean	25.28		24.88		22.63		20.22	
	F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		0.43		1.47		6.34	
Growth regulator (B)	**		0.55		1.59		8.12	
B within A	**		1.09		3.18			
A within B			1.04		3.02			
<b>1000 grains weight, g</b>								
Control	32.33	3	35.67	2	38.63	4	44.50	3
Two sprays of CCC (0.2%)	31.43	4	34.27	3	40.54	2	48.50	1
Two sprays of tebuconazole (0.1 %)	37.03	1	32.77	4	39.57	3	47.00	2
Two sprays of CCC + tebuconazole	32.37	2	43.23	1	41.35	1	43.23	4
Mean	33.29		36.48		40.02		45.81	
	F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		0.50		1.74		4.47	
Growth regulator (B)	**		0.31		0.92		2.80	
B within A	**		0.63		1.84			
A within B			0.74		2.16			
<b>Biomass. q/ha</b>								
Control	62.09	4	95.80	4	92.77	4	101.27	4
Two sprays of CCC (0.2%)	71.54	3	109.58	3	111.77	2	117.96	1
Two sprays of tebuconazole (0.1 %)	81.06	1	110.96	1	109.39	3	115.63	2
Two sprays of CCC + tebuconazole	74.10	2	110.28	2	126.25	1	108.62	3
Mean	72.20		106.65		110.05		110.87	
	F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)	**		1.85		6.40		6.41	
Growth regulator (B)	**		1.89		5.51		6.55	
B within A	*		3.78		11.03			
A within B			3.76		10.97			
<b>Plant ht., cm</b>								
Control	77.61	1	88.11	1	86.34	1	89.78	1
Two sprays of CCC (0.2%)	71.18	4	85.48	3	84.14	2	84.28	2
Two sprays of tebuconazole (0.1 %)	73.90	3	85.23	4	83.30	3	83.47	3
Two sprays of CCC + tebuconazole	76.41	2	85.71	2	81.38	4	82.44	4
Mean	74.77		86.13		83.79		84.99	
	F. Test		SEm		CD (0.05)		CV (%)	
Fertilization (A)	*		2.16		7.49		9.09	
Growth regulator (B)	**		0.77		2.26		3.25	
B within A	N.S.		1.55		4.51			
A within B			2.54		7.42			
Date of Sowing:	11.11.2016				Date of Harvesting: 05.04.2017			

Table 6.15.8. Central Zone

SPL-2

Vijapur

2016-17

Growth Regulator (GR)	Fertilization									
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk	Mean	Rk
	<b>Yield,q/ha</b>									
Control	33.49	2	36.75	2	39.39	2	40.07	1	37.42	2
Two sprays of CCC (0.2%)	33.40	3	34.27	4	39.13	3	37.48	4	36.07	4
Two sprays of tebuconazole (0.1 %)	31.26	4	38.21	1	37.07	4	38.72	3	36.32	3
Two sprays of CCC + tebuconazole	36.63	1	35.26	3	41.14	1	39.81	2	38.21	1
Mean	33.69		36.12		39.18		39.02		37.01	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	*		1.10		3.80		10.28			
Growth regulator (B)	N.S.		1.37		3.99		12.80			
B within A	N.S.		2.73		7.98					
A within B			2.61		7.62					
	<b>Earhead/sqm</b>									
Control	358	3	417	2	388	3	373	4	384	3
Two sprays of CCC (0.2%)	418	1	346	4	407	1	471	1	410	1
Two sprays of tebuconazole (0.1 %)	357	4	421	1	358	4	386	2	380	4
Two sprays of CCC + tebuconazole	385	2	411	3	400	2	377	3	393	2
Mean	379		399		388		402		392	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		20.58		71.21		18.18			
Growth regulator (B)	N.S.		13.42		39.17		11.86			
B within A	N.S.		26.84		78.33					
A within B			31.04		90.61					
	<b>Grains/earhead</b>									
Control	18.06	3	18.00	4	21.72	4	23.43	2	20.30	4
Two sprays of CCC (0.2%)	17.17	4	23.65	1	21.85	3	19.98	4	20.66	3
Two sprays of tebuconazole (0.1 %)	19.35	2	19.32	3	22.77	1	22.00	3	20.86	2
Two sprays of CCC + tebuconazole	22.52	1	20.12	2	22.11	2	23.80	1	22.14	1
Mean	19.28		20.27		22.11		22.30		20.99	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		1.14		3.94		18.81			
Growth regulator (B)	N.S.		1.20		3.49		19.75			
B within A	N.S.		2.39		6.99					
A within B			2.37		6.91					
	<b>1000 grains weight, g</b>									
Control	52.60	1	49.47	1	47.53	1	45.77	2	48.84	1
Two sprays of CCC (0.2%)	46.63	2	43.57	3	44.13	4	40.80	4	43.78	4
Two sprays of tebuconazole (0.1 %)	46.17	3	47.77	2	46.60	3	46.40	1	46.73	2
Two sprays of CCC + tebuconazole	43.40	4	43.30	4	46.77	2	44.53	3	44.50	3
Mean	47.20		46.03		46.26		44.38		45.96	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		1.13		3.92		8.54			
Growth regulator (B)	*		1.12		3.26		8.42			
B within A	N.S.		2.23		6.52					
A within B			2.24		6.55					
	<b>Biomass. q/ha</b>									
Control	69.73	3	79.93	1	85.03	2	83.33	4	79.51	3
Two sprays of CCC (0.2%)	71.43	2	76.53	3	81.63	4	91.84	1	80.36	1
Two sprays of tebuconazole (0.1 %)	66.33	4	79.93	1	85.03	3	88.44	2	79.93	2
Two sprays of CCC + tebuconazole	74.83	1	68.03	4	86.73	1	88.44	2	79.51	3
Mean	70.58		76.11		84.61		88.01		79.83	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	*		3.11		10.75		13.48			
Growth regulator (B)	N.S.		2.46		7.19		10.69			
B within A	N.S.		4.93		14.38					
A within B			5.28		15.41					
	<b>Plant ht., cm</b>									
Control	81.67	2	82.33	2	88.11	1	85.89	2	84.50	1
Two sprays of CCC (0.2%)	77.11	3	79.33	3	82.78	3	80.33	3	79.89	3
Two sprays of tebuconazole (0.1 %)	83.00	1	83.11	1	83.56	2	86.33	1	84.00	2
Two sprays of CCC + tebuconazole	76.67	4	78.44	4	79.78	4	77.33	4	78.06	4
Mean	79.61		80.81		83.56		82.47		81.61	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		1.30		4.50		5.52			
Growth regulator (B)	**		1.04		3.04		4.42			
B within A	N.S.		2.08		6.07					
A within B			2.22		6.49					
Date of Sowing:	18.11.2016				Date of Harvesting: 20.03.2017					

<b>Table 6.16.1. Peninsular Zone</b>		<b>SPL-2</b>				<b>Dharwad</b>				<b>2016-17</b>	
Growth Regulator (GR)	Fertilization								Mean	Rk	
	Control	Rk	RDF	Rk	150% RDF	Rk	150%RDF+FYM	Rk			
<b>Yield, q/ha</b>											
Control	29.75	4	36.57	4	38.76	4	39.06	4	36.04	4	
Two sprays of CCC (0.2%)	31.58	3	39.73	3	40.34	3	41.24	3	38.22	3	
Two sprays of tebuconazole (0.1 %)	32.69	2	40.00	2	41.09	2	42.08	2	38.97	2	
Two sprays of CCC + tebuconazole	35.38	1	42.79	1	43.05	1	44.02	1	41.31	1	
Mean	32.35		39.77		40.81		41.60		38.63		
	F. Test		SEm		CD (0.05)		CV (%)				
Fertilization (A)	**		0.39		1.36		3.51				
Growth regulator (B)	**		0.72		2.11		6.48				
B within A	N.S.		1.44		4.22						
A within B			1.31		3.83						
<b>Earhead/sqm</b>											
Control	232	4	238	4	240	4	241	4	238	4	
Two sprays of CCC (0.2%)	234	3	242	3	248	3	254	3	245	3	
Two sprays of tebuconazole (0.1 %)	237	1	244	2	249	2	260	2	248	2	
Two sprays of CCC + tebuconazole	237	1	262	1	264	1	270	1	258	1	
Mean	235		247		250		256		247		
	F. Test		SEm		CD (0.05)		CV (%)				
Fertilization (A)	**		1.87		6.48		2.63				
Growth regulator (B)	**		1.55		4.53		2.18				
B within A	*		3.10		9.06						
A within B			3.28		9.56						
<b>Grains/earhead</b>											
Control	37.91	3	43.07	1	42.52	1	40.59	1	41.02	1	
Two sprays of CCC (0.2%)	37.87	4	40.81	2	38.73	4	39.25	2	39.16	2	
Two sprays of tebuconazole (0.1 %)	38.39	2	39.18	3	39.49	2	36.73	3	38.45	4	
Two sprays of CCC + tebuconazole	41.22	1	37.89	4	39.31	3	36.28	4	38.67	3	
Mean	38.85		40.24		40.01		38.21		39.33		
	F. Test		SEm		CD (0.05)		CV (%)				
Fertilization (A)	N.S.		0.55		1.91		4.85				
Growth regulator (B)	N.S.		0.89		2.61		7.88				
B within A	N.S.		1.79		5.22						
A within B			1.64		4.80						
<b>1000 grains weight, g</b>											
Control	34.12	4	35.75	4	37.98	4	40.14	4	37.00	4	
Two sprays of CCC (0.2%)	35.76	3	40.28	3	42.23	1	41.39	3	39.92	3	
Two sprays of tebuconazole (0.1 %)	35.93	2	41.80	2	41.79	2	44.15	2	40.92	2	
Two sprays of CCC + tebuconazole	36.28	1	43.20	1	41.51	3	44.97	1	41.49	1	
Mean	35.52		40.26		40.88		42.66		39.83		
	F. Test		SEm		CD (0.05)		CV (%)				
Fertilization (A)	**		0.57		1.96		4.92				
Growth regulator (B)	**		0.72		2.09		6.23				
B within A	N.S.		1.43		4.18						
A within B			1.36		3.98						
<b>Biomass. q/ha</b>											
Control	82.32	4	105.06	4	106.55	4	115.24	3	102.29	4	
Two sprays of CCC (0.2%)	86.82	3	107.76	3	108.48	3	110.03	4	103.27	3	
Two sprays of tebuconazole (0.1 %)	88.49	2	109.68	2	109.56	2	121.91	2	107.41	2	
Two sprays of CCC + tebuconazole	104.72	1	115.68	1	120.54	1	122.08	1	115.75	1	
Mean	90.59		109.55		111.28		117.31		107.18		
	F. Test		SEm		CD (0.05)		CV (%)				
Fertilization (A)	**		2.24		7.76		7.25				
Growth regulator (B)	**		1.67		4.89		5.41				
B within A	N.S.		3.35		9.78						
A within B			3.67		10.70						
<b>Plant ht., cm</b>											
Control	70.53	2	72.46	1	71.20	1	66.06	1	70.06	1	
Two sprays of CCC (0.2%)	65.58	4	66.60	4	70.90	3	62.93	4	66.50	4	
Two sprays of tebuconazole (0.1 %)	70.06	3	70.58	2	71.07	2	64.73	3	69.11	2	
Two sprays of CCC + tebuconazole	71.46	1	67.66	3	69.20	4	65.79	2	68.53	3	
Mean	69.41		69.33		70.59		64.88		68.55		
	F. Test		SEm		CD (0.05)		CV (%)				
Fertilization (A)	**		0.57		1.97		2.88				
Growth regulator (B)	**		0.57		1.65		2.86				
B within A	N.S.		1.13		3.30						
A within B			1.13		3.31						
Date of Sowing:	11.11.2016				Date of Harvesting:	15.03.2017					

<b>Table 6.16.2. Peninsular Zone</b>		<b>SPL-2</b>				<b>Niphad</b>				<b>2016-17</b>	
<b>Growth Regulator (GR)</b>	<b>Fertilization</b>								<b>Mean</b>	<b>Rk</b>	
	<b>Control</b>	<b>Rk</b>	<b>RDF</b>	<b>Rk</b>	<b>150% RDF</b>	<b>Rk</b>	<b>150%RDF+FYM</b>	<b>Rk</b>			
<b>Yield, q/ha</b>											
Control	22.45	4	31.63	3	40.80	3	42.26	3	34.28	4	
Two sprays of CCC (0.2%)	25.59	1	32.40	2	42.79	2	45.58	1	36.59	1	
Two sprays of tebuconazole (0.1 %)	24.37	3	33.64	1	43.03	1	41.33	4	35.59	2	
Two sprays of CCC + tebuconazole	24.68	2	30.21	4	40.41	4	43.54	2	34.71	3	
Mean	24.27		31.97		41.76		43.18		35.29		
	<b>F. Test</b>		<b>SEm</b>		<b>CD (0.05)</b>		<b>CV (%)</b>				
Fertilization (A)	**		0.39		1.36		3.51				
Growth regulator (B)	**		0.72		2.11		6.48				
B within A	N.S.		1.44		4.22						
A within B			1.31		3.83						
<b>Earhead/sqm</b>											
Control	392	2	418	3	405	4	402	4	405	4	
Two sprays of CCC (0.2%)	384	3	421	2	423	3	425	2	413	2	
Two sprays of tebuconazole (0.1 %)	379	4	416	4	428	1	429	1	413	3	
Two sprays of CCC + tebuconazole	400	1	423	1	427	2	417	3	417	1	
Mean	389		420		421		418		412		
	<b>F. Test</b>		<b>SEm</b>		<b>CD (0.05)</b>		<b>CV (%)</b>				
Fertilization (A)	**		2.14		7.40		1.80				
Growth regulator (B)	*		2.71		7.92		2.28				
B within A	*		5.42		15.83						
A within B			5.16		15.07						
<b>Grains/earhead</b>											
Control	15.57	4	17.58	3	23.51	1	24.61	2	20.32	3	
Two sprays of CCC (0.2%)	19.30	1	17.68	2	23.09	3	24.78	1	21.21	1	
Two sprays of tebuconazole (0.1 %)	18.26	2	18.73	1	23.23	2	22.02	4	20.56	2	
Two sprays of CCC + tebuconazole	16.76	3	16.56	4	21.29	4	23.49	3	19.52	4	
Mean	17.47		17.64		22.78		23.72		20.40		
	<b>F. Test</b>		<b>SEm</b>		<b>CD (0.05)</b>		<b>CV (%)</b>				
Fertilization (A)	**		0.67		2.33		11.43				
Growth regulator (B)	N.S.		0.72		2.10		12.23				
B within A	N.S.		1.44		4.20						
A within B			1.42		4.14						
<b>1000 grains weight, g</b>											
Control	36.96	2	42.94	4	42.83	4	42.63	4	41.34	4	
Two sprays of CCC (0.2%)	35.01	4	43.61	1	43.79	2	43.32	3	41.43	2	
Two sprays of tebuconazole (0.1 %)	35.50	3	43.11	2	43.31	3	43.77	2	41.42	3	
Two sprays of CCC + tebuconazole	36.98	1	43.00	3	44.39	1	44.38	1	42.19	1	
Mean	36.11		43.17		43.58		43.52		41.59		
	<b>F. Test</b>		<b>SEm</b>		<b>CD (0.05)</b>		<b>CV (%)</b>				
Fertilization (A)	**		0.27		0.95		2.28				
Growth regulator (B)	N.S.		0.36		1.05		2.98				
B within A	N.S.		0.72		2.09						
A within B			0.68		1.98						
<b>Biomass. q/ha</b>											
Control	33.06	4	53.10	3	68.72	2	57.06	2	52.98	3	
Two sprays of CCC (0.2%)	44.01	1	59.94	1	57.68	4	52.93	3	53.64	2	
Two sprays of tebuconazole (0.1 %)	38.87	3	46.31	4	61.33	3	61.53	1	52.01	4	
Two sprays of CCC + tebuconazole	40.82	2	55.04	2	71.22	1	51.36	4	54.61	1	
Mean	39.19		53.60		64.74		55.72		53.31		
	<b>F. Test</b>		<b>SEm</b>		<b>CD (0.05)</b>		<b>CV (%)</b>				
Fertilization (A)	**		2.00		6.93		13.02				
Growth regulator (B)	N.S.		1.66		4.85		10.79				
B within A	**		3.32		9.69						
A within B			3.51		10.23						
<b>Plant ht., cm</b>											
Control	77.00	2	81.67	2	83.00	1	86.33	1	82.00	2	
Two sprays of CCC (0.2%)	72.00	4	76.33	3	72.00	4	73.33	4	73.42	4	
Two sprays of tebuconazole (0.1 %)	83.67	1	85.00	1	79.67	2	84.33	3	83.17	1	
Two sprays of CCC + tebuconazole	76.67	3	73.00	4	74.33	3	84.67	2	77.17	3	
Mean	77.33		79.00		77.25		82.17		78.94		
	<b>F. Test</b>		<b>SEm</b>		<b>CD (0.05)</b>		<b>CV (%)</b>				
Fertilization (A)	*		0.85		2.95		3.74				
Growth regulator (B)	**		1.10		3.20		4.81				
B within A	N.S.		2.19		6.40						
A within B			2.08		6.07						
Date of Sowing:	06.11.2016				Date of Harvesting:	30.03.2017					



Table 6.16.3. Peninsular Zone		SPL-2				Pune		2016-17		
Growth Regulator (GR)	Fertilization				150% RDF+FYM	Rk	Mean	Rk		
	Control	Rk	RDF	Rk						
<b>Yield, q/ha</b>										
Control	29.86	4	50.99	3	56.84	2	61.54	1	49.81	3
Two sprays of CCC (0.2%)	31.38	2	50.90	4	56.17	4	56.09	4	48.64	4
Two sprays of tebuconazole (0.1 %)	31.79	1	53.62	2	56.67	3	60.03	3	50.53	2
Two sprays of CCC + tebuconazole	30.03	3	55.78	1	58.74	1	60.21	2	51.19	1
Mean	30.77		52.82		57.11		59.47		50.04	
	F. Test		SEM		CD (0.05)		CV (%)			
Fertilization (A)	**		1.19		4.10		8.20			
Growth regulator (B)	N.S.		1.10		3.22		7.64			
B within A	N.S.		2.21		6.44					
A within B			2.25		6.56					
<b>Earhead/sqm</b>										
Control	275	2	322	2	315	4	322	3	308	4
Two sprays of CCC (0.2%)	280	1	307	4	327	2	350	1	316	2
Two sprays of tebuconazole (0.1 %)	272	4	348	1	322	3	320	4	315	3
Two sprays of CCC + tebuconazole	273	3	310	3	393	1	328	2	326	1
Mean	275		322		339		330		316	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		6.71		23.23		7.35			
Growth regulator (B)	N.S.		8.19		23.89		8.96			
B within A	N.S.		16.37		47.78					
A within B			15.69		45.79					
<b>Grains/earhead</b>										
Control	25.27	3	36.13	3	42.10	1	44.27	1	36.94	1
Two sprays of CCC (0.2%)	25.57	2	38.08	2	40.02	2	36.10	4	34.94	4
Two sprays of tebuconazole (0.1 %)	27.06	1	35.71	4	39.77	3	42.42	2	36.24	2
Two sprays of CCC + tebuconazole	25.10	4	41.34	1	34.63	4	40.91	3	35.50	3
Mean	25.75		37.82		39.13		40.93		35.91	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.12		3.89		10.85			
Growth regulator (B)	N.S.		1.06		3.09		10.21			
B within A	N.S.		2.12		6.18					
A within B			2.15		6.28					
<b>1000 grains weight, g</b>										
Control	43.00	4	44.33	1	43.00	3	43.33	4	43.42	4
Two sprays of CCC (0.2%)	44.00	2	43.67	2	43.00	3	44.33	3	43.75	3
Two sprays of tebuconazole (0.1 %)	43.33	3	43.67	2	44.33	1	44.67	2	44.00	2
Two sprays of CCC + tebuconazole	44.67	1	43.67	2	43.33	2	45.00	1	44.17	1
Mean	43.75		43.83		43.42		44.33		43.83	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	N.S.		0.41		1.41		3.22			
Growth regulator (B)	N.S.		0.32		0.93		2.52			
B within A	N.S.		0.64		1.86					
A within B			0.69		2.00					
<b>Biomass. q/ha</b>										
Control	80.41	3	131.67	3	144.35	2	162.62	1	129.76	3
Two sprays of CCC (0.2%)	82.21	2	129.49	4	130.78	4	140.68	4	120.79	4
Two sprays of tebuconazole (0.1 %)	86.19	1	137.52	2	143.23	3	156.40	3	130.84	1
Two sprays of CCC + tebuconazole	77.86	4	138.98	1	145.27	1	157.11	2	129.80	2
Mean	81.67		134.42		140.91		154.20		127.80	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		2.43		8.40		6.58			
Growth regulator (B)	*		2.26		6.60		6.13			
B within A	N.S.		4.52		13.20					
A within B			4.61		13.44					
<b>Plant ht., cm</b>										
Control	89.00	1	98.33	1	98.67	1	99.67	1	96.42	1
Two sprays of CCC (0.2%)	85.67	4	94.67	4	97.00	2	97.67	2	93.75	3
Two sprays of tebuconazole (0.1 %)	89.00	1	95.33	3	97.00	2	97.67	2	94.75	2
Two sprays of CCC + tebuconazole	86.67	3	96.67	2	95.67	4	94.00	4	93.25	4
Mean	87.58		96.25		97.08		97.25		94.54	
	F. Test		SEm		CD (0.05)		CV (%)			
Fertilization (A)	**		1.02		3.54		3.75			
Growth regulator (B)	N.S.		0.83		2.44		3.06			
B within A	N.S.		1.67		4.87					
A within B			1.77		5.17					
Date of Sowing:	09.11.2016				Date of Harvesting:	09.03.2017				

**Table 6.16.4. Peninsular Zone** **SPL-2** **Ugar Khurd** **2016-17**

Growth Regulator (GR)	Fertilization				150% RDF Rk	150%RDF+FYM Rk	Mean	Rk	
	Control	Rk	RDF	Rk					
<b>Yield,q/ha</b>									
Control	30.75	4	37.95	4	39.56	4	37.25	4	
Two sprays of CCC (0.2%)	32.54	3	40.94	3	41.34	3	39.25	3	
Two sprays of tebuconazole (0.1 %)	33.26	2	41.36	2	42.93	2	40.17	2	
Two sprays of CCC + tebuconazole	36.72	1	43.92	1	45.98	1	43.65	1	
Mean	33.32		41.04		42.45		43.51	40.08	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.49		1.71		4.27		
B within A	N.S.		1.20		3.51				
A within B			1.15		3.36				
<b>Earhead/sqm</b>									
Control	236	4	250	3	254	3	273	1	
Two sprays of CCC (0.2%)	238	3	246	4	251	4	256	4	
Two sprays of tebuconazole (0.1 %)	241	2	252	2	255	2	261	3	
Two sprays of CCC + tebuconazole	244	1	262	1	271	1	271	2	
Mean	240		253		258		265	254	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.71		2.46		0.97		
B within A	N.S.		2.06		6.02		2.82		
A within B			4.13		12.04				
			3.64		10.64				
<b>Grains/earhead</b>									
Control	35.34	4	37.07	4	37.28	4	34.76	4	
Two sprays of CCC (0.2%)	36.95	2	38.85	1	38.19	3	37.96	2	
Two sprays of tebuconazole (0.1 %)	36.73	3	38.26	3	38.83	2	37.61	3	
Two sprays of CCC + tebuconazole	39.58	1	38.44	2	39.00	1	39.54	1	
Mean	37.15		38.16		38.33		37.47	37.78	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	N.S.		0.69		2.39		6.33		
B within A	N.S.		0.90		2.63		8.25		
A within B			1.80		5.25				
			1.71		4.98				
<b>1000 grains weight, g</b>									
Control	36.96	4	40.98	4	41.84	4	42.98	4	
Two sprays of CCC (0.2%)	37.16	3	42.86	3	43.28	3	43.46	3	
Two sprays of tebuconazole (0.1 %)	37.54	2	43.11	2	43.52	2	44.12	2	
Two sprays of CCC + tebuconazole	38.14	1	43.64	1	43.60	1	44.82	1	
Mean	37.45		42.65		43.06		43.85	41.75	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.50		1.74		4.18		
B within A	N.S.		0.58		1.70		4.84		
A within B			1.17		3.40				
			1.13		3.29				
<b>Biomass. q/ha</b>									
Control	86.84	4	106.56	4	115.24	4	107.38	4	
Two sprays of CCC (0.2%)	87.68	3	108.98	3	115.72	3	119.57	3	
Two sprays of tebuconazole (0.1 %)	95.76	2	116.56	2	120.22	2	123.16	2	
Two sprays of CCC + tebuconazole	100.12	1	124.98	1	126.36	1	127.32	1	
Mean	92.60		114.27		119.39		119.36	111.40	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		1.50		5.18		4.66		
B within A	N.S.		1.62		4.73		5.03		
A within B			3.24		9.45				
			3.18		9.28				
<b>Plant ht., cm</b>									
Control	72.50	1	79.90	2	87.20	1	81.60	2	
Two sprays of CCC (0.2%)	69.50	4	76.00	4	73.20	4	76.70	3	
Two sprays of tebuconazole (0.1 %)	70.50	3	81.60	1	83.93	2	82.30	1	
Two sprays of CCC + tebuconazole	71.50	2	77.80	3	76.70	3	76.10	4	
Mean	71.00		78.83		80.26		79.18	77.31	
Fertilization (A)	F. Test		SEm		CD (0.05)		CV (%)		
Growth regulator (B)	**		0.52		1.80		2.34		
B within A	**		0.55		1.61		2.47		
A within B			1.10		3.22				
			1.09		3.17				
Date of Sowing:	12.11.2016				Date of Harvesting:	24.03.2017			

**Table 6.17.1. Peninsular Zone**

Soybean/Maize	Wheat	SPL-3		Dharwad	2016-17
		Earheads/sqm	TGW, g	Grains/earhead	Yield, q/ha
		<b>Wheat</b>			
Recommended Fertilizers(RDF)	Wheat RDF	240	40.14	41.07	39.56
125% of RDF	125% of RDF	252	41.45	39.99	41.57
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 4.0 t ha <sup>-1</sup> targeted yield	238	35.56	41.69	35.16
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 5.0 t ha <sup>-1</sup> targeted yield	244	41.38	39.82	40.16
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 6.0 t ha <sup>-1</sup> targeted yield	260	42.79	38.72	42.97
RDF Soybean	RDF for targeted yield - 4t ha <sup>-1</sup>	237	39.28	41.50	38.51
RDF Soybean	RDF for targeted yield - 5t ha <sup>-1</sup>	243	41.49	40.07	40.36
RDF Soybean	RDF for targeted yield - 6t ha <sup>-1</sup>	260	42.39	39.55	43.56
Absolute control-Soybean	Absolute control	232	38.71	36.32	32.48
Absolute control-Maize	Absolute control	230	36.52	36.78	30.72
CD (0.05)		4.52	3.93	6.79	4.08
Date of Sowing: 22.11.2016		Date of Harvesting : 28.03.2017			

**Table 6.17.2. Peninsular Zone**

Soybean/Maize	Wheat	SPL-3		Niphad	2016-17
		Earheads/sqm	TGW,g	Grains/earhead	Yield, q/ha
		<b>Wheat</b>			
Recommended Fertilizers(RDF)	Wheat RDF	426	42.36	24.63	44.41
125% of RDF	125% of RDF	423	43.37	25.61	46.97
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 4.0 t ha <sup>-1</sup> targeted yield	420	42.95	22.52	40.63
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 5.0 t ha <sup>-1</sup> targeted yield	417	46.36	23.92	46.23
RDF for 6.0 t ha <sup>-1</sup> targeted maize yield	RDF for 6.0 t ha <sup>-1</sup> targeted yield	430	44.59	25.05	48.07
RDF Soybean	RDF for targeted yield - 4t ha <sup>-1</sup>	416	44.07	23.33	42.73
RDF Soybean	RDF for targeted yield - 5t ha <sup>-1</sup>	415	43.41	26.15	47.10
RDF Soybean	RDF for targeted yield - 6t ha <sup>-1</sup>	414	42.58	27.60	48.64
Absolute control-Soybean	Absolute control	399	36.53	19.31	28.07
Absolute control-Maize	Absolute control	399	35.26	16.96	23.92
CD (0.05)		9.99	1.20	3.32	5.31
Date of Sowing: 30.11.2016		Date of Harvesting : 28.03.2017			

**Table 6.18.1. Northern Hills Zone**

N Management	Genotype					Genotype										
	HPW 349 Rk	VL 907 Rk	HS 507	Rk	Mean Rk	HPW 349 Rk	VL 907 Rk	HS 507	Rk	Mean Rk						
		<b>Yield, q/ha</b>					<b>Earhead/sqm</b>									
No N	27.73	7	36.97	7	22.20	7	28.97	7	262	7	277	7	255	7	264	7
N 150 kg/ha	63.57	2	65.67	3	57.80	4	62.34	3	432	3	433	3	425	4	430	3
N LCC 35,25	55.93	5	58.17	5	54.43	6	56.18	5	382	6	388	5	388	6	386	6
N LCC 45,35	61.77	4	62.17	4	61.10	3	61.68	4	413	4	413	4	428	3	418	4
N LCC 55,45	63.30	3	66.10	2	65.27	1	64.89	2	437	2	443	2	447	1	442	2
N Green Seeker	49.67	6	54.37	6	54.73	5	52.92	6	392	5	383	6	410	5	395	5
N rich plot	70.37	1	69.97	1	63.97	2	68.10	1	458	1	472	1	440	2	457	1
Mean	56.05		59.06		54.21		56.44		396		401		399		399	
		F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)							
Genotype (A)	N.S.		1.56	6.13	12.68	N.S.		4.86	19.10	5.59						
Nitrogen (B)	**		1.72	4.92	9.12	**		5.89	16.89	4.43						
B within A	N.S.		2.97	8.53		N.S.		10.19	29.25							
A within B			3.16	9.08				10.62	30.47							
		<b>Grains/earhead</b>					<b>1000 Grains weight, g</b>									
No N	22.54	7	25.84	7	18.75	7	22.38	7	46.88	6	51.66	2	46.40	6	48.32	5
N 150 kg/ha	31.82	2	30.45	3	26.80	6	29.69	5	46.38	7	49.92	5	50.61	1	48.97	3
N LCC 35,25	31.19	3	29.90	4	28.52	4	29.87	3	47.35	5	49.98	4	49.54	2	48.95	4
N LCC 45,35	30.85	4	29.18	5	29.20	3	29.75	4	48.40	2	51.59	3	48.87	3	49.62	2
N LCC 55,45	30.60	5	31.55	1	31.49	1	31.22	2	47.44	4	47.34	7	46.60	5	47.12	7
N Green Seeker	25.47	6	27.12	6	28.48	5	27.02	6	49.98	1	52.28	1	46.96	4	49.74	1
N rich plot	32.07	1	31.46	2	31.29	2	31.61	1	47.88	3	47.52	6	46.40	7	47.27	6
Mean	29.22		29.36		27.79		28.79		47.76		50.04		47.91		48.57	
		F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)							
Genotype (A)	N.S.		0.70	2.74	11.11	**		0.25	0.98	2.36						
Nitrogen (B)	**		0.86	2.46	8.92	N.S.		0.78	2.23	4.81						
B within A	N.S.		1.48	4.26		N.S.		1.35	3.87							
A within B			1.54	4.42				1.27	3.65							
Date of Sowing:		05.11.2016					Date of Harvesting:		12.05.2017							

Table 6.18.2. Northern Hill Zone

N Management	SPL-4							Bajaura				2016-17				
	Genotype				Genotype				Mean	Rk						
	HPW 349	Rk	VL 907	Rk	HS 507	Rk	Mean	Rk								
Yield, q/ha																
No N	29.04	7	25.96	7	22.44	7	25.81	7	262	7	271	7	243	7	258	7
N 150 kg/ha	45.42	4	46.29	2	47.42	3	46.38	3	360	4	323	6	378	1	354	3
N LCC 35,25	42.71	6	41.92	5	44.42	6	43.01	6	350	6	346	4	335	4	344	6
N LCC 45,35	47.08	3	43.58	4	47.13	4	45.93	4	356	5	345	5	333	5	344	5
N LCC 55,45	50.42	2	46.19	3	49.83	1	48.81	2	366	2	349	3	349	3	355	2
N Green Seeker	45.29	5	40.75	6	44.71	5	43.58	5	364	3	351	2	329	6	348	4
N rich plot	50.83	1	49.96	1	47.58	2	49.46	1	395	1	366	1	370	2	377	1
Mean	44.40		42.09		43.36		43.28		350		336		334		340	
F. Test											F. Test					
SEm											SEm					
CD (0.05)											CD (0.05)					
CV (%)											CV (%)					
Genotype (A)	N.S.		1.04		4.07		10.98		N.S.		7.88		30.92		10.62	
Nitrogen (B)	**		1.04		2.97		7.18		**		9.41		27.01		8.30	
B within A	N.S.		1.79		5.15				N.S.		16.30		46.78			
A within B			1.96		5.62						17.02		48.85			
Grains/earhead											1000 Grains weight, g					
No N	27.65	7	24.48	7	23.18	7	25.10	7	40.43	7	39.46	7	40.46	6	40.11	7
N 150 kg/ha	28.64	5	32.46	1	30.87	5	30.66	4	44.25	2	44.42	2	40.74	5	43.14	4
N LCC 35,25	28.01	6	29.30	4	32.21	3	29.84	5	43.57	3	41.72	5	41.74	4	42.34	5
N LCC 45,35	30.42	3	29.29	5	33.13	2	30.95	2	43.57	3	43.20	3	42.92	3	43.23	3
N LCC 55,45	30.59	2	29.42	3	32.12	4	30.71	3	45.17	1	45.27	1	44.56	2	45.00	1
N Green Seeker	29.33	4	28.03	6	29.71	6	29.02	6	43.30	5	41.47	6	45.77	1	43.51	2
N rich plot	30.95	1	32.05	2	34.26	1	32.42	1	42.02	6	42.75	4	37.60	7	40.79	6
Mean	29.37		29.29		30.78		29.81		43.19		42.61		41.97		42.59	
F. Test											F. Test					
SEm											SEm					
CD (0.05)											CD (0.05)					
CV (%)											CV (%)					
Genotype (A)	N.S.		0.63		2.47		9.69		N.S.		0.44		1.73		4.74	
Nitrogen (B)	**		1.22		3.50		12.29		**		0.61		1.74		4.28	
B within A	N.S.		2.12		6.07				*		1.05		3.02			
A within B			2.06		5.90						1.07		3.07			
Date of Sowing:	04.11.2016							Date of Harvesting: 29.05.2017								

Table 6.18.3. Northern Hill Zone

N Management	SPL-4							Khudwani				2016-17				
	Genotype				Genotype				Mean	Rk						
	HPW 349	Rk	VL 907	Rk	HS 507	Rk	Mean	Rk								
Yield, q/ha																
No N	23.64	7	22.17	7	22.07	7	22.63	7	210	7	201	7	200	7	203	7
N 150 kg/ha	35.93	1	34.54	1	34.38	1	34.95	1	288	3	253	3	252	3	264	3
N LCC 35,25	33.15	4	32.03	5	31.89	5	32.36	5	268	6	242	6	241	6	250	6
N LCC 45,35	34.60	3	32.26	4	32.12	4	33.00	4	272	5	247	5	246	5	255	5
N LCC 55,45	35.03	2	32.55	3	32.40	3	33.33	3	278	4	251	4	250	4	260	4
N Green Seeker	32.82	5	34.31	2	34.16	2	33.76	2	293	2	262	2	261	2	272	2
N rich plot	28.95	6	27.12	6	27.00	6	27.69	6	301	1	273	1	272	1	282	1
Mean	32.02		30.71		30.57		31.10		273		247		246		255	
F. Test											F. Test					
SEm											SEm					
CD (0.05)											CD (0.05)					
CV (%)											CV (%)					
Genotype (A)	**		0.11		0.44		1.66		**		3.42		13.43		6.15	
Nitrogen (B)	**		0.48		1.37		4.62		**		4.96		14.23		5.83	
B within A	N.S.		0.83		2.38				N.S.		8.59		24.64			
A within B			0.78		2.23						8.66		24.84			
Grains/earhead											1000 Grains weight, g					
No N	43.04	1	45.19	1	45.39	1	44.54	1	26.19	7	24.49	7	24.38	7	25.02	7
N 150 kg/ha	35.92	5	40.31	3	40.48	4	38.90	3	34.76	2	34.17	2	34.02	2	34.32	2
N LCC 35,25	38.28	2	41.16	2	41.34	2	40.26	2	32.23	6	32.23	6	32.09	6	32.19	6
N LCC 45,35	37.61	3	39.12	4	39.29	5	38.68	4	33.94	4	33.41	5	33.26	4	33.54	4
N LCC 55,45	37.05	4	38.51	6	38.69	6	38.09	5	34.08	3	33.69	4	33.54	3	33.77	3
N Green Seeker	33.24	6	38.63	5	40.68	3	37.52	6	33.72	5	34.05	3	32.30	5	33.36	5
N rich plot	27.63	7	28.83	7	28.95	7	28.47	7	34.90	1	34.56	1	34.40	1	34.62	1
Mean	36.11		38.82		39.26		38.06		32.83		32.37		32.00		32.40	
F. Test											F. Test					
SEm											SEm					
CD (0.05)											CD (0.05)					
CV (%)											CV (%)					
Genotype (A)	*		0.67		2.65		8.11		N.S.		0.29		1.14		4.12	
Nitrogen (B)	**		0.70		2.01		5.53		**		0.36		1.04		3.35	
B within A	N.S.		1.22		3.49				N.S.		0.63		1.80			
A within B			1.31		3.76						0.65		1.86			
Date of Sowing:	27.10.2016							Date of Harvesting: 02.06.2017								

Table 6.18.4. Northern Hill Zone										SPL-4				Malan				2016-17			
N Management	Genotype								Genotype												
	HPW 349	Rk	VL 907	Rk	HS 507	Rk	Mean	Rk	HPW 349	Rk	VL 907	Rk	HS 507	Rk	Mean	Rk					
<b>Yield, q/ha</b>																					
No N	13.36	7	16.23	7	15.18	7	14.92	7	215	7	222	7	223	7	220	7					
N 150 kg/ha	31.87	5	35.42	4	38.50	1	35.26	4	268	4	280	1	268	5	272	4					
N LCC 35,25	29.85	6	34.27	6	35.29	6	33.14	6	267	5	274	4	260	6	267	6					
N LCC 45,35	33.83	2	35.73	3	37.27	4	35.61	2	279	2	270	6	272	3	274	3					
N LCC 55,45	34.01	1	35.97	1	38.31	2	36.10	1	288	1	277	2	278	1	281	1					
N Green Seeker	32.57	4	34.84	5	36.01	5	34.48	5	264	6	273	5	271	4	269	5					
N rich plot	32.89	3	35.96	2	37.63	3	35.49	3	272	3	276	3	278	2	275	2					
Mean	29.77		32.63		34.03		32.14		265		267		264		265						
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)						
Genotype (A)	N.S.		1.39		5.46		19.83		N.S.		8.58		33.70		14.83						
Nitrogen (B)	**		0.81		2.32		7.53		**		4.67		13.40		5.28						
B within A	N.S.		1.40		4.01				N.S.		8.09		23.21								
A within B			1.90		5.45						11.39		32.69								
<b>Grains/earhead</b>																					
No N	15.38	7	17.13	7	16.66	7	16.39	7	40.40	4	42.70	4	41.05	5	41.38	5					
N 150 kg/ha	28.01	5	29.66	4	33.19	2	30.29	5	42.38	1	42.62	5	43.33	1	42.78	1					
N LCC 35,25	27.34	6	28.81	6	32.91	4	29.69	6	40.94	3	43.35	2	41.20	4	41.83	2					
N LCC 45,35	29.17	4	32.36	1	32.36	6	31.30	2	41.55	2	40.92	6	42.38	2	41.61	4					
N LCC 55,45	29.34	3	30.06	3	33.10	3	30.83	4	40.22	5	43.28	3	41.56	3	41.69	3					
N Green Seeker	30.73	1	29.35	5	32.64	5	30.91	3	40.07	6	43.40	1	40.67	6	41.38	6					
N rich plot	30.68	2	32.09	2	33.44	1	32.07	1	39.37	7	40.61	7	40.49	7	40.16	7					
Mean	27.24		28.49		30.61		28.78		40.70		42.41		41.52		41.55						
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)						
Genotype (A)	**		0.10		0.40		1.61		*		0.37		1.44		4.04						
Nitrogen (B)	**		0.36		1.03		3.74		**		0.28		0.81		2.05						
B within A	**		0.62		1.78				**		0.49		1.41								
A within B			0.58		1.67						0.58		1.68								
Date of Sowing:	11.11.2016								Date of Harvesting:	14.05.2017											

Table 6.19.1. North Western Plains Zone										SPL-4				Durgapura				2016-17			
N Management	Genotype								Genotype												
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk					
<b>Yield, q/ha</b>																					
No N	36.67	7	38.54	7	33.75	7	36.32	7	304	7	347	7	304	7	318	7					
N 150 kg/ha	50.00	2	53.54	2	49.48	2	51.01	2	389	1	407	1	385	4	394	1					
N LCC 35,25	42.50	6	45.10	6	42.29	6	43.30	6	372	6	375	6	375	5	374	6					
N LCC 45,35	46.88	4	49.58	4	47.08	4	47.85	4	380	4	388	5	388	3	386	4					
N LCC 55,45	49.38	3	52.29	3	48.96	3	50.21	3	381	3	401	2	389	2	390	3					
N Green Seeker	44.98	5	46.46	5	45.31	5	45.58	5	379	5	390	4	375	6	381	5					
N rich plot	53.13	1	54.17	1	52.29	1	53.19	1	384	2	395	3	397	1	392	2					
Mean	46.22		48.53		45.60		46.78		370		386		373		376						
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)						
Genotype (A)	*		0.46		1.82		4.54		*		3.68		14.45		4.48						
Nitrogen (B)	**		1.03		2.94		6.57		**		6.34		18.18		5.05						
B within A	N.S.		1.78		5.10				N.S.		10.97		31.49								
A within B			1.71		4.90						10.81		31.01								
<b>Grains/earhead</b>																					
No N	32.91	3	30.64	7	30.69	6	31.41	6	36.70	7	36.40	7	36.33	7	36.48	7					
N 150 kg/ha	32.74	4	32.87	3	32.77	2	32.79	2	39.13	1	39.97	1	39.20	2	39.43	2					
N LCC 35,25	30.80	7	31.78	5	29.80	7	30.79	7	37.27	5	37.80	6	37.90	6	37.66	6					
N LCC 45,35	32.52	5	33.49	2	31.68	4	32.56	4	38.00	4	38.23	4	38.30	5	38.18	4					
N LCC 55,45	33.11	2	32.83	4	31.90	3	32.61	3	39.13	1	39.83	2	39.50	1	39.49	1					
N Green Seeker	32.03	6	31.48	6	31.58	5	31.70	5	37.20	6	37.83	5	38.37	4	37.80	5					
N rich plot	35.56	1	34.83	1	34.05	1	34.81	1	39.00	3	39.43	3	38.80	3	39.08	3					
Mean	32.81		32.56		31.78		32.38		38.06		38.50		38.34		38.30						
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)						
Genotype (A)	N.S.		0.68		2.68		9.65		N.S.		0.82		3.23		9.85						
Nitrogen (B)	**		0.62		1.78		5.75		**		0.63		1.79		4.90						
B within A	N.S.		1.08		3.08				N.S.		1.08		3.11								
A within B			1.21		3.46						1.30		3.72								
Date of Sowing:	15.11.2016								Date of Harvesting:	07.04.2017											

Table 6.19.2. North Western Plains Zone										SPL-4		Gurdaspur		2016-17		
N Management	Genotype						Genotype									
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk		
<b>Yield, q/ha</b>																
No N	33.63	7	31.95	7	35.68	7	33.76	7	214	7	275	7	277	7	255	7
N 150 kg/ha	67.72	3	67.87	3	70.22	3	68.60	3	358	4	381	3	411	3	384	3
N LCC 35,25	55.15	6	59.73	6	64.80	6	59.89	6	352	6	359	6	376	6	363	6
N LCC 45,35	66.85	5	64.58	5	66.55	5	65.99	5	359	3	371	5	389	5	373	5
N LCC 55,45	68.77	2	68.35	2	70.67	2	69.26	2	364	2	383	2	417	2	388	2
N Green Seeker	67.57	4	65.77	4	68.28	4	67.21	4	358	5	374	4	394	4	375	4
N rich plot	73.84	1	69.58	1	71.52	1	71.65	1	381	1	393	1	420	1	398	1
Mean	61.93		61.12		63.96		62.34		341		362		383		362	
<b>Earhead/sqm</b>																
Genotype (A)	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	**		1.14		3.27		5.48		**		4.21		16.53		5.33	
B within A	N.S.		1.97		5.66				N.S.		8.85		25.40			
A within B			2.11		6.04						9.21		26.44			
<b>Grains/earhead</b>																
No N	37.48	6	28.31	7	31.29	7	32.36	7	41.80	7	40.96	7	41.60	4	41.45	7
N 150 kg/ha	44.74	3	42.96	1	41.10	3	42.93	1	42.25	4	41.52	6	41.53	5	41.77	6
N LCC 35,25	35.99	7	39.05	6	41.62	2	38.89	6	43.55	1	42.69	3	41.52	6	42.59	4
N LCC 45,35	43.17	5	41.34	4	40.30	5	41.60	5	43.32	2	42.27	5	42.49	1	42.69	2
N LCC 55,45	43.94	4	41.61	2	40.31	4	41.95	4	43.08	3	42.97	2	42.08	3	42.71	1
N Green Seeker	44.90	2	41.45	3	41.83	1	42.73	2	42.10	5	42.45	4	41.46	7	42.00	5
N rich plot	46.23	1	40.66	5	40.23	6	42.37	3	42.05	6	43.58	1	42.35	2	42.66	3
Mean	42.35		39.34		39.52		40.40		42.59		42.35		41.86		42.27	
<b>1000 Grains weight, g</b>																
Genotype (A)	*		0.70		2.73		7.89		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	**		0.90		2.59		6.70		N.S.		0.36		1.40		3.87	
B within A	*		1.56		4.49				N.S.		0.55		1.58			
A within B			1.61		4.61						0.62		1.78			
Date of Sowing:	09.11.2016						Date of Harvesting:						18.04.2017			

Table 6.19.3. North Western Plains Zone										SPL-4		Hisar		2016-17		
N Management	Genotype						Genotype									
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk		
<b>Yield, q/ha</b>																
No N	29.75	7	28.17	7	26.64	7	28.19	7	212	7	225	7	208	7	215	7
N 150 kg/ha	57.85	2	55.41	3	53.96	3	55.74	2	320	2	342	2	340	3	334	2
N LCC 35,25	53.90	5	52.23	6	51.43	5	52.52	5	282	5	288	6	303	5	291	5
N LCC 45,35	55.21	4	54.94	4	52.36	4	54.17	4	303	4	328	4	345	1	326	4
N LCC 55,45	56.77	3	55.43	2	54.42	1	55.54	3	317	3	337	3	335	4	329	3
N Green Seeker	50.00	6	52.34	5	50.15	6	50.83	6	275	6	295	5	282	6	284	6
N rich plot	62.42	1	57.78	1	54.08	2	58.09	1	342	1	363	1	343	2	349	1
Mean	52.27		50.90		49.01		50.73		293		311		308		304	
<b>Earhead/sqm</b>																
Genotype (A)	*		0.49		1.93		4.43		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	**		0.62		1.78		3.67		**		6.14		17.62		6.06	
B within A	N.S.		1.07		3.08				N.S.		10.64		30.52			
A within B			1.11		3.18						10.84		31.11			
<b>Grains/earhead</b>																
No N	34.35	7	30.41	7	31.83	7	32.20	7	40.98	2	41.27	3	40.35	1	40.87	2
N 150 kg/ha	44.39	5	39.91	5	40.38	5	41.56	6	40.77	3	40.89	4	39.44	5	40.37	3
N LCC 35,25	48.68	1	43.84	1	42.96	2	45.16	1	39.52	6	41.36	2	39.51	4	40.13	5
N LCC 45,35	45.42	3	41.65	3	38.02	6	41.70	5	40.17	4	40.28	6	39.98	3	40.14	4
N LCC 55,45	44.78	4	40.71	4	41.79	4	42.43	4	40.08	5	40.51	5	39.02	6	39.87	6
N Green Seeker	43.78	6	42.12	2	44.44	1	43.45	2	41.75	1	42.29	1	40.08	2	41.37	1
N rich plot	47.75	2	39.89	6	41.96	3	43.20	3	38.37	7	39.99	7	37.64	7	38.67	7
Mean	44.17		39.79		40.20		41.38		40.24		40.94		39.43		40.20	
<b>1000 Grains weight, g</b>																
Genotype (A)	*		0.67		2.61		7.37		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	**		0.83		2.38		6.01		*		0.27		1.08		3.13	
B within A	N.S.		1.44		4.12				N.S.		0.76		2.18			
A within B			1.49		4.27						0.76		2.17			
Date of Sowing:	14.11.2016						Date of Harvesting:						10.04.2017			

Table 6.19.4. North Western Plains Zone										SPL-4		Ludhiana		2016-17		
N Management	Genotype						Genotype									
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk		
<b>Yield, q/ha</b>																
No N	37.64	7	41.00	7	43.19	7	40.61	7	268	7	257	7	258	7	261	7
N 150 kg/ha	66.57	4	65.30	4	64.96	5	65.61	4	372	5	401	2	396	5	390	4
N LCC 35,25	61.02	6	61.69	6	61.39	6	61.36	6	359	6	357	6	386	6	368	6
N LCC 45,35	65.05	5	64.81	5	65.97	4	65.28	5	379	4	371	5	409	1	386	5
N LCC 55,45	66.98	3	66.67	2	69.44	1	67.70	2	393	2	398	3	397	4	396	2
N Green Seeker	68.66	2	66.06	3	66.20	3	66.98	3	394	1	389	4	401	3	395	3
N rich plot	69.90	1	67.01	1	68.88	2	68.60	1	385	3	409	1	401	2	398	1
Mean	62.26		61.79		62.86		62.30		364		369		378		370	
<b>Earhead/sqm</b>																
Genotype (A)	F. Test		SEM		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	**		1.26		3.03		5.68		N.S.		6.70		26.29		8.28	
B within A	N.S.		2.19		6.28		6.08		N.S.		11.16		32.01		5.22	
A within B			2.17		6.22		6.22				12.31		35.32			
<b>Grains/earhead</b>																
No N	39.18	7	44.53	2	47.97	3	43.90	7	35.85	6	36.23	7	35.12	5	35.74	7
N 150 kg/ha	48.19	2	42.13	7	46.08	5	45.47	3	37.44	4	38.80	5	35.96	4	37.40	4
N LCC 35,25	48.64	1	46.74	1	45.48	7	46.95	1	35.40	7	37.09	6	35.11	6	35.87	6
N LCC 45,35	46.45	3	44.03	3	49.23	1	46.57	2	37.00	5	39.78	2	33.00	7	36.59	5
N LCC 55,45	43.22	6	42.81	5	48.13	2	44.72	6	39.50	2	39.31	4	36.47	1	38.42	2
N Green Seeker	46.37	4	42.89	4	45.79	6	45.02	5	37.69	3	39.91	1	36.05	3	37.88	3
N rich plot	45.63	5	42.44	6	47.33	4	45.13	4	39.94	1	39.34	3	36.35	2	38.54	1
Mean	45.38		43.65		47.14		45.39		37.55		38.64		35.44		37.21	
<b>1000 Grains weight, g</b>																
Genotype (A)	F. Test		SEM		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	N.S.		1.10		4.33		11.12		*		0.59		2.30		7.23	
B within A	N.S.		1.73		4.96		11.42		N.S.		0.80		2.30		6.47	
A within B	N.S.		2.99		8.59		8.59		N.S.		1.39		3.99			
			2.98		8.56		8.56				1.41		4.06			
Date of Sowing:	05.11.2016						Date of Harvesting:						20.04.2017			

Table 6.19.5. North Western Plains Zone										SPL-4		Pantnagar		2016-17		
N Management	Genotype						Genotype									
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk		
<b>Yield, q/ha</b>																
No N	27.27	7	30.23	7	30.40	7	29.30	7	224	7	194	7	298	6	239	7
N 150 kg/ha	59.97	2	53.77	2	57.27	1	57.00	1	301	6	390	2	339	5	343	3
N LCC 35,25	59.17	5	50.33	5	56.77	2	55.42	3	319	4	292	5	376	1	329	5
N LCC 45,35	62.10	1	51.90	4	55.03	3	56.34	2	367	1	336	4	357	3	353	2
N LCC 55,45	59.37	4	53.53	3	52.83	6	55.24	4	314	5	339	3	362	2	339	4
N Green Seeker	55.60	6	55.27	1	53.27	5	54.71	5	330	3	290	6	283	7	301	6
N rich plot	59.57	3	45.70	6	53.90	4	53.06	6	360	2	416	1	346	4	374	1
Mean	54.72		48.68		51.35		51.58		317		323		337		325	
<b>Earhead/sqm</b>																
Genotype (A)	F. Test		SEM		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	*		1.56		6.12		13.84		*		6.32		24.82		8.90	
B within A	**		1.00		2.88		5.83		**		8.99		25.80		8.29	
A within B	**		1.74		4.98		6.42		**		15.57		44.69			
			2.24		6.42		6.42				15.74		45.18			
<b>Grains/earhead</b>																
No N	31.54	7	41.43	3	27.33	7	33.44	7	38.33	7	37.70	7	37.60	7	37.88	7
N 150 kg/ha	48.89	1	33.41	6	39.70	2	40.66	3	40.83	5	41.30	3	42.60	3	41.58	2
N LCC 35,25	45.42	3	43.15	2	35.35	5	41.31	2	41.27	2	40.17	6	42.93	1	41.46	3
N LCC 45,35	41.48	5	38.47	4	36.27	4	38.74	5	40.90	3	40.27	4	42.87	2	41.34	5
N LCC 55,45	46.26	2	36.14	5	35.08	6	39.16	4	40.87	4	44.00	1	41.73	4	42.20	1
N Green Seeker	40.72	6	45.99	1	46.67	1	44.46	1	42.00	1	41.50	2	40.67	6	41.39	4
N rich plot	43.19	4	27.29	7	37.90	3	36.13	6	38.47	6	40.20	5	41.27	5	39.98	6
Mean	42.50		37.98		36.90		39.13		40.38		40.73		41.38		40.83	
<b>1000 Grains weight, g</b>																
Genotype (A)	F. Test		SEM		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	*		0.93		3.65		10.90		N.S.		0.44		1.72		4.92	
B within A	**		1.23		3.54		9.46		**		0.60		1.73		4.42	
A within B	**		2.14		6.13		6.13		N.S.		1.04		2.99			
			2.19		6.27		6.27				1.06		3.04			
Date of Sowing:	11.11.2016						Date of Harvesting:						09.04.2017			

Table 6.20.1. North Western Plains Zone

N Management	SPL-4							Agra								
	Genotype							Genotype								
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk
<b>Yield, q/ha</b>																
No N	24.80	6	25.97	6	26.20	6	25.66	6	379	6	403	6	391	6	391	6
N 150 kg/ha	54.50	2	55.87	2	56.17	2	55.51	2	477	2	478	2	481	2	479	2
N LCC 35,25	47.17	5	49.23	5	51.17	5	49.19	5	453	5	465	5	465	5	461	5
N LCC 45,35	49.83	4	51.23	4	52.17	4	51.08	4	455	4	466	4	467	4	463	4
N LCC 55,45	51.87	3	52.17	3	52.84	3	52.29	3	461	3	468	3	469	3	466	3
N rich plot	58.17	1	59.20	1	60.90	1	59.42	1	497	1	502	1	507	1	502	1
Mean	47.72		48.94		49.91		48.86		454		464		463		460	
<b>Earhead/sqm</b>																
Genotype (A)	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (B)	**		0.20		0.79		1.75		**		0.27		1.05		0.25	
B within A	*		0.22		0.63		1.34		**		0.35		1.01		0.23	
A within B			0.38		1.09				**		0.61		1.75			
<b>Grains/earhead</b>																
No N	18.34	6	17.19	6	17.14	6	17.56	6	35.70	6	37.50	6	39.10	6	37.43	6
N 150 kg/ha	27.51	3	28.06	1	27.55	3	27.71	2	41.50	2	41.70	2	42.40	2	41.87	2
N LCC 35,25	26.31	5	26.52	5	27.80	2	26.88	5	39.57	5	39.93	5	39.60	5	39.70	5
N LCC 45,35	27.61	2	26.83	4	27.47	4	27.30	3	39.67	4	40.97	4	40.70	4	40.44	4
N LCC 55,45	27.28	4	27.13	3	27.04	5	27.15	4	41.20	3	41.13	3	41.63	3	41.32	3
N rich plot	27.74	1	27.65	2	28.06	1	27.82	1	42.20	1	42.66	1	42.83	1	42.56	1
Mean	25.80		25.56		25.84		25.73		39.97		40.65		41.04		40.56	
<b>1000 Grains weight, g</b>																
Genotype (A)	N.S.		0.17		0.69		2.88		*		0.17		0.67		1.79	
Nitrogen (B)	**		0.21		0.60		2.43		**		0.19		0.56		1.43	
B within A	N.S.		0.36		1.04				**		0.33		0.97			
A within B			0.37		1.08						0.35		1.01			
Date of Sowing:	17.11.2016							Date of Harvesting: 07.04.2017								

Table 6.20.2. North Western Plains Zone

N Management	SPL-4							Jammu								
	Genotype							Genotype								
	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk	WH 1105	Rk	HD 2967	Rk	DPW 621-50	Rk	Mean	Rk
<b>Yield, q/ha</b>																
No N	24.20	6	22.10	6	23.20	6	23.17	6	302	6	281	6	302	6	295	6
N 150 kg/ha	45.33	3	47.53	3	44.17	5	45.68	3	357	1	323	4	374	3	351	2
N LCC 35,25	44.13	4	46.27	4	46.20	4	45.53	4	320	3	340	3	377	2	346	3
N LCC 45,35	46.27	2	47.80	2	47.50	1	47.19	2	310	5	355	2	355	4	340	4
N LCC 55,45	46.80	1	48.33	1	47.20	2	47.44	1	315	4	372	1	382	1	356	1
N rich plot	40.27	5	41.10	5	46.50	3	42.62	5	351	2	308	5	352	5	337	5
Mean	41.17		42.19		42.46		41.94		326		330		357		338	
<b>Earhead/sqm</b>																
Genotype (A)	N.S.		0.48		1.90		4.90		*		7.27		28.54		9.14	
Nitrogen (B)	**		0.37		1.05		2.61		**		7.75		22.38		6.89	
B within A	**		0.63		1.83				*		13.42		38.76			
A within B			0.75		2.18						14.25		41.14			
<b>Grains/earhead</b>																
No N	22.92	6	22.68	6	21.25	6	22.29	6	34.97	6	34.77	6	36.17	6	35.30	6
N 150 kg/ha	35.61	4	40.03	1	31.58	5	35.74	4	35.80	5	36.73	3	37.53	1	36.69	4
N LCC 35,25	38.05	3	37.25	2	33.76	4	36.35	3	36.40	4	36.70	4	36.40	5	36.50	5
N LCC 45,35	40.69	1	36.32	3	36.45	1	37.82	1	36.80	2	37.23	1	37.03	3	37.02	2
N LCC 55,45	39.69	2	35.89	5	34.19	3	36.59	2	37.57	1	36.33	5	36.57	4	36.82	3
N rich plot	31.21	5	36.31	4	35.46	2	34.33	5	36.80	2	36.97	2	37.37	2	37.04	1
Mean	34.70		34.75		32.12		33.85		36.39		36.46		36.84		36.56	
<b>1000 Grains weight, g</b>																
Genotype (A)	*		0.88		3.45		11.01		N.S.		0.35		1.37		4.06	
Nitrogen (B)	**		0.86		2.48		7.62		**		0.31		0.89		2.54	
B within A	*		1.49		4.30				N.S.		0.54		1.55			
A within B			1.62		4.68						0.60		1.74			
Date of Sowing:	16.11.2016							Date of Harvesting: 25.04.2017								



<b>Table 6.21.1. North Western Plains Zone</b>		<b>SPL-5</b>		<b>Durgapura</b>	<b>2016-17</b>
<b>Irrigation treatments</b>	<b>Earheads/sq.m.</b>	<b>TGW,g</b>	<b>Grains/earhead</b>	<b>Yield, q/ha</b>	<b>Water use, mm</b>
T1: 60 mm check basin	408	39.45	33.41	53.57	492.6
T2: Sprinkler-60% PE	380	34.63	30.22	39.73	409.3
T3: Sprinkler-80% PE	388	37.60	31.55	45.98	478.5
T4: Sprinkler-100% PE	392	38.28	33.05	49.55	565.0
T5:Drip- 60% PE	387	38.50	31.79	47.32	265.1
T6:Drip- 80% PE	400	39.23	32.16	50.45	312.8
T7: Drip- 100% PE	411	39.85	35.20	57.59	358.3
CD (0.05)	20.04	2.61	3.74	6.33	0.0
Date of Sowing:	15.11.2016				
Date of Harvesting:	01.04.2017				

<b>Table 6.21.2. North Western Plains Zone</b>		<b>SPL-5</b>		<b>Karnal</b>	<b>2016-17</b>
<b>Irrigation treatments</b>	<b>Earheads/sq.m.</b>	<b>TGW,g</b>	<b>Grains/earhead</b>	<b>Yield, q/ha</b>	<b>Water use, mm</b>
T1: 60 mm check basin	529	39.60	27.14	56.82	300.0
T2: Sprinkler-60% PE	478	35.88	30.73	52.69	178.0
T3: Sprinkler-80% PE	528	37.10	28.08	54.90	237.0
T4: Sprinkler-100% PE	521	38.36	28.28	56.45	296.0
T5:Drip- 60% PE	450	39.43	30.16	53.41	178.0
T6:Drip- 80% PE	509	40.07	27.11	55.31	237.0
T7: Drip- 100% PE	518	40.33	27.14	56.61	296.0
CD (0.05)	27.30	2.01	2.58	1.40	0.0
Date of Sowing:	23.11.2016				
Date of Harvesting:	11.04.2017				

**Table 6.23.1. North Western Plains Zone SPL-6 Durgapura 2016-17**

Treatment	Irrigation levels								Mean	Rk
	No irrigation	Rk	CRI,LT,GF	Rk	Six Irrigations	Rk	40,80,120 DAS	Rk		
<b>Yield, q/ha</b>										
Control	14.12	3	29.59	3	45.92	3	27.04	3	29.17	3
Pusa hydrogel	18.71	1	35.03	1	48.81	1	32.82	1	33.84	1
Herbal hydrogel	16.67	2	31.12	2	46.77	2	31.29	2	31.46	2
Mean	16.50		31.92		47.17		30.39		31.49	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.77		2.67		7.36			
Hydrogel (B)	*		1.10		3.22		12.14			
B within A	N.S.		2.21		6.44					
A within B			1.96		5.72					
<b>Earhead/sq.m.</b>										
Control	241	3	299	3	366	3	293	3	300	3
Pusa hydrogel	266	1	320	1	384	1	320	1	322	1
Herbal hydrogel	257	2	314	2	377	2	306	2	314	2
Mean	255		311		376		306		312	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		5.31		18.36		5.10			
Hydrogel (B)	*		5.80		16.94		6.44			
B within A	N.S.		11.61		33.88					
A within B			10.86		31.70					
<b>Grains/earhead</b>										
Control	20.15	3	28.79	2	31.66	1	27.36	3	26.99	3
Pusa hydrogel	22.53	1	29.98	1	30.68	2	28.68	2	27.97	1
Herbal hydrogel	21.45	2	27.44	3	30.47	3	29.20	1	27.14	2
Mean	21.38		28.74		30.94		28.42		27.37	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.43		1.48		4.70			
Hydrogel (B)	N.S.		0.74		2.15		9.32			
B within A	N.S.		1.47		4.30					
A within B			1.28		3.73					
<b>1000 Grains weight, g</b>										
Control	28.97	3	34.57	3	39.67	3	33.77	3	34.24	3
Pusa hydrogel	31.30	1	36.43	1	41.47	1	35.73	1	36.23	1
Herbal hydrogel	30.07	2	36.13	2	40.67	2	35.07	2	35.48	2
Mean	30.11		35.71		40.60		34.86		35.32	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.42		1.45		3.56			
Hydrogel (B)	N.S.		0.67		1.97		6.61			
B within A	N.S.		1.35		3.93					
A within B			1.18		3.44					
Date of Sowing:	16.11.2016				Date of Harvesting: 21.03.2017				31.03.2017	

**Table 6.23.2. North Western Plains Zone SPL-6 Karnal 2016-17**

Treatment	Irrigation levels								Mean	Rk
	No irrigation	Rk	CRI,LT,GF	Rk	Six Irrigations	Rk	40,80,120 DAS	Rk		
<b>Yield, q/ha</b>										
Control	28.38	1	41.32	3	59.94	2	45.73	2	43.84	3
Pusa hydrogel	28.03	3	42.00	2	60.27	1	46.82	1	44.28	1
Herbal hydrogel	28.08	2	44.85	1	58.35	3	44.91	3	44.05	2
Mean	28.17		42.73		59.52		45.82		44.06	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.68		2.36		4.64			
Hydrogel (B)	N.S.		0.56		1.63		4.39			
B within A	N.S.		1.12		3.26					
A within B			1.14		3.32					
<b>Earhead/sq.m.</b>										
Control	295	1	412	3	518	1	389	1	403	1
Pusa hydrogel	281	2	440	2	510	2	367	3	399	2
Herbal hydrogel	258	3	445	1	502	3	376	2	395	3
Mean	278		432		510		377		399	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		5.18		17.93		3.89			
Hydrogel (B)	N.S.		3.12		9.09		2.70			
B within A	**		6.23		18.19					
A within B			7.26		21.19					
<b>Grains/earhead</b>										
Control	25.82	2	24.49	2	27.04	2	28.21	3	26.39	2
Pusa hydrogel	25.47	3	22.96	3	27.51	1	29.22	1	26.29	3
Herbal hydrogel	27.18	1	24.66	1	27.03	3	28.56	2	26.86	1
Mean	26.16		24.04		27.19		28.66		26.51	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	*		0.81		2.80		9.14			
Hydrogel (B)	N.S.		0.51		1.48		6.61			
B within A	N.S.		1.01		2.95					
A within B			1.16		3.37					
<b>1000 Grains weight, g</b>										
Control	37.31	3	41.09	2	42.77	3	41.78	3	40.74	3
Pusa hydrogel	39.31	2	41.58	1	43.02	2	43.77	1	41.92	1
Herbal hydrogel	40.40	1	40.93	3	43.04	1	41.83	2	41.55	2
Mean	39.01		41.20		42.94		42.46		41.40	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	*		0.70		2.43		5.09			
Hydrogel (B)	N.S.		0.49		1.42		4.06			
B within A	N.S.		0.97		2.84					
A within B			1.06		3.09					
Date of Sowing:	11.11.2016				Date of Harvesting: 15.04.2017					

**Table 6.23.3. North Western Plains Zone SPL-6 Ludhiana 2016-17**

Treatment	Irrigation levels								Mean	Rk
	No irrigation	Rk	CRI,LT,GF	Rk	Six Irrigations	Rk	40,80,120 DAS	Rk		
<b>Yield, q/ha</b>										
Control	40.88	3	66.48	1	69.86	3	63.06	1	60.07	3
Pusa hydrogel	48.21	1	64.41	3	70.13	2	61.77	3	61.13	1
Herbal hydrogel	42.21	2	65.70	2	71.23	1	62.55	2	60.42	2
Mean	43.77		65.53		70.41		62.46		60.54	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.92		3.18		4.55			
Hydrogel (B)	N.S.		0.63		1.84		3.60			
B within A	*		1.26		3.68					
A within B			1.38		4.03					
<b>Earhead/sq.m.</b>										
Control	304	3	427	2	435	3	425	2	398	3
Pusa hydrogel	332	1	427	1	438	1	422	3	405	1
Herbal hydrogel	306	2	427	3	438	2	426	1	399	2
Mean	314		427		437		424		401	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		10.16		35.17		7.61			
Hydrogel (B)	N.S.		6.42		18.74		5.55			
B within A	N.S.		12.84		37.48					
A within B			14.60		42.62					
<b>Grains/earhead</b>										
Control	28.24	3	36.56	1	35.98	2	32.53	3	33.33	3
Pusa hydrogel	30.56	1	34.09	3	35.19	3	34.49	1	33.58	2
Herbal hydrogel	28.81	2	36.02	2	37.31	1	34.33	2	34.12	1
Mean	29.20		35.55		36.16		33.79		33.68	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	*		1.15		3.98		10.23			
Hydrogel (B)	N.S.		0.64		1.87		6.60			
B within A	N.S.		1.28		3.74					
A within B			1.55		4.54					
<b>1000 Grains weight, g</b>										
Control	47.65	3	42.80	2	44.88	2	45.66	1	45.25	2
Pusa hydrogel	47.99	1	44.23	1	46.34	1	42.43	3	45.25	1
Herbal hydrogel	47.93	2	42.75	3	43.59	3	42.82	2	44.27	3
Mean	47.86		43.26		44.94		43.64		44.92	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	*		0.90		3.10		5.98			
Hydrogel (B)	N.S.		0.49		1.42		3.76			
B within A	N.S.		0.97		2.84					
A within B			1.20		3.50					
Date of Sowing:	10.11.2016				Date of Harvesting: 25.04.2017					

Table 6.23.4. North Western Plains Zone				SPL-6		Pantnagar		2016-17		
Treatment	Irrigation levels								Mean	Rk
	No irrigation	Rk	CRI,LT,GF	Rk	Six Irrigations	Rk	40,80,120 DAS	Rk		
<b>Yield, q/ha</b>										
Control	37.60	3	50.37	3	58.17	3	43.37	3	47.38	3
Pusa hydrogel	39.20	2	55.30	2	61.93	2	48.57	2	51.25	2
Herbal hydrogel	39.80	1	58.20	1	62.87	1	50.17	1	52.76	1
Mean	38.87		54.62		60.99		47.37		50.46	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.51		5.24		9.00			
Hydrogel (B)	N.S.		1.47		4.30		10.12			
B within A	N.S.		2.95		8.60					
A within B			2.84		8.30					
<b>Earhead/sq.m.</b>										
Control	361	3	457	3	459	3	385	3	416	3
Pusa hydrogel	373	2	478	2	486	2	406	1	436	2
Herbal hydrogel	389	1	480	1	491	1	391	2	438	1
Mean	374		472		479		394		430	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		10.76		37.23		7.51			
Hydrogel (B)	N.S.		13.13		38.33		10.59			
B within A	N.S.		26.27		76.67					
A within B			23.99		70.03					
<b>Grains/earhead</b>										
Control	26.72	1	27.10	3	30.99	2	27.44	3	28.07	2
Pusa hydrogel	25.95	2	28.12	2	29.64	3	28.02	2	27.93	3
Herbal hydrogel	25.71	3	29.33	1	31.30	1	30.76	1	29.28	1
Mean	26.13		28.18		30.65		28.74		28.42	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	N.S.		1.75		6.06		18.47			
Hydrogel (B)	N.S.		1.29		3.78		15.77			
B within A	N.S.		2.59		7.56					
A within B			2.74		8.01					
<b>1000 Grains weight, g</b>										
Control	39.50	3	40.63	3	41.83	2	41.07	3	40.76	3
Pusa hydrogel	40.43	2	42.40	1	43.07	1	42.77	1	42.17	1
Herbal hydrogel	40.83	1	41.57	2	41.00	3	42.03	2	41.36	2
Mean	40.26		41.53		41.97		41.96		41.43	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	N.S.		0.63		2.18		4.55			
Hydrogel (B)	N.S.		0.52		1.53		4.39			
B within A	N.S.		1.05		3.06					
A within B			1.06		3.10					
Date of Sowing:	19.11.2016				Date of Harvesting: 12.04.2017					

Table 6.26.1. North Western Plains Zone							SPL-7	Hisar	2016-17			
Variety	Tillage Options				Mean	Rk	Tillage Options				Mean	Rk
	CA	Rk	CT	Rk			CA	Rk	CT	Rk		
<b>Yield, q/ha</b>							<b>Earhead/sqm</b>					
WH 1105	60.25	2	62.26	1	61.25	1	405	4	413	4	409	4
HD 2967	61.23	1	60.21	2	60.72	2	428	2	423	2	426	2
DPW 621-50	55.83	6	57.56	4	56.70	5	417	3	415	3	416	3
DBW 88	55.94	5	53.51	6	54.73	6	405	4	395	6	400	6
HD 3086	58.42	3	58.23	3	58.32	3	432	1	430	1	431	1
PBW 550	58.38	4	57.53	5	57.96	4	400	6	403	5	402	5
Mean	58.34		58.22		58.28		414		413		414	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		0.96	5.84	6.99		N.S.		5.16	31.42	5.29	
Variety (B)	**		0.81	2.40	3.41		*		7.62	22.49	4.51	
B within A	N.S.		1.15	3.39			N.S.		10.78	31.80		
A within B			1.42	4.19					11.11	32.78		
<b>Grains/earhead</b>							<b>1000 Grains weight, g</b>					
WH 1105	36.90	2	37.38	1	37.14	1	40.32	3	40.35	4	40.33	4
HD 2967	34.63	3	33.68	5	34.16	3	41.31	1	42.26	1	41.78	1
DPW 621-50	33.51	6	33.77	3	33.64	5	40.08	4	41.15	3	40.62	3
DBW 88	33.56	5	32.68	6	33.12	6	41.12	2	41.51	2	41.31	2
HD 3086	34.10	4	33.75	4	33.92	4	39.77	5	40.25	5	40.01	5
PBW 550	37.13	1	35.83	2	36.48	2	39.31	6	39.84	6	39.58	6
Mean	34.97		34.51		34.74		40.32		40.89		40.61	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		0.22	1.36	2.73		N.S.		0.42	2.58	4.43	
Variety (B)	**		0.66	1.94	4.64		*		0.49	1.44	2.95	
B within A	N.S.		0.93	2.75			N.S.		0.69	2.04		
A within B			0.88	2.59					0.76	2.24		
Date of Sowing:	14.11.2016					Date of harvesting:	12.04.2017					

Table 6.26.2. North Western Plains Zone							SPL-7	Karnal	2016-17			
Variety	Tillage Options				Mean	Rk	Tillage Options				Mean	Rk
	CA	Rk	CT	Rk			CA	Rk	CT	Rk		
<b>Yield, q/ha</b>							<b>Earhead/sqm</b>					
WH 1105	58.09	6	59.82	5	58.96	6	372	6	389	5	380	6
HD 2967	63.28	1	62.17	1	62.72	1	414	2	421	2	418	2
DPW 621-50	59.42	4	61.02	2	60.22	3	401	4	403	4	402	4
DBW 88	58.30	5	60.11	4	59.21	5	404	3	405	3	405	3
HD 3086	59.73	3	59.41	6	59.57	4	434	1	437	1	436	1
PBW 550	60.62	2	60.98	3	60.80	2	386	5	383	6	385	5
Mean	59.91		60.59		60.25		402		406		404	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		0.37	2.23	2.58		N.S.		3.99	24.30	4.19	
Variety (B)	N.S.		1.11	3.27	4.51		*		12.53	36.95	7.59	
B within A	N.S.		1.57	4.62			N.S.		17.72	52.26		
A within B			1.48	4.36					16.66	49.14		
<b>Grains/earhead</b>							<b>1000 Grains weight, g</b>					
WH 1105	36.77	1	37.83	1	37.30	1	42.51	6	40.84	6	41.67	6
HD 2967	33.94	3	32.92	5	33.43	5	45.13	1	44.84	1	44.98	1
DPW 621-50	33.44	5	34.93	4	34.18	4	44.59	4	43.45	3	44.02	3
DBW 88	33.88	4	36.02	3	34.95	3	42.75	5	42.30	4	42.53	5
HD 3086	30.81	6	31.25	6	31.03	6	44.87	2	43.67	2	44.27	2
PBW 550	35.19	2	37.68	2	36.44	2	44.69	3	42.23	5	43.46	4
Mean	34.01		35.11		34.56		44.09		42.89		43.49	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		0.45	2.73	5.51		*		0.13	0.81	1.30	
Variety (B)	N.S.		1.42	4.20	10.10		**		0.52	1.52	2.90	
B within A	N.S.		2.01	5.94			N.S.		0.73	2.15		
A within B			1.89	5.58					0.68	2.00		
Date of Sowing:	05.11.2016					Date of harvesting:	09.04.2017					

Table 6.26.3. North Western Plains Zone							SPL-7		Ludhiana		2016-17	
Variety	Tillage Options				Mean	Rk	Tillage Options				Mean	Rk
	CA	Rk	CT	Rk			CA	Rk	CT	Rk		
<b>Yield, q/ha</b>							<b>Earhead/sqm</b>					
WH 1105	56.67	3	55.11	6	55.89	5	375	6	375	6	375	6
HD 2967	54.89	6	55.78	5	55.33	6	402	3	395	4	399	3
DPW 621-50	56.67	3	57.78	4	57.22	3	400	4	396	3	398	4
DBW 88	56.00	5	58.22	3	57.11	4	424	1	427	1	425	1
HD 3086	58.11	2	60.44	1	59.28	2	416	2	415	2	416	2
PBW 550	60.00	1	58.89	2	59.44	1	382	5	382	5	382	5
Mean	57.06		57.70		57.38		400		398		399	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		1.31	8.00	9.72		N.S.		2.00	12.16	2.12	
Variety (B)	N.S.		1.34	3.94	5.70		**		6.25	18.44	3.84	
B within A	N.S.		1.89	5.57			N.S.		8.84	26.08		
A within B			2.17	6.40					8.31	24.52		
<b>Grains/earhead</b>							<b>1000 Grains weight, g</b>					
WH 1105	33.96	3	31.86	3	32.91	3	44.53	4	46.12	3	45.33	3
HD 2967	30.58	4	31.54	4	31.06	4	44.66	3	44.96	4	44.81	4
DPW 621-50	34.79	2	33.90	2	34.34	2	41.11	6	43.14	6	42.12	6
DBW 88	28.01	6	28.04	6	28.03	6	47.25	1	48.87	1	48.06	1
HD 3086	29.81	5	30.68	5	30.24	5	47.02	2	47.74	2	47.38	2
PBW 550	36.15	1	34.94	1	35.54	1	43.88	5	44.09	5	43.99	5
Mean	32.22		31.83		32.02		44.74		45.82		45.28	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		0.34	2.08	4.53		N.S.		0.35	2.14	3.30	
Variety (B)	*		1.44	4.24	10.98		**		1.01	2.98	5.47	
B within A	N.S.		2.03	5.99			N.S.		1.43	4.22		
A within B			1.89	5.56					1.35	3.99		
Date of Sowing:	04.11.2016					Date of harvesting:	18.04.2017					

Table 6.26.4. North Western Plains Zone							SPL-7		Pantnagar		2016-17	
Variety	Tillage Options				Mean	Rk	Tillage Options				Mean	Rk
	CA	Rk	CT	Rk			CA	Rk	CT	Rk		
<b>Yield, q/ha</b>							<b>Earhead/sqm</b>					
WH 1105	52.27	3	46.90	3	49.58	3	339	5	335	6	337	6
HD 2967	50.43	5	49.43	2	49.93	2	372	2	345	5	359	3
DPW 621-50	53.00	2	43.87	5	48.43	5	342	4	389	2	365	2
DBW 88	53.63	1	49.60	1	51.62	1	338	6	379	3	358	4
HD 3086	51.30	4	46.57	4	48.93	4	393	1	420	1	406	1
PBW 550	42.43	6	42.83	6	42.63	6	354	3	348	4	351	5
Mean	50.51		46.53		48.52		356		369		363	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		0.98	5.94	8.54		N.S.		4.05	24.64	4.74	
Variety (B)	**		1.14	3.35	5.74		N.S.		16.04	47.33	10.84	
B within A	N.S.		1.61	4.74			N.S.		22.69	66.93		
A within B			1.76	5.20					21.10	62.25		
<b>Grains/earhead</b>							<b>1000 Grains weight, g</b>					
WH 1105	37.80	3	35.82	2	36.81	1	40.90	3	40.00	2	40.45	2
HD 2967	34.22	4	36.07	1	35.15	3	40.37	4	39.97	3	40.17	4
DPW 621-50	39.51	1	28.78	6	34.14	4	39.57	6	39.67	4	39.62	6
DBW 88	39.14	2	34.47	3	36.80	2	42.53	1	38.57	5	40.55	1
HD 3086	31.04	5	29.21	5	30.13	6	42.20	2	38.53	6	40.37	3
PBW 550	30.40	6	31.02	4	30.71	5	39.97	5	40.27	1	40.12	5
Mean	35.35		32.56		33.96		40.92		39.50		40.21	
	F. Test		SEm	CD (0.05)	CV (%)		F. Test		SEm	CD (0.05)	CV (%)	
Tillage (A)	N.S.		1.03	6.29	12.92		N.S.		0.88	5.33	9.24	
Variety (B)	N.S.		2.13	6.27	15.34		N.S.		2.11	6.22	12.85	
B within A	N.S.		3.01	8.87			N.S.		2.98	8.80		
A within B			2.93	8.65					2.86	8.44		
Date of Sowing:	26.11.2016					Date of harvesting:	20.04.2017					

Table 6.28.1. North Eastern Plains Zone						SPL-9		Coochbehar				2016-17				
Treatments	Tillage Options					Mean	Rk	Tillage Options					Mean	Rk		
	ZT	Rk	Bed	Rk	CT			Rk	ZT	Rk	Bed	Rk			CT	Rk
	Yield, q/ha							Earhead/sq.m.								
Straw mulch -No Irrig	31.33	5	33.27	5	30.07	4	31.56	5	305	4	289	5	262	5	286	5
Straw mulch -1 Irrig	36.90	2	38.33	2	34.17	2	36.47	2	325	3	347	3	326	2	333	3
Straw mulch -3 Irrig	41.63	1	45.53	1	39.10	1	42.09	1	364	1	395	1	348	1	369	1
No mulch- No Irrig	28.23	6	29.17	6	24.60	6	27.33	6	253	6	237	6	192	6	227	6
No mulch- 1 Irrig	32.17	4	35.77	4	27.20	5	31.71	4	295	5	301	4	271	4	289	4
No mulch- 3 Irrig	36.67	3	38.20	3	33.40	3	36.09	3	339	2	370	2	306	3	338	2
Mean	34.49		36.71		31.42		34.21		314		323		284		307	
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	**		0.33		1.29		4.07		**		2.26		8.87		3.12	
Mulch (B)	**		1.19		3.45		10.47		**		8.46		24.42		8.26	
B within A	N.S.		2.07		5.97				N.S.		14.65		42.29			
A within B			1.92		5.53						13.56		39.16			
	Grains/earhead							1000 Grains weight, g								
Straw mulch -No Irrig	27.25	6	30.89	2	30.27	2	29.47	2	37.80	4	37.53	5	38.10	4	37.81	5
Straw mulch -1 Irrig	28.99	3	27.31	5	26.78	5	27.69	5	39.27	2	40.60	3	39.50	2	39.79	2
Straw mulch -3 Irrig	28.78	4	28.08	4	27.60	4	28.15	4	40.07	1	41.03	1	40.93	1	40.68	1
No mulch- No Irrig	31.06	1	33.75	1	34.95	1	33.26	1	36.10	6	36.77	6	37.00	6	36.62	6
No mulch- 1 Irrig	29.51	2	29.14	3	26.68	6	28.44	3	37.20	5	40.77	2	37.73	5	38.57	4
No mulch- 3 Irrig	27.66	5	26.14	6	27.84	3	27.21	6	39.23	3	39.77	4	39.27	3	39.42	3
Mean	28.87		29.22		29.02		29.04		38.28		39.41		38.76		38.81	
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		0.59		2.30		8.56		**		0.12		0.46		1.29	
Mulch (B)	N.S.		1.43		4.14		14.81		**		0.22		0.63		1.69	
B within A	N.S.		2.48		7.17				**		0.38		1.09			
A within B			2.34		6.76						0.36		1.05			
Date of Sowing:	17.11.2016					Date of Harvesting:					17.3.2017					

Table 6.28.2. North Eastern Plains Zone						SPL-9		Shillongani				2016-17				
Treatments	Tillage Options					Mean	Rk	Tillage Options					Mean	Rk		
	ZT	Rk	Bed	Rk	CT			Rk	ZT	Rk	Bed	Rk			CT	Rk
	Yield, q/ha							Earhead/sq.m.								
Straw mulch -No Irrig	20.77	4	28.11	5	33.63	5	27.50	5	190	4	195	5	261	4	215	4
Straw mulch -1 Irrig	25.97	3	36.11	2	37.94	3	33.34	3	215	3	221	3	267	2	235	3
Straw mulch -3 Irrig	39.97	1	44.63	1	45.62	1	43.41	1	241	1	261	1	292	1	264	1
No mulch- No Irrig	15.61	6	22.59	6	29.99	6	22.73	6	147	6	177	6	238	6	187	6
No mulch- 1 Irrig	19.25	5	28.87	4	36.18	4	28.10	4	162	5	216	4	256	5	211	5
No mulch- 3 Irrig	27.54	2	36.10	3	39.15	2	34.26	2	217	2	231	2	267	3	238	2
Mean	24.85		32.73		37.09		31.56		195		217		263		225	
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	**		0.26		1.04		3.55		**		0.68		2.66		1.28	
Mulch (B)	**		0.42		1.22		4.03		**		1.13		3.26		1.50	
B within A	**		0.73		2.12				**		1.96		5.65			
A within B			0.72		2.08						1.91		5.51			
	Grains/earhead							1000 Grains weight, g								
Straw mulch -No Irrig	31.13	5	33.87	5	37.70	4	34.23	5	35.17	5	42.63	1	34.23	6	37.34	2
Straw mulch -1 Irrig	34.13	3	41.80	2	39.47	3	38.47	3	35.33	3	39.07	4	36.00	3	36.80	5
Straw mulch -3 Irrig	42.60	1	43.77	1	45.20	1	43.86	1	38.93	1	39.07	3	34.57	5	37.52	1
No mulch- No Irrig	30.17	6	33.74	6	34.60	6	32.84	6	35.23	4	37.80	6	36.43	2	36.49	6
No mulch- 1 Irrig	33.96	4	35.34	4	36.40	5	35.23	4	35.03	6	37.83	5	38.80	1	37.22	3
No mulch- 3 Irrig	35.27	2	39.34	3	40.87	2	38.49	2	36.03	2	39.63	2	35.90	4	37.19	4
Mean	34.54		37.97		39.04		37.19		35.96		39.34		35.99		37.09	
	F. Test		SEm		CD (0.05)		CV (%)		F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	**		0.13		0.51		1.48		**		0.17		0.66		1.93	
Mulch (B)	**		0.26		0.76		2.12		N.S.		0.46		1.33		3.71	
B within A	**		0.46		1.31				**		0.80		2.30			
A within B			0.44		1.26						0.75		2.15			
Date of Sowing:	05.12.2016					Date of Harvesting:					21.04.2017					



**Table 6.29.1. North Western Plains Zone**

Fertilizer	SPL-10					Hisar						
	Sowing time					Sowing time						
	Timely	Rk	Late	Rk	Mean	Timely	Rk	Late	Rk	Mean	Rk	
	Yield, q/ha					Earhead/sqm						
RFD	60.02	6	41.70	6	50.86	6	397	4	311	6	354	6
RFD+10 t/ha FYM	63.20	1	42.77	4	52.98	2	406	1	320	5	363	2
RFD+ 4t/ha Straw mulch	60.88	5	42.49	5	51.69	5	396	5	330	3	363	3
RFD+ 10 t/ha FYM+4t/ha Straw	62.62	2	44.63	1	53.62	1	405	2	336	1	370	1
T4+ 0.5 % Zn SO4	61.75	3	43.53	3	52.64	4	399	3	327	4	363	3
T4+ 0.2% KCl (Two spray)	61.02	4	44.30	2	52.66	3	393	6	333	2	363	3
Mean	61.58		43.24		52.41		399		326		363	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	**	0.51	3.08	4.09	*	5.28	32.12	6.17				
Fertilizer (B)	NS	0.83	2.44	3.86	NS	5.93	17.49	4.01				
B within A	NS	1.17	3.44		NS	8.39	24.74					
A within B		1.18	3.48			9.30	27.43					
	Grains/earhead					1000 Grains weight, g						
RFD	40.85	4	40.05	4	40.45	4	37.01	6	33.50	3	35.26	3
RFD+10 t/ha FYM	40.89	3	42.11	1	41.50	2	38.06	2	31.73	6	34.89	4
RFD+ 4t/ha Straw mulch	40.72	5	38.53	6	39.63	5	37.83	3	33.69	2	35.76	2
RFD+ 10 t/ha FYM+4t/ha Straw	39.08	6	39.41	5	39.25	6	39.62	1	33.71	1	36.66	1
T4+ 0.5 % Zn SO4	41.57	2	42.03	2	41.80	1	37.30	4	31.80	5	34.55	6
T4+ 0.2% KCl (Two spray)	41.94	1	41.00	3	41.47	3	37.07	5	32.53	4	34.80	5
Mean	40.84		40.52		40.68		37.81		32.83		35.32	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	NS	0.93	5.64	9.66	*	0.45	2.73	5.38				
Fertilizer (B)	NS	0.75	2.21	4.52	**	0.37	1.10	2.60				
B within A	NS	1.06	3.13		NS	0.53	1.56					
A within B		1.34	3.95			0.66	1.94					
Date of sowing:	12.11.2016			14.12.2016		Date of harvesting:			12.04.2017		17.04.2017	

**Table 6.29.2. North Western Plains Zone**

Fertilizer	SPL-10					Karnal						
	Sowing time					Sowing time						
	Timely	Rk	Late	Rk	Mean	Timely	Rk	Late	Rk	Mean	Rk	
	Yield, q/ha					Earhead/sqm						
RFD	63.03	2	50.58	2	56.81	2	428	2	378	3	403	2
RFD+10 t/ha FYM	63.72	1	51.92	1	57.82	1	408	4	393	2	400	3
RFD+ 4t/ha Straw mulch	61.35	4	49.39	6	55.37	5	406	5	373	4	389	4
RFD+ 10 t/ha FYM+4t/ha Straw	61.31	5	49.84	4	55.58	4	443	1	413	1	428	1
T4+ 0.5 % Zn SO4	60.17	6	49.53	5	54.85	6	380	6	364	5	372	6
T4+ 0.2% KCl (Two spray)	62.06	3	50.01	3	56.04	3	420	3	356	6	388	5
Mean	61.94		50.21		56.08		414		379		397	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	**	0.17	1.03	1.28	NS	6.03	36.72	6.45				
Fertilizer (B)	NS	0.76	2.25	3.34	NS	16.16	47.68	9.98				
B within A	NS	1.08	3.19		NS	22.86	67.43					
A within B		1.00	2.95			21.72	64.08					
	Grains/earhead					1000 Grains weight, g						
RFD	33.47	5	37.82	4	35.65	5	44.31	1	35.68	2	39.99	1
RFD+10 t/ha FYM	36.14	2	37.18	5	36.66	3	43.57	4	35.74	1	39.65	3
RFD+ 4t/ha Straw mulch	34.43	3	38.53	3	36.48	4	43.95	3	34.59	6	39.27	6
RFD+ 10 t/ha FYM+4t/ha Straw	31.39	6	35.19	6	33.29	6	44.30	2	35.51	3	39.91	2
T4+ 0.5 % Zn SO4	36.59	1	38.93	2	37.76	1	43.39	5	35.43	4	39.41	4
T4+ 0.2% KCl (Two spray)	34.15	4	40.01	1	37.08	2	43.33	6	35.33	5	39.33	5
Mean	34.36		37.94		36.15		43.81		35.38		39.59	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	*	0.51	3.08	5.93	**	0.10	0.63	1.11				
Fertilizer (B)	NS	1.67	4.94	11.34	NS	0.55	1.62	3.40				
B within A	NS	2.37	6.98		NS	0.78	2.29					
A within B		2.22	6.55			0.72	2.12					
Date of sowing:	12.11.2016			17.12.2016		Date of harvesting:			22.04.2017			

**Table 6.29.3. North Western Plains Zone**

Fertilizer	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	Yield, q/ha						Earhead/sqm					
RFD	70.83	6	47.45	6	59.14	6	395	6	365	6	380	6
RFD+10 t/ha FYM	73.31	3	51.67	2	62.49	2	412	1	377	5	395	5
RFD+ 4t/ha Straw mulch	72.50	5	50.89	5	61.70	5	406	2	385	4	396	3
RFD+ 10 t/ha FYM+4t/ha Straw	73.96	1	51.90	1	62.93	1	405	3	391	1	398	1
T4+ 0.5 % Zn SO4	73.29	4	50.95	4	62.12	4	404	4	385	3	395	4
T4+ 0.2% KCl (Two spray)	73.38	2	51.31	3	62.34	3	403	5	389	2	396	2
Mean	72.88		50.70		61.79		404		382		393	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	**	0.68	4.16	4.69	NS	9.48	57.72	10.24				
Fertilizer (B)	NS	1.85	5.46	7.33	NS	8.00	23.61	4.99				
B within A	NS	2.62	7.72		NS	11.32	33.39					
A within B		2.48	7.33			14.02	41.37					
	Grains/earhead				1000 Grains weight, g							
RFD	47.44	1	42.86	2	45.15	1	37.93	6	30.38	6	34.16	6
RFD+10 t/ha FYM	40.62	3	40.73	5	40.67	5	43.83	5	33.93	1	38.88	2
RFD+ 4t/ha Straw mulch	38.59	6	39.96	6	39.28	6	46.37	1	33.31	2	39.84	1
RFD+ 10 t/ha FYM+4t/ha Straw	41.30	2	42.56	3	41.93	2	44.20	4	31.36	4	37.78	5
T4+ 0.5 % Zn SO4	40.47	4	41.96	4	41.21	4	45.13	3	31.86	3	38.50	3
T4+ 0.2% KCl (Two spray)	39.87	5	42.87	1	41.37	3	45.60	2	30.89	5	38.24	4
Mean	41.38		41.82		41.60		43.84		31.96		37.90	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	NS	0.69	4.20	7.04	**	0.50	3.05	5.60				
Fertilizer (B)	NS	1.76	5.18	10.34	**	0.91	2.69	5.90				
B within A	NS	2.48	7.33		NS	1.29	3.81					
A within B		2.37	6.99			1.28	3.78					
Date of sowing:	10.11.2016			15.12.2016	Date of harvesting:	20.04.2017						

**Table 6.29.4. North Western Plains Zone**

Fertilizer	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	Yield, q/ha						Earhead/sqm					
RFD	49.73	6	41.37	6	45.55	6	403	4	403	3	403	4
RFD+10 t/ha FYM	52.63	4	42.50	5	47.57	5	401	5	376	6	389	6
RFD+ 4t/ha Straw mulch	52.20	5	43.20	4	47.70	4	401	6	379	5	390	5
RFD+ 10 t/ha FYM+4t/ha Straw	52.83	3	43.57	3	48.20	3	417	1	400	4	409	3
T4+ 0.5 % Zn SO4	53.83	2	44.43	2	49.13	2	410	3	409	2	409	2
T4+ 0.2% KCl (Two spray)	55.30	1	46.37	1	50.83	1	416	2	409	1	413	1
Mean	52.76		43.57		48.16		408		396		402	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	*	1.23	7.49	10.84	NS	3.72	22.63	3.92				
Fertilizer (B)	*	1.04	3.07	5.29	NS	13.13	38.73	8.00				
B within A	NS	1.47	4.34		NS	18.57	54.77					
A within B		1.82	5.38			17.35	51.19					
	Grains/earhead				1000 Grains weight, g							
RFD	28.88	6	33.50	5	31.19	6	42.83	2	30.83	4	36.83	3
RFD+10 t/ha FYM	30.18	5	33.92	4	32.05	4	43.47	1	33.40	2	38.43	1
RFD+ 4t/ha Straw mulch	31.80	2	36.35	3	34.08	3	41.03	5	31.37	3	36.20	5
RFD+ 10 t/ha FYM+4t/ha Straw	30.68	4	32.34	6	31.51	5	41.50	4	33.97	1	37.73	2
T4+ 0.5 % Zn SO4	32.73	1	38.44	2	35.58	1	40.17	6	28.80	6	34.48	6
T4+ 0.2% KCl (Two spray)	31.23	3	38.45	1	34.84	2	42.80	3	29.87	5	36.33	4
Mean	30.92		35.50		33.21		41.97		31.37		36.67	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	*	0.72	4.40	9.23	*	1.37	8.35	15.88				
Fertilizer (B)	NS	1.48	4.37	10.93	**	0.68	2.02	4.57				
B within A	NS	2.10	6.18		NS	0.97	2.85					
A within B		2.04	6.03			1.63	4.81					
Date of sowing:	10.11.2016			13.12.2016	Date of harvesting:	10.04.2017			21.04.2017			

Table 6.30.1. North Eastern Plains Zone

Fertilizer	SPL-10					Kalyani						
	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	Yield, q/ha					Earhead/sq.m.						
RFD	34.51	4	24.52	4	29.52	5	240	6	286	2	263	5
RFD+10 t/ha FYM	40.67	2	21.12	6	30.90	3	248	5	269	4	259	6
RFD+ 4t/ha Straw mulch	30.13	6	25.72	2	27.93	6	304	4	227	6	266	4
RFD+ 10 t/ha FYM+4t/ha Straw	33.85	5	27.52	1	30.69	4	308	3	233	5	270	3
T4+ 0.5 % Zn SO4	41.11	1	25.41	3	33.26	1	314	1	274	3	294	2
T4+ 0.2% KCl (Two spray)	38.72	3	23.57	5	31.15	2	310	2	294	1	302	1
Mean	36.50		24.64		30.57		287		264		276	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	*	1.33	8.08	18.43	NS	8.63	52.51	13.28				
Fertilizer (B)	NS	1.38	4.08	11.08	**	8.73	25.75	7.76				
B within A	**	1.96	5.77		**	12.35	36.42					
A within B		2.22	6.56			14.19	41.87					
	Grains/earhead					1000 Grains weight, g						
RFD	38.77	2	25.75	4	32.26	2	37.63	5	33.10	6	35.37	6
RFD+10 t/ha FYM	43.21	1	22.85	6	33.03	1	38.13	4	34.77	3	36.45	3
RFD+ 4t/ha Straw mulch	27.43	6	33.18	1	30.30	4	36.33	6	34.47	4	35.40	5
RFD+ 10 t/ha FYM+4t/ha Straw	28.77	5	32.07	2	30.42	3	38.23	3	37.57	1	37.90	1
T4+ 0.5 % Zn SO4	33.62	3	26.35	3	29.98	5	39.03	1	35.60	2	37.32	2
T4+ 0.2% KCl (Two spray)	32.57	4	24.06	5	28.32	6	38.43	2	33.23	5	35.83	4
Mean	34.06		27.38		30.72		37.97		34.79		36.38	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	NS	1.72	10.45	23.72	NS	1.50	9.10	17.44				
Fertilizer (B)	NS	1.79	5.29	14.30	NS	0.89	2.64	6.02				
B within A	**	2.54	7.48		NS	1.26	3.73					
A within B		2.88	8.50			1.89	5.57					
Date of sowing:	11.11.2016				16.12.2016				Date of harvesting: 15.03.2017 28.03.2017			

Table 6.30.2. North Eastern Plains Zone

Fertilizer	SPL-10					Ranchi						
	Sowing time				Mean	Rk	Sowing time				Mean	Rk
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	Yield, q/ha					Earhead/sq.m.						
RFD	47.07	6	33.73	6	40.40	6	333	6	262	6	298	6
RFD+10 t/ha FYM	48.13	4	36.87	3	42.50	4	345	4	293	3	319	4
RFD+ 4t/ha Straw mulch	47.60	5	35.20	5	41.40	5	335	5	277	5	306	5
RFD+ 10 t/ha FYM+4t/ha Straw	48.67	3	37.87	2	43.27	3	352	2	293	3	323	3
T4+ 0.5 % Zn SO4	50.17	2	36.40	4	43.28	2	352	2	303	2	328	2
T4+ 0.2% KCl (Two spray)	52.33	1	40.73	1	46.53	1	360	1	337	1	348	1
Mean	48.99		36.80		42.90		346		294		320	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	**	0.53	3.23	5.26	*	6.98	42.50	9.25				
Fertilizer (B)	*	1.27	3.76	7.28	NS	12.64	37.29	9.67				
B within A	NS	1.80	5.32		NS	17.88	52.73					
A within B		1.73	5.10			17.75	52.36					
	Grains/earhead					1000 Grains weight, g						
RFD	35.90	2	34.42	1	35.16	1	39.37	6	37.73	5	38.55	6
RFD+10 t/ha FYM	35.14	5	32.99	4	34.07	4	39.80	3	38.43	3	39.12	3
RFD+ 4t/ha Straw mulch	35.72	4	33.77	2	34.74	2	39.77	5	38.00	4	38.88	4
RFD+ 10 t/ha FYM+4t/ha Straw	34.74	6	33.74	3	34.24	3	39.90	2	38.47	2	39.18	2
T4+ 0.5 % Zn SO4	35.73	3	32.35	5	34.04	5	40.10	1	37.47	6	38.78	5
T4+ 0.2% KCl (Two spray)	36.77	1	30.92	6	33.85	6	39.80	4	39.47	1	39.63	1
Mean	35.67		33.03		34.35		39.79		38.26		39.03	
	F. Test	SEm	CD (0.05)	CV (%)	F. Test	SEm	CD (0.05)	CV (%)				
Sowing (A)	NS	0.64	3.87	7.86	*	0.15	0.92	1.65				
Fertilizer (B)	NS	1.31	3.87	9.36	NS	0.51	1.50	3.20				
B within A	NS	1.86	5.48		NS	0.72	2.12					
A within B		1.81	5.34			0.67	1.99					
Date of sowing:	18.11.2016				14.12.2016				Date of harvesting: 12.03.2017 05.04.2017			

Table 6.30.3. North Eastern Plains Zone

SPL-10

Varanasi

2016-17

Fertilizer	Sowing time				Mean	Rk	Sowing time				Mean	
	Timely	Rk	Late	Rk			Timely	Rk	Late	Rk		
	<b>Yield, q/ha</b>						<b>Earhead/sq.m.</b>					
RFD	47.07	6	42.10	4	44.58	5	242	2	260	1	251	1
RFD+10 t/ha FYM	47.93	3	44.77	2	46.35	2	245	1	230	5	238	5
RFD+ 4t/ha Straw mulch	48.33	2	42.37	3	45.35	3	231	6	257	2	244	2
RFD+ 10 t/ha FYM+4t/ha Straw	49.37	1	46.80	1	48.08	1	234	4	243	3	239	3
T4+ 0.5 % Zn SO4	47.87	4	41.62	5	44.74	4	233	5	243	4	238	4
T4+ 0.2% KCl (Two spray)	47.40	5	40.83	6	44.12	6	235	3	230	6	232	6
Mean	47.99		43.08		45.54		237		244		240	
	F. Test	SEm	CD (0.05)	CV (%)			F. Test	SEm	CD (0.05)	CV (%)		
Sowing (A)	**	0.11	0.70	1.07			NS	5.46	33.25	9.65		
Fertilizer (B)	**	0.21	0.62	1.13			NS	9.56	28.19	9.75		
B within A	**	0.30	0.88				NS	13.51	39.87			
A within B		0.29	0.87					13.49	39.80			
	<b>Grains/earhead</b>						<b>1000 Grains weight, g</b>					
RFD	45.93	6	43.70	6	44.81	6	42.62	2	37.15	2	39.89	2
RFD+10 t/ha FYM	48.02	4	51.35	2	49.69	3	41.21	4	37.93	1	39.57	3
RFD+ 4t/ha Straw mulch	51.88	1	46.49	5	49.19	4	40.50	5	35.97	5	38.24	6
RFD+ 10 t/ha FYM+4t/ha Straw	51.23	3	55.78	1	53.50	1	41.69	3	34.96	6	38.33	5
T4+ 0.5 % Zn SO4	47.47	5	46.98	4	47.23	5	43.66	1	36.50	4	40.08	1
T4+ 0.2% KCl (Two spray)	51.76	2	48.49	3	50.13	2	40.09	6	37.03	3	38.56	4
Mean	49.38		48.80		49.09		41.63		36.59		39.11	
	F. Test	SEm	CD (0.05)	CV (%)			F. Test	SEm	CD (0.05)	CV (%)		
Sowing (A)	NS	1.58	9.64	13.69			**	0.36	2.17	3.87		
Fertilizer (B)	NS	2.66	7.85	13.27			NS	0.92	2.72	5.77		
B within A	NS	3.76	11.10				NS	1.30	3.84			
A within B		3.78	11.16					1.24	3.66			
Date of sowing:	12.11.2016		18.12.2016		Date of harvesting:		10.04.2017		16.04.2017			

<b>Table 6.32.1. Central Zone</b>		<b>SPL-11</b>		<b>Bilaspur</b>		<b>2016-17</b>	
Variety	LS20cm&100kg/ha	LS20cm&50kg/ha	Planting methods			Mean	
			Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
HI 1544	33.41	29.40	41.13	35.87	33.74	34.71	
HI 8737	35.58	35.47	46.01	40.95	37.41	39.09	
Mean	34.49	32.44	43.57	38.41	35.58	36.90	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	*	1.91	6.24	12.69			
Variety (B)	**	0.22	0.68	2.28			
B within A	*	0.49	1.53				
A within B		1.94	6.12				
<b>Earhead/sqm</b>							
HI 1544	241	236	296	267	251	258	
HI 8737	301	281	360	304	300	309	
Mean	271	259	328	286	276	284	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	*	10.36	33.79	8.94			
Variety (B)	**	3.63	11.42	4.95			
B within A	N.S.	8.11	25.55				
A within B		11.84	37.31				
<b>Grains/earhead</b>							
HI 1544	35.52	32.60	32.00	32.29	32.98	33.08	
HI 8737	26.03	29.72	27.08	30.12	27.97	28.18	
Mean	30.77	31.16	29.54	31.20	30.47	30.63	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	2.49	8.12	19.90			
Variety (B)	**	0.58	1.83	7.35			
B within A	N.S.	1.30	4.09				
A within B		2.65	8.36				
<b>1000 Grains Weight, g</b>							
HI 1544	39.57	39.63	43.46	41.90	41.04	41.12	
HI 8737	45.66	42.92	47.26	45.01	44.60	45.09	
Mean	42.61	41.28	45.36	43.46	42.82	43.10	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	0.47	1.53	2.67			
Variety (B)	**	0.32	1.00	2.84			
B within A	N.S.	0.71	2.23				
A within B		0.69	2.16				
Date of Sowing:	16.11.2016		Date of Harvesting 26.03.2017				

<b>Table 6.32.2. Central Zone</b>		<b>SPL-11</b>		<b>Gwalior</b>		<b>2016-17</b>	
Variety	LS20cm&100kg/ha	LS20cm&50kg/ha	Planting methods			Mean	
			Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
HI 1544	55.26	53.92	59.50	57.39	58.37	56.89	
HI 8737	56.98	56.37	62.63	60.83	59.80	59.32	
Mean	56.12	55.15	61.06	59.11	59.09	58.11	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	*	1.03	3.35	4.33			
Variety (B)	*	0.57	1.81	3.82			
B within A	N.S.	1.28	4.04				
A within B		1.37	4.32				
<b>Earhead/sqm</b>							
HI 1544	348	324	360	351	350	347	
HI 8737	350	348	363	357	348	353	
Mean	349	336	362	354	349	350	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	2.31	7.52	1.61			
Variety (B)	N.S.	2.33	7.34	2.58			
B within A	N.S.	5.21	16.41				
A within B		4.35	13.69				
<b>Grains/earhead</b>							
HI 1544	45.36	44.73	45.80	43.55	44.31	44.75	
HI 8737	37.45	38.09	40.80	39.45	38.33	38.83	
Mean	41.41	41.41	43.30	41.50	41.32	41.79	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	1.46	4.76	8.56			
Variety (B)	**	0.30	0.95	2.79			
B within A	N.S.	0.67	2.12				
A within B		1.54	4.84				
<b>1000 Grains Weight, g</b>							
HI 1544	35.16	37.07	36.13	37.55	37.69	36.72	
HI 8737	43.65	42.62	42.31	43.34	44.90	43.36	
Mean	39.40	39.84	39.22	40.45	41.29	40.04	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	1.08	3.53	6.62			
Variety (B)	**	0.37	1.15	3.53			
B within A	N.S.	0.82	2.57				
A within B		1.23	3.86				
Date of Sowing:	14.11.2016		Date of Harvesting 10.04.2017				

<b>Table 6.32.3. Central Zone</b>		<b>SPL-11</b>		<b>Indore</b>		<b>2016-17</b>	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
HI 1544	62.27	56.40	59.67	60.50	60.63	59.89	
HI 8737	58.17	55.70	58.37	59.67	58.20	58.02	
Mean	60.22	56.05	59.02	60.08	59.42	58.96	
<b>Statistical Analysis</b>							
Planting (A)	F. Test *	S.E.m	CD (0.05)	CV (%)			
Variety (B)	N.S.	0.85	2.76	3.51			
B within A	N.S.	0.65	2.03	4.24			
A within B		1.44	4.55				
		1.33	4.18				
<b>Earhead/sqm</b>							
HI 1544	372	351	363	366	369	364	
HI 8737	346	324	336	349	341	339	
Mean	359	337	349	358	355	352	
<b>Statistical Analysis</b>							
Planting (A)	F. Test N.S.	S.E.m	CD (0.05)	CV (%)			
Variety (B)	**	7.25	23.64	5.05			
B within A	N.S.	4.53	14.26	4.99			
A within B		10.12	31.89				
		10.19	32.10				
<b>Grains/earhead</b>							
HI 1544	40.94	38.02	40.50	39.81	39.71	39.79	
HI 8737	33.12	33.24	33.63	33.06	31.87	32.98	
Mean	37.03	35.63	37.07	36.43	35.79	36.39	
<b>Statistical Analysis</b>							
Planting (A)	F. Test N.S.	S.E.m	CD (0.05)	CV (%)			
Variety (B)	**	1.11	3.63	7.50			
B within A	N.S.	0.60	1.89	6.39			
A within B		1.34	4.23				
		1.46	4.61				
<b>1000 Grains Weight, g</b>							
HI 1544	40.93	42.30	40.70	41.63	41.40	41.39	
HI 8737	51.07	51.90	51.90	51.70	53.57	52.03	
Mean	46.00	47.10	46.30	46.67	47.48	46.71	
<b>Statistical Analysis</b>							
Planting (A)	F. Test *	S.E.m	CD (0.05)	CV (%)			
Variety (B)	**	0.24	0.77	1.23			
B within A	N.S.	0.24	0.75	1.98			
A within B		0.53	1.68				
		0.44	1.40				
Date of Sowing:	15.11.2016		Date of Harvesting 05.04.2017				

<b>Table 6.32.4. Central Zone</b>		<b>SPL-11</b>		<b>Jabalpur</b>		<b>2016-17</b>	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
HI 1544	50.04	42.96	52.31	41.20	38.92	45.09	
HI 8737	47.06	41.58	48.76	39.44	36.04	42.58	
Mean	48.55	42.27	50.54	40.32	37.48	43.83	
<b>Statistical Analysis</b>							
Planting (A)	F. Test **	S.E.m	CD (0.05)	CV (%)			
Variety (B)	**	0.50	1.64	2.82			
B within A	N.S.	0.16	0.49	1.38			
A within B		0.35	1.10				
		0.56	1.77				
<b>Earhead/sqm</b>							
HI 1544	358	365	388	394	373	376	
HI 8737	351	383	370	372	363	368	
Mean	355	374	379	383	368	372	
<b>Statistical Analysis</b>							
Planting (A)	F. Test N.S.	S.E.m	CD (0.05)	CV (%)			
Variety (B)	N.S.	7.71	25.15	5.08			
B within A	N.S.	4.56	14.36	4.75			
A within B		10.19	32.10				
		10.55	33.25				
<b>Grains/earhead</b>							
HI 1544	30.81	25.60	29.51	22.66	22.33	26.19	
HI 8737	29.65	23.30	27.42	22.40	20.38	24.63	
Mean	30.23	24.45	28.47	22.53	21.36	25.41	
<b>Statistical Analysis</b>							
Planting (A)	F. Test **	S.E.m	CD (0.05)	CV (%)			
Variety (B)	**	0.62	2.01	5.93			
B within A	N.S.	0.30	0.94	4.55			
A within B		0.67	2.10				
		0.78	2.44				
<b>1000 Grains Weight, g</b>							
HI 1544	45.39	46.04	45.77	46.12	46.78	46.02	
HI 8737	45.23	47.13	48.13	47.43	48.79	47.34	
Mean	45.31	46.59	46.95	46.77	47.78	46.68	
<b>Statistical Analysis</b>							
Planting (A)	F. Test N.S.	S.E.m	CD (0.05)	CV (%)			
Variety (B)	**	0.67	2.19	3.53			
B within A	N.S.	0.18	0.58	1.52			
A within B		0.41	1.29				
		0.73	2.31				
Date of Sowing:	18.11.2016		Date of Harvesting 28.03.2017				

<b>Table 6.32.5. Central Zone</b>		<b>SPL-11</b>		<b>Junagadh</b>		<b>2016-17</b>	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
	<b>Yield, q/ha</b>						
HI 1544	43.96	33.67	33.71	30.88	27.48	33.94	
HI 8737	45.78	35.85	36.90	42.24	38.01	39.76	
Mean	44.87	34.76	35.31	36.56	32.75	36.85	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	1.05	3.43	7.00			
Variety (B)	**	0.80	2.54	8.46			
B within A	N.S.	1.80	5.67				
A within B		1.65	5.20				
	<b>Earhead/sqm</b>						
HI 1544	318	313	272	290	233	285	
HI 8737	274	246	226	231	205	236	
Mean	296	280	249	261	219	261	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	9.57	31.22	8.99			
Variety (B)	**	2.82	8.89	4.19			
B within A	N.S.	6.31	19.89				
A within B		10.56	33.28				
	<b>Grains/Earhead</b>						
HI 1544	34.79	27.12	32.84	27.29	29.78	30.36	
HI 8737	33.59	30.01	33.64	36.69	37.61	34.31	
Mean	34.19	28.56	33.24	31.99	33.69	32.33	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	1.36	4.42	10.28			
Variety (B)	**	0.64	2.01	7.63			
B within A	*	1.42	4.49				
A within B		1.69	5.32				
	<b>1000 Grains Weight, g</b>						
HI 1544	39.80	40.00	38.00	39.00	39.60	39.28	
HI 8737	50.20	49.00	48.80	50.00	49.40	49.48	
Mean	45.00	44.50	43.40	44.50	44.50	44.38	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	0.49	1.61	2.72			
Variety (B)	**	0.37	1.17	3.25			
B within A	N.S.	0.83	2.62				
A within B		0.77	2.42				
Date of Sowing:	22.11.2016		Date of Harvesting 16.03.2017				

<b>Table 6.32.6. Central Zone</b>		<b>SPL-11</b>		<b>Kota</b>		<b>2016-17</b>	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
	<b>Yield, q/ha</b>						
HI 1544	61.54	53.12	48.83	49.86	43.79	51.43	
HI 8737	59.21	50.01	47.59	46.91	40.59	48.86	
Mean	60.38	51.56	48.21	48.38	42.19	50.14	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	0.54	1.75	2.63			
Variety (B)	N.S.	0.96	3.02	7.39			
B within A	N.S.	2.14	6.74				
A within B		1.61	5.06				
	<b>Earhead/sqm</b>						
HI 1544	307	288	278	276	249	280	
HI 8737	267	265	282	274	270	271	
Mean	287	277	280	275	260	276	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	7.70	25.10	6.84			
Variety (B)	*	2.54	8.00	3.57			
B within A	**	5.68	17.88				
A within B		8.68	27.35				
	<b>Grains/earhead</b>						
HI 1544	45.16	40.37	41.40	41.65	39.08	41.53	
HI 8737	43.99	38.03	33.82	33.08	28.56	35.50	
Mean	44.58	39.20	37.61	37.36	33.82	38.52	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	1.02	3.32	6.48			
Variety (B)	**	0.83	2.60	8.31			
B within A	N.S.	1.85	5.82				
A within B		1.66	5.22				
	<b>1000 Grains Weight, g</b>						
HI 1544	44.40	45.63	42.57	43.40	45.10	44.22	
HI 8737	50.90	49.97	49.97	51.80	52.77	51.08	
Mean	47.65	47.80	46.27	47.60	48.93	47.65	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	0.35	1.15	1.81			
Variety (B)	**	0.23	0.73	1.89			
B within A	*	0.52	1.64				
A within B		0.51	1.60				
Date of Sowing:	10.11.2016		Date of Harvesting 27.03.2017				

Table 6.32.7. Central Zone		SPL-11		Udaipur		2016-17	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
HI 1544	50.66	38.69	53.04	49.81	40.80	46.60	
HI 8737	53.45	44.44	58.14	68.00	55.08	55.82	
Mean	52.05	41.57	55.59	58.91	47.94	51.21	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	*	3.13	10.22	14.99			
Variety (B)	**	1.44	4.53	10.88			
B within A	N.S.	3.22	10.14				
A within B		3.87	12.20				
<b>Earhead/sqm</b>							
HI 1544	477	437	437	458	478	457	
HI 8737	488	445	460	470	485	470	
Mean	483	441	448	464	482	464	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	20.81	67.87	11.00			
Variety (B)	N.S.	7.64	24.06	6.38			
B within A	N.S.	17.07	53.80				
A within B		24.06	75.81				
<b>Grains/earhead</b>							
HI 1544	23.41	19.80	25.37	22.07	18.76	21.88	
HI 8737	20.41	20.21	23.56	26.50	22.79	22.69	
Mean	21.91	20.00	24.46	24.28	20.78	22.29	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	2.04	6.66	22.44			
Variety (B)	N.S.	0.60	1.89	10.45			
B within A	N.S.	1.34	4.24				
A within B		2.25	7.10				
<b>1000 Grains Weight, g</b>							
HI 1544	46.08	44.88	47.97	49.50	45.42	46.77	
HI 8737	53.65	49.68	54.57	55.13	50.17	52.64	
Mean	49.87	47.28	51.27	52.32	47.80	49.71	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	*	0.98	3.19	4.83			
Variety (B)	**	0.28	0.87	2.16			
B within A	N.S.	0.62	1.95				
A within B		1.07	3.38				
Date of Sowing: 14.11.2016				Date of Harvesting 05.04.2017			

Table 6.33.1. Peninsular Zone		SPL-11		Akola		2016-17	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
UAS 304	38.22	37.76	44.41	37.41	33.30	38.22	
NIAW 301	35.49	31.84	37.35	32.62	31.41	33.74	
Mean	36.86	34.80	40.88	35.02	32.36	35.98	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	1.16	3.78	7.89			
Variety (B)	*	1.34	4.21	14.40			
B within A	N.S.	2.99	9.42				
A within B		2.41	7.60				
<b>Earhead/sqm</b>							
UAS 304	321	290	342	265	252	294	
NIAW 301	309	277	330	242	233	278	
Mean	315	284	336	254	243	286	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	2.30	7.51	1.97			
Variety (B)	**	1.52	4.77	2.05			
B within A	N.S.	3.39	10.67				
A within B		3.32	10.47				
<b>Grains/earhead</b>							
UAS 304	35.45	32.37	30.29	34.81	31.34	32.85	
NIAW 301	29.77	28.86	30.40	34.85	34.32	31.64	
Mean	32.61	30.62	30.34	34.83	32.83	32.25	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	0.95	3.09	7.20			
Variety (B)	N.S.	1.16	3.65	13.904494			
B within A	N.S.	2.59	8.16				
A within B		2.06	6.50				
<b>1000 Grains Weight, g</b>							
UAS 304	33.40	40.20	42.93	40.50	42.05	39.82	
NIAW 301	38.61	39.62	37.22	38.66	39.24	38.67	
Mean	36.01	39.91	40.08	39.58	40.65	39.24	
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	0.14	0.47	0.90			
Variety (B)	**	0.13	0.42	1.33			
B within A	**	0.30	0.95				
A within B		0.26	0.81				
Date of Sowing: 30.11.2016				Date of Harvesting: 25.03.2017			



<b>Table 6.33.2. Peninsular Zone</b>		<b>SPL-11</b>		<b>Dharwad</b>		<b>2016-17</b>	
Variety	Planting methods		Dib15 X 15	Dib15 X 20	Dib20X 20	Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha					
<b>Yield, q/ha</b>							
UAS 304	42.46	33.74	43.53	34.87	31.45	37.21	
NIAW 301	44.67	35.56	45.41	36.21	32.10	38.79	
Mean	43.57	34.65	44.47	35.54	31.78	38.00	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	0.58	1.91	3.77			
Variety (B)	N.S.	0.69	2.16	7.00			
B within A	N.S.	1.54	4.84				
A within B		1.23	3.88				
<b>Earhead/sqm</b>							
UAS 304	272	256	284	245	239	259	
NIAW 301	278	262	298	252	242	266	
Mean	275	259	291	249	241	263	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	5.14	16.76	4.79			
Variety (B)	N.S.	3.40	10.72	5.01			
B within A	N.S.	7.61	23.97				
A within B		7.44	23.44				
<b>Grains/earhead</b>							
UAS 304	37.28	32.17	35.79	35.65	33.81	34.94	
NIAW 301	37.18	32.84	35.08	35.58	33.42	34.82	
Mean	37.23	32.51	35.44	35.61	33.62	34.88	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	1.14	3.72	8.00			
Variety (B)	N.S.	0.81	2.54	8.95			
B within A	N.S.	1.80	5.68				
A within B		1.71	5.39				
<b>1000 Grains Weight, g</b>							
UAS 304	42.00	40.95	42.90	40.16	39.16	41.03	
NIAW 301	43.26	41.50	43.57	40.38	40.00	41.74	
Mean	42.63	41.23	43.24	40.27	39.58	41.39	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	N.S.	0.87	2.85	5.17			
Variety (B)	N.S.	0.50	1.59	4.71			
B within A	N.S.	1.13	3.55				
A within B		1.18	3.72				
Date of Sowing: 10.11.2016				Date of Harvesting: 14.03.2017			

<b>Table 6.33.3. Peninsular Zone</b>		<b>SPL-11</b>		<b>Nipad</b>		<b>2016-17</b>	
Variety	Planting methods		Dib15 X 15	Dib15 X 20	Dib20X 20	Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha					
<b>Yield, q/ha</b>							
UAS 304	51.33	39.46	45.88	49.42	41.22	45.46	
NIAW 301	49.61	37.89	42.52	48.07	40.78	43.77	
Mean	50.47	38.67	44.20	48.74	41.00	44.62	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	1.84	5.99	10.09			
Variety (B)	N.S.	0.60	1.90	5.24			
B within A	N.S.	1.35	4.25				
A within B		2.07	6.53				
<b>Earhead/sqm</b>							
UAS 304	432	402	418	423	427	421	
NIAW 301	419	405	441	416	428	422	
Mean	426	404	430	419	428	421	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	2.45	7.99	1.42			
Variety (B)	N.S.	1.56	4.92	1.43			
B within A	**	3.49	10.99				
A within B		3.48	10.95				
<b>Grains/earhead</b>							
UAS 304	25.50	21.72	23.71	25.95	22.43	23.86	
NIAW 301	27.20	21.28	20.66	26.36	22.40	23.58	
Mean	26.35	21.50	22.18	26.16	22.42	23.72	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	*	1.08	3.51	11.11			
Variety (B)	N.S.	0.35	1.09	5.67			
B within A	N.S.	0.78	2.45				
A within B		1.21	3.81				
<b>1000 Grains Weight, g</b>							
UAS 304	46.61	45.12	46.23	45.02	43.00	45.19	
NIAW 301	43.55	44.05	46.70	43.86	42.66	44.16	
Mean	45.08	44.58	46.47	44.44	42.83	44.68	
<b>Statistical Analysis</b>							
	F. Test	S.E.m	CD (0.05)	CV (%)			
Planting (A)	**	0.44	1.43	2.40			
Variety (B)	*	0.25	0.79	2.19			
B within A	N.S.	0.56	1.78				
A within B		0.59	1.87				
Date of Sowing: 06.11.2016				Date of Harvesting: 30.03.2017			

<b>Table 6.32.8. Central Zone</b>		<b>SPL-11</b>		<b>Powarkheda</b>		<b>2016-17</b>	
Variety	Planting methods		Planting methods			Mean	
	LS20cm&100kg/ha	LS20cm&50kg/ha	Dib15 X 15	Dib15 X 20	Dib20X 20		
<b>Yield, q/ha</b>							
UAS 304	40.51	38.81	47.99	43.57	43.57	42.89	
NIAW 301	38.81	34.55	47.48	41.02	37.44	39.86	
Mean	39.66	36.68	47.73	42.29	40.51	41.37	
	F. Test	SEm	CD (0.05)	CV (%)			
Planting (A)	**	0.73	2.37	4.30			
Variety (B)	**	0.39	1.22	3.63			
B within A	N.S.	0.87	2.73				
A within B		0.95	2.99				
<b>Earhead/sqm</b>							
UAS 304	379	361	633	441	413	445	
NIAW 301	349	296	494	430	264	367	
Mean	364	329	564	436	339	406	
	F. Test	SEm	CD (0.05)	CV (%)			
Planting (A)	**	1.44	4.69	0.87			
Variety (B)	**	0.63	1.98	0.60			
B within A	**	1.40	4.42				
A within B		1.75	5.51				
<b>Grains/earhead</b>							
UAS 304	22.30	24.24	16.39	21.23	21.91	21.21	
NIAW 301	21.92	23.25	18.21	18.83	25.97	21.64	
Mean	22.11	23.74	17.30	20.03	23.94	21.43	
	F. Test	SEm	CD (0.05)	CV (%)			
Planting (A)	**	0.59	1.93	6.75			
Variety (B)	N.S.	0.28	0.89	5.10			
B within A	**	0.63	1.99				
A within B		0.74	2.33				
<b>1000 Grains Weight, g</b>							
UAS 304	48.25	44.42	46.25	46.58	48.25	46.75	
NIAW 301	50.75	50.25	52.75	50.92	54.58	51.85	
Mean	49.50	47.33	49.50	48.75	51.42	49.30	
	F. Test	SEm	CD (0.05)	CV (%)			
Planting (A)	N.S.	0.88	2.86	4.35			
Variety (B)	**	0.70	2.20	5.48			
B within A	N.S.	1.56	4.92				
A within B		1.41	4.44				
Date of Sowing: 20.11.2016				Date of Harvesting: 10.04.2017			

<b>Table 6.34.1. Northern Hills Zone</b>		<b>SPL-12</b>		<b>Almora</b>		<b>2016-17</b>	
Fertilization	Earheads/sq.m.	1000 Grains Weight, g	Grains/Earhead	Yield, q/ha	Biomass, q/ha		
Control	283	48.97	23.06	32.07	72.90		
RDF	415	48.55	25.08	50.47	118.67		
150% RDF	477	49.33	23.24	54.63	123.13		
150% PK	388	52.15	19.32	39.07	92.47		
150% NK	470	46.83	24.48	53.63	125.33		
150% NP	450	45.73	24.90	51.30	120.47		
Nutrient Expert	488	46.36	25.06	56.67	130.20		
CD (0.05)	55.16	4.23	3.36	8.17	17.99		
Date of Sowing: 08.11.2016				Date of Harvesting: 23.05.2017			

<b>Table 6.34.2. Northern Hills Zone</b>		<b>SPL-12</b>		<b>Bajaura</b>		<b>2016-17</b>	
Fertilization	Earheads/sq.m.	1000 Grains Weight, g	Grains/Earhead	Yield, q/ha	Biomass, q/ha		
Control	278	38.53	18.99	20.33	58.34		
RDF	359	42.33	29.45	44.62	108.32		
150% RDF	371	41.87	34.67	53.81	125.51		
150% PK	302	42.20	20.96	26.68	72.50		
150% NK	371	38.87	30.29	43.59	108.07		
150% NP	396	41.53	26.75	43.84	111.29		
Nutrient Expert	370	42.73	29.03	45.93	113.01		
CD (0.05)	40.40	2.93	3.50	5.79	11.04		
Date of Sowing: 16.11.2016				Date of Harvesting: 26.05.2017			

**Table 6.34.3. Northern Hills Zone**

Fertilization	Earheads/sq.m.	1000 Grains Weight, g	SPL-12	Malan	2016-17
			Grains/Earhead	Yield, q/ha	Biomass, q/ha
Control	209	41.23	14.99	12.93	35.13
RDF	274	42.42	29.58	34.43	93.89
150% RDF	285	43.35	32.73	40.32	107.44
150% PK	223	42.08	16.77	15.78	43.01
150% NK	262	41.75	29.82	32.59	89.16
150% NP	259	42.11	28.61	31.21	87.27
Nutrient Expert	277	41.95	30.92	35.86	95.94
CD (0.05)	33.82	1.79	1.30	3.99	9.07
Date of Sowing: 12.11.2016			Date of Harvesting: 12.05.2017		

**Table 6.35.1. North Western Plains Zone**

Fertilization	Earheads/sq.m.	1000 Grains Weight, g	SPL-12	Hisar	2016-17
			Grains/Earhead	Yield, q/ha	Biomass, q/ha
Control	403	42.12	39.21	27.81	71.79
RDF	422	39.15	38.57	53.62	134.10
150% RDF	423	39.91	37.75	62.31	141.54
150% PK	415	41.88	34.71	42.90	108.97
150% NK	425	39.38	40.12	56.72	139.74
150% NP	420	37.21	41.84	57.21	138.72
Nutrient Expert	430	39.76	38.77	59.18	142.82
CD (0.05)	34.82	2.87	6.37	4.58	9.50
Date of Sowing: 14.11.2016			Date of Harvesting: 10.04.2017		

**Table 6.35.2. North Western Plains Zone**

Fertilization	Earheads/sq.m.	1000 Grains Weight, g	SPL-12	Karnal	2016-17
			Grains/Earhead	Yield, q/ha	Biomass, q/ha
Control	294	41.41	12.14	14.73	45.63
RDF	468	42.10	30.42	59.88	155.16
150% RDF	497	36.83	31.00	56.63	153.57
150% PK	286	42.06	12.34	14.81	44.05
150% NK	471	34.54	32.71	53.18	151.19
150% NP	503	35.09	29.57	52.08	146.03
Nutrient Expert	498	37.31	28.55	53.03	149.60
CD (0.05)	29.95	1.74	2.40	3.75	10.07
Date of Sowing: 12.11.2016			Date of Harvesting: 18.04.2017		

**Table 6.35.3. North Western Plains Zone**

Fertilization	Earheads/sq.m.	1000 Grains Weight, g	SPL-12	Ludhiana	2016-17
			Grains/Earhead	Yield, q/ha	Biomass, q/ha
Control	242	34.62	44.72	37.24	183.60
RDF	446	37.60	42.41	70.23	189.95
150% RDF	474	41.64	36.74	72.54	210.05
150% PK	278	32.78	43.85	39.98	177.78
150% NK	468	40.90	37.81	71.66	192.06
150% NP	470	39.68	38.51	71.69	205.45
Nutrient Expert	449	39.24	40.26	70.63	202.12
CD (0.05)	39.50	4.47	8.09	6.03	27.83
Date of Sowing: 11.11.2016			Date of Harvesting: 14.04.2017		

**Table 6.35.4. North Western Plains Zone**

Fertilization	Earheads/sq.m.	1000 Grains Weight, g	SPL-12	Pantnagar	2016-17
			Grains/Earhead	Yield, q/ha	Biomass, q/ha
Control	245	38.10	36.29	32.67	77.87
RDF	384	42.43	34.54	55.20	141.10
150% RDF	464	42.77	27.35	54.33	139.80
150% PK	272	39.33	34.75	37.00	86.03
150% NK	443	41.80	27.01	49.73	136.43
150% NP	422	42.10	24.94	43.80	134.33
Nutrient Expert	401	42.00	31.89	53.53	138.40
CD (0.05)	72.89	3.10	9.51	5.95	7.71
Date of Sowing: 11.11.2016			Date of Harvesting: 14.04.2017		

# METEOROLOGICAL INFORMATION: 2016-2017

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
<b>NORTHERN HILLS ZONE</b>								
<b>ALMORA</b>	<b>Latitude 29<sup>o</sup>36' N</b>		<b>Longitude 79<sup>o</sup>40' E</b>		<b>Height above MSL 1250 m</b>			
40 (01-07 Oct)	29.6	18.1	85.3	64.7	3.5	2.9		5.14
41 (08-14 Oct)	29.7	11.0	78.9	59.6	0.0	3.3		8.50
42 (15-21 Oct)	28.6	8.9	79.1	44.0	0.0	3.1		8.75
43 (22-28 Oct)	27.3	6.1	91.2	37.9	0.0	2.5		8.79
44 (29-04 Nov)	26.7	5.1	84.9	45.3	0.0	2.2		8.11
45 (05-11 Nov)	26.0	3.0	73.9	40.1	0.0	1.9		9.00
46 (12-18 Nov)	24.9	1.3	79.1	36.0	0.0	1.8		8.43
47 (19-25 Nov)	25.9	2.4	79.6	40.7	0.0	2.0		9.21
48 (26-02 Dec)	24.6	2.1	88.0	38.3	0.0	1.7		7.60
49 (03-09 Dec)	24.4	1.5	89.7	35.3	0.0	1.6		8.25
50 (10-16 Dec)	22.6	-0.9	84.6	49.6	0.0	1.5		8.21
51 (17-23 Dec)	23.2	-1.0	82.3	30.1	0.0	1.4		7.89
52 (24-31 Dec)	20.8	0.4	90.9	37.9	0.0	1.3		6.16
1 (01-07 Jan)	19.2	-0.4	94.3	56.9	13.0	1.2		5.46
2 (08-14 Jan)	15.8	-1.6	92.3	41.7	0.0	1.2		6.61
3 (15-21 Jan)	18.7	0.7	85.5	39.0	0.0	1.1		6.32
4 (22-28 Jan)	20.3	0.9	83.8	45.7	12.0	1.1		6.12
5 (29-04 Feb)	21.6	2.0	88.5	38.7	0.0	1.3		6.50
6 (05-11 Feb)	21.2	1.6	85.9	46.5	0.0	1.3		6.96
7 (12-18 Feb)	23.8	2.9	88.7	41.6	0.0	1.1		8.25
8 (19-25 Feb)	22.9	3.5	90.4	49.0	1.5	19.3		6.93
9 (26-04 Mar)	24.7	3.0	82.3	41.7	3.0	2.4		8.82
10 (05-11 Mar)	19.5	4.3	81.3	55.1	16.4	1.8		5.64
11 (12-18 Mar)	22.1	2.0	85.9	51.3	9.3	2.3		8.71
12 (19-25 Mar)	27.4	5.1	77.7	26.9	0.0	3.0		8.86
13 (26-01 Apr)	31.2	10.0	65.6	24.7	0.0	3.8		9.71
14 (02-08 Apr)	26.9	9.8	74.0	54.9	17.3	3.0		8.64
15 (09-15 Apr)	30.6	8.4	79.1	22.0	0.0	3.9		9.64
16 (16-22 Apr)	32.1	13.6	69.7	38.0	0.0	5.0		9.00
17 (23-29 Apr)	31.1	11.6	49.4	30.0	0.0	4.8		8.82
18 (30-06 May)	31.1	10.9	48.9	32.9	2.0	4.9		8.14
19 (7-13 May)	32.9	14.1	64.4	46.9	0.0	4.8		8.93
20 (14-20 May)	32.1	14.7	65.6	47.7	64.8	3.6		6.82
21 (21-27 May)	30.4	15.1	66.9	47.5	22.0	3.5		6.36
22 (28-03 June)	29.0	16.2	69.9	64.9	15.0	3.9		7.14
<b>BAJAURA</b>	<b>Latitude 31<sup>o</sup>48' N</b>		<b>Longitude 77<sup>o</sup>00' E</b>		<b>Height above MSL 1090 m</b>			
44 (29-04 Nov)	26.3	3.9	93.0	27.0	0.0			6.9
45 (05-11 Nov)	26.0	1.4	93.0	20.0	0.0			6.9
46 (12-18 Nov)	24.6	1.0	92.0	23.0	0.0			6.7
47 (19-25 Nov)	24.1	1.7	90.0	24.0	0.0			5.4
48 (26-02 Dec)	23.5	1.3	94.0	26.0	0.0			5.0
49 (03-09 Dec)	21.3	-1.0	93.0	27.0	0.0			5.3
50 (10-16 Dec)	20.6	-0.2	95.0	32.0	0.2			5.2
51 (17-23 Dec)	18.2	-2.3	95.0	28.0	0.0			3.9
52 (24-31 Dec)	19.0	-0.4	93.0	36.0	0.0			4.3
1 (01-07 Jan)	16.8	1.0	92.0	52.0	32.2			3.2
2 (08-14 Jan)	12.8	-1.2	96.0	53.0	18.0			4.7
3 (15-21 Jan)	13.8	-0.4	94.0	48.0	11.1			3.1
4 (22-28 Jan)	14.4	3.2	92.0	65.0	56.6			2.6

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
5 (29-04 Feb)	18.1	3.0	94.0	46.0	3.0			3.5
6 (05-11 Feb)	17.7	3.3	90.0	41.0	15.0			3.9
7 (12-18 Feb)	23.7	3.9	91.0	21.0	0.0			6.5
8 (19-25 Feb)	19.7	4.6	92.0	45.0	43.4			5.3
9 (26-04 Mar)	20.5	2.8	95.0	40.0	3.8			5.7
10 (05-11 Mar)	16.3	3.9	90.0	60.0	45.4			4.1
11 (12-18 Mar)	18.7	3.2	91.0	40.0	22.0			6.2
12 (19-25 Mar)	25.5	6.5	92.0	28.0	0.4			7.4
13 (26-01 Apr)	30.2	8.8	92.0	22.0	0.0			8.2
14 (02-08 Apr)	26.5	9.4	94.0	38.0	60.4			6.3
15 (09-15 Apr)	27.9	7.0	93.0	26.0	1.0			9.5
16 (16-22 Apr)	32.7	11.6	93.0	35.0	14.0			8.6
17 (23-29 Apr)	27.4	10.3	92.0	37.0	9.6			7.3
18 (30-06 May)	27.2	10.1	91.0	44.0	16.1			5.9
19 (7-13 May)	32.0	13.1	93.0	35.0	14.0			8.4
<b>KHUDWANI</b>	<b>Latitude 34<sup>o</sup> N</b>		<b>Longitude 74<sup>o</sup> E</b>			<b>Height above MSL 1560 m</b>		
40 (01-07 Oct)	27.6	8.2	89.3	38.0	0.9			7.06
41 (08-14 Oct)	25.6	4.1	76.1	32.6	0.0			7.46
42 (15-21 Oct)	24.8	3.2	80.4	37.9	0.0			7.49
43 (22-28 Oct)	22.6	0.4	83.0	44.4	0.0			7.11
44 (29-04 Nov)	21.4	-0.8	84.9	44.0	0.0			4.83
45 (05-11 Nov)	18.9	-2.0	88.4	37.7	0.0			3.70
46 (12-18 Nov)	15.4	-4.1	93.9	42.0	0.0			0.36
47 (19-25 Nov)	13.0	0.0	87.7	52.1	0.0			0.00
48 (26-02 Dec)	13.6	-0.2	91.1	57.0	0.0			0.00
49 (03-09 Dec)	12.2	-3.7	93.1	55.0	0.0			0.00
50 (10-16 Dec)	11.6	-2.0	93.3	61.9	0.6			1.83
51 (17-23 Dec)	9.6	-6.0	94.6	55.7	0.0			1.29
52 (24-31 Dec)	10.7	-4.8	94.5	51.3	0.0			0.11
1 (01-07 Jan)	5.5	-2.2	94.0	78.7	16.2			0.00
2 (08-14 Jan)	3.5	-4.2	93.4	72.6	0.5			1.54
3 (15-21 Jan)	3.3	-3.0	93.6	74.3	6.5			0.21
4 (22-28 Jan)	3.4	-1.6	92.7	83.9	14.7			0.00
5 (29-04 Feb)	5.8	0.2	91.6	80.1	3.6			0.47
6 (05-11 Feb)	9.4	-1.3	87.1	59.3	21.1			4.31
7 (12-18 Feb)	10.9	-0.3	88.9	62.0	2.1			2.17
8 (19-25 Feb)	12.0	1.6	84.7	67.0	4.9			3.51
9 (26-04 Mar)	12.9	1.6	82.9	56.6	2.1			3.89
10 (05-11 Mar)	9.2	0.3	85.4	65.4	14.2			1.30
11 (12-18 Mar)	13.8	1.1	77.3	44.9	2.8			5.54
12 (19-25 Mar)	16.9	4.1	77.1	46.1	1.9			4.13
13 (26-01 Apr)	21.5	8.0	75.6	43.6	0.5			5.51
14 (02-08 Apr)	13.8	4.6	82.6	68.7	25.3			2.73
15 (09-15 Apr)	21.6	4.6	73.3	35.6	0.0			9.96
16 (16-22 Apr)	25.4	9.2	84.3	46.0	7.0			21.11
17 (23-29 Apr)	19.4	7.6	86.4	80.6	10.1			5.91
18 (30-06 May)	21.2	7.2	83.9	57.3	5.2			6.34
19 (7-13 May)	26.1	10.1	75.0	51.3	0.1			6.64
20 (14-20 May)	24.3	10.5	85.9	60.0	6.6			5.86
21 (21-27 May)	26.6	11.4	81.1	51.9	1.2			6.39
22 (28-3 June)	29.3	11.8	63.3	41.8	0.0			8.50
<b>MALAN</b>	<b>Latitude 32<sup>o</sup>1' N</b>		<b>Longitude 76<sup>o</sup>2' E</b>			<b>Height above MSL 950 m</b>		
40 (01-07 Oct)	30.8	10.3	72.6	69.7	21.0			
41 (08-14 Oct)	30.6	10.3	69.9	66.9	0.0			
42 (15-21 Oct)	30.4	9.4	67.1	62.3	0.0			
43 (22-28 Oct)	29.3	9.1	60.0	56.3	0.0			
44 (29-04 Nov)	29.2	9.0	54.3	49.7	0.0			
45 (05-11 Nov)	28.9	9.2	54.3	50.0	0.0			

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
46 (12-18 Nov)	28.5	8.8	51.1	47.1	0.0			
47 (19-25 Nov)	28.4	7.8	55.7	50.9	0.0			
48 (26-02 Dec)	28.2	7.7	51.4	46.0	0.0			
49 (03-09 Dec)	28.0	7.8	48.6	44.9	0.0			
50 (10-16 Dec)	27.5	7.6	53.6	50.3	0.0			
51 (17-23 Dec)	28.1	7.8	52.6	49.4	0.0			
52 (24-31 Dec)	27.8	7.6	56.5	52.8	10.2			
1 (01-07 Jan)	27.2	6.8	68.9	66.3	51.6			
2 (08-14 Jan)	24.7	5.5	64.1	61.1	0.0			
3 (15-21 Jan)	24.9	5.4	67.4	64.3	22.0			
4 (22-28 Jan)	26.4	5.4	68.6	66.6	45.6			
5 (29-04 Feb)	26.8	6.7	65.4	61.7	2.2			
6 (05-11 Feb)	27.4	6.9	61.3	58.3	14.0			
7 (12-18 Feb)	28.7	8.1	57.7	53.8	0.0			
8 (19-25 Feb)	28.3	7.3	63.4	60.0	14.6			
9 (26-04 Mar)	29.1	7.9	57.9	53.6	0.0			
10 (05-11 Mar)	28.8	6.8	72.7	69.1	27.0			
11 (12-18 Mar)	28.3	7.1	75.7	72.7	1.8			
12 (19-25 Mar)	30.3	9.6	65.4	60.0	0.0			
13 (26-01 Apr)	31.3	11.2	60.3	55.3	0.0			
14 (02-08 Apr)	30.2	10.4	63.1	60.0	33.8			
15 (09-15 Apr)	31.1	11.3	59.6	54.4	0.0			
16 (16-22 Apr)	33.5	13.9	59.0	53.0	4.2			
17 (23-29 Apr)	32.1	13.5	62.1	57.4	5.7			
18 (30-06 May)	33.3	14.9	62.3	57.7	3.4			
19 (7-13 May)	34.6	14.1	62.7	58.3	6.8			
20 (14-20 May)	33.4	14.1	65.3	61.7	14.6			
21 (21-27 May)	34.1	14.0	60.3	56.6	0.2			

### NORTH WESTERN PLAINS ZONE

DELHI	Latitude 28 <sup>o</sup> 38' N		Longitude 77 <sup>o</sup> 09' E		Height above MSL 228.6 m			
40(01-07 Oct)	34.5	22.7	90	58	37.8	4.4	2.0	1.4
41(08-14 Oct)	34.3	17.1	88	37	0.0	4.4	3.4	5.7
42(15-21 Oct)	34.2	13.5	82	29	0.0	5.3	3.2	8.8
43(22-28 Oct)	33.4	13.5	80	31	0.0	5.3	4.4	6.9
44(29-04 Nov)	30.8	10.8	97	39	0.0	4.0	1.4	1.6
45(05-11 Nov)	29.3	9.7	90	40	0.0	3.5	2.8	0.7
46(12-18 Nov)	28.2	8.5	91	35	0.0	3.3	2.5	0.9
47(19-25 Nov)	28.6	7.3	87	32	0.0	3.9	2.6	4.4
48(26-02 Dec)	28.2	8.8	82	46	0.0	4.8	5.1	5.8
49(03-09 Dec)	24.5	5.1	97	50	0.0	3.0	1.6	4.6
50(10-16 Dec)	24.3	6.3	95	51	0.0	2.8	2.9	5.4
51(17-23 Dec)	23.0	4.2	90	40	0.0	3.1	4.3	5.9
52(24-31 Dec)	21.1	5.0	90	56	0.0	2.2	3.5	3.6
1(01-07 Jan)	22.8	4.2	96	58	5.0	2.1	2.8	4.7
2(08-14 Jan)	17.6	4.2	92	47	0.0	2.0	3.6	4.7
3(15-21 Jan)	18.6	6.2	91	55	0.0	2.4	4.9	4.3
4(22-28 Jan)	21.6	10.6	95	68	81.6	2.1	4.3	2.4
5(29-04 Feb)	21.4	8.6	96	61	0.0	2.8	3.2	5.3
6(05-11 Feb)	21.7	9.1	94	51	0.0	3.5	5.2	5.7
7(12-18 Feb)	24.3	9.5	92	55	0.0	4.0	4.1	6.8
8(19-25 Feb)	26.9	12.2	85	39	0.0	4.7	6.0	8.2
9(26-04 Mar)	27.7	11.4	84	41	0.0	4.8	4.9	7.5
10(05-11 Mar)	26.7	12.7	82	49	4.7	4.7	6.3	7.5
11(12-18 Mar)	25.4	10.0	93	47	0.0	4.7	4.3	8.4
12(19-25 Mar)	32.4	15.0	86	40	0.0	5.8	4.6	8.3
13(26-01 Apr)	36.4	20.4	76	40	0.0	6.4	7.4	9.2
14(02-08 Apr)	36.7	19.5	76	42	8.0	6.6	7.7	8.7

Julian weeks	Temperature °C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
15(09-15 Apr)	36.7	18.8	64	41	0.0	7.5	7.3	9.8
16(16-22 Apr)	39.5	22.1	68	41	0.0	7.0	5.0	9.2
17(23-29 Apr)	38.5	22.3	69	37	0.0	6.4	6.4	7.4
18(30-06 May)	39.0	22.0	66	40	0.0	6.6	5.3	7.5
<b>DURGAPURA</b>	<b>Latitude 26°51' N</b>			<b>Longitude 75°47' E</b>			<b>Height above MSL 390 m</b>	
40(01-07 Oct)	34.2	25.6	74	47	11.6	5.2	4.1	6.2
41(08-14 Oct)	34.1	22.5	64	32	0.0	3.8	4.9	9.0
42(15-21 Oct)	34.5	20	51	19	0.0	5.2	4.2	8.9
43(22-28 Oct)	33.9	19.6	51	22	0.0	5.0	4.8	9.0
44(29-04 Nov)	32.2	15.5	68	20	0.0	3.3	2.0	6.2
45(05-11 Nov)	31.4	13.9	55	16	0.0	3.8	3.1	8.1
46(12-18 Nov)	29.5	12.8	65	20	0.0	3.1	2.6	9.0
47(19-25 Nov)	30.9	13.2	67	20	0.0	3.3	3.0	9.2
48(26-02 Dec)	29.9	13.7	64	23	0.0	3.4	3.4	9.4
49(03-09 Dec)	27.8	10.8	80	29	0.0	2.6	1.9	8.9
50(10-16 Dec)	27.6	13.4	72	34	0.0	3.4	2.3	7.9
51(17-23 Dec)	25.4	8.9	73	19	0.0	2.6	3.1	9.2
52(24-31 Dec)	25.9	10.2	87	31	0.0	2.3	3.7	8.7
1(01-07 Jan)	23.2	10.4	89	45	0.0	1.9	3.6	8.2
2(08-14 Jan)	19.3	5.7	82	29	0.0	2.0	3.9	8.0
3(15-21 Jan)	20.6	7.4	70	28	0.0	2.7	4.8	8.4
4(22-28 Jan)	23.1	12.2	77	49	22.4	2.4	5.8	6.5
5(29-04 Feb)	24.2	12.2	82	45	0.0	2.4	3.9	8.8
6(05-11 Feb)	24.0	10.4	82	58	0.0	3.6	5.5	8.6
7(12-18 Feb)	27.2	10.6	77	36	0.0	3.2	2.9	9.1
8(19-25 Feb)	28.7	12.2	72	24	0.0	4.8	4.4	9.8
9(26-04 Mar)	29.9	15.2	54	21	6.4	5.3	5.5	8.7
10(05-11 Mar)	27.7	13.8	61	29	3.8	4.9	5.8	8.6
11(12-18 Mar)	27.9	14.2	47	15	0.0	5.4	5.2	9.0
12(19-25 Mar)	33.6	18.2	56	17	0.0	6.1	4.8	9.0
13(26-01 Apr)	38.6	21.2	39	11	0.0	8.7	5.0	10.1
14(02-08 Apr)	38.2	23.5	26	11	0.0	9.7	7.9	10.2
15(09-15 Apr)	37.4	19.8	25	8	0.0	9.3	5.3	10.6
16(16-22 Apr)	42.1	27.2	30	11	0.0	11.4	6.7	10.8
17(23-29 Apr)	38.7	23.1	36	17	3.2	9.7	7.8	9.2
<b>GURDASPUR</b>	<b>Latitude – 32°03'</b>			<b>Longitude – 75°24'</b>			<b>Height Above MSL 260 m</b>	
40(01-07 Oct)	33.8	23.7	85	60	0.1	2.93	0.22	
41(08-14 Oct)	32.8	19.3	82	51	0	4.2	0.05	
42(15-21 Oct)	32.4	17	81	63	0	2.79	0.06	
43(22-28 Oct)	31.1	15.2	79	49	0	2.65	0.05	
44(29-04 Nov)	28.3	14.1	81	65	0	2.49	0.05	
45(05-11 Nov)	28	12.3	79	59	0	2.91	0.22	
46(12-18 Nov)	25.6	10.9	77	53	1	2.96	1.12	
47(19-25 Nov)	25.4	11.6	82	55	0	2.46	0.04	
48(26-02 Dec)	24.8	10	86	59	0	2.96	0.03	
49(03-09 Dec)	23.7	9.3	89	63	0	2.83	0.04	
50(10-16 Dec)	20.7	10.2	91	72	0	2.58	0.35	
51(17-23 Dec)	21.1	6.3	87	62	0	2.74	0.05	
52(24-31 Dec)	21.1	7.9	89	58	0	2.66	0.31	
1(01-07 Jan)	20.7	10.3	87	73	33.5	2.79	0.4	
2(08-14 Jan)	16.5	3.3	85	56	3	2.21	0.16	
3(15-21 Jan)	16	6.4	91	72	16.3	0.75	0.1	
4(22-28 Jan)	18.5	10.1	92	75	58.6	0.68	1.61	
5(29-04 Feb)	18.3	9.2	95	83	0	0.72	2.1	
6(05-11 Feb)	20.6	9.9	86	64	11.5	1.11	0.12	
7(12-18 Feb)	23.8	8.5	86	59	0	2.12	0.15	
8(19-25 Feb)	23.6	10.8	79	54	0	2.22	0.52	
9(26-04 Mar)	24.7	9.6	79	47	0	3.95	0.74	

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
10(05-11 Mar)	21.8	9.3	77	54	26.6	2.34	3.23	
11(12-18 Mar)	22.3	8.3	75	51	0.2	2.76	0.86	
12(19-25 Mar)	29.3	14.2	76	45	0	3.44	0.32	
13(26-01 Apr)	33	17.7	72	44	0	3.94	0.32	
14(02-08 Apr)	31	17.3	66	38	12.6	2.5	4.42	
15(09-15 Apr)	34.7	13.6	71	35	0	4.94	0.79	
16(16-22 Apr)	40.3	21.6	51	29	3	4.47	6.95	
17(23-29 Apr)	35.8	19.1	48	28	5.5	3.94	6.51	
18(30-06 May)	35.7	19.8	42	29	2.3	5.39	4.78	
19(07-13 May)	38.9	22.2	47	30	0	6.0	3.27	
20(14-20 May)	37.1	23.1	51	33	2	6.06	3.41	
<b>HISAR</b>	<b>Latitude 29°10'N</b>		<b>Longitude 75° 46'E</b>		<b>Height above MSL 215.2 m</b>			
40(01-07 Oct)	35.2	24.7	90	57	12.0	3.6	3.1	5.3
41(08-14 Oct)	35.1	20.4	83	37	0.0	4.2	2.9	8.7
42(15-21 Oct)	35.1	16.1	79	33	0.0	3.9	2.5	9.4
43(22-28 Oct)	34.1	16.4	85	40	0.0	4.7	3.7	8.5
44(29-04 Nov)	31.2	13.1	92	49	0.0	2.2	1.3	4.4
45(05-11 Nov)	29.8	11.0	95	46	0.0	1.7	1.4	2.5
46(12-18 Nov)	29.4	11.3	91	47	0.0	2.3	2.2	6.3
47(19-25 Nov)	29.0	10.0	89	48	0.0	1.9	1.9	8.2
48(26-02 Dec)	28.8	9.0	89	46	0.0	1.9	2.2	8.1
49(03-09 Dec)	26.1	7.6	95	51	0.0	1.5	1.2	7.0
50(10-16 Dec)	24.9	9.6	98	54	0.0	1.3	2.5	5.5
51(17-23 Dec)	23.5	5.3	97	49	0.0	1.4	2.2	7.3
52(24-31 Dec)	22.8	7.1	99	67	0.0	1.1	2.7	5.5
1(01-07 Jan)	20.1	9.9	100	80	5.8	0.8	5.0	2.9
2(08-14 Jan)	17.6	3.2	99	60	0.0	1.2	2.4	6.0
3(15-21 Jan)	16.9	3.9	96	66	0.8	1.1	3.2	4.3
4(22-28 Jan)	20.0	10.4	99	81	34.6	1.4	4.1	3.1
5(29-04 Feb)	20.6	7.8	98	64	0.0	1.1	2.2	5.6
6(05-11 Feb)	21.6	7.0	93	53	0.0	1.7	3.7	6.9
7(12-18 Feb)	24.5	7.4	90	45	0.0	2.0	1.9	7.8
8(19-25 Feb)	26.8	9.1	90	37	0.0	2.7	2.6	8.4
9(26-04 Mar)	26.9	8.3	92	37	0.0	2.7	2.8	8.6
10(05-11 Mar)	25.6	9.7	89	45	7.5	3.5	4.8	7.6
11(12-18 Mar)	25.1	7.4	90	40	0.0	2.6	2.7	8.3
12(19-25 Mar)	32.0	13.6	90	34	0.0	3.9	2.8	9.2
13(26-01 Apr)	36.3	16.7	85	30	0.0	4.9	2.8	9.6
14(02-08 Apr)	35.7	17.5	68	27	0.0	6.5	7.2	6.9
15(09-15 Apr)	37.2	14.0	59	16	0.0	6.7	3.2	10.3
16(16-22 Apr)	42.9	22.8	45	19	0.0	8.4	4.0	9.9
17(23-29 Apr)	38.5	20.7	54	24	1.0	7.4	5.0	7.9
<b>JAMMU</b>	<b>Latitude- 32°44' N</b>		<b>Longitude- 74°54" E</b>		<b>Height Above MSL - 356 m</b>			
40(01-07 Oct)	34.2	23.5	79	63	1.2	28.5	4	6
41(08-14 Oct)	32.7	18	75	57	0	23.8	0.2	7.9
42(15-21 Oct)	32	16.1	78	43	0	23.3	0.2	7.4
43(22-28 Oct)	31.4	13.8	76	39	0	25.2	0.3	7.8
44(29-04 Nov)	28.6	12.6	80	53	0	18.8	0.1	3.9
45(05-11 Nov)	28.1	10	87	39	0	15	0.3	6.6
46(12-18 Nov)	24.7	8.4	79	43	0	10	0.7	5.8
47(19-25 Nov)	24.8	9.2	90	45	0	8.2	0.1	3.2
48(26-02 Dec)	26.1	8.2	92	41	0	1.2	0.15	5.1
49(03-09 Dec)	23.8	6.9	94	51	0	0.9	0	4.3
50(10-16 Dec)	21.9	7.4	92	62	0	0.7	0.7	3.8
51(17-23 Dec)	22.7	3.6	92	51	0	0.6	0.1	5.8
52(24-31 Dec)	22	5.7	90	54	0	0.6	0.2	4.2
1(01-07 Jan)	19.7	8.6	92	59	33.2	3.2	2.8	2.8
2(08-14 Jan)	16.9	2.4	90	53	10	1.3	0.9	6.2



Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
3(15-21 Jan)	16.7	5.2	87	61	21.2	5.5	1.7	2.6
4(22-28 Jan)	18.1	9.4	93	79	69.2	3.7	1.5	3.1
5(29-04 Feb)	18.6	9.7	97	76	10.2	3.5	0.5	2.1
6(05-11 Feb)	20.1	7.4	86	58	24	11.1	0.5	5.5
7(12-18 Feb)	24.2	9	86	58	0	13.4	0.7	4.9
8(19-25 Feb)	24.2	9.6	76	52	7.4	12	1.4	7.3
9(26-04 Mar)	25.4	8.7	82	38	0	13.7	1.2	6.9
10(05-11 Mar)	21.7	8.2	84	53	38.4	20.9	2.6	5
11(12-18 Mar)	22.9	7.3	78	44	2	19.1	1.2	6.1
12(19-25 Mar)	28.9	12.5	82	43	0	27.6	0.8	6.1
13(26-01 Apr)	33.1	15.6	84	43	0	36.6	0.4	8.1
14(02-08 Apr)	30.4	15.1	79	41	19.8	28.6	2.1	4.2
15(09-15 Apr)	33.4	11.9	70	33	0	43.4	1.4	10.1
16(16-22 Apr)	38.8	20.1	62	29	1.8	60.9	1.8	8.3
17(23-29 Apr)	35.1	16.9	61	28	1.8	52.9	1.8	9
18(30-06 May)	36.1	16.4	56	24	0	71.6	3.7	7.9
19(07-13 May)	39.9	20.6	56	30	0	75.8	1.4	8.1
20 (14-20 May)	37.8	20.9	55	27	1	75.8	1.8	7
21 (21-27 May)	37.8	21.7	60	33	23	74.4	11	83
<b>KARNAL</b>	<b>Latitude 29<sup>o</sup>43'N</b>		<b>Longitude 76<sup>o</sup>58'E</b>		<b>Height above MSL 245 m</b>			
41(08-14 Oct)	33.81	18.17	84.29	38.43	0.00	2.71	7.33	0.00
42(15-21 Oct)	33.36	15.37	83.43	29.71	0.00	2.97	7.80	0.00
43(22-28 Oct)	32.21	14.81	87.57	34.71	0.00	2.97	7.83	0.00
44(29-04 Nov)	30.13	13.56	93.86	40.43	0.00	2.21	5.43	0.00
45(05-11 Nov)	29.40	11.43	94.43	32.14	0.00	2.41	5.66	0.91
46(12-18 Nov)	28.10	10.51	85.00	42.29	0.00	2.57	7.33	1.79
47(19-25 Nov)	28.01	10.14	86.86	32.14	0.00	2.33	7.47	1.76
48(26-02 Dec)	27.53	11.59	83.71	42.14	0.00	3.21	5.60	3.34
49(03-09 Dec)	22.56	8.30	98.71	63.00	0.00	1.34	3.67	1.01
50(10-16 Dec)	21.67	9.47	99.29	63.43	0.00	1.06	4.27	2.81
51(17-23 Dec)	22.20	6.54	95.43	49.43	0.00	1.24	6.76	2.27
52(24-31 Dec)	20.66	7.79	94.63	59.25	0.00	0.85	4.59	2.83
1(01-07 Jan)	22.17	8.33	99.14	62.71	8.00	1.00	5.76	2.24
2(08-14 Jan)	16.20	3.41	99.57	61.29	19.00	0.80	6.69	2.34
3(15-21 Jan)	17.47	4.96	98.71	63.29	3.60	0.70	4.41	2.94
4(22-28 Jan)	20.49	9.67	98.00	70.29	55.20	1.11	4.06	3.67
5(29-04 Feb)	20.49	7.97	98.57	62.14	0.00	1.19	5.03	2.17
6(05-11 Feb)	20.64	7.33	94.29	56.14	0.00	1.37	6.47	3.83
7(12-18 Feb)	23.77	8.36	91.86	53.86	0.00	2.00	7.49	2.50
8(19-25 Feb)	25.04	9.93	87.00	47.86	0.00	2.74	8.14	3.56
9(26-04 Mar)	26.31	9.31	85.57	39.00	0.30	2.67	8.83	3.00
10(05-11 Mar)	24.79	10.11	78.43	49.43	7.50	2.56	8.37	4.49
11(12-18 Mar)	23.43	7.59	86.86	42.29	0.00	2.41	9.23	2.29
12(19-25 Mar)	30.27	13.66	83.00	38.71	0.00	3.00	10.01	2.01
13(26-01 Apr)	35.20	16.60	77.71	25.43	0.00	3.93	10.46	3.17
14(02-08 Apr)	35.80	18.16	60.43	29.86	2.00	4.50	9.53	5.03
15(09-15 Apr)	35.94	14.53	50.57	12.57	0.00	5.69	10.94	3.41
16(16-22 Apr)	40.43	21.94	65.14	23.43	0.00	6.04	10.89	4.01
17(23-29 Apr)	38.01	21.01	48.14	19.57	0.00	6.87	10.46	3.86
18(30-06 May)	37.76	20.16	53.00	19.00	1.40	4.96	10.50	3.63
<b>LUDHIANA</b>	<b>Latitude 30<sup>o</sup>54' N</b>		<b>Longitude 75<sup>o</sup>52' E</b>		<b>Height above MSL 247 m</b>			
40(01-07 Oct)	33.1	20.5	93	47	0	29	2.2	10.1
41(08-14 Oct)	32.7	22	87	52	7	27	3.2	6.5
42(15-21 Oct)	31.5	19.2	94	46	0	20.6	1.6	7.4
43(22-28 Oct)	29.5	16.4	84	39	9	25	3.9	6.8
44(29-04 Nov)	27.8	14.4	94	43	0	15.5	1.5	3.8
45(05-11 Nov)	26.8	14.8	88	42	0	15.1	2.3	3.1
46(12-18 Nov)	28	12.5	89	30	0	13	2.7	7.1

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
47(19-25 Nov)	27	9.9	94	29	0	17.4	1.6	7.4
48(26-02 Dec)	24.7	11.4	93	48	0	11.7	0.9	1.4
49(03-09 Dec)	23.8	10	96	47	0	10.9	2.7	3.7
50(10-16 Dec)	20	7.9	91	44	1.7	11.5	2.5	5.2
51(17-23 Dec)	20	4.9	95	38	0	8.2	1.6	6
52(24-31 Dec)	20.4	5.3	94	37	0	9.3	2.7	7.5
1(01-07 Jan)	21.2	7.3	95	49	0	8.4	1.2	2.9
2(08-14 Jan)	19.1	7.9	94	59	16	9.6	2.3	3.4
3(15-21 Jan)	13	8	94	77	0	5.3	3.5	0.2
4(22-28 Jan)	14.1	5.2	97	69	0.4	4.8	1.9	2.9
5(29-04 Feb)	20.5	7.6	93	52	3	11	2.7	6.4
6(05-11 Feb)	21.4	8.2	89	48	0.8	17.8	3.9	6.5
7(12-18 Feb)	22.1	7.5	89	41	0.6	17	2.7	7.8
8(19-25 Feb)	24.2	11.7	94	53	7.4	19	3.9	8.1
9(26-04 Mar)	28.1	12.9	94	42	0	22.7	1.6	7.9
10(05-11 Mar)	26.7	14.5	90	47	23	24.8	3.3	7.8
11(12-18 Mar)	24.2	14.2	91	56	14.9	22.8	4.9	6.5
12(19-25 Mar)	29.8	14.5	84	36	3.2	32.2	4.4	8.8
13(26-01 Apr)	33	17.6	83	35	0	38.3	2.7	9.5
14(02-08 Apr)	34.3	20.1	70	30	0	42.9	3.8	6.3
15(09-15 Apr)	35.1	18	65	22	0.4	57.4	4.3	10.2
16(16-22 Apr)	38.9	22.3	59	21	2.6	65.6	4.3	10.2
17(23-29 Apr)	37.8	18.1	52	13	0	68.5	2.7	12.1
18(30-06 May)	39.2	22.4	49	23	2.4	65.4	4.9	6.6
<b>NAGINA</b>	<b>Latitude N29<sup>o</sup> 28'N</b>		<b>Longitude 78<sup>o</sup> 32'E</b>			<b>Height above MSL 245 m</b>		
45(05-11 Nov)	33.1	24.5	33.1	24.5	2.0	2.8	1.9	4.0
46(12-18 Nov)	32.0	19.4	32.0	19.4	0.0	3.4	2.5	8.0
47(19-25 Nov)	31.5	16.6	31.5	16.6	0.0	2.9	1.6	8.4
48(26-02 Dec)	30.4	13.9	30.4	13.9	0.0	2.9	2.1	8.1
49(03-09 Dec)	30.1	12.2	30.1	12.2	0.0	2.7	1.3	8.4
50(10-16 Dec)	28.0	10.4	28.0	10.4	0.0	2.3	2.2	7.8
51(17-23 Dec)	27.2	8.8	27.2	8.8	0.0	2.1	1.7	8.5
52(24-31 Dec)	26.4	8.9	26.4	8.9	0.0	1.9	2.6	7.1
1(01-07 Jan)	25.1	9.0	25.1	9.0	0.0	1.5	2.3	5.8
2(08-14 Jan)	23.8	8.8	23.8	8.8	0.0	1.2	1.9	5.3
3(15-21 Jan)	20.1	8.8	20.1	8.8	0.0	1.2	3.4	3.7
4(22-28 Jan)	23.5	5.4	23.5	5.4	0.0	1.2	2.1	7.0
5(29-04 Feb)	22.3	5.8	22.3	5.8	0.0	1.1	2.8	5.6
6(05-11 Feb)	22.8	6.0	98	61	36.0	0.8	3.2	6.9
7(12-18 Feb)	17.5	2.5	100	50	0.0	1.0	3.2	6.4
8(19-25 Feb)	19.5	7.4	97	57	0.0	1.4	4.6	5.6
9(26-04 Mar)	21.4	10.2	95	60	11.0	1.6	4.6	4.6
10(05-11 Mar)	19.8	8.6	97	67	0.0	1.7	3.3	4.4
11(12-18 Mar)	22.1	8.4	97	50	6.0	1.7	4.8	6.6
12(19-25 Mar)	24.6	8.4	96	49	0.0	1.9	2.5	7.6
13(26-01 Apr)	25.9	10.8	91	42	5.0	2.6	5.0	8.4
14(02-08 Apr)	27.6	9.2	91	32	0.0	2.3	4.4	8.0
15(09-15 Apr)	26.4	9.5	86	38	3.0	3.4	5.5	7.9
16(16-22 Apr)	25.0	7.8	91	27	0.0	3.3	4.9	8.4
17(23-29 Apr)	30.1	12.2	91	35	0.0	4.3	5.4	8.9
18(30-06 May)	35.1	15.7	91	30	0.0	5.6	5.2	9.5
<b>PANTNAGAR</b>	<b>Latitude 29<sup>o</sup>N</b>		<b>Longitude 79<sup>o</sup> 30'E</b>			<b>Height above MSL 243.84 m</b>		
40(01-07 Oct)	32.5	24.9	88	66	Trace	2.8	2.5	3.1
41(08-14 Oct)	32.1	19.9	89	61	0	2.8	2.7	7.4
42(15-21 Oct)	31.4	17.2	80	47	0	2.8	2.2	7.6
43(22-28 Oct)	31.1	13.9	90	37	0	2.9	2.3	7.8
44(29-04 Nov)	30.3	13.5	85	39	0	2.5	1.7	8
45(05-11 Nov)	29	11.4	90	36	0	2.4	2.5	7.9

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
46(12-18 Nov)	27.8	10.6	91	37	0	2.8	2.3	7.8
47(19-25 Nov)	26.6	9.8	93	40	0	1.9	2.2	7.8
48(26-02 Dec)	26.3	11.3	93	50	0	1.7	2.6	3.9
49(03-09 Dec)	22.2	11.5	95	60	0	1.2	3	3.3
50(10-16 Dec)	20.5	9.9	94	63	0	1.2	2.6	3
51(17-23 Dec)	23.6	6.5	95	48	0	1.9	2.4	6.4
52(24-31 Dec)	22.6	8.7	94	55	11.2	1.7	3.4	6
1(01-07 Jan)	21.3	21.3	92	59	13	1.7	4.1	5.5
2(08-14 Jan)	19.1	19.1	93	52	0	1.4	4	7.1
3(15-21 Jan)	19	19	95	55	0	1.2	4.7	3.1
4(22-28 Jan)	22.8	22.8	92	60	47.4	2	5.8	6.1
5(29-04 Feb)	21.8	21.8	93	47	0	1.6	2.3	4.4
6(05-11 Feb)	23.5	23.5	92	49	Trace	2.3	5.1	6.9
7(12-18 Feb)	25.7	25.7	91	45	0	1.5	2.7	7
8(19-25 Feb)	26.5	26.5	92	39	0	2.9	5.6	7.5
9(26-04 Mar)	27.6	27.6	87	50	0.8	3.1	4.3	8.1
10(05-11 Mar)	25.1	25.1	86	36	2.8	3	5.6	6.6
11(12-18 Mar)	26.6	26.6	88	38	0	4	5.9	9.6
12(19-25 Mar)	31.2	31.2	82	34	0	3.8	5.4	8.4
13(26-01 Apr)	35.2	35.2	82	34	Trace	5.2	6	9.2
14(02-08 Apr)	35.2	35.2	72	28	1	6.7	7.6	7.3
15(09-15 Apr)	35.7	35.7	66	21	0	7.1	7.4	9.1
16(16-22 Apr)	36.3	36.3	57	40	3	7.5	7.5	6.5
17(23-29 Apr)	38.1	38.1	61	23	0	9.5	8.5	9.6
<b>SRIGANGANAGAR</b>								
		<b>Latitude 28<sup>o</sup> 4'N</b>			<b>Longitude 72<sup>o</sup> 30'E</b>		<b>Height above MSL 175.6 m</b>	
40(01-07 Oct)	37.4	23.2	83.1	57.4	0.0			5.9
41(08-14 Oct)	37.9	18.9	73.4	41.1	0.0			8.4
42(15-21 Oct)	37.8	17.3	59.0	34.0	0.0			9.0
43(22-28 Oct)	35.6	15.2	73.3	39.0	0.0			8.2
44(29-04 Nov)	33.6	13.1	77.0	49.0	0.0			5.3
45(05-11 Nov)	32.6	10.9	80.6	48.0	0.0			4.4
46(12-18 Nov)	28.5	10.1	77.1	50.4	0.0			7.0
47(19-25 Nov)	30.8	9.7	76.0	45.0	0.0			7.7
48(26-02 Dec)	29.6	9.6	76.7	47.9	0.0			7.6
49(03-09 Dec)	30.1	7.4	84.4	50.9	0.0			8.3
50(10-16 Dec)	24.1	7.8	91.3	65.1	0.0			5.1
51(17-23 Dec)	26.3	5.9	89.3	55.4	0.0			6.8
52(24-31 Dec)	21.6	6.4	94.3	71.6	0.0			5.1
1(01-07 Jan)	17.8	8.4	95.0	81.9	0.0			0.6
2(08-14 Jan)	18.7	2.9	86.9	50.9	0.0			5.7
3(15-21 Jan)	17.9	3.8	87.3	62.0	0.9			4.8
4(22-28 Jan)	20.1	7.1	90.7	65.1	4.1			2.7
5(29-04 Feb)	23.5	6.8	90.4	56.7	0.0			5.9
6(05-11 Feb)	23.4	5.5	82.9	41.3	0.5			8.1
7(12-18 Feb)	27.5	8.4	82.4	44.3	0.0			8.2
8(19-25 Feb)	28.5	8.9	71.1	38.4	0.0			7.2
9(26-04 Mar)	28.5	9.2	76.9	35.6	0.3			8.8
10(05-11 Mar)	26.5	9.0	76.3	39.4	0.0			7.8
11(12-18 Mar)	27.4	8.0	73.6	35.0	0.0			7.9
12(19-25 Mar)	34.7	15.9	67.9	36.6	0.0			8.4
13(26-01 Apr)	39.0	20.7	69.3	34.7	0.0			8.7
14(02-08 Apr)	35.8	20.5	61.0	25.1	10.1			7.8
15(09-15 Apr)	40.4	19.0	44.9	15.3	0.0			9.9

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
<b>NORTH EASTERN PLAINS ZONE</b>								
<b>BURDWAN</b>	<b>Latitude 23<sup>o</sup>15' N</b>			<b>Longitude 87<sup>o</sup>52'E</b>			<b>Height above MSL 32 m</b>	
40(01-07 Oct)	36.0	24.5	89.0	48.0	13.8		0.7	
41(08-14 Oct)	32.8	24.0	92.0	50.0	35.9		1.3	
42(15-21 Oct)	32.9	17.8	95.0	47.0	0.0		0.6	
43(22-28 Oct)	32.5	18.8	93.0	46.0	6.8		0.8	
44 (29-04 Nov)	32.0	20.5	92.0	49.0	1.0		1.7	
45 (05-11 Nov)	32.2	14.5	95.0	41.0	0.7		1.1	
46 (12-18 Nov)	31.6	13.2	92.0	26.0	0.0		0.9	
47 (19-25 Nov)	29.5	14.0	90.0	29.0	0.0		0.8	
48 (26-02 Dec)	30.0	14.3	92.0	24.0	0.0		0.8	
49 (03-09 Dec)	29.5	11.5	92.0	39.0	0.0		1.2	
50 (10-16 Dec)	25.0	9.2	90.0	36.0	0.0		1.9	
51 (17-23 Dec)	27.0	11.0	89.0	37.0	0.0		0.6	
52 (24-31 Dec)	29.0	11.9	95.0	40.0	0.0		0.8	
1 (01-07 Jan)	26.8	9.0	93.0	38.0	0.0		1.2	
2 (08-14 Jan)	30.1	9.4	91.0	33.0	0.2		1.6	
3 (15-21 Jan)	24.6	9.0	93.0	42.0	6.0		1.6	
4 (22-28 Jan)	30.0	8.0	91.0	41.0	0.0		1.8	
5 (29-04 Feb)	28.2	10.6	91.0	41.0	0.0		1.0	
6 (05-11 Feb)	29.8	11.1	91.0	33.5	0.0		1.3	
7 (12-18 Feb)	29.7	12.0	90.0	31.0	0.0		0.8	
8 (19-25 Feb)	33.2	13.8	87.0	31.0	0.0		1.7	
9 (26-04 Mar)	34.0	12.0	91.0	35.0	0.0		0.9	
10 (05-11 Mar)	33.2	16.1	96.0	35.0	20.3		1.5	
11 (12-18 Mar)	33.5	12.4	89.0	27.0	0.4		1.6	
12 (19-25 Mar)	35.5	16.4	90.0	31.0	1.4		2.2	
13 (26-01 Apr)	36.5	20.0	90.0	33.0	1.0		5.2	
14 (02-08 Apr)	41.3	23.5	91.0	20.0	1.7		3.7	
15 (09-15 Apr)	42.6	24.5	82.0	19.0	0.0		3.9	
16 (16-22 Apr)	43.0	24.5	85.0	23.0	0.0		5.9	
17 (23-29 Apr)	43.2	25.5	84.0	18.0	0.0		5.8	
18 (30-06 May)	43.3	20.2	90.0	22.0	18.2		5.5	
19 (07-13 May)	38.5	22.0	90.0	29.0	15.6		4.3	
20 (14-20 May)	38.4	21.4	92.0	31.0	73.7		7.4	
21 (21-27 May)	35.8	24.0	92.0	44.0	10.0		3.8	
<b>COOCHBEHAR</b>	<b>Latitude 26<sup>o</sup>19'86" N</b>			<b>Longitude 89<sup>o</sup>23'53" E</b>			<b>Height above MSL 43 m</b>	
40(01-07 Oct)	34.76	25.83	87.43	79.57	3.00			
41(08-14 Oct)	29.03	23.19	94.43	90.57	6.00			
42(15-21 Oct)	34.16	20.10	74.29	62.86	0.00			
43(22-28 Oct)	33.13	19.81	74.86	68.86	0.00			
44(29-04 Nov)	33.11	18.17	77.43	66.14	0.00			
45(05-11 Nov)	32.23	18.77	72.57	64.14	0.00			
46(12-18 Nov)	31.34	16.39	77.43	74.86	0.00			
47(19-25 Nov)	29.56	14.13	74.71	69.29	0.00			
48(26-02 Dec)	30.10	15.40	71.86	69.86	0.00			
49(03-09 Dec)	28.79	13.11	72.14	62.00	0.00			
50(10-16 Dec)	28.33	11.16	84.00	74.71	0.00			
51(17-23 Dec)	28.00	12.43	82.57	70.00	0.00			
52(24-31 Dec)	27.63	11.53	83.86	71.86	0.00			
1(01-07 Jan)	27.24	11.44	96.86	45.43	0.00			
2(08-14 Jan)	23.99	8.11	96.57	47.29	0.00			
3(15-21 Jan)	25.72	8.06	97.14	44.71	0.00			
4(22-28 Jan)	28.10	10.54	97.14	42.71	0.00			
5(29-04 Feb)	25.17	11.31	97.86	58.43	0.00			
6(05-11 Feb)	28.11	11.16	97.86	44.43	0.00			
7(12-18 Feb)	28.67	11.36	97.57	46.71	0.00			

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
8(19-25 Feb)	28.49	13.30	97.29	56.00	0.00			
9(26-04 Mar)	28.59	14.27	94.43	45.00	0.00			
10(05-11 Mar)	29.54	14.23	92.43	49.29	1.00			
11(12-18 Mar)	26.73	13.07	95.57	50.57	1.00			
12(19-25 Mar)	28.01	15.19	89.86	53.43	3.00			
13(26-01 Apr)	29.14	20.13	90.29	66.14	3.00			
<b>FAIZABAD</b>	<b>Latitude 26.47<sup>o</sup> N</b>		<b>Longitude 82.80<sup>o</sup> E</b>			<b>Height above MSL 113 m</b>		
40 (01-07 Oct)	34	25.7	89.8	63.4	9.8			5.1
41 (08-14 Oct)	32.7	21.8	92.2	56.8	25.3			5.1
42 (15-21 Oct)	32.8	17.9	93.1	43.7	0			5.9
43 (22-28 Oct)	32.4	16.3	92	37.8	0			3
44 (29-04 Nov)	31	14.1	96.4	34.5	0			2.6
45 (05-11 Nov)	29.7	12.7	95.1	39.4	0			1.5
46 (12-18 Nov)	29	11.8	94.8	40.1	0			1.8
47 (19-25 Nov)	27.3	11.1	92.4	42.4	0			2.4
48 (26-02 Dec)	25.8	12.2	96.4	63.5	0			1.1
49 (03-09 Dec)	19.2	11.7	96.2	77.1	0			1.7
50 (10-16 Dec)	19.5	9	99.1	74.2	0			1.5
51 (17-23 Dec)	23.2	7.5	95.1	53	0			2.3
52 (24-31 Dec)	20.1	10.6	96.2	72	0			1.5
1 (01-07 Jan)	18	10.2	98.4	78	0			1
2 (08-14 Jan)	20.1	4.9	89.1	43.5	0			2.2
3 (15-21 Jan)	22.4	5.9	93.5	42.5	0			2.5
4 (22-28 Jan)	23.7	9.1	95	57	16			2
5 (29-04 Feb)	21.9	8.2	98.5	62	0			2.7
6 (05-11 Feb)	24.5	8.4	93.4	45.2	0			5.2
7 (12-18 Feb)	25.7	9.9	94.4	46.2	0			5.5
8 (19-25 Feb)	27.9	11.1	90.8	37.1	0			5.3
9 (26-04 Mar)	28.8	11.5	82.1	33.5	0			6.4
10 (05-11 Mar)	27.8	12.3	82.4	42.5	0			4.4
11 (12-18 Mar)	29.4	10	79.5	34.1	0.7			7.9
12 (19-25 Mar)	33.4	15.5	73.2	28.2	0			8.4
13 (26-01 Apr)	37.8	18.8	74.5	29.5	0			9.5
14 (02-08 Apr)	37.7	20	72	38	0			8.4
15 (09-15 Apr)	37.4	18.8	67.8	35	0			9.1
<b>IARI PUSA BIHAR</b>	<b>Latitude 25<sup>o</sup>98' N</b>			<b>Longitude 85<sup>o</sup>67' E</b>			<b>Height above MSL 52.1 m</b>	
40(01-07 Oct)	34.6	25.6	90	67	0.0	3.2	2.9	7.1
41(08-14 Oct)	32.3	23.4	92	70	33.6	2.8	3.6	4.9
42(15-21 Oct)	33.1	22.0	87	50	0.0	2.8	1.8	7.9
43(22-28 Oct)	32.5	21.3	86	49	0.0	2.6	1.5	7.5
44 (29-04 Nov)	32.2	19.8	84	43	0.0	2.5	1.8	8.4
45 (05-11 Nov)	26.6	18.2	87	39	0.0	2.3	1.8	7.2
46 (12-18 Nov)	29.9	15.8	83	37	0.0	2.6	2.0	7.5
47 (19-25 Nov)	27.6	13.5	86	51	0.0	1.7	1.2	4.2
48 (26-02 Dec)	26.9	13.8	90	58	0.0	0.8	1.1	1.2
49 (03-09 Dec)	22.7	12.1	89	67	0.0	0.9	3.0	1.0
50 (10-16 Dec)	18.6	9.6	91	67	0.0	0.7	3.7	1.9
51 (17-23 Dec)	23.5	10.2	91	58	0.0	0.9	2.1	3.4
52 (24-31 Dec)	22.5	11.9	93	75	0.0	0.7	3.0	1.0
1 (01-07 Jan)	20.4	10.9	93	70	0.0	0.5	3.3	1.4
2 (08-14 Jan)	21.7	6.7	93	50	0.2	1.4	2.7	5.8
3 (15-21 Jan)	23.2	6.2	93	55	0.0	1.6	2.7	7.7
4 (22-28 Jan)	25.1	10.6	92	66	0.2	1.4	2.7	6.3
5 (29-04 Feb)	20.1	9.6	93	71	0.0	1.0	3.4	3.4
6 (05-11 Feb)	26.2	10.2	94	54	0.0	2.0	3.2	8.0
7 (12-18 Feb)	26.8	10.6	90	57	0.0	2.2	2.1	8.0
8 (19-25 Feb)	28.9	12.7	87	53	0.0	3.1	3.6	7.2
9 (26-04 Mar)	29.3	12.6	84	50	0.0	2.5	2.8	8.8

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
10 (05-11 Mar)	30.0	13.4	85	52	9.6	3.9	4.4	8.5
11 (12-18 Mar)	28.4	12.0	84	42	1.0	3.9	3.5	8.6
12 (19-25 Mar)	29.5	16.6	86	59	0.0	2.9	5.4	6.5
13 (26-01 Apr)	31.8	21.4	89	64	0.0	3.7	7.2	3.9
14 (02-08 Apr)	33.7	21.7	85	61	0.0	4.6	8.3	5.9
15 (09-15 Apr)	36.3	19.7	64	46	0.0	6.9	6.4	8.7
16 (16-22 Apr)	32.3	22.2	82	64	11.8	5.1	9.4	3.9
17 (23-29 Apr)	34.9	21.4	79	40	51.8	6.0	5.9	6.5
18 (30-06 May)	34.7	22.4	81	62	0.0	4.9	6.7	9.3
19 (07-13 May)	32.3	23.1	78	70	47.2	5.3	9.1	7.4
20 (14-20 May)	34.6	24.5	83	62	15.8	5.0	6.7	8.9
21 (21-27 May)	36.7	24.7	85	60	26.2	4.5	6.3	9.1
<b>KALYANI</b>	<b>Latitude 22<sup>o</sup>57'N</b>		<b>Longitude 88<sup>o</sup>20'E</b>			<b>Height above MSL 9.75 m</b>		
40 (01-07 Oct)	34.04	25.87	95.57	73.71	3.71	2.67	0	6.92
41 (08-14 Oct)	32.57	24.4	98.86	71.86	8.74	1.84	0	5.93
42 (15-21 Oct)	33.77	22.57	94.29	56.14	0	2.79	0	9.74
43 (22-28 Oct)	32.24	22.89	95.29	64.86	1.59	1.94	0	5.94
44 (29-04 Nov)	31.57	23.87	95.71	21.57	1.06	1.63	0	6
45 (05-11 Nov)	28.94	18.4	95.71	66.43	1.74	1.29	0	6.2
46 (12-18 Nov)	30.2	14.62	92.14	48.57	0	1.63	0	8.91
47 (19-25 Nov)	33.56	15.11	91.43	52.43	0	1.24	0	6.73
48 (26-02 Dec)	29.36	16.57	93	58.29	0	0.91	0	4.69
49 (03-09 Dec)	27.76	14.99	93.71	57	0	1.24	0	7.67
50 (10-16 Dec)	25.3	10.8	94.14	54.57	0	1.14	0	7.23
51 (17-23 Dec)	25.93	12.43	92	57.86	0	1.04	0	4.09
52 (24-31 Dec)	26.05	13.43	95.75	66.13	0	0.83	0	2.43
1 (01-07 Jan)	25.67	12.41	94.86	57.14	0	1.01	0	5.5
2 (08-14 Jan)	24.13	10.59	91	41.29	0	1.23	0.028	5.94
3 (15-21 Jan)	25.96	8.8	90	43.29	0.37	0.73	0	7.67
4 (22-28 Jan)	23.8	11.74	90	50.43	0	1.27	0	6.59
5 (29-04 Feb)	26.9	11.79	91.71	53	0	1.44	0	6.14
6 (05-11 Feb)	29.64	14	89.57	41.43	0	1.84	0	8.36
7 (12-18 Feb)	31.34	15.74	89.86	44.43	0	1.76	0	5.41
8 (19-25 Feb)	31.86	18.59	88.57	47.14	0	2.56	0.09	5.87
9 (26-04 Mar)	33.41	16.5	91.29	47	0	3.29	0.03	8.8
10 (05-11 Mar)	31.61	17.14	95.14	60.86	0.46	2.19	0.09	4.63
11 (12-18 Mar)	32.21	16.73	75.29	34.14	0	3.61	0.2	9.44
12 (19-25 Mar)	33.8	21.86	80.86	44.86	0.81	3.5	0.94	7.89
13 (26-01 Apr)	35.7	25.84	92.14	55	0	4.17	1.69	7.31
14 (02-08 Apr)	30.29	26.29	90.43	59.57	0.03	3.89	3.66	4.79
15 (09-15 Apr)	37.17	25.53	91.57	35	0	5.06	1.53	8.96
16 (16-22 Apr)	37.8	26.86	90.86	40.86	0.81	3.5	0.94	7.89
17 (23-29 Apr)	35.7	25.84	92.14	55	0	4.17	1.69	8.31
18 (30-06 May)	36.29	26.29	90.43	59.57	0.01	3.89	3	6.79
<b>KANPUR</b>	<b>Latitude 26<sup>o</sup>29'N</b>		<b>Longitude 80<sup>o</sup>18'E</b>			<b>Height above MSL 125.9 m</b>		
40 (01-07 Oct)	34.9	21	84.4	59	20	4	4.2	6.7
41 (08-14 Oct)	33.5	22.1	84.1	50.8	14	4	3.1	6.6
42 (15-21 Oct)	33.6	16.5	83.5	37.5	0	3.8	2.4	6
43 (22-28 Oct)	33.4	17	86.5	35.1	0	3.7	3.9	8.5
44 (29-04 Nov)	31.4	13.9	89	38.1	0	3.3	1.6	7.5
45 (05-11 Nov)	30.2	13.3	83.2	41.7	0	3.1	3.3	4
46 (12-18 Nov)	28.4	12	86	42.4	0	2.7	2.2	6.8
47 (19-25 Nov)	28.8	11.8	81	42.2	0	2.4	3.9	6.6
48 (26-02 Dec)	25.6	13.1	87.4	59.2	0	2.5	4.4	3.8
49 (03-09 Dec)	19.7	10.7	99	73.7	0	2	3	0.4
50 (10-16 Dec)	25.1	9.2	96.2	49.7	0	1.4	2.7	4.5
51 (17-23 Dec)	24.5	8	89.5	47.1	0	1.4	4.2	6.2
52 (24-31 Dec)	21.2	9	96.1	65.5	0	1.2	3.2	0.6

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
1 (01-07 Jan)	20.0	9.1	83.2	76.7	0.4	1	4.4	1.3
2 (08-14 Jan)	19.0	5.9	88.1	52.1	0	1.1	3.7	4.4
3 (15-21 Jan)	21.1	6.4	91.2	52.1	0	1.2	3.4	4.8
4 (22-28 Jan)	24.2	9.5	94.2	57.5	27.8	1.5	4.5	5
5 (29-04 Feb)	22.6	8.9	96.5	61.8	0	1.6	1.7	6.2
6 (05-11 Feb)	24	9.6	89.4	53.1	0	1.8	5.2	8.1
7 (12-18 Feb)	25.8	10.2	91.1	51.2	0	2	3.3	7.5
8 (19-25 Feb)	27.7	12.2	79.7	43.1	0	2.4	6.4	7.8
9 (26-04 Mar)	29.1	13	78.1	40	0	2.6	5	7.7
10 (05-11 Mar)	26.9	13.2	75	49	0.6	2.8	6	6.5
11 (12-18 Mar)	28.2	10.9	73.7	45.7	0	3.2	5.1	8.8
12 (19-25 Mar)	34.1	16.6	75.2	47.4	0	3.5	4.7	7.6
13 (26-01 Apr)	39.0	19.3	69.2	44.8	0	3.8	6.9	9
14 (02-08 Apr)	38.7	21.8	69.4	45.5	4	4	5.5	7.9
15 (09-15 Apr)	38.1	19.6	60.8	34.8	0	4.1	7.5	8.2
16 (16-22 Apr)	39.8	24.3	63.3	27.3	0	4.5	6.6	7.9
17 (23-29 Apr)	39.4	24.2	52.8	23.7	2.6	5.2	6.2	8.5
<b>RANCHI</b>	<b>Latitude 23<sup>o</sup>21'N</b>		<b>Longitude 85<sup>o</sup>20'E</b>			<b>Height above MSL 629 m</b>		
40 (01-07 Oct)	30.0	20.7	84	69	0.0	24.8	2.5	57.8
41 (08-14 Oct)	28.7	19.0	82	71	19.3	20.5	3.5	47.3
42 (15-21 Oct)	28.2	14.6	85	59	0.0	22.1	1.5	65.5
43 (22-28 Oct)	28.6	14.5	87	47	0.0	19.9	2.1	63.2
44 (29-04 Nov)	28.1	14.6	86	58	0.0	22.7	2.9	60.9
45 (05-11 Nov)	26.9	12.1	86	59	0.0	20.0	2.6	56.7
46 (12-18 Nov)	27.0	10.9	87	49	0.0	21.8	2.2	60.5
47 (19-25 Nov)	25.1	6.9	87	57	0.0	19.6	2.4	67.5
48 (26-02 Dec)	25.0	7.3	87	57	0.0	20.3	2.5	60.1
49 (03-09 Dec)	26.1	9.7	88	54	0.0	20.9	1.9	57.2
50 (10-16 Dec)	24.3	5.2	87	63	0.0	17.6	3.3	60.6
51 (17-23 Dec)	24.3	3.5	85	47	0.0	13.7	2.6	62.3
52 (24-31 Dec)	24.6	4.8	86	55	0.0	17.5	1.8	62
1 (01-07 Jan)	24.8	4.8	84	58	0.0	14.2	2.7	48.5
2 (08-14 Jan)	22.9	5.0	84	61	0.0	10.5	2.8	50.5
3 (15-21 Jan)	23.4	5.8	85	64	0.0	15.5	2.9	61.4
4 (22-28 Jan)	26.7	8.3	85	59	0.0	19.0	4.4	59.9
5 (29-04 Feb)	24.6	6.3	84	57	0.0	15.8	4.5	68.8
6 (05-11 Feb)	27.5	10.3	88	61	0.0	18.2	3.1	70.3
7 (12-18 Feb)	27.3	11.1	87	71	0.0	13.6	2.9	58.8
8 (19-25 Feb)	29.8	12.7	87	52	0.0	21.3	3.4	69.4
9 (26-04 Mar)	29.5	11.1	85	69	0.0	25.3	4.2	62.7
10 (05-11 Mar)	28.1	13.9	87	69	6.0	14.4	3.5	44.7
11 (12-18 Mar)	28.5	11.1	74	45	0.0	21.0	4.4	69.1
12 (19-25 Mar)	31.0	14.3	83	69	0.0	21.9	4.7	63.0
13 (26-01 Apr)	36.4	16.4	84	64	0.0	30.6	5.3	68.2
14 (02-08 Apr)	35.6	19.1	83	66	0.0	33.6	4.1	70
15 (09-15 Apr)	36.0	17.8	86	69	0.0	29.4	4.8	69.6
16 (16-22 Apr)	38.5	20.8	84	68	3.1	31.1	6.3	65.4
17 (23-29 Apr)	40.5	22.0	81	67	0.0	39.7	4.9	67.0
18 (30-06 May)	38.8	22.1	85	68	1.0	33.5	4.5	60.9
<b>RAU PUSA BIHAR</b>	<b>Latitude 28.98<sup>o</sup> N</b>		<b>Longitude 85.67<sup>o</sup> E</b>			<b>Height above MSL 52.0 m</b>		
40 (01-07 Oct)	34.5	25.4	90	67	1	3.2	2.9	7.1
41 (08-14 Oct)	32	23.4	92	70	33.6	2.8	3.6	4.9
42 (15-21 Oct)	32.9	23	87	51	0	2.8	2	7.9
43 (22-28 Oct)	32.3	21.3	86	49	0	2.6	1.7	7.5
44 (29-04 Nov)	31.9	19.8	84	43	0	2.5	1.5	8.2
45 (05-11 Nov)	30.6	18.2	87	39	0	2.3	1.8	6.9
46 (12-18 Nov)	29.5	15.8	83	37	0	2.6	2	7.5
47 (19-25 Nov)	27.1	13.5	86	50	0	1.7	1.2	5.3

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
48 (26-02 Dec)	26.8	13.8	91	58	0	0.8	1.1	1.8
49 (03-09 Dec)	22.8	12.1	87	62	0	0.9	3	1
50 (10-16 Dec)	18.9	9.7	91	66	0	0.7	3.4	1.8
51 (17-23 Dec)	23.5	10.5	91	58	0	0.9	2.1	3.4
52 (24-31 Dec)	22.4	12	93	75	0	0.6	2.6	1.1
1 (01-07 Jan)	20.2	10.9	93	70	0	0.5	3.3	1
2 (08-14 Jan)	21.6	6.7	93	50	0	1.4	2.7	4.9
3 (15-21 Jan)	23.2	6.2	93	61	0	1.6	2.7	7.7
4 (22-28 Jan)	25	10.6	92	66	0	1.4	2.2	6.4
5 (29-04 Feb)	20.1	9.7	93	71	0	1	3.4	3.4
6 (05-11 Feb)	26.1	10.2	94	56	0	2	3.2	8
7 (12-18 Feb)	26.6	10.6	90	57	0	2.2	2.1	8
8 (19-25 Feb)	28.8	12.7	87	53	0	3.1	3.6	7.2
9 (26-04 Mar)	29.2	12.6	84	50	0	2.5	2.8	8.9
10 (05-11 Mar)	29.9	13.6	85	52	9.6	3.9	4.4	8.5
11 (12-18 Mar)	27.7	12	84	42	1	3.3	3.5	8.6
12 (19-25 Mar)	29.4	16.7	88	59	0	2.9	5.4	6.5
13 (26-01 Apr)	31.6	21.5	89	67	0	3.8	7.2	3.9
14 (02-08 Apr)	33.6	21.8	85	61	0	4.6	8.3	5.9
15 (09-15 Apr)	36.3	19.8	64	46	0	6.9	6.4	8.7
16 (16-22 Apr)	32.2	22.4	82	64	11.8	5.1	9.4	3.9
17 (23-29 Apr)	34.9	23.1	70	40	51.8	6	5.8	6.6
18 (30-06 May)	34.5	22.8	81	62	0	4.9	5.9	9.3
19 (7-13 May)	32.2	23.5	81	69	47.2	5.3	9.1	7.4
20 (14-20 May)	34.7	24.5	83	62	15.8	5	6.7	8.9
21 (21-27 May)	36.6	24.9	85	66	25.6	4.5	6.3	9.1

SABOUR	Latitude 25 <sup>o</sup> 23' N		Longitude 87 <sup>o</sup> 07' E			Height above MSL 37.1m		
40 (01-07 Oct)	32.5	25.1	85.8	74.2	23.2	2.7	3.2	8
41 (08-14 Oct)	30.9	23.9	91.7	76.7	8.6	1.4	4.4	5
42 (15-21 Oct)	32.2	20.1	86.8	60	0	2.3	1.7	7.8
43 (22-28 Oct)	30.9	19.5	89.8	62.1	0	1.3	1.9	6.8
44 (29-04 Nov)	30.5	18.8	99.7	64.8	0	2.2	2.2	8.1
45 (05-11 Nov)	30.6	16.1	86.8	60.7	0	2.5	2.2	5.9
46 (12-18 Nov)	29.2	13.7	92	50.4	0	1.9	2.3	6.9
47 (19-25 Nov)	27.8	11.8	92	47.7	0	1.2	2	4.5
48 (26-02 Dec)	27	12.6	91.5	62.1	0	0.9	1.2	2.5
49 (03-09 Dec)	24.4	11.6	95.7	72.4	0	0.8	3.4	1.6
50 (10-16 Dec)	18.7	7.9	97.2	75.7	0	0.6	5.5	2.1
51 (17-23 Dec)	23.2	8.1	94.7	59.2	0	1	2.9	4.4
52 (24-31 Dec)	23.8	10.7	95.5	70	0	0.9	3.2	1.9
1 (01-07 Jan)	21.1	8.6	98.2	76	0	0.6	4	2.3
2 (08-14 Jan)	21.3	7.9	95.5	60.5	0	1.2	2.9	4.6
3 (15-21 Jan)	22.6	6	93.2	48.2	0	1.5	3.2	7.2
4 (22-28 Jan)	25.2	8.2	91.4	58.5	12.4	2.1	3.4	5.7
5 (29-04 Feb)	22.1	7.8	97.7	63.1	0	1.2	4.6	3.7
6 (05-11 Feb)	26	7.6	89.4	50.5	0	1.9	3.8	7.7
7 (12-18 Feb)	26.7	9.4	87.5	46	0	2.1	1.4	5.7
8 (19-25 Feb)	28.4	11.1	87	44.2	0	1.9	2.5	6.2
9 (26-04 Mar)	29.1	13.4	82.8	36	0	2.7	3	7.2
10 (05-11 Mar)	28.9	12.9	84.5	53.2	3.2	2.5	3.6	3.9
11 (12-18 Mar)	28.4	11.9	83	49.5	0.6	2.6	4	7.2
12 (19-25 Mar)	30.3	16.4	87.5	56.1	5.9	2.6	4.3	2.6
13 (26-01 Apr)	31.5	21.5	94.2	67.4	0	1.9	5.7	2.6
14 (02-08 Apr)	32.9	21.7	92.5	64.2	0	3.1	8	5.5
15 (09-15 Apr)	36.8	19.8	64	34.4	0	8.3	6.1	7.7
16 (16-22 Apr)	32	21.9	88.2	59.7	0	6.2	7.8	3.3



Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
<b>SHILLONGANI</b>	Latitude 26 <sup>o</sup> 21' N		Longitude 90 <sup>o</sup> 45' E		Height above MSL 50.2 m			
40 (01-07 Oct)	33.6	26.1	85	70	1.0	45.9	1.6	
41 (08-14 Oct)	30.0	24.4	85	77	81.9	31.8	1.9	
42 (15-21 Oct)	31.6	23.8	84	70	0.0	44	1.2	
43 (22-28 Oct)	30.5	22.1	88	67	2.0	41.4	1.4	
44 (29-04 Nov)	30.9	21.5	87	66	0.0	39.1	1.2	
45 (05-11 Nov)	28.4	20.6	88	69	4.2	30.7	1.7	
46 (12-18 Nov)	30.0	19.1	86	58	0.0	36.1	1.3	
47 (19-25 Nov)	27.4	15.0	92	56	0.0	33.7	1.3	
48 (26-02 Dec)	27.8	15.0	88	59	0.0	32.1	1.1	
49 (03-09 Dec)	27.7	13.6	90	58	0.0	33.6	1.1	
50 (10-16 Dec)	26.1	12.9	89	57	0.0	33.4	1.1	
51 (17-23 Dec)	25.8	14.1	83	55	0.0	34.4	1.1	
52 (24-31 Dec)	25.6	12.9	89	58	4.4	40.4	1.5	
1 (01-07 Jan)	25.7	12.1	85	56	0.0	37.1	1.2	
2 (08-14 Jan)	24.3	10.1	86	59	0.0	36.8	1.3	
3 (15-21 Jan)	24.1	8.5	85	52	0.0	38.5	1.2	
4 (22-28 Jan)	26.2	10.4	88	55	0.0	39.1	1.3	
5 (29-04 Feb)	24.8	13.7	87	60	0.0	40.1	1.5	
6 (05-11 Feb)	26.4	13.9	86	54	0.0	39.8	1.6	
7 (12-18 Feb)	27.1	13.6	80	47	0.0	39.9	1.4	
8 (19-25 Feb)	26.4	14.6	80	56	13.2	35	2.5	
9 (26-04 Mar)	26.6	15.4	82	60	0.0	42.7	2.2	
10 (05-11 Mar)	28.1	15.9	76	56	0.0	42.1	3.4	
11 (12-18 Mar)	26.9	13.3	75	48	0.0	22.6	2.9	
12 (19-25 Mar)	26.7	15.9	88	58	15.2	37.3	2.7	
13 (26-01 Apr)	27.2	19.8	85	74	47.6	32.2	3	
14 (02-08 Apr)	24.5	20	100	80	77.4	16.8	2.8	
15 (09-15 Apr)	31.6	20.3	89	57	5.2	36.5	2.8	
16 (16-22 Apr)	28.9	20.3	87	70	15.8	35.7	2.9	
17 (23-29 Apr)	30.1	21.3	90	66	36	37.8	3.2	
18 (30-06 May)	28.2	21.4	95	73	64.4	32.6	2.6	
19 (7-13 May)	30.9	22.6	94	64	37	35.6	1.8	
20 (14-20 May)	34.8	23	98	68	10.4	11.2	3.6	
<b>VARANASI</b>	Latitude 25 <sup>o</sup> 20' N		Longitude 83 <sup>o</sup> 03' E		Height above MSL 128.93 m			
40 (01-07 Oct)	32.4	26.3	88	74	2.6	2.9	1.2	5.8
41 (08-14 Oct)	32	23.4	87	61	1.5	3.2	1.9	6.5
42 (15-21 Oct)	32.4	18.4	74	43	0.0	3.0	0.4	8.7
43 (22-28 Oct)	32.4	17.9	74	43	0.0	2.9	1.3	7.7
44 (29-04 Nov)	31.4	16.6	77	43	0.0	2.2	0.2	8.0
45 (05-11 Nov)	29.2	15.3	80	45	0.0	1.9	1.1	3.9
46 (12-18 Nov)	29	13.8	77	42	0.0	2.2	0.5	6.6
47 (19-25 Nov)	27.3	11.7	72	42	0.0	1.9	2.0	4.7
48 (26-02 Dec)	25.4	13.2	79	56	0.0	1.3	1.6	3.7
49 (03-09 Dec)	20.3	16.3	94	78	0.0	0.8	1.1	0.2
50 (10-16 Dec)	20.2	10	94	73	0.0	1.1	0.9	1.2
51 (17-23 Dec)	23.3	9.8	89	50	0.0	1.5	2.2	3.2
52 (24-31 Dec)	20.5	10.9	94	69	0.0	0.85	1.6	0.2
1 (01-07 Jan)	20.1	11.6	95	76	0.0	0.8	2.2	0.2
2 (08-14 Jan)	20.7	8.2	91	44	0.0	1.6	2	3.2
3 (15-21 Jan)	23	8.8	90	49	0.0	1.6	1.3	1.0
4 (22-28 Jan)	24.4	10.9	90	58	1.0	2.4	1.8	1.8
5 (29-04 Feb)	23.8	14.1	94	57	0.0	1.5	1.9	4.1
6 (05-11 Feb)	25.4	10.8	91	47	0.0	2.3	2.4	7.1
7 (12-18 Feb)	26.2	12.3	87	53	0.0	2.3	1.2	4.6
8 (19-25 Feb)	27.7	13	81	41	0.0	3.3	3.1	6.4
9 (26-04 Mar)	29.7	13.1	83	43	0.0	3.3	2.3	7.4
10 (05-11 Mar)	29.6	14.6	71	38	0.0	3.8	3.1	5.7

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
11 (12-18 Mar)	28.7	12.3	81	39	0.0	4	2.7	7.6
12 (19-25 Mar)	33.2	17.6	81	36	0.0	4.3	2.7	6.2
13 (26-01 Apr)	38.5	20.1	64	30	0.0	6.6	4.1	7.1
14 (02-08 Apr)	38.8	22.4	70	37	0.0	7.7	4.4	6.7
15 (09-15 Apr)	39.4	20.2	48	26	0.0	7.7	3.4	6.7
16 (16-22 Apr)	37.3	24.8	74	49	0	7.2	4.9	9.0
17 (23-29 Apr)	40.1	23.5	51	26	0	8.5	4.5	9.8

## CENTRAL ZONE

BILASPUR	Latitude 22 <sup>o</sup> 9' N		Longitude 82 <sup>o</sup> 12' E			Height above MSL 292.3 m		
40 (01-07 Oct)	32.7	23.4	95.1	73.8	9.0	0.0	0.0	5.9
41 (08-14 Oct)	32.3	20.3	93.6	55.7	25.1	0.0	0.0	6.1
42 (15-21 Oct)	32.1	16.4	90.0	38.1	0.0	0.0	0.0	9.4
43 (22-28 Oct)	32.3	16.6	83.8	39.4	0.0	0.0	0.0	9.1
44 (29-04 Nov)	30.9	18.3	84.0	45.7	0.0	0.0	0.0	7.9
45 (05-11 Nov)	30.6	14.6	83.0	30.1	0.0	0.0	0.0	8.2
46 (12-18 Nov)	29.1	14.0	85.6	35.4	0.0	0.0	0.0	8.3
47 (19-25 Nov)	29.9	11.2	84.4	24.7	0.0	0.0	0.0	9.3
48 (26-02 Dec)	30.0	11.9	89.3	30.4	0.0	0.0	0.0	8.5
49 (03-09 Dec)	28.4	13.7	86.8	42.3	0.0	0.0	0.0	7.4
50 (10-16 Dec)	28.9	11.8	84.1	28.4	0.0	0.0	0.0	8.2
51 (17-23 Dec)	27.6	7.9	84.3	24.6	0.0	0.0	0.0	9.1
52 (24-31 Dec)	27.4	10.7	87.6	29.9	0.0	0.0	0.0	8.2
1 (01-07 Jan)	27.7	11.4	90.6	38.0	0.3	0.0	0.0	7.8
2 (08-14 Jan)	26.2	11.2	82.4	36.1	7.4	0.0	0.0	7.5
3 (15-21 Jan)	28.6	12.3	84.8	30.4	0.0	0.0	0.0	8.3
4 (22-28 Jan)	29.6	13.1	81.8	30.3	0.0	0.0	0.0	8.2
5 (29-04 Feb)	30.2	12.1	77.0	24.7	0.0	0.0	0.0	9.9
6 (05-11 Feb)	31.6	13.6	79.0	28.7	0.0	0.0	0.0	9.1
7 (12-18 Feb)	30.3	15.2	77.1	32.1	0.0	0.0	0.0	8.0
8 (19-25 Feb)	33.5	14.8	74.1	21.7	0.0	0.0	0.0	10.2
9 (26-04 Mar)	31.1	17.6	88.2	62.1	3.3	0.0	0.0	9.9
10 (05-11 Mar)	30.6	16.0	85.4	39.8	0.0	0.0	0.0	7.6
11 (12-18 Mar)	32.4	18.7	79.8	45.1	0.0	0.0	0.0	9.7
12 (19-25 Mar)	34.2	17.7	73.5	40.7	0.0	0.0	0.0	9.7
13 (26-01 Apr)	36.2	20.1	76.8	38.2	0.0	0.0	0.0	9.8
14 (02-08 Apr)	38.0	20.7	72.4	32.0	0.0	0.0	0.0	8.4
15 (09-15 Apr)	38.4	21.2	71.8	31.6	0.0	0.0	0.0	9.3
GWALIOR	Latitude 26 <sup>o</sup> 13' N		Longitude 78 <sup>o</sup> 14' E			Height above MSL 211.52 m		
45 (05-11 Nov)	31.6	11.8	85.9	23.3	0.0			
46 (12-18 Nov)	30.9	10.3	89.9	24.0	0.0			
47 (19-25 Nov)	29.9	10.1	84.7	27.7	0.0			
48 (26-02 Dec)	28.8	11.1	79.9	30.9	0.0			
49 (03-09 Dec)	26.1	8.3	98.3	35.3	0.0			
50 (10-16 Dec)	27.2	9.0	90.9	32.7	0.0			
51 (17-23 Dec)	25.7	6.7	86.6	38.4	0.0			
52 (24-31 Dec)	25.8	7.4	91.6	30.3	0.0			
1 (01-07 Jan)	23.2	9.2	88.7	37.6	0.0			
2 (08-14 Jan)	19.8	6.0	93.1	49.9	0.0			
3 (15-21 Jan)	21.8	6.4	94.0	49.1	0.0			
4 (22-28 Jan)	26.1	10.4	94.1	50.0	0.0			
5 (29-04 Feb)	24.0	9.2	94.3	57.7	0.0			
6 (05-11 Feb)	24.3	9.1	88.7	51.4	0.0			
7 (12-18 Feb)	25.4	9.3	90.0	42.6	0.0			
8 (19-25 Feb)	29.5	12.0	69.7	33.6	0.0			
9 (26-04 Mar)	30.6	12.1	82.9	37.6	0.0			
10 (05-11 Mar)	28.4	11.7	83.3	36.9	0.0			

Julian weeks	Temperature °C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
11 (12-18 Mar)	29.0	10.4	83.7	34.7	0.0			
12 (19-25 Mar)	34.8	16.4	73.6	30.4	0.0			
13 (26-01 Apr)	38.8	19.0	59.6	24.4	0.0			
14 (02-08 Apr)	41.0	21.1	55.0	26.4	0.0			
15 (09-15 Apr)	38.4	18.2	48.1	26.0	0.0			
16 (16-22 Apr)	43.5	20.8	48.7	23.9	0.0			
17 (23-29 Apr)	42.0	26.6	48.4	33.0	0.0			
18 (30-06 May)	41.5	22.3	51.7	32.1	0.0			
<b>INDORE</b>	<b>Latitude 22° 37' N</b>		<b>Longitude 75° 50' N</b>		<b>Height above MSL 557 m</b>			
40 (01-07 Oct)	30.3	23.4	86.9		1.3	2.3	0.6	
41 (08-14 Oct)	31.0	24.3	85.4		1.1	3.5	0.8	
42 (15-21 Oct)	31.1	18.6	82.3		0.0	3.6	0.2	
43 (22-28 Oct)	32.1	16.4	81.0		0.0	3.9	0.3	
44 (29-04 Nov)	29.7	12.9	75.9		0.0	3.1	0.3	
45 (05-11 Nov)	29.7	11.7	71.0		0.0	2.9	0.2	
46 (12-18 Nov)	29.3	10.6	78.4		0.0	2.5	0.2	
47 (19-25 Nov)	29.0	10.5	80.1		0.0	2.8	0.1	
48 (26-02 Dec)	29.1	10.1	84.6		0.0	2.7	0.1	
49 (03-09 Dec)	26.9	8.4	86.6		0.0	2.2	0.3	
50 (10-16 Dec)	27.2	8.7	76.9		0.0	2.2	0.2	
51 (17-23 Dec)	25.9	7.3	84.9		0.0	2.3	2.0	
52 (24-31 Dec)	27.1	7.4	76.4		0.0	2.2	2.2	
1 (01-07 Jan)	25.5	8.3	83.1		0.0	2.2	0.4	
2 (08-14 Jan)	21.4	6.4	87.6		0.0	1.9	0.5	
3 (15-21 Jan)	24.6	8.0	88.0		0.0	2.3	0.6	
4 (22-28 Jan)	28.7	13.7	75.4		0.0	3.1	0.5	
5 (29-04 Feb)	29.1	10.0	86.0		0.0	3.4	0.4	
6 (05-11 Feb)	27.1	10.9	78.7		0.0	4.1	0.0	
7 (12-18 Feb)	29.6	12.7	79.9		0.0	3.3	0.0	
8 (19-25 Feb)	31.7	13.4	78.4		0.0	4.6	0.0	
9 (26-04 Mar)	33.0	14.1	74.1		0.0	5.1	0.3	
10 (05-11 Mar)	31.1	15.1	71.3		0.0	5.5	1.4	
11 (12-18 Mar)	30.7	12.4	65.1		0.0	5.4	0.9	
12 (19-25 Mar)	37.3	17.0	70.9		0.0	6.0	1.0	
13 (26-01 Apr)	40.7	20.9	65.4		0.0	6.9	0.8	
14 (02-08 Apr)	38.6	21.9	81.1		0.0	9.3	2.1	
15 (09-15 Apr)	39.3	19.4	63.1		0.0	9.4	0.8	
16 (16-22 Apr)	41.5	26.3	71.3		0.0	11.3	2.7	
<b>JABALPUR</b>	<b>Latitude 21° 31' N</b>		<b>Longitude 70° 33' E</b>		<b>Height above MSL 61 m</b>			
40 (01-07 Oct)	31.9	23.9	93.0	64.0	24.2	3.0	3.0	7.3
41 (08-14 Oct)	31.5	21.3	88.0	51.0	0.0	3.2	4.2	8.0
42 (15-21 Oct)	31.5	15.4	91.0	32.0	0.0	3.3	2.5	9.3
43 (22-28 Oct)	31.7	15.6	82.0	29.0	0.0	3.1	2.9	8.8
44 (29-04 Nov)	29.7	12.3	87.0	34.0	0.0	2.7	2.4	8.7
45 (05-11 Nov)	29.7	10.6	91.0	24.0	0.0	2.9	2.2	8.1
46 (12-18 Nov)	28.3	8.1	88.0	24.0	0.0	2.4	2.0	8.1
47 (19-25 Nov)	28.8	8.4	87.0	22.0	0.0	2.4	1.4	8.3
48 (26-02 Dec)	28.8	8.7	89.0	27.0	0.0	2.4	1.7	8.7
49 (03-09 Dec)	25.1	7.9	93.0	43.0	0.0	2.0	2.1	6.2
50 (10-16 Dec)	26.1	7.3	91.0	28.0	0.0	2.6	2.0	7.8
51 (17-23 Dec)	24.7	5.5	91.0	30.0	0.0	2.4	1.8	7.4
52 (24-31 Dec)	25.7	5.6	88.0	29.0	0.0	2.1	1.9	8.6
1 (01-07 Jan)	23.9	9.1	90.0	48.0	0.0	1.7	2.8	6.5
2 (08-14 Jan)	21.7	6.6	86.0	42.0	0.2	2.2	2.9	7.2
3 (15-21 Jan)	24.1	9.2	89.0	47.0	0.0	1.7	3.1	6.4
4 (22-28 Jan)	25.7	10.1	97.0	45.0	3.2	2.1	2.9	6.5
5 (29-04 Feb)	25.4	7.5	92.0	38.0	0.0	2.2	2.3	9.6
6 (05-11 Feb)	27.2	9.8	84.0	42.0	0.0	2.6	3.2	9.0

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
7 (12-18 Feb)	26.4	10.6	95.0	42.0	13.2	2.0	2.9	8.4
8 (19-25 Feb)	29.7	10.0	83.0	26.0	0.0	4.0	3.3	10.3
9 (26-04 Mar)	31.2	11.1	80.0	26.0	0.0	4.2	2.6	10.2
10 (05-11 Mar)	30.3	12.5	72.0	24.0	0.0	4.8	4.5	9.6
11 (12-18 Mar)	29.3	9.8	74.0	16.0	0.0	5.0	2.7	10.1
12 (19-25 Mar)	33.9	14.4	75.0	19.0	2.8	5.3	3.4	10.0
13 (26-01 Apr)	38.6	15.9	69.0	15.0	0.0	6.7	3.5	10.3
14 (02-08 Apr)	39.3	20.6	41.0	15.0	0.0	7.9	6.1	10.0
15 (09-15 Apr)	38.1	14.4	54.0	9.0	0.0	7.1	3.7	10.2
16 (16-22 Apr)	41.6	21.6	39.0	11.0	0.0	9.0	6.4	10.1
17 (23-29 Apr)	39.1	21.8	44.0	18.0	0.0	9.4	6.8	10.6
18 (30-06 May)	40.3	20.3	52.0	17.0	0.0	8.0	4.5	9.3
19 (07-13 May)	41.8	24.6	37.0	18.0	0.0	8.7	5.9	9.1
20 (14-20 May)	42.6	23.9	34.0	16.0	0.0	9.4	5.9	9.9
<b>JUNAGARH</b>	<b>Latitude 21<sup>o</sup> 31' N</b>		<b>Longitude 70<sup>o</sup> 33' E</b>			<b>Height above MSL</b>		
40 (01-07 Oct)	31.0	24.1	79	76	141.4			2.7
41 (08-14 Oct)	32.2	23.0	89	63	11.6			6.1
42 (15-21 Oct)	34.1	20.8	80	38	0			8.5
43 (22-28 Oct)	33.0	19.2	80	39	0			9.2
44 (29-04 Nov)	34.7	16.9	71	25	0			8.4
45 (05-11 Nov)	33.9	15.2	73	24	0			8.1
46 (12-18 Nov)	33.2	15.0	70	33	0			8.6
47 (19-25 Nov)	33.9	14.2	72	27	0			8.4
48 (26-02 Dec)	33.6	13.9	76	29	0			8.7
49 (03-09 Dec)	33.5	14.1	70	26	0			8.5
50 (10-16 Dec)	32.3	15.0	72	28	0			8.7
51 (17-23 Dec)	30.7	12.6	81	29	0			8
52 (24-31 Dec)	31.9	11.7	74	23	0			8.7
1 (01-07 Jan)	30.8	12.4	85	34	0			7.6
2 (08-14 Jan)	27.3	10.2	61	23	0			7.6
3 (15-21 Jan)	28.9	12.0	74	32	0			7.3
4 (22-28 Jan)	31.5	13.6	72	31	0			8.2
5 (29-04 Feb)	32.0	12.0	77	32	0			9
6 (05-11 Feb)	29.4	12.0	58	21	0			9.2
7 (12-18 Feb)	34.9	16.1	62	24	0			7.2
8 (19-25 Feb)	36.6	17.3	67	23	0			10
9 (26-04 Mar)	36.5	18.7	40	13	0			10.1
10 (05-11 Mar)	34.2	17.0	63	26	0			9.6
11 (12-18 Mar)	35.4	14.8	50	13	0			9.7
12 (19-25 Mar)	37.5	20.2	69	26	0			10
13 (26-01 Apr)	40.9	22.7	54	19	0			9.8
14 (02-08 Apr)	37.2	21.9	76	32	0			9.7
15 (09-15 Apr)	42.7	21.8	28	10	0			10.3
<b>KOTA</b>	<b>Latitude 25<sup>o</sup> 13' N</b>		<b>Longitude 75<sup>o</sup> 25' E</b>			<b>Height above MSL 258 m</b>		
40 (01-07 Oct)	33.6	25.2	85.3	66.4	21.8			6.3
41 (08-14 Oct)	34.3	21.9	86.0	38.0	1.4			8.6
42 (15-21 Oct)	34.8	17.4	83.1	26.6	-			9.7
43 (22-28 Oct)	34.1	17.4	77.7	39.7	-			9.6
44 (29-04 Nov)	32.3	12.9	88.7	24.1	-			8.2
45 (05-11 Nov)	31.7	12.0	82.3	19.1	-			8.5
46 (12-18 Nov)	29.8	11.3	87.9	28.9	-			8.7
47 (19-25 Nov)	30.2	10.2	93.1	26.9	-			9.0
48 (26-02 Dec)	30.1	10.3	88.4	28.6	-			9.1
49 (03-09 Dec)	27.2	8.3	91.1	33.4	-			8.3
50 (10-16 Dec)	28.1	10.0	92.0	38.4	-			8.2
51 (17-23 Dec)	25.8	7.4	92.3	33.4	-			8.7
52 (24-31 Dec)	25.7	8.1	91.0	43.8	-			8.0
1 (01-07 Jan)	22.2	8.9	94.4	63.4	-			5.6

Julian weeks	Temperature °C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
2 (08-14 Jan)	20.0	4.8	89.7	44.0	-			5.8
3 (15-21 Jan)	20.0	6.2	86.3	45.9	-			7.1
4 (22-28 Jan)	24.0	10.5	91.0	54.9	9.4			5.7
5 (29-04 Feb)	24.1	9.2	90.0	51.7	-			9.0
6 (05-11 Feb)	24.6	8.0	82.7	37.9	-			8.9
7 (12-18 Feb)	26.0	9.3	89.1	36.1	-			8.0
8 (19-25 Feb)	29.1	10.5	78.4	24.3	-			9.8
9 (26-04 Mar)	30.2	12.7	77.1	29.4	-			8.3
10 (05-11 Mar)	28.7	12.1	85.6	29.4	3.4			7.7
11 (12-18 Mar)	29.1	10.0	73.9	19.1	-			9.5
12 (19-25 Mar)	33.9	16.8	80.0	24.0	8.6			9.2
13 (26-01 Apr)	39.4	18.6	61.0	14.7	-			10.4
14 (02-08 Apr)	38.9	20.5	52.4	18.3	-			10.0
15 (09-15 Apr)	38.7	17.2	41.0	10.0	-			10.4
<b>POWARKHEDA</b>	<b>Latitude 22° 44' N</b>			<b>Longitude 77° 42' E</b>			<b>Height above MSL 299 m</b>	
41 (08-14 Oct)	45.00	22.00						
42 (15-21 Oct)	46.00	18.00						
43 (22-28 Oct)	46.00	18.00						
44 (29-04 Nov)	42.00	15.00						
45 (05-11 Nov)	42.00	14.00						
46 (12-18 Nov)	43.00	13.00						
47 (19-25 Nov)	42.00	12.00						
48 (26-02 Dec)	42.00	12.00						
49 (03-09 Dec)	38.00	12.00						
50 (10-16 Dec)	39.00	11.00						
51 (17-23 Dec)	36.00	9.00						
52 (24-31 Dec)	37.00	9.00						
1 (01-07 Jan)	38.00	11.00						
2 (08-14 Jan)	34.00	11.00						
3 (15-21 Jan)	32.00	9.00						
4 (22-28 Jan)	39.00	14.00						
5 (29-04 Feb)	38.00	12.00			3			
6 (05-11 Feb)	41.00	14.00						
7 (12-18 Feb)	49.00	18.00			3			
8 (19-25 Feb)	32.00	11.00						
9 (26-04 Mar)	45.00	15.00						
10 (05-11 Mar)	45.00	16.00						
11 (12-18 Mar)	42.00	15.00						
12 (19-25 Mar)	47.00	17.00			1			
13 (26-01 Apr)	55.00	21.00						
14 (02-08 Apr)	56.00	22.00						
15 (09-15 Apr)	54.00	21.00						
16 (16-22 Apr)	59.00	23.00						
17 (23-29 Apr)	55.00	25.00						
<b>UDAIPUR</b>	<b>Latitude 24° 34' N</b>			<b>Longitude 70° 42' E</b>			<b>Height above MSL 582 m</b>	
40 (01-07 Oct)	31.7	23.2	88.4	65.1	62.4	3.2	3.0	3.3
41 (08-14 Oct)	32.0	19.5	81.1	41.9	0.0	4.7	3.2	8.1
42 (15-21 Oct)	32.4	17.9	72.0	30.4	0.0	4.4	2.5	7.5
43 (22-28 Oct)	30.8	15.7	76.0	32.0	0.0	4.5	3.4	8.8
44 (29-04 Nov)	30.6	12.5	75.7	30.4	0.0	3.6	2.7	8.2
45 (05-11 Nov)	30.9	11.7	71.6	24.1	0.0	3.4	2.3	8.4
46 (12-18 Nov)	29.3	10.3	84.6	34.6	0.0	2.6	2.0	8.6
47 (19-25 Nov)	30.5	10.7	82.4	23.1	0.0	2.6	1.8	9.0
48 (26-02 Dec)	30.3	10.6	80.4	24.7	0.0	2.9	1.8	9.0
49 (03-09 Dec)	27.7	8.9	88.7	27.6	0.0	2.6	1.9	8.6
50 (10-16 Dec)	28.3	10.4	90.1	32.4	0.0	2.7	1.7	8.7
51 (17-23 Dec)	27.5	9.8	89.4	29.1	0.0	2.5	1.7	8.6
52 (24-31 Dec)	28.0	9.3	85.8	24.6	0.0	2.6	1.7	8.6

Julian weeks	Temperature °C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine	
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day	
1 (01-07 Jan)	26.2	8.3	92.1	37.9	0.0	2.8	2.2	7.9	
2 (08-14 Jan)	20.9	5.6	89.6	38.9	0.0	2.3	2.5	5.8	
3 (15-21 Jan)	21.8	7.1	80.7	43.1	0.0	2.4	2.5	6.5	
4 (22-28 Jan)	26.0	10.4	91.6	47.0	0.2	2.6	2.3	5.4	
5 (29-04 Feb)	27.0	8.6	91.6	36.0	0.0	2.8	1.9	8.7	
6 (05-11 Feb)	25.1	7.2	84.1	28.7	0.0	3.9	3.3	8.4	
7 (12-18 Feb)	27.4	11.0	88.0	34.1	0.0	3.5	2.7	8.0	
8 (19-25 Feb)	30.0	11.1	71.4	26.0	0.0	5.2	3.6	8.8	
9 (26-04 Mar)	31.4	12.7	71.1	26.0	0.0	5.1	2.8	9.1	
10 (05-11 Mar)	29.1	12.2	73.1	23.7	0.0	5.0	3.9	7.8	
11 (12-18 Mar)	29.2	10.1	63.0	16.9	0.0	5.5	2.9	8.6	
12 (19-25 Mar)	34.1	15.1	73.6	17.4	0.0	6.3	3.4	8.8	
13 (26-01 Apr)	38.1	18.6	46.4	10.9	0.0	8.9	4.3	9.5	
14 (02-08 Apr)	36.4	19.7	46.0	17.3	0.0	10.3	6.4	9.2	
15 (09-15 Apr)	37.8	17.5	26.9	7.7	0.0	8.7	3.4	9.5	
16 (16-22 Apr)	40.2	22.9	34.6	12.7	0.0	12.3	6.7	9.7	
<b>VIJAPUR</b>	<b>Latitude 23°35' N</b>			<b>Longitude 72°55' E</b>			<b>Height above MSL 124 m</b>		
40 (01-07 Oct)	31.7	25.2	99.4	89.7	71.5		0.8	8.4	
41 (08-14 Oct)	33.3	23.9	100.0	72.1	0.0		0.8	9.7	
42 (15-21 Oct)	34.6	20.8	95.6	27.3	0.0		0.7	10.1	
43 (22-28 Oct)	34.0	18.6	98.0	29.6	0.0		0.7	9.7	
44 (29-04 Nov)	33.7	16.6	90.3	21.4	0.0		0.9	9.5	
45 (05-11 Nov)	33.4	15.4	92.6	20.4	0.0		0.5	9.5	
46 (12-18 Nov)	31.9	15.1	90.0	31.9	0.0		0.9	9.4	
47 (19-25 Nov)	33.0	14.8	91.7	21.6	0.0		0.7	9.4	
48 (26-02 Dec)	32.7	15.1	92.0	23.0	0.0		0.8	9.5	
49 (03-09 Dec)	30.6	13.8	91.1	26.9	0.0		1.0	9.3	
50 (10-16 Dec)	30.3	14.0	94.1	28.1	0.0	3.1	0.8	9.4	
51 (17-23 Dec)	30.1	13.3	96.0	27.6	0.0	3.1	0.6	9.3	
52 (24-31 Dec)	29.6	12.6	94.6	27.9	0.0	3.1	0.8	9.4	
1 (01-07 Jan)	28.3	12.5	93.8	29.4	0.0	2.7	0.7	9.3	
2 (08-14 Jan)	25.7	12.3	95.9	36.0	0.0	2.8	1.1	9.6	
3 (15-21 Jan)	25.4	10.4	82.0	30.6	0.0	3.2	1.2	9.1	
4 (22-28 Jan)	29.7	15.9	85.4	35.1	0.0	3.5	0.9	9.7	
5 (29-04 Feb)	29.1	11.7	94.3	26.0	0.0	3.2	0.7	10.3	
6 (05-11 Feb)	28.2	11.0	88.7	24.1	0.0	4.2	1.0	10.1	
7 (12-18 Feb)	30.5	15.2	84.4	29.7	0.0	4.0	1.2	9.6	
8 (19-25 Feb)	33.2	16.2	89.9	22.0	0.0	5.2	1.0	10.5	
9 (26-04 Mar)	34.6	15.0	83.8	17.3	0.0	6.2	0.8	10.3	
10 (05-11 Mar)	32.9	17.4	79.6	20.1	0.0		1.1	10.3	
11 (12-18 Mar)	32.9	14.3	45.0	10.6	0.0		1.3	10.5	
12 (19-25 Mar)	36.9	20.3	74.6	20.4	0.0		0.8	11.0	
13 (26-01 Apr)	40.3	21.8	53.1	13.9	0.0		1.0	11.3	
14 (02-08 Apr)	37.8	22.9	74.0	22.1	0.0		1.2	11.0	
15 (09-15 Apr)	41.0	19.9	27.0	8.0	0.0		1.1	11.5	
16 (16-22 Apr)	41.2	23.3	60.0	15.7	0.0		1.5	11.3	

### PENINSULAR ZONE

AKOLA	Latitude 20° 70' N		Longitude 77°03' E			Height above MSL 282 m		
40(01-07 Oct)	29.1	24.5	92	73	4	3.2	1.8	4.6
41(08-14 Oct)	31.2	22.6	90	59	1	4.1	3	7.6
42(15-21 Oct)	32.9	23.6	80	29	0	4.4	0.4	8.9
43(22-28 Oct)	32.4	23.3	80	34	0	4.7	0.9	8.4
44(29-04 Nov)	31.4	23	81	34	0	4.4	0.4	8.7
45(05-11 Nov)	31.4	22.8	77	27	0	3.8	0.3	8.6
46(12-18 Nov)	30.3	21.3	84	33	0	3.7	0.4	8.3
47(19-25 Nov)	30.7	16.5	85	32	0	3.6	0.3	8.4
48(26-02 Dec)	31.9	15.8	85	27	0	3.8	0.2	8.9

Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
49(03-09 Dec)	31.9	14.3	85	62	1	3.9	4.5	4.5
50(10-16 Dec)	31.3	11.2	85	47	0	6.2	8.4	8.5
51(17-23 Dec)	31.8	11.9	86	59	3	4.2	5.5	3.4
52(24-31 Dec)	30.9	9.7	94	70	3	3.4	2.8	4.3
1(01-07 Jan)	29.5	9.3	82	33	0	3.5	0.5	8.1
2(08-14 Jan)	27.3	8.4	84	40	0	3.4	0.6	7.6
3(15-21 Jan)	29.3	12.2	79	36	0	3.8	0.8	5.8
4(22-28 Jan)	31.3	13.8	77	35	0	5.1	1.4	7.7
5(29-04 Feb)	31.6	11.8	80	27	0	4.8	0.8	8.8
6(05-11 Feb)	32.5	14.2	72	27	0	5.7	1.7	8.5
7(12-18 Feb)	33.2	16.4	74	27	0	6.2	2.2	7.7
8(19-25 Feb)	35.1	14.8	59	14	0	8.3	2.9	9.4
9(26-04 Mar)	36.4	15.6	42	12	0	8	1.4	9.2
<b>DHARWAD</b>	<b>Latitude 15<sup>o</sup> 26'N</b>		<b>Longitude 75<sup>o</sup> 07' E</b>			<b>Height above MSL 678 m</b>		
40(01-07 Oct)	27.30	19.50	91	67	6.2			
41(08-14 Oct)	28.90	20.20	91	59	38.6			
42(15-21 Oct)	30.80	16.30	60	31	0			
43(22-28 Oct)	31.10	18.50	67	29	0			
44(29-04 Nov)	31.50	18.40	63	42	0.4			
45(05-11 Nov)	30.30	12.60	46	25	0			
46(12-18 Nov)	31.00	17.20	71	41	5.4			
47(19-25 Nov)	30.10	13.20	58	27	0			
48(26-02 Dec)	31.40	13.10	48	22	0			
49(03-09 Dec)	29.40	16.20	69	39	0			
50(10-16 Dec)	29.00	15.10	63	38	0			
51(17-23 Dec)	30.60	13.40	57	25	0			
52(24-31 Dec)	30.70	11.60	52	25	0			
1(01-07 Jan)	30.00	12.10	49	30	0			
2(08-14 Jan)	29.60	13.60	66	43	0			
3(15-21 Jan)	29.20	13.40	61	39	0			
4(22-28 Jan)	31.30	15.40	65	40	0			
5(29-04 Feb)	32.30	15.60	52	30	0			
6(05-11 Feb)	32.80	16.10	69	24	0			
7(12-18 Feb)	32.30	15.50	52	21	0			
8(19-25 Feb)	35.10	17.60	45	15	0			
9(26-04 Mar)	35.10	17.10	43	20	0			
10(05-11 Mar)	33.70	16.00	43	20	0			
11(12-18 Mar)	34.40	19.00	60	23	0			
12(19-25 Mar)	36.60	19.90	66	20	0			
13(26-01 Apr)	36.70	21.90	88	28	0.2			
14(02-08 Apr)	36.90	21.00	83	20	0			
<b>NIPHAD</b>	<b>Latitude 20.6<sup>o</sup> N</b>		<b>Longitude 74.6<sup>o</sup> E</b>			<b>Height above MSL 548.6 m</b>		
40(01-07 Oct)	27.3	21.3	92	76	77.2	3.4	5.8	3.9
41(08-14 Oct)	31	19.6	89	38	2	5.4	3.2	7.4
42(15-21 Oct)	31.4	18.6	87	44	0	6.7	3	8.6
43(22-28 Oct)	30.9	14.1	78	32	0	7.1	2.2	9.5
44(29-04 Nov)	30.7	12.5	79	31	0	6.6	2	9.2
45(05-11 Nov)	29.9	9.1	76	23	0	6.5	2	9.3
46(12-18 Nov)	29.7	10.5	77	24	0	6.8	1.8	9.1
47(19-25 Nov)	29.8	8.7	77	25	0	7.1	2.3	9.2
48(26-02 Dec)	31.4	9.5	74	25	0	7	2.3	9.5
49(03-09 Dec)	29.3	9.9	78	32	0	6.2	2.4	9.3
50(10-16 Dec)	29.2	9.8	78	31	0	6.7	2.3	9.4
51(17-23 Dec)	29.2	8.9	78	29	0	6.6	1.8	9.6
52(24-31 Dec)	29.5	7.3	73	26	0	6.7	1.8	9.6
1(01-07 Jan)	28.7	6.9	72	26	0	6.1	1	9.4
2(08-14 Jan)	26	6.5	69	29	0	6	1.9	8.9
3(15-21 Jan)	27.6	11.1	75	41	0	6.8	1.6	8.9

Julian weeks	Temperature °C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
4(22-28 Jan)	29.7	10.1	75	33	0	6.2	1.9	8.7
5(29-04 Feb)	30.8	10	68	27	0	6.6	0.9	8.8
6(05-11 Feb)	30.8	11	61	32	0	6.2	1.5	9.1
7(12-18 Feb)	31.3	11.5	71	29	0	6.8	2.1	9.1
8(19-25 Feb)	33.6	10.9	69	18	0	7.4	2.1	9.3
9(26-04 Mar)	33.9	10.6	67	20	0	7.5	1.4	9.1
10(05-11 Mar)	32.3	10.8	68	25	0	7.9	2.8	10.3
11(12-18 Mar)	33	10.1	72	23	0	8.2	2.7	9.6
12(19-25 Mar)	35.4	14.5	70	24	0	8.6	2.6	10
13(26-01 Apr)	39.6	17.8	72	25	0	9	2.5	10
14(02-08 Apr)	36.8	15.4	73	23	0	8.9	5.9	10
15(09-15 Apr)	38.9	15.2	68	20	0	9.3	3.1	10
16(16-22 Apr)	39.3	19.6	61	18	0	13.6	7.3	10.1
17(23-29 Apr)	36.3	18.8	71	24	0	14.2	6.7	10
18(30-06 May)	38.6	19.5	66	16	0	14.1	5.1	9.8
19(07-13 May)	39	21.4	60	23	0	14.1	6.7	10.4
20(14-20 May)	37.9	22.3	74	27	1	13.7	9	9.2
<b>PUNE</b>	<b>Latitude 18°04' N</b>		<b>Longitude 74°21' E</b>		<b>Height above MSL 548.6 m</b>			
40(01-07 Oct)	28.2	20.5	96	78	29			
41(08-14 Oct)	32.8	20.7	98	53	0			
42(15-21 Oct)	32.1	18.6	95	38	0			
43(22-28 Oct)	31.9	18	92	37	0			
44(29-04 Nov)	31.4	14.3	90	39	0			
45(05-11 Nov)	30.6	12.2	88	37	0			
46(12-18 Nov)	30.3	14.9	93	46	0			
47(19-25 Nov)	30.1	10.2	92	37	0			
48(26-02 Dec)	31.2	10.7	93	35	0			
49(03-09 Dec)	29.7	11.6	95	50	0			
50(10-16 Dec)	28.8	10.6	94	54	0			
51(17-23 Dec)	30.1	11.2	96	45	0			
52(24-31 Dec)	30	8.7	95	42	0			
1(01-07 Jan)	29.6	8.1	95	36	0			
2(08-14 Jan)	28.2	7.9	93	44	0			
3(15-21 Jan)	29.2	12.9	97	47	0			
4(22-28 Jan)	30.6	12	93	36	0			
5(29-04 Feb)	31.7	12	95	37	0			
6(05-11 Feb)	32.3	13.7	97	44	0			
7(12-18 Feb)	31.7	12.7	89	40	0			
8(19-25 Feb)	35.8	12.4	83	26	0			
9(26-04 Mar)	34.9	12.6	75	31	0			
10(05-11 Mar)	33.3	12.2	79	27	0			
11(12-18 Mar)	34.3	13.4	81	25	0			
12(19-25 Mar)	37	15.8	79	26	0			
13(26-01 Apr)	39.4	20.7	86	28	0			
14(02-08 Apr)	38.5	17.3	64	19	0			
15(09-15 Apr)	39.7	18.8	72	21	0			
16(16-22 Apr)	39.9	20.3	75.6	22.6	0			
17(23-29 Apr)	38.2	19.4	74.6	22.3	0			
<b>UGAR</b>	<b>Latitude 16°66' N</b>		<b>Longitude 74°82' E</b>		<b>Height above MSL 548 m</b>			
40(01-07 Oct)	32.25	19.75			0.00			
41(08-14 Oct)	33.12	20.50			7.00			
42(15-21 Oct)	34.25	18.37			0.00			
43(22-28 Oct)	34.42	18.57			0.00			
44(29-04 Nov)	34.12	16.87			0.00			
45(05-11 Nov)	33.00	13.62			0.00			
46(12-18 Nov)	33.25	14.62			0.00			
47(19-25 Nov)	33.16	14.33			0.00			
48(26-02 Dec)	33.12	13.87			0.00			



Julian weeks	Temperature <sup>o</sup> C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine	
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day	
49(03-09 Dec)	31.75	13.12			0.00				
50(10-16 Dec)	32.62	15.12			0.00				
51(17-23 Dec)	33.85	12.42			0.00				
52(24-31 Dec)	32.25	11.75			0.00				
1(01-07 Jan)	31.12	11.37			0.00				
2(08-14 Jan)	31.62	13.12			0.00				
3(15-21 Jan)	33.57	16.42			0.00				
4(22-28 Jan)	34.62	16.00			0.00				
5(29-04 Feb)	34.25	16.75			0.00				
6(05-11 Feb)	35.87	17.00			0.00				
7(12-18 Feb)	37.75	16.75			0.00				
8(19-25 Feb)	37.12	16.37			0.00				
9(26-04 Mar)	36.75	15.00			0.00				
10(05-11 Mar)	37.37	14.50			0.00				
11(12-18 Mar)	38.00	15.00			0.00				
12(19-25 Mar)	38.62	20.00			0.00				
13(26-01 Apr)	40.25	21.25			0.00				
14(02-08 Apr)	41.00	21.66			0.00				
<b>WASHIM</b>	<b>Latitude 19<sup>o</sup>37'-21<sup>o</sup>10'N</b>				<b>Longitude 76<sup>o</sup>42'-77<sup>o</sup>24' E</b>		<b>Height above MSL</b>		
40(01-07 Oct)	28.4	24.7	26	24.2	98				
41(08-14 Oct)	31.9	24.6	27.7	23.9	18				
42(15-21 Oct)	30.8	23.8	26.7	23.2					
43(22-28 Oct)	29.5	24.4	26.5	23					
44(29-04 Nov)	30.9	24.1	27	22.6					
45(05-11 Nov)	29.5	23.8	27	20.8					
46(12-18 Nov)	30	24.1	26.5	20.3					
47(19-25 Nov)	30.2	24.3	26.7	20.4					
48(26-02 Dec)	30.5	21.3	25.3	19.6					
49(03-09 Dec)	30.1	17.4	23.3	18.4					
50(10-16 Dec)	29.5	16.6	22.4	18.5					
51(17-23 Dec)	30.5	16.2	21.3	18					
52(24-31 Dec)	27.8	15.4	20.8	16.5					
1(01-07 Jan)	27.2	15.1	20.1	15.9					
2(08-14 Jan)	25.3	13.8	18.8	15.7					
3(15-21 Jan)	27.6	18.6	22.3	18.2					
4(22-28 Jan)	29.8	21.7	25	20.1					
5(29-04 Feb)	30.8	19.5	24.5	19.9					
6(05-11 Feb)	31.3	21.1	25.6	20.1					
7(12-18 Feb)	32.4	21.9	26.3	21.1					
8(19-25 Feb)	34.9	23.9	28.7	21.6					
9(26-04 Mar)	34.6	24.3	28.9	22.3					
10(05-11 Mar)	34.6	24.1	28.8	22.7					

## SOIL PHYSICO-CHEMICAL PROPERTIES

Name of Centre	Textural class	Sand %	Silt %	Clay %	Db Mg m <sup>-3</sup>	FC %	PWP %	OC %	Avail. N kg/ha	Avail. P kg/ha	Avail. K kg/ha	pH	EC dsm <sup>-1</sup>
<b>NORTHERN HILLS ZONE</b>													
Almora SPL-1	Silty clay loam	30	36	34	1.36	28	17.8	1.06	358	15.8	192	6.4	0.09
Almora SPL-2	Silty clay loam	29	43	28	1.35	27.9	17.7	1.03	342	14.9	184	6.4	0.09
Almora SPL-4	Silty clay loam	27	41	32	1.37	28.2	17.9	1.09	375	16.2	199	6.3	0.09
Almora SPL-12	Silty clay loam	27	45	28	1.36	27.4	17.6	1.02	336	14.4	181	6.5	0.09
Bajaura SPL-1	Silty loam	28	53	18	1.54	NA	NA	0.60	343.0	48.0	150.0	6.0	0.06
Bajaura SPL-2	Silty loam	28	53	18	1.54	NA	NA	0.60	366.0	55.0	186.0	6.2	0.06
Bajaura SPL-4	Silty loam	28	53	18	1.54	NA	NA	0.60	366.0	55.0	186.0	6.2	0.06
Bajaura SPL-12	Silty loam	28	53	18	1.54	NA	NA	0.62	362.0	55.0	182.0	6.2	0.06
Khudwani SPL-1	Silty clay loam	16.6	48.2	35.2	1.13	-	-	1.20	214.0	16.2	248.0	6.9	0.20
Khudwani SPL-2	Silty clay loam	16.6	48.2	35.2	1.13	-	-	1.02	210.0	15.4	229.0	6.8	0.21
Khudwani SPL-4	Silty clay loam	16.6	48.2	35.2	1.08	-	-	1.01	213.0	15.2	244.0	6.8	0.21
Malan SPL-1	Silty clay loam	24.7	38.2	36.9	1.56	32.0	13.0	0.6	488.0	48.0	248.0	5.2	0.17
Malan SPL-2	Silty clay loam	24.7	38.2	36.9	1.54	32.0	13.0	0.8	418.0	44.0	218.0	5.2	0.17
Malan SPL-4	Silty clay loam	16.6	48.2	35.2	1.58	30.0	14.0	0.8	428.0	42.0	232.0	5.1	0.16
Malan SPL-12	Silty clay loam	16.6	48.2	35.2	1.56	32.0	13.0	0.7	438.0	46.0	258.0	5.2	0.17
<b>NORTH WESTERN PLAINS ZONE</b>													
Agra	Sandy Loam	60.64	20.08	18.92	1.63	18.50	9.50	0.36	188.4	28.90	310.00	8.40	1.64
Bikaner	Loamy sand				1.63			0.40	132.1	20.73	320.32	7.97	0.39
Delhi	Sandy loam	62.1	15.6	22.3	1.52	21.3	9.76	0.39	250.8	10.02	302	7.4	1.25
Durgapura	Loamy sand	83.4	7.8	8.8	1.45	10.4	3.15	0.28	208.5	51.74	181.84	7.9	0.15
Gurdaspur	Loam							0.39	-	6.44	80	7.48	0.20
Hisar	Sandy loam	72	18.5	9.5	1.4			0.38	126	21	308	7.8	0.22
Jammu	Clay Loam	40.32	31.89	27.79	1.49	21.21		0.47	169	14.6	141	7.6	0.24
Karnal	Sandy Loam	63.2	26.6	10.2	1.47	18.7	7.1	0.48	184.8	16.6	273.2	7.77	0.23
Ludhiana	Loamy sand	84.58	7.34	7.99	1.45			0.38		29.08	149.70	8.24	0.15
Pantnagar	Loam	35.88	48.25	15.88	1.39	22.13	8.88	0.71	230.00	44.13	145.13	7.30	0.40
Sriganganagar								0.23		23	325	8.3	0.16
<b>NORTH EASTERN PLAINS ZONE</b>													
Burdwan	Sandy Loam	55	34	11	-	-	-	0.5	212	-	60	5.62	0.07
Coochbehar	Sandy loam	68	20	12	1.36			0.88	250.88	28.2	142.91	5.8	-
Faizabad	Sandy loam	56.6	29.3	14.7	1.4	23	8	0.47	119	23	264	7.6	0.48
IARI Pusa		-	-	-	-	-	-	0.57	-	18.28	187	8.02	0.66
Kalyani	Loamy soil	45.13	32.76	22.11	1.55	33	12	0.51	246	24.61	281.32	7.1	0.32

Name of Centre	Textural class	Sand %	Silt %	Clay %	Db Mg m <sup>-3</sup>	FC %	PWP %	OC %	Avail. N kg/ha	Avail. P kg/ha	Avail. K kg/ha	pH	EC dsm <sup>-1</sup>
Kanpur	Sandy Loam	60	26	14	-	-	-	0.39	-	20	110	8.0	0.18
Ranchi	clay loam	32.6	30.3	37.1	1.44	25.6	14.6	0.42	185.6	12.6	186.4	6.2	-
RAU Pusa	Clay loam	23.86	48.92	27.22	1.41	21.49	7.62	0.44	193.8	21.05	124.88	8.4	0.24
Sabour	Loamy Sand	29	47	24	1.44	23	10	0.52	198	25	189	7.5	0.16
Shillongani	Typic Heplaquept	51.8	20.6	26.6	1.38	43.03	7.8	1.12	252.6	12.6	284.6	5.5	0.262
Varanasi	Sandy clay loam	49.57	28.81	21.62	1.5	19.5	5.2	0.39	185.3	26.8	235.9	7.4	0.31
<b>CENTRAL ZONE</b>													
Bilaspur	Sandy Clay Loam	43.31	22.51	35.63	1.34	21.26	8.7	0.37	266	12.35	293	7.4	0.18
Gwalior	Sandy Clay Loam	56	17.2	20				0.45	180	12.5	200	7.4	0.42
Indore	Vertisols	13	27	58	1.48	36	16	0.51	265.4	16.8	456.8	7.7	0.23
Jabalpur	Vertisols	28.15	23.6	44.7	1.36	39	18	0.54	236.8	17.78	311.62	7.1	0.38
Kota	Clay	18.5	35	46	1.47	30.4	15.1	0.8	326	25	295	7.7	0.72
Udaipur	Clay Loam	38.75	26.78	34.47	1.45			0.62	287.52	23.67	366.15	7.85	0.9
Vijapur: SPL-2	Sandy Loam	74.8	11.8	8.8	1.59	11.45	2.44	0.31	168	41.16	293	7.65	0.33
Vijapur: SPL-5	Sandy Loam	74.8	11.8	8.8	1.59	11.45	2.44	0.33	162	37.72	289	7.79	0.36
<b>PENINSULAR ZONE</b>													
Akola	Clayey	11.4	29.7	58.9				0.39	147	32	310	8.1	0.42
Dharwad: IR-TS-TAD-DOS								0.61	282	32.8	292	7.13	0.31
Dharwad: RF-TAS-LON								0.49	236	40.2	277	7.23	0.29
Dharwad: SPL-1								0.51	249	48.6	258	7.38	0.3
Dharwad: SPL-2								0.59	271	41.6	288	7.21	0.29
Dharwad: SPL-3								0.48	256	41.3	286	7.58	0.32
Dharwad: SPL-11								0.38	229	49.3	286	6.88	0.31
Dharwad: SPL-12								0.48	248	40.4	252	7.34	0.32
Niphad	Vertisol	22.85	32.69	43.12	1.29			0.59	201.36	20.45	419.44	8.04	0.49
Pune-1	Black cotton soil	9.6	48.8	24.2	1.38			0.90	216	7.61	284	7.83	0.77
Pune-2	Black cotton soil	5.7	63.4	12.8	1.30			0.49	118	9.04	200	8.03	.32
Pune-3	Black cotton soil	9.4	53.4	20.8	1.38			0.90	245	11.91	320	7.97	0.42
Pune -4	Black cotton soil	8.3	53.5	25.3	1.38			0.31	209	10.48	231	7.83	0.31
Washim-1								0.55	246	19.4	285	8.2	0.2
Washim-2								0.59	280	17.7	290	8.5	0.12
Washim-3								0.68	325	21.5	328	7.5	0.13
Washim-4								0.52	251	22	335	9	0.16
Washim-5								0.55	260	23.4	265	8.1	0.14
Ugar Khurd: IR-TS-TAD-DOS								0.62	246	30.9	302	7.29	0.32
Ugar: SPL-2								0.53	253	36.5	263	6.96	0.32

## SOWING DATES FOR DIFFERENT ZONES UNDER IRRIGATED CONDITIONS

ZONE	<i>Triticum aestivum</i>	<i>Triticum durum</i>
<b>NORTHERN HILLS ZONE</b>		
Normal	5 <sup>th</sup> Nov. to 11 <sup>th</sup> Nov.	
Late	26 <sup>th</sup> Nov. to 2 <sup>nd</sup> Dec.	
Very Late	17 <sup>th</sup> Dec. to 23 <sup>rd</sup> Dec.	
<b>NORTH WESTERN PLAINS ZONE</b>		
Normal	5 <sup>th</sup> Nov. to 11 <sup>th</sup> Nov.	29 <sup>th</sup> Oct. to 4 <sup>th</sup> Nov.
Late	10 <sup>th</sup> Dec. to 16 <sup>th</sup> Dec.	26 <sup>th</sup> Nov. to 2 <sup>nd</sup> Dec.
Very Late	1 <sup>st</sup> Jan. to 7 <sup>th</sup> Jan.	
<b>NORTH EASTERN PLAINS ZONE</b>		
Normal	12 <sup>th</sup> Nov. to 18 <sup>th</sup> Nov.	
Late	10 <sup>th</sup> Dec. to 16 <sup>th</sup> Dec.	
Very Late	1 <sup>st</sup> Jan. to 7 <sup>th</sup> Jan.	
<b>CENTRAL ZONE</b>		
Normal	12 <sup>th</sup> Nov. to 18 <sup>h</sup> Nov.	5 <sup>th</sup> Nov. to 11 <sup>th</sup> Nov.
Late	3 <sup>rd</sup> Dec. to 9 <sup>th</sup> Dec.	
Very Late	24 <sup>th</sup> Dec. to 31 <sup>st</sup> Dec.	
<b>PENINSULAR ZONE</b>		
Normal	5 <sup>th</sup> Nov. to 11 <sup>th</sup> Nov.	5 <sup>th</sup> Nov. to 11 <sup>th</sup> Nov.
Late	26 <sup>th</sup> Nov. to 2 <sup>nd</sup> Dec.	
Very Late	17 <sup>th</sup> Dec. to 23 <sup>rd</sup> Dec.	
<b>SOUTHERN HILLS ZONE</b>		
Normal	26 <sup>th</sup> Nov. to 2 <sup>nd</sup> Dec.	
Late	24 <sup>th</sup> Dec. to 31 <sup>st</sup> Dec.	

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