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PROGRESS REPORT

2019-20

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RESOURCE MANAGEMENT



अखिल भारतीय समन्वित गेहूँ एवं जौ अनुसंधान परियोजना

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AICRP on Wheat & Barley

**PROGRESS REPORT
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RESOURCE MANAGEMENT

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SUMMARY

Wheat being the most staple food crop of India plays an important role in food security and its production mainly dependent on available natural resources and climatic conditions. Under the present circumstances there is urgent need of increasing the wheat productivity without jeopardising the soil health. This year India harvested a record wheat production of 107.18 million ton despite shrinking land and water resources and climate abrasions. This was possible by adoption of latest high yielding diseases resistant varieties and their production technologies by Indian farmers. In recent years it was observed that in the month of February and March a lot of rain and thunder storm occur which induces lodging and thereby reduce the grain yield of wheat crop. To address these issues under high fertility condition growth retardant were used to minimise the losses. Nitrogen is generally applied in excess in NWPZ whereas in NEPZ it is applied less than the recommended ones and potash and micronutrients are rarely applied. 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 including fine tuning sowing and nutrient management with growth regulators, phosphorous usage in rice-wheat system, seed priming for enhancing early crop establishment in NEPZ, integrated nutrient management, precision N management etc to make efficient wheat production, which is main food basket of the country.

The Resource Management group of the “All India Co-ordinated Wheat and Barley Improvement Project” (AICW&BIP), 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 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 here.

In four wheat growing zones, six varietal evaluation trial series were conducted at a number of locations under different growing conditions. The newly developed genotypes were evaluated against the existing varieties used as checks. In addition, six 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, 46 trials were proposed, of which 41 were conducted. Out of the conducted trials, one trial was rejected due to improper data reporting. The overall conduct of trial was 89.1 percent.

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

Trial Series	Locations	Trials conducted	Trials not conducted		Rejected	
			Number	Centres	Number	Centres
North Western Plains Zone						
IR-TS-DOS	10	10	-	-	-	-
IR-ES-HYPT	07	06	01	Delhi	-	-
Total	17	16	01	-	-	-
North Eastern Plains Zone						
RIR-TS-TAS	11	11	-	-	-	-
Total	11	11	-	-	-	-
Central Zone						
IR-TAS-DOS	08	08	-	-	01	Udaipur
Total	08	08	-	-	01	-
Peninsular Zone						
IR-TDS-DOS	05	03	-	-	02	Akola, Washim
RIR-TS-TAS	05	03	-	-	02	Akola, Washim
Total	10	6	4	-	-	-
Total Trials	46	41	05	-	01	-

In NWPZ, out of 17 proposed trials, 16 were successfully conducted. In NEPZ and CZ, 11 and 8 trials were proposed and all were conducted for respective zones. One trial from Udaipur of CZ was rejected due to improper data reporting. In PZ, out of 10 proposed 6 were conducted. The centres where the trials were not conducted or where the trials were rejected have been listed in the Table 1.

The performance of 20 test entries has been presented in the Table 2. In NWPZ, the results showed that one test entry in the AVT-II year timely sown condition was tested. In early sown high yield trial out of the 12 test entries, two test entries DBW 329 and DBW 332 were numerically superior to the best check DBW 222 with an yield gain of 1.07 and 0.46 percent, respectively.

In NEPZ, one test genotype namely HD 3293 was tested at 11 locations and found inferior to the best check HI 1612.

In CZ, two test entries namely CG 1029 and HI 1634 were evaluated and both were found significantly superior to best check HD 2932 with yield gain of 3.52 and 2.03 percent, respectively.

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			
North Western Plains Zone						
IR-TS-DOS	HD 3298	-	-	HD 3059	-	10
IR-ES-HYPT	DBW 327, DBW 332, DBW 303, DBW 187, DBW 329, WH 1252, HD 3378, WH 1270, DBW 333, DBW 330, DBW 328, DBW 325,	DBW 329, DBW 332	-	DBW 222 DBW 222	1.07 0.46	06
North Eastern Plains Zone						
RIR-TS-TAS	HD 3293	-	-	HI 1612	-	11
Central Zone						
IR-TAS-DOS	CG 1029, HI 1634	-	CG1029 HI 1634	HD 2932 HD 2932	3.52 2.03	07 07
Peninsular Zone						
IR-TDS-DOS	DDW 48 (d), DDW 49 (d), HI 1633	-	-	HD 2932	-	03
RIR-TS-TAS	NIDW 1149 (d)	-	NIDW 1149 (d)	NIAW 3170 UAS 446 (d)	8.29 8.01	03

In PZ, under timely sown condition three test entries namely DDW 48(d), DDW 49(d), HI 1633 were tested and none was found superior to the best check HD2932. Even durum test entries namely DDW 48(d) and DDW 49(d) were inferior to their respective best check MACS 3949 (d). Under restricted irrigation conditions one test entry NIDW 1149 (d) was evaluated and found significantly superior to best check NIAW 3170 with a yield gain of 8.29 per cent.

The details of the special trials conducted in different zones are presented in Table 3. In all, 108 trials were proposed, out of which 85 were conducted and the conduct percentage was 78.7. The maximum numbers of special trials were conducted in NWPZ (26) followed by NEPZ (24), CZ (16), PZ (10) and NHZ (9).

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

Trial Series	Locations	Trials conducted	Trials not conducted	
			Number	Centres
Northern Hill Zone				
SPL-1: Fine tuning of sowing and nutrient management	05	03	02	Khudwani, Shimla
SPL-2: Role of PSB	02	02	-	-
SPL-4 Optimisation of N doses	05	04	01	Shimla
Total	12	09	03	
North Western Plains Zone				
SPL-1: Fine tuning of sowing and nutrient management	10	09	01	Sriganganagar
HYPT: Early sown HYPT	07	06	01	Delhi
SPL-2: Role of PSB	02	02	-	
SPL-4 Optimisation of N doses	10	09	01	Sriganganagar
Total	29	26	03	
North Eastern Plains Zone				
SPL-1: Fine tuning of sowing and nutrient management	11	05	06	Faizabad, Kalyani, Kanpur, IARI Pusa, Ranchi, Varanasi
SPL-2: Role of PSB	02	02	-	-
SPL-3: Seed priming	06	05	01	Kanpur
SPL-4 Optimisation of N doses	11	10	01	IARI Pusa
SPL-5 :Precision nutrient management	02	02	-	-
Total	32	24	08	
Central Zone				
SPL-1: Fine tuning of sowing and nutrient management	09	05	04	Dhandhuka, Indore, Powarkheda, Udaipur
SPL-4 Optimisation of N doses	09	06	03	Dhandhuka, Powarkheda, Udaipur
SPL-6 :Silica management	05	05	-	-
Total	23	16	07	
Peninsular Zone				
SPL-1: Fine tuning of sowing and nutrient management	05	03	02	Niphad, Pune
SPL-4 Optimisation of N doses	05	05	-	-
SPL-5: Precision nitrogen management	02	02	-	-
Total	12	10	02	
Total Trials	108	85	23	

NORTH WESTERN PLAINS ZONE

In North Western Plains, two varietal evaluation trials (irrigated timely sown and early sown high yield potential) were conducted to evaluate the performance of new genotypes as compared to existing varieties as checks.

The performance of one *aestivum* test entry HD 3298 against five checks (WH 1124, WH1021, HD 3059, DBW 173 and PBW 771) was evaluated at ten centres *i.e.* Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganganagar under timely, late and very late sown conditions. Yield decline in late and very late sown condition was 17.61 and 33.19 %, respectively as compared to timely sown condition. On average basis, test entry HD 3298 ranked 4th in all sowing conditions with mean yield of 46.39 q/ha (Fig.1).

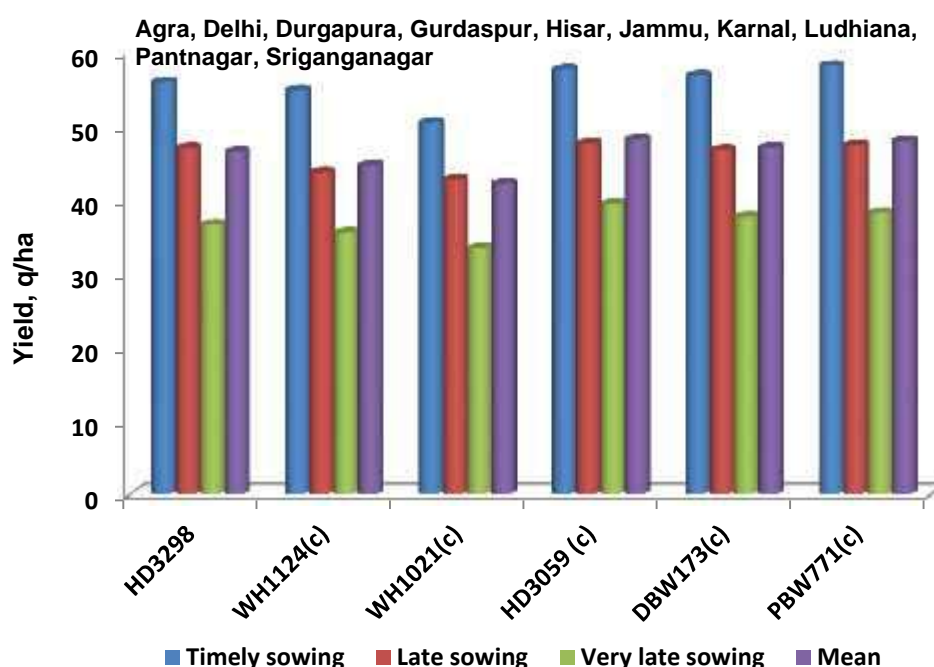


Fig. 1. Genotypes for irrigated condition under different dates of sowing in NWPZ

In early sown high yield potential trials, experiments were conducted at six centres namely BISA Ladowal, Gurdaspur, Hisar, Karnal, Ludhiana and Pantnagar. The objective was to maximise the wheat yield with target of 8 t/ha by using higher level of inorganic and organic fertilisers and spraying of growth retardant to control lodging. The experiment consisted of three fertility treatments *viz.* recommended doses of fertilizers (RDF), 150%RDF + 15 t FYM/ha and 150% RDF + 15 t FYM/ha + two sprays as tank mix-Chlormequat chloride (Lihocin) @0.2% + tebuconazole (Folicur 430 SC) @0.1% of commercial product dose at first node and flag leaf (tank mix application) stage using 15 wheat genotypes.

The grain yield increased with fertiliser doses. Addition of 15 t FYM/ha + 150% RDF significantly increased the grain yield (60.79 q/ha) as compared to RDF (59.76 q/ha). Also, 150% RDF and two sprays of growth retardants increased the grain yield (66.77 q/ha) significantly as compared to other two nutrient management practices (Fig. 2). This increase was to the tune of 11.7% as compared with RDF. This showed that growth retardant in combination with fungicide tebuconazole was more effective for control of lodging and enhancing the grain yield. Variety DBW 329 ranked first with mean yield of 66.38 q/ha, which was significantly higher than other varieties except genotypes DBW 332 and DBW 222.

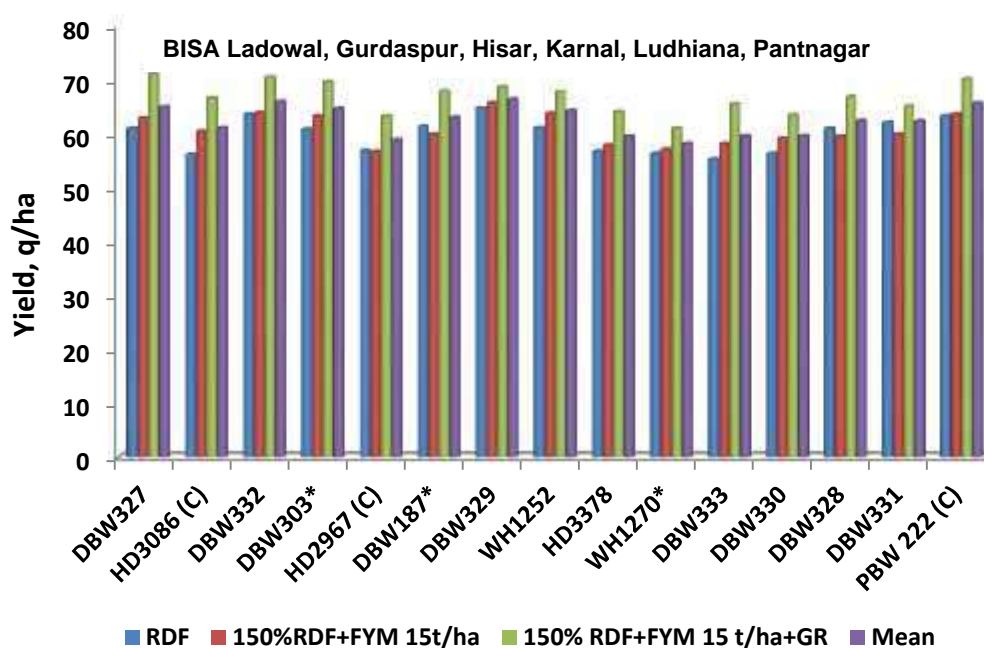


Fig. 2. Genotypes under early sown high fertility conditions in NWPZ

NORTH EASTERN PLAINS ZONE

In this zone, the performance of test genotypes was evaluated under restricted irrigation conditions at different locations and the results are summarized here:

In restricted irrigation trial, one test entry HD 3293 against five checks (K 1317, HD 3171, HI 1612, HD 2888 and DBW 252) was evaluated with no, one and two irrigation levels at eleven locations (Burdwan, Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RPCAU Pusa, Sabour, Shillongani and Varanasi). The data presented in Fig. 3 showed that grain yield increased with increasing irrigation frequency. One and two irrigation application gave 20.8 and 37.2% higher grain yield, respectively, than no irrigation. The check genotype HI 1612 produced the highest grain yield (36.82 q/ha) which was significantly higher than test entry HD 3293 (35.90 q/ha).

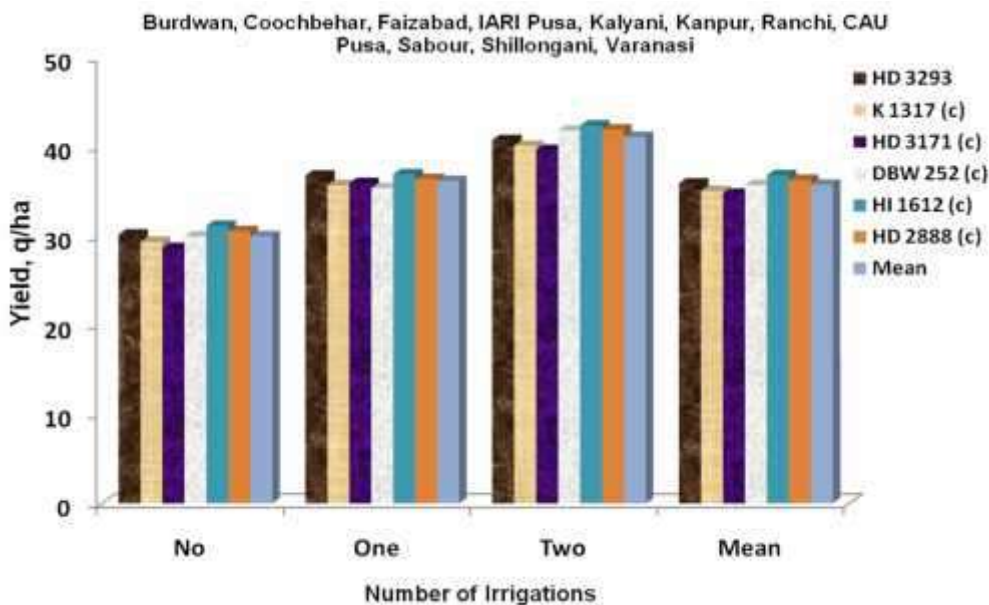


Fig. 3. Performance of genotypes under restricted irrigation in NEPZ

CENTRAL ZONE

In Central Zone, one varietal evaluation trial (irrigated timely sown) was conducted to evaluate the performance of new genotypes as compared to existing varieties as checks.

In this trial, two test entries (CG 1029 and HI 1634) against three checks (HD 2864, HD 2932 and MP 3336) were evaluated at eight centres (Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Powarkheda, Udaipur and Vijapur). The data from Udaipur centre were rejected due to improper data reporting. The data presented in Fig. 4 revealed that test entries CG 1029 and HI 1634 were significantly superior in grain yield as compared to the best check (HD 2932).

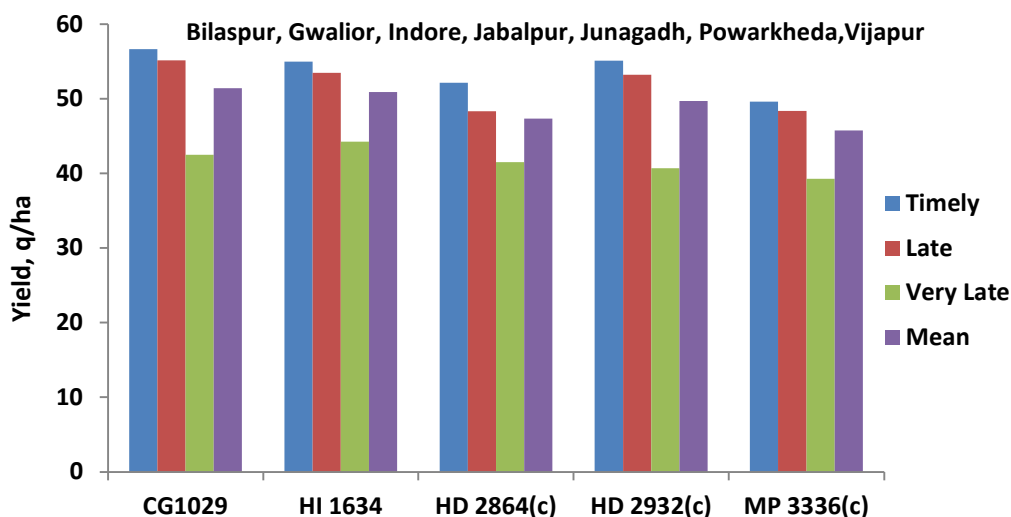


Fig. 4. Performance of genotypes under different sowing conditions in CZ

Test genotype CG 1029 (51.92 q/ha) yielded the maximum and significantly higher to the best check HD 2932 (49.67 q/ha) followed by second test entry HI 1634 (50.88 q/ha) which was also

significantly higher than best check. Test entries as well as check varieties performed best under timely sown conditions (53.69 q/ha) as compared to late (51.69 q/ha) and very late (41.63 q/ha) sown conditions.

PENINSULAR ZONE

In Peninsular zone, two varietal evaluation trials (irrigated timely sown and restricted irrigation) were conducted to evaluate the performance of new genotypes as compared to existing varieties as checks.

The performance of three test entries (DDW 48 (d), DDW 49 (d) and HI 1633) against six checks {MACS 6478, MACS 6222, MACS 3949 (d), UAS 428 (d), RAJ 4083, HD 2932} were evaluated at three locations (Dharwad, Niphad and Pune). The results revealed that only HI 1633 was superior to the best check (MACS 3949).

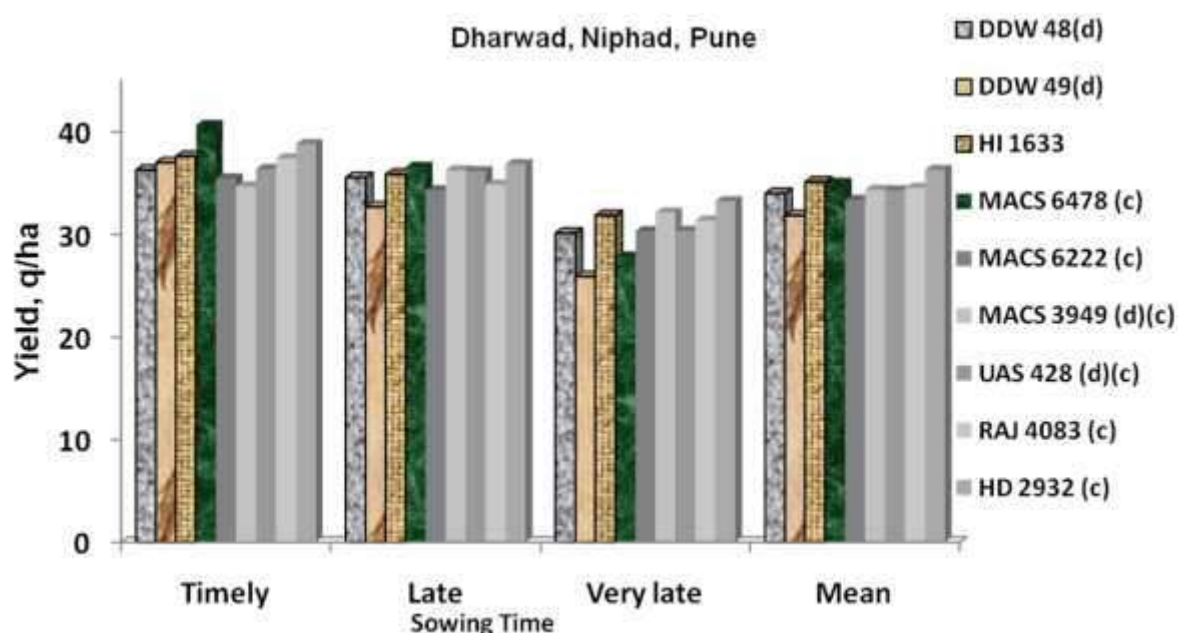


Fig. 5. Performance of genotypes under different dates of sowing in PZ

In restricted irrigation trial, one test entry NIDW 1149 (d) was evaluated against five checks namely HI 1605, AKDW2997-16 (d), UAS446 (d), NIAW 3170 and HI 8805 (d) at three locations (Dharwad, Niphad and Pune). The increasing irrigation frequency significantly enhanced the grain yield (Fig. 6) and wheat grain yield obtained at zero, one and two irrigations was 19.60, 21.63 and 26.04 q/ha, respectively. Under no and one irrigation level, test entry NIDW 1149 (d) was the top yielder and on mean basis and it showed the significant superiority over all the check varieties. Overall, mean yield of NIDW 1149 (d) was 8.01% higher than the best check yield of 22.72 q/ha for UAS446 (d).

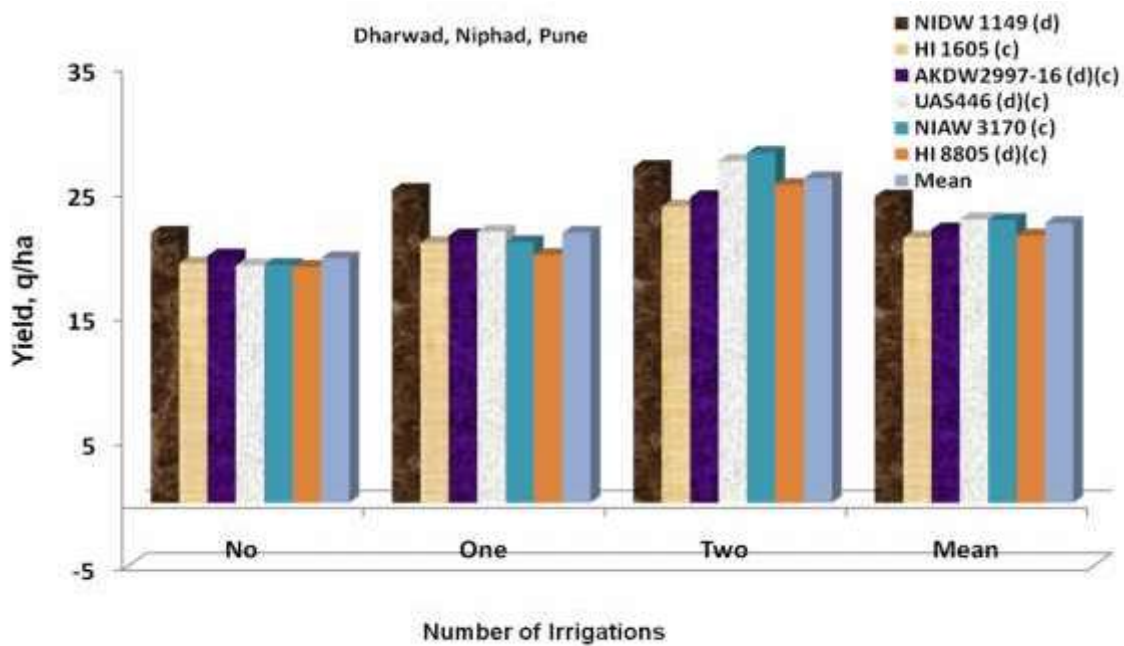


Fig. 6. Performance of genotypes under restricted irrigations in PZ

PRODUCTION TECHNOLOGIES

Various special coordinated trials on early wheat sowing with higher N rate and use of growth regulator, optimising nutrient usage, maximising production, phosphorus use efficiency in wheat, management of delayed wheat sowing, surface seeding, seed priming, precision N management through NDVI and silica application in wheat were conducted to address the various issues in different wheat growing zones of the country.

SPL-1: Maximizing wheat productivity by fine tuning sowing time and fertilizer rates

The growth in wheat productivity has limited scope for its horizontal side and hence, the only option left is its vertical growth which can be achieved by fine tuning the sowing time and use of more nutrients alone or in combination of growth regulators to achieve more yield per unit area sown. For exploring this objective, field trials were conducted with sowing time (25th October, 05th November, 15th November and 25th November) in main and nutrient management (recommended fertilizer dose (RFD), 150% RFD + FYM15 t/ha and 150% RFD + FYM15 t/ha + growth regulators) in sub plots with three replications across the zones. Two sprays of growth regulators as tank mix-chlormequat chloride (Lihocin) @0.2% + tebuconazole (Folicur 430 SC) @0.1% of commercial product dose at first node and flag leaf (tank mix application) were done. Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone.

In NHZ, the trial was conducted at three centres namely Almora, Bajaura and Malan. The data presented in Fig. 7 revealed significant higher grain yield (59.82 q/ha) with application of 150% RFD+FYM15 t/ha+ growth regulators as compared to other fertilizer treatments. Sowing date also significantly affected the grain yield. Sowing on 25th October produced significantly higher grain yield compared to 5th November, 15th November and 25th November sowing.



Fig. 7 Wheat productivity under different sowing time and fertilizer rates in NHZ

In NWPZ, this experiment was planned to maximize the wheat productivity by response of varieties to early sowing and higher fertilization under climatic variations at nine locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar). The maximum mean grain yield (57.68 q/ha) was obtained with treatment having 150% RFD + FYM15 t/ha + growth regulators (Fig. 8).

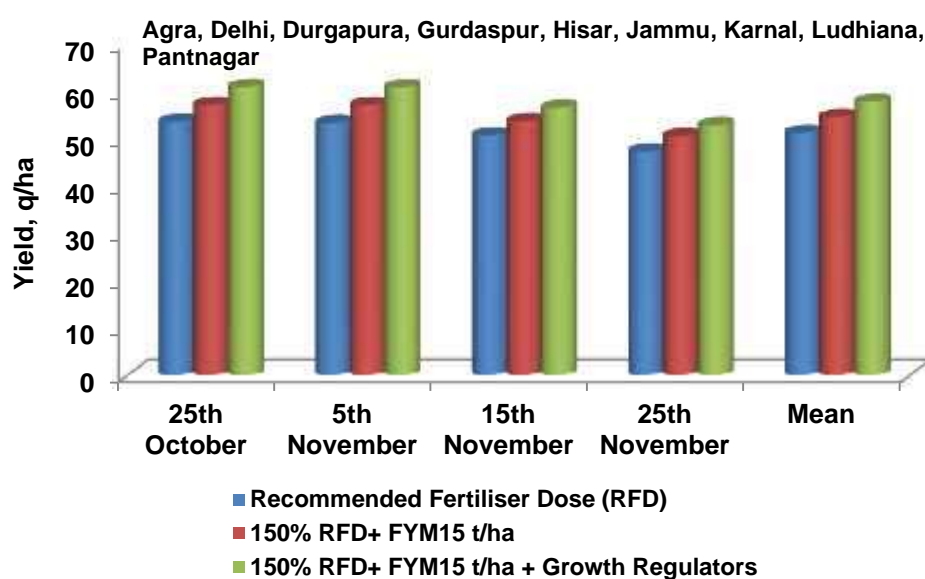


Fig. 8. Wheat productivity under different sowing time and fertilizer rates in NWPZ

Sowing of wheat up to 5th November resulted in significantly higher grain yield as compared to delayed sowing. Grain yield reduction in 15th and 25th November sowing was 6.08 and 12 percent, respectively as compared to wheat sown on 5th November.

In NEPZ, this trial was conducted at five locations (Burdwan, Kalyani, RPCAU Pusa, Sabour and Shillongani). The first date of sowing was not implemented by two centres namely Burdwan and Sabour and therefore, these centres were pooled separately. The pooled analysis data of three centres namely Kalyani, RPCAU, Pusa and Shillongani are presented in Fig. 9. The presented data revealed that the maximum grain yield (44.97 q/ha) was obtained by application of 150% RDF + FYM 15 t/ha + growth regulators. The increase in nutrient application over recommended rate caused an increase in yield of 1.58 to 3.92 q/ha. Sowing on 5th November and 15th November produced significantly higher grain yield compared to 25th October and 25th November sowing based on three centres pooled data.

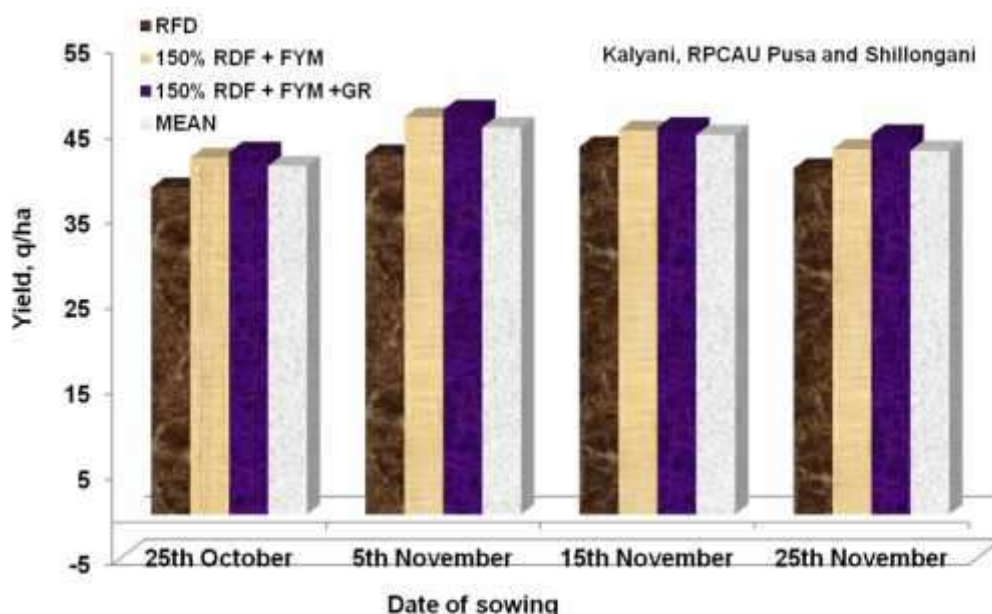


Fig. 9 Wheat productivity under different sowing time and fertilizer rates in NEPZ

The pooled data of two centres namely Burdwan and Sabour are presented in Fig. 10 revealed that 25th November sowing produced significantly higher grain yield compared to two other dates of sowing.

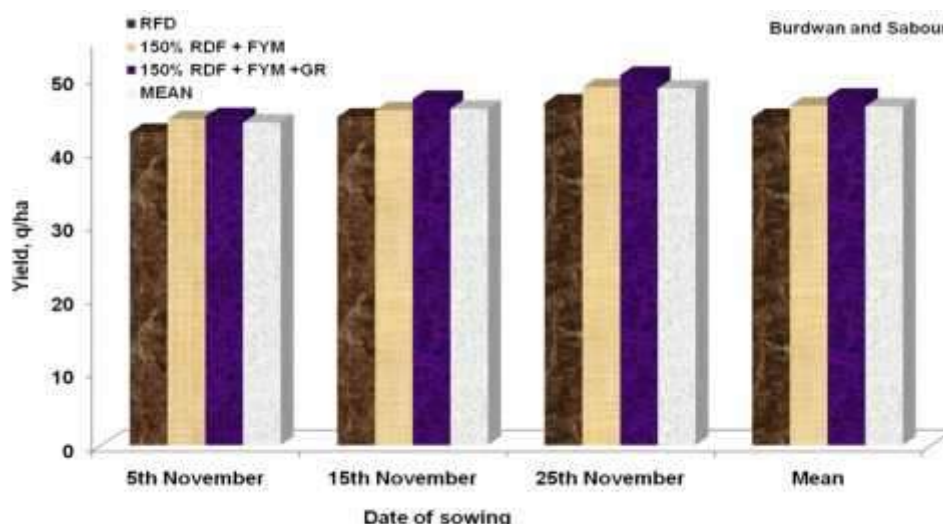


Fig. 10 Wheat productivity under different sowing time and fertilizer rates in NEPZ

In CZ, this trial was conducted at five centres of which two centres (Bilaspur and Jabalpur) had three dates of sowing and three centres (Gwalior, Junagadh and Vijapur) had four dates of sowing. The results of Bilaspur and Jabalpur centres revealed that first date of sowing (5th November) was the best suitable for all nutrient management options (Fig. 11) which produced the maximum and significantly higher grain yield (49.41 q/ha). Among nutrient management options, 150% RFD + FYM 15 t/ha + growth regulators was significantly superior with 48.73 q/ha grain yield over other options.

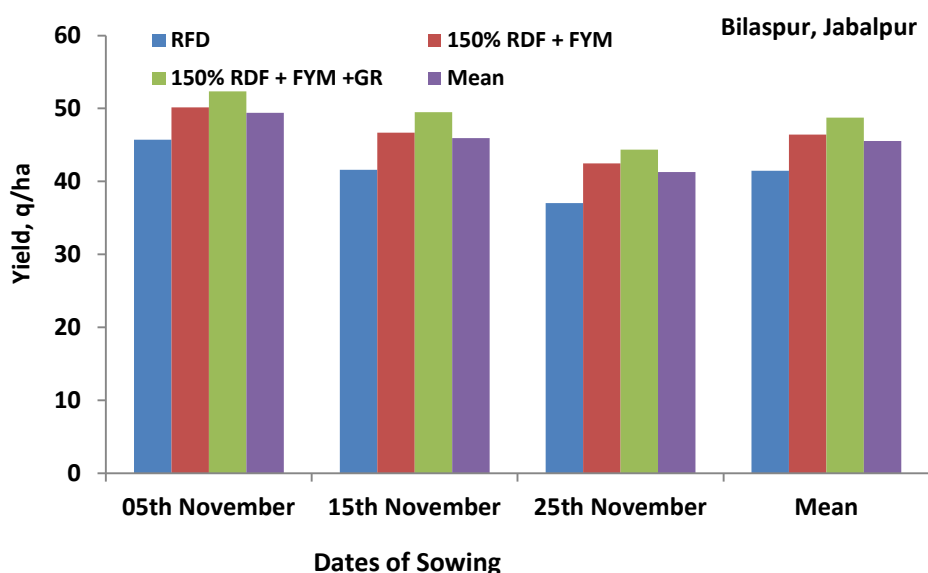


Fig. 11. Wheat productivity under different sowing time and fertilizer rates in CZ

The results of Gwalior, Junagadh and Vijapur centres revealed that 25th November was the best time for sowing which produced higher grain yield (62.73 q/ha). Among nutrient management options, 150% RFD + FYM 15 t/ha + growth regulators was significantly higher with 53.06 q/ha grain yield over other options (Fig. 12).

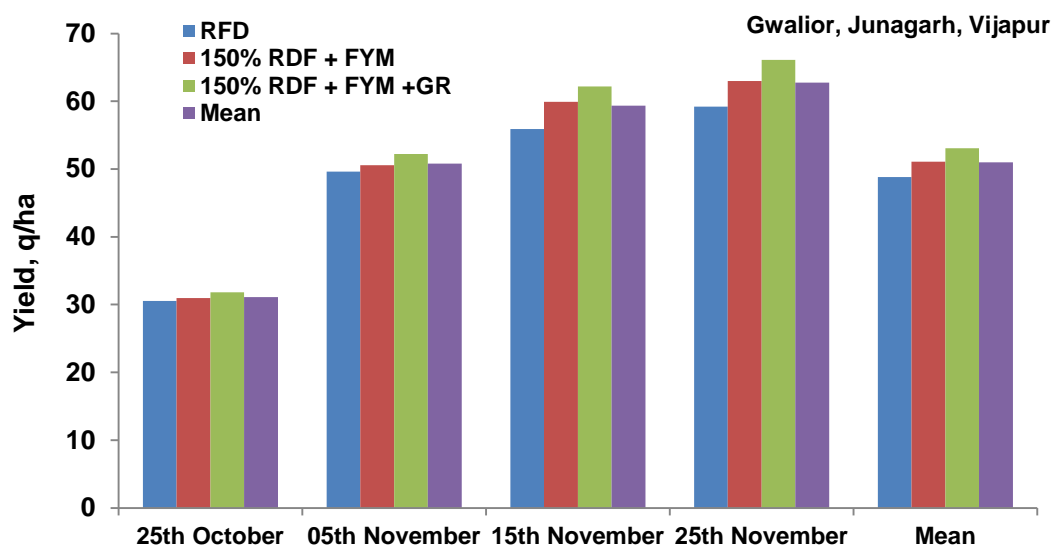


Fig. 12. Wheat productivity under different sowing time and fertilizer rates in CZ

In Peninsular Zone, the trial was conducted at one centre namely Dharwad. The results presented in Fig. 13 revealed that yield significantly reduced when wheat sowing was delayed up to 25th November. The highest mean yield was observed when sowing was done on 15th November which was statistically similar to wheat sown on 05th November. Among fertilization treatments, the highest mean yield was recorded with 150% RDF + FYM + GR (39.04 q/ha) followed by 150%RDF + FYM and RDF. Wheat yield increased by 23.4% with 150%RDF + FYM + GR compared to RDF treatment.

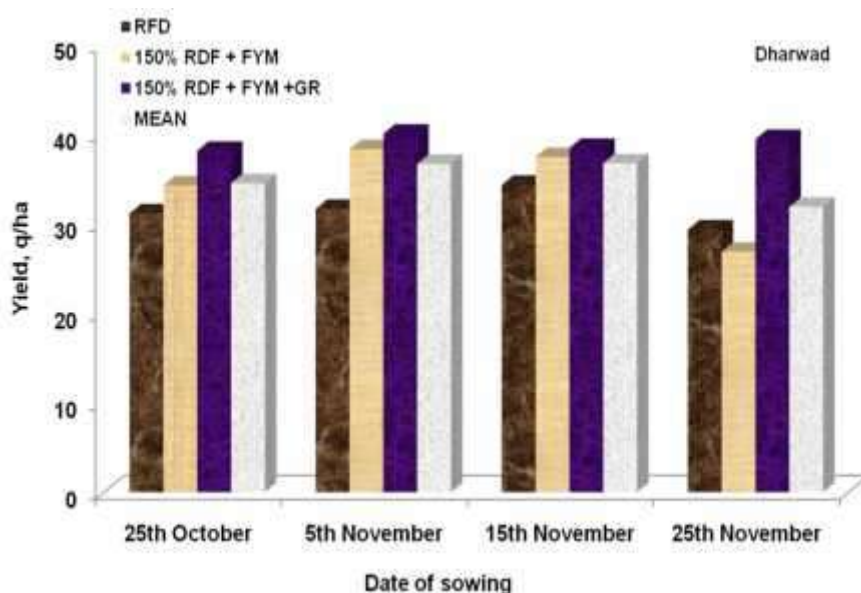


Fig.13. Wheat productivity under different sowing time and fertilizer rates in PZ

SPL-2: Optimising phosphorus usage in wheat

Phosphorus is a major nutrient element, which plays a key role in realizing crop yield potential. Phosphorus solubilising bacteria makes phosphorus available to crop from the fixed reservoir in

the soil and therefore, enhancing the phosphorus use efficiency. Experiment consisting of 12 treatments namely 0, 30, 60, Kg P₂O₅/ha and each along with PSB was tried in wheat. In rice, each treatment was tested at 0 and 30 kg P₂O₅/ha at Ludhiana whereas, at Bajaura, Malan and Karnal one more treatment *i.e.* application of 60 Kg P₂O₅/ha in both the crops was added.

In NHZ, this experiment was conducted at two locations (Bajaura and Malan). The data presented in Fig. 14 revealed that maximum grain yield was obtained with recommended dose of P application (60 kg/ha) + PSB inoculation.

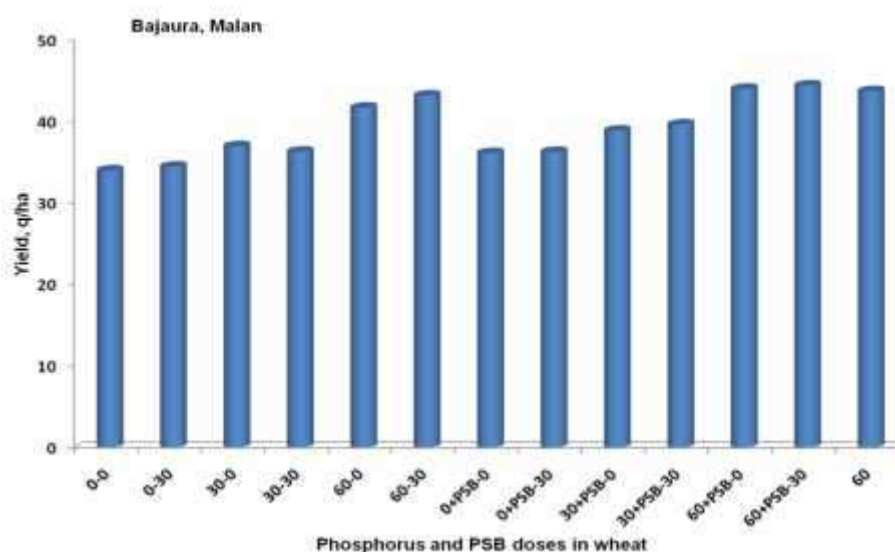


Fig. 14. Role of PSB in phosphorus management in wheat in NHZ

In NWPZ, the maximum grain yield (58.09 q/ha) at Karnal location was obtained when P was applied @60 kg/ha in both the crops although, it was at par to recommended dose of P application. Additional application of PSB did not increase any yield at higher P levels (Fig. 15).

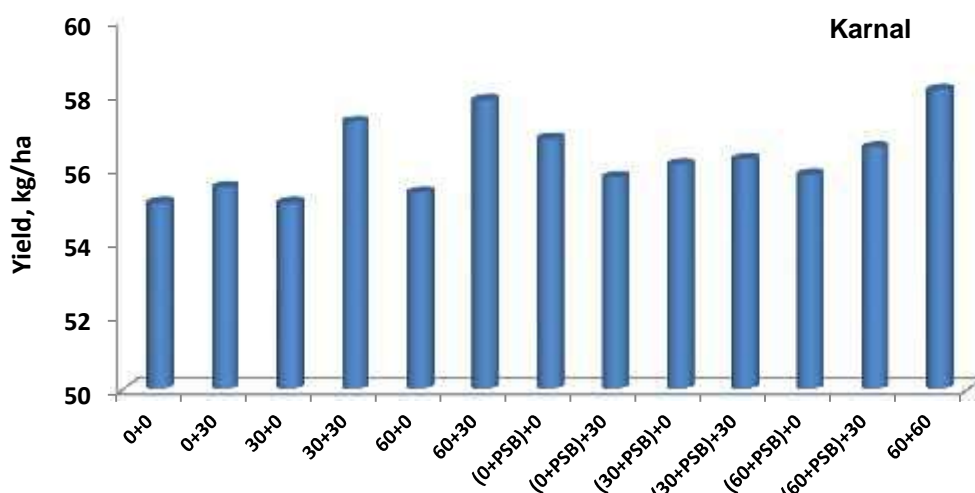


Fig. 15. Role of PSB in phosphorus management in wheat in NWPZ

At Ludhiana location, maximum wheat grain yield (62.13 q/ha) was obtained by addition of PSB to recommended dose of P application (Fig.16). Additional application of PSB increased the grain yield across the P (0, 30 60) levels. This showed that PSB application have advantage in wheat crop.

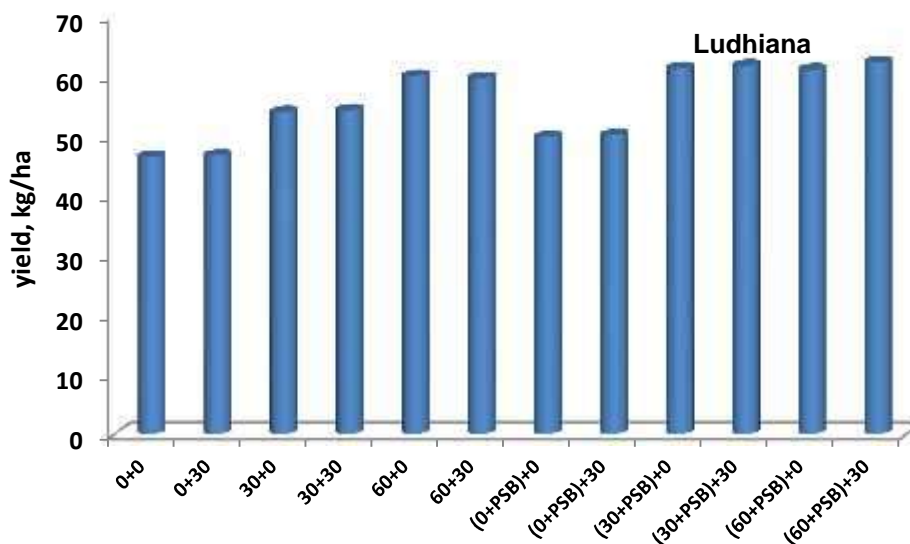


Fig.16. Role of PSB in phosphorus management in wheat in NWPZ

In NEPZ, this experiment was conducted at two locations (Faizabad and Shillongani). The data presented in Fig. 17 revealed that maximum wheat grain yield (49.27 q/ha) was obtained with recommended dose of P application (60 kg/ha) + PSB inoculation in wheat and 30 kg/ha P₂O₅ in rice. The addition of PSB significantly increased the yield as compared to other treatments having no P or 30 kg P₂O₅/ha. The minimum yield of 36.63 q/ha was recorded with no application of P and PSB.

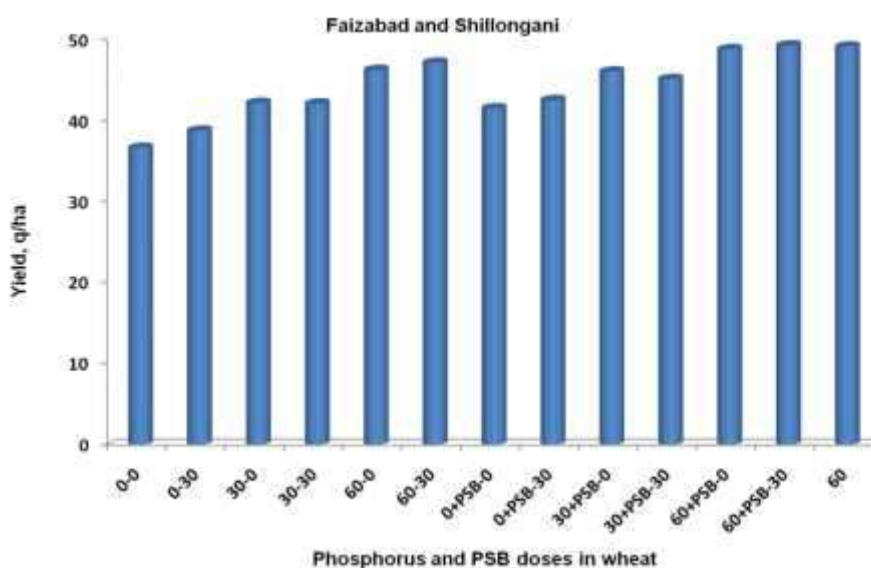


Fig. 17. Role of PSB in phosphorus management in wheat in NEPZ

SPL-3: Exploring surface seeding, seed priming and seed rate in NEPZ

In NEPZ, this experiment was conducted to explore the possibility of surface seeding for timely sowing of wheat to maximize the productivity in situations where fields remain wet for longer periods. This trial was conducted at five locations namely Faizabad, IARI, Pusa, RPCAU, Pusa, Sabour and Varanasi. The surface seeding of 150 kg/ha primed seed with 1% KNO₃ produced the highest grain yield of 41.92 q/ha (Fig. 18) followed by surface seeding of 150 kg/ha primed seed with 1% CaCl₂ (40.75 q/ha). In comparison to dry seed-surface seeding, all treatments produced significantly higher grain yield except soaked seed-surface seeding with lower seed rate of 100 kg/ha.

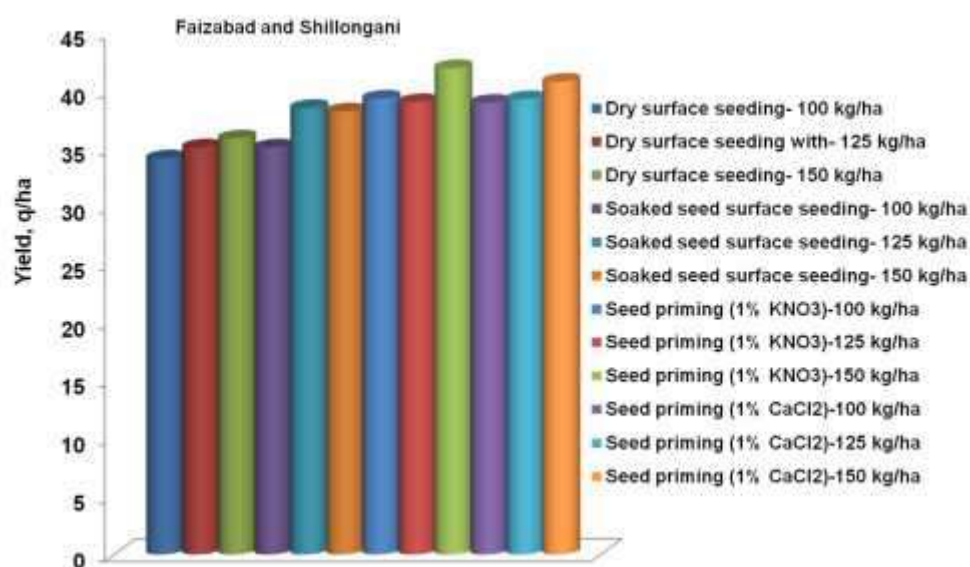


Fig.18 Effect of surface seeding, seed priming and seed rate on wheat yield in NEPZ

SPL-4: Optimisation of nitrogen doses for high yield potential

Nitrogen is the primary and widely deficient plant nutrient in majority of the Indian soils. Absence of nitrogen even inhibits the utilization of phosphorus, potash and other micro nutrients. For exploring the optimization of nitrogen doses, different trials were conducted across the zones. This experiment consisted of ten fertilizer treatments viz. absolute control, 50, 75, 100, 125 and 150% recommended dose of N (RDN), 100% recommended dose of NPK, 125 and 150% recommended dose of N with growth regulators spray at first node and boot leaf stage and 150% recommended dose of NPK with growth regulators (GR) spray at first node and boot leaf stage.

In NHZ, this trial was conducted at 4 locations namely Almora, Bajaura Khudwani and Malan. The data presented in Fig. 19 revealed that the highest grain yield was obtained with

150% recommended dose of NPK + two sprays of growth regulators at first node and boot leaf stage as compared to other fertilizer treatments.

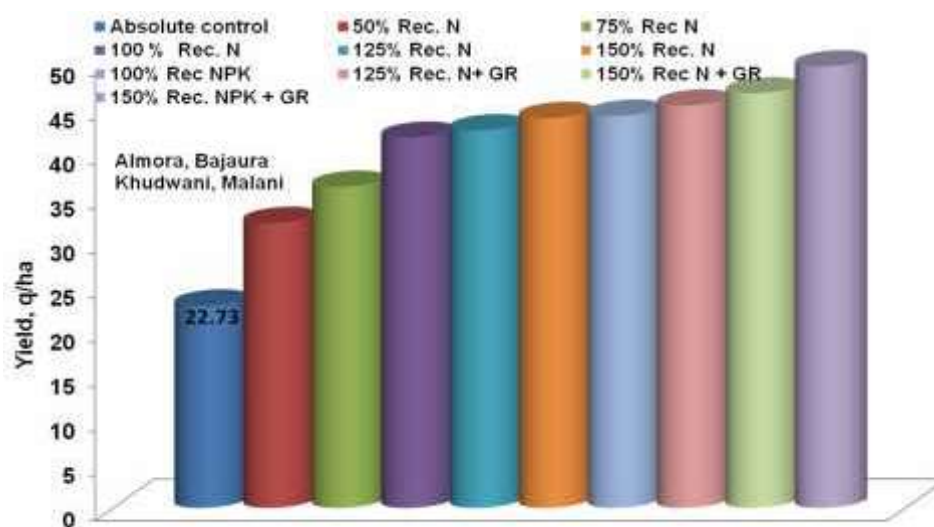


Fig.19. Optimization of N dose for high yield in NHZ

In NWPZ, this experiment was conducted at nine locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar). The results revealed that the maximum grain yield (63.35 q/ha) was obtained by applying 150% recommended dose of NPK and two sprays of growth regulators with a yield gain of 8.59% over treatment having 100% recommended dose of NPK (Fig. 20).

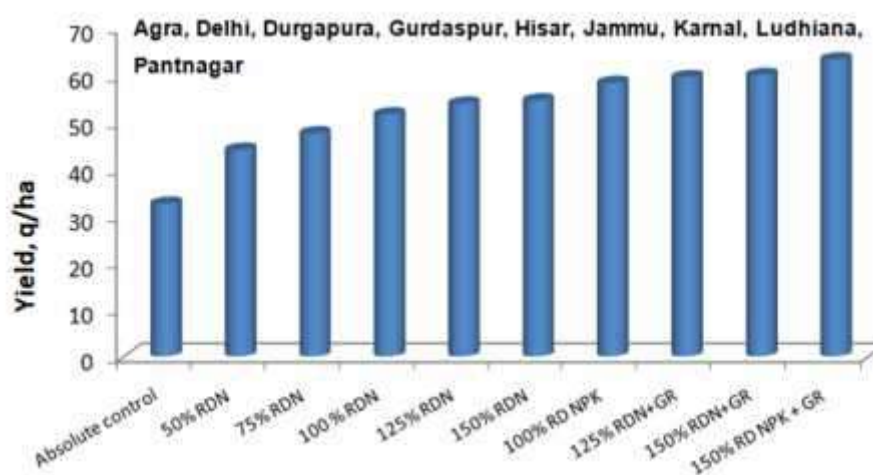


Fig. 20. Optimization of N dose for high yield in NWPZ

In NEPZ, this trial was conducted at 10 locations namely Burdwan, Coochbehar, Faizabad, Kalyani, Kanpur, Ranchi, RPCAU Pusa, Sabour, Shillongani and Varanasi. The highest wheat grain yield (53.25 q/ha) was obtained by applying 150% recommended dose of NPK and two sprays of growth regulators at first node and boot leaf stage as it was significantly

higher than all other fertilizer treatments. The second best treatment was the application of 100% recommended NPK fertilizer for which a yield of 49.59 q/ha was obtained. The yield gain over 100% recommended dose of NPK was 7.38%.

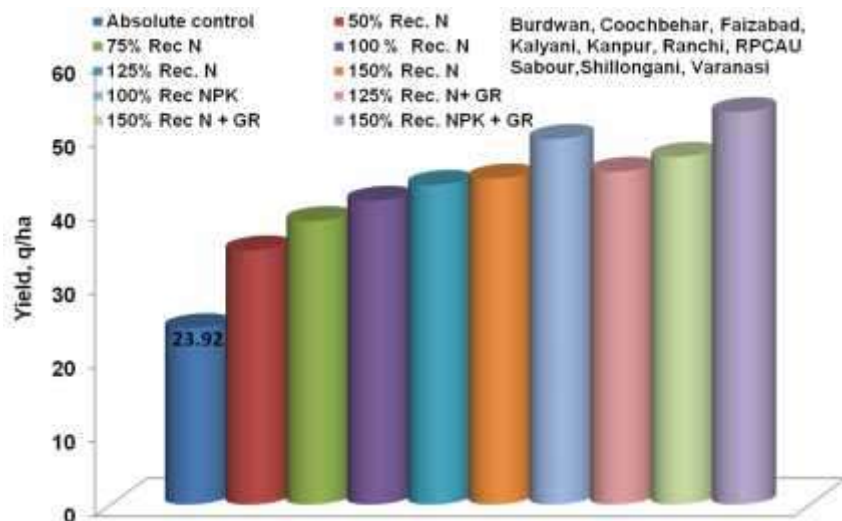


Fig. 21. Optimization of N dose for high yield in NEPZ

In CZ, this trial was conducted at six locations (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh and Vijapur). The results revealed that maximum yield (53.92 q/ha) was obtained with treatment having 150 percent recommended dose of NPK with growth regulators spray at first node and boot leaf stage (Fig. 22) followed by the treatments having 100 percent recommended dose of NPK (51.25 q/ha) and 150 percent recommended dose of N with growth regulators spray (50.60 q/ha).

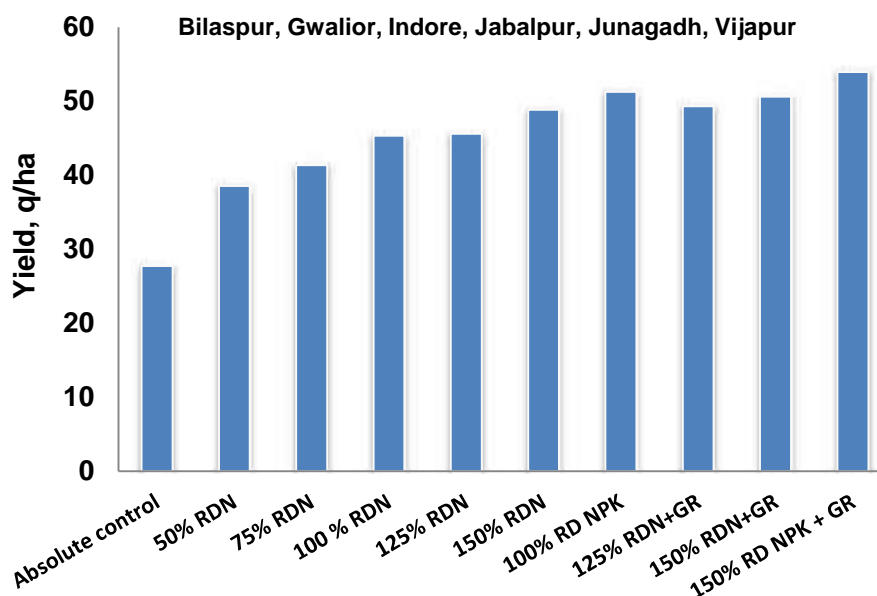


Fig. 22. Optimization of N dose for high yield in CZ

In Peninsular Zone, the trial was conducted at three centres (Dharwad, Niphad and Pune). The results presented in Fig. 23 revealed that maximum grain yield was obtained when 125% of recommended N or 150% of recommended NPK were applied along with two sprays of growth regulators. Although, these treatments showed numerical superiority but statistically were at par with the recommended dose of N or NPK fertilizers. The data also indicated that absence of phosphorus and potassium fertilizers did not cause any decline in wheat yield.

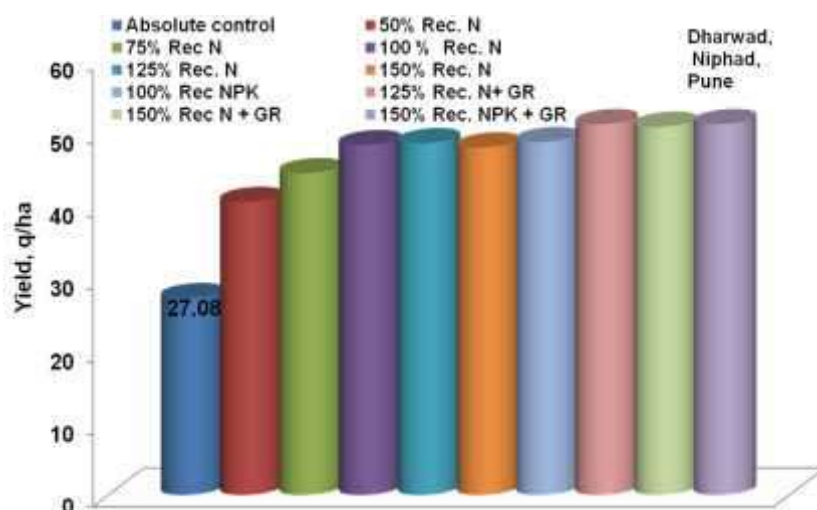


Fig. 23. Optimization of N dose for high yield in PZ

SPL-5: Precision nitrogen management in irrigated wheat using NDVI sensor

Precise nutrient management especially nitrogen plays a vital role in achieving the potential yield of wheat crop. Hence, this experiment was planned and conducted in Randomized Block Design to improve the nitrogen use efficiency in wheat by need based application of N using NDVI sensors. This experiment consisted of eight treatments (absolute control, 75 kg/ha basal + 37.5 kg N/ha at CRI and tillering, 60 kg/ha basal + 30 kg/ha at CRI and tillering, 30 kg/ha basal + 30 kg/ha at CRI + GS at 40-45 & 60-65 DAS, 30 kg/ha basal + 60 kg/ha at CRI + GS at 40-45 & 60-65 DAS, half N basal and half at CRI, one-third N basal + one-third at CRI + one-third at first node and rich plot-90 kg N/ha basal + 90 at CRI).

In NEPZ, this trials was conducted at two locations (Coochbehar and Ranchi) and the results revealed that the highest grain yield (51.62 q/ha) was obtained in N rich plot, where 90 kg N/ha basal + 90 kg/ha at CRI were applied followed by treatment having 30 kg N/ha basal + 60 kg N/ha CRI + rest using Green Seeker at 40-45 & 60-65 DAS (50.73 q/ha). Both these treatments were at par with 150 kg N/ha applied half as basal + half at CRI (49.08 q/ha); 75 kg/ha basal + 37.5 kg/ha each at CRI + tillering; and 30 kg N/ha basal + 30 kg/ha at CRI + GS at 40-45 & 60-

65 DAS (Fig. 24). The N rich plots also produced the maximum biomass and plant height of wheat crop.

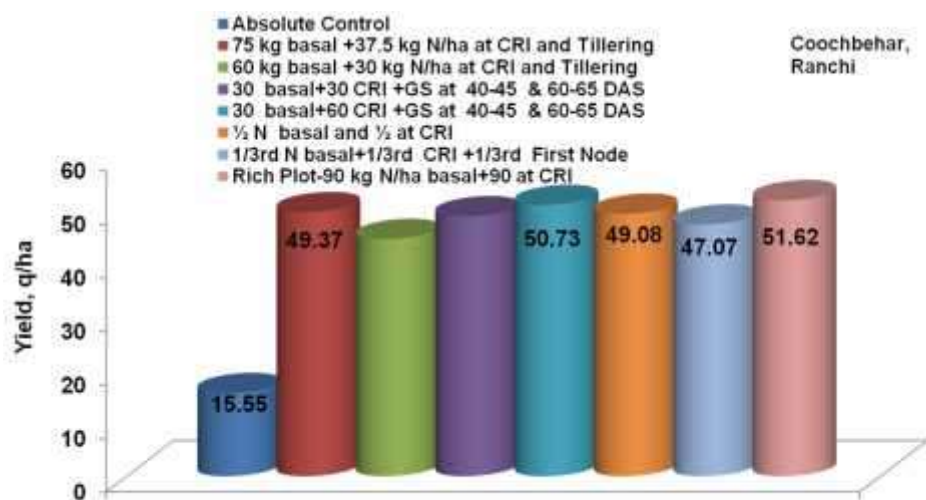


Fig. 24. Precision nitrogen management in wheat using GreenSeeker in NEPZ

In Peninsular zone, this trial was conducted at two locations (Dharwad and Pune). The maximum grain yield was recorded for the treatment having 75 kg N/ha basal + 37.5 kg N/ha at CRI and tillering followed by 60 kg N/ha basal + 30 kg N/ha at CRI and tillering and N Rich Plot-90 kg N/ha basal + 90 kg N/ha at CRI and these treatments were not having any significant differences (Fig. 25).

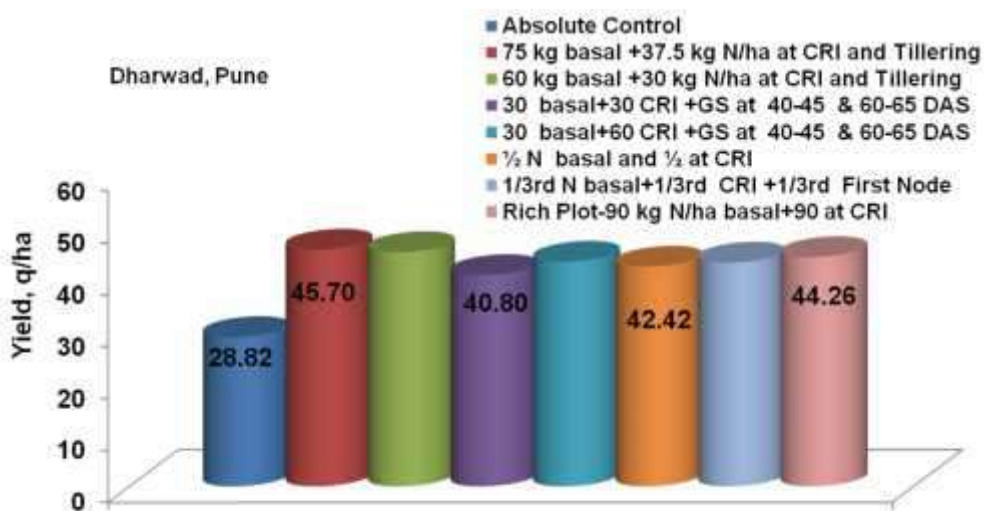


Fig. 25. Precision nitrogen management in wheat using GreenSeeker in PZ

SPL-6: Performance of wheat under different levels of silicon and irrigation levels

Silicon fertilization plays important role in improving soil exchange capacity, water and air regimes, transformation of P-containing minerals and formation of aluminosilicates and heavy

metal silicates. This experiment was planned and conducted in central zone at five locations (Bilaspur, Dhanduka, Junagadh, Udaipur and Vijapur) with four levels of silica (control, 100 kg/ha, 150 kg/ha and 200 kg/ha) and four levels of irrigation (zero, one, two and three). The pooled results of four centres (Bilaspur, Dhanduka, Junagadh and Vijapur) revealed that maximum yield (28.55 q/ha) was obtained with treatment having Silicon@150 kg/ha followed by Silicon@200 kg/ha (28.48 q/ha) and both treatments remained statistically at par (Fig. 26). The yield increased with increase in irrigation frequency. The maximum yield was obtained with three irrigations (37.14 q/ha) and minimum was under no irrigation treatment (13.39 q/ha).

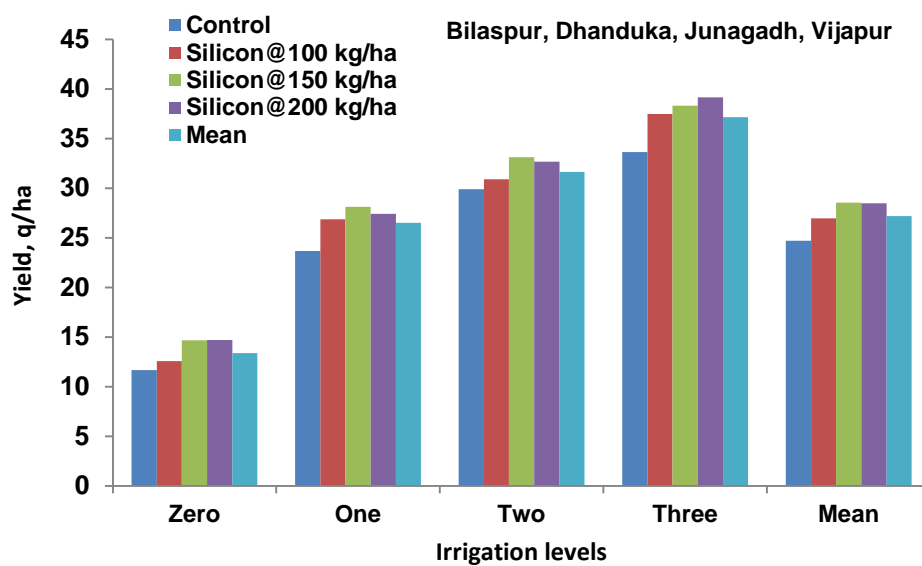


Fig. 26. Effect of silica fertilization on grain yield under different irrigation levels in CZ

Northern Hills Zone

The Northern Hills Zone represents Himachal Pradesh, parts of Jammu & Kashmir, Uttarakhand and North Eastern Hills. The four centres namely Almora, Bajaura, Khudwani and Malan are actively engaged in wheat research under All India Coordinated Wheat and Barley Improvement Project. The data on meteorological parameters received from centres has been reported in Annexure II. The rainfall was well distributed at all the locations, the highest rainfall of 889.3 mm was recorded at Khudwani during the crop growing period followed by 511.6 mm at Malan, 452.1 mm at Bajaura, and 389.9 mm at Almora from October 2019 to May, 2020. The minimum and maximum temperatures were -2.7 °C and 34.1 °C at Almora, -3.8 °C and 27.8 °C at Bajaura, -5.7 °C and 26.1 °C at Khudwani, 4.8 °C and 32.4 °C at Malan, respectively.

The soil data received from four centres (Almora, Bajaura, Malan and Khudwani) are presented in Annexure III. The texture of soil at all the four centres varied from silty loam to silty clay loam. The organic carbon content of Almora, Bajaura, Khudwani and Malan centres was 1.03, 0.6, 1.12 and 0.8 per cent, respectively with low to medium in nitrogen, medium to high in phosphorus and potash contents.

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. However, three special coordinated trials on optimization of nutrient management, phosphorus application, and yield maximization using growth regulators were conducted to address various management issues in this zone. The results of various experiments on updating the package of practices are presented in the “Production Technologies” section.

North Western Plains Zone

In the North Western Plains Zone, the areas covered are the states of Haryana, Punjab, Delhi, Western UP, part of Rajasthan and Jammu area of J&K. Eleven centres in this zone namely Agra, BISA, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganaganagar are actively engaged in wheat research activities under All India Coordinated Wheat and Barley Improvement Project (AICW&BIP). The data on soil and various meteorological 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 0.70% at Pantnagar. Soils of this zone are low in available nitrogen, medium to high in available phosphorus and available potash. The maximum rainfall was received at Jammu (483.0 mm) followed by Delhi (372.3 mm), Pantnagar (371.6 mm), Karnal (364.5 mm), Ludhiana (349.4 mm), Gurdaspur (246.1 mm), Agra (207.6 mm), Hisar (159.4 mm), Sriganaganagar (130.8 mm), and the lowest amount of rain (64.4 mm) during the wheat crop season 2019-20 was received at Durgapura. The maximum and minimum temperatures at different locations were 44.7°C and 4.9°C at Agra, 35.6°C and 4.9°C at Gurdaspur, 37.4°C and 2.6°C at Hisar, 38.4°C and 2.7°C at Durgapura, 41.8°C and 4.8°C at Jammu, 36.3°C and 3.9°C at Karnal, 35.6°C and 4.9°C at Ludhiana, 43.5°C and 3.3°C at Delhi, 35.4°C and 4.0°C at Pantnagar, 38.6°C and 3.5°C at Sriganaganagar, respectively. In this zone two coordinated trials were conducted to evaluate second year AVT genotypes for different growing conditions at various locations.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

The performance of genotypes was evaluated for sowing time and restricted irrigation conditions at different locations and the results are summarized here as under;

Irrigated Timely Sown

The performance of one *aestivum* test entry HD 3298 against five checks (WH 1124, WH1021, HD 3059, DBW 173 and PBW 771) was evaluated at ten centres *i.e.* Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganaganagar under normal, late and very late sown conditions. For pooled analysis, all the centres data were considered and there was no rejection. The timely sowing time was from 5th to 11th November, late sowing was from 10th to 16nd December and very late sowing was from 1st - 7th 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 100 kg/ha at a row-to-row spacing of 20 cm. Nitrogen was applied in three splits (1/3rd at sowing and remaining 2/3rd

nitrogen as 1/3rd at first irrigation *i.e.* at 20-25 days after sowing and 1/3rd at second irrigation *i.e.* 40-45 days after sowing), whereas full phosphorus and potash was applied as basal.

Table 2.1: North Western Plains Zone			IR-TAS-DOS		Pooled	2019-20		
Variety	Date of sowing				Mean	Rk		
	Timely	Rk	Late	Rk			Very late	Rk
Yield, q/ha								
HD3298	55.79	4	46.89	3	36.48	4	46.39	4
WH1124(c)	54.73	5	43.56	5	35.40	5	44.56	5
WH1021(c)	50.32	6	42.64	6	33.31	6	42.09	6
HD3059 (c)	57.50	2	47.47	1	39.29	1	48.09	1
DBW173(c)	56.71	3	46.61	4	37.55	3	46.96	3
PBW771(c)	58.04	1	47.28	2	38.09	2	47.80	2
Mean	55.52		45.74		36.69		45.98	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	0.70		0.87		1.50		1.54	
Earhead/sqm								
HD3298	414	4	366	4	337	2	372	3
WH1124(c)	423	2	379	2	339	1	380	1
WH1021(c)	426	1	381	1	330	5	379	2
HD3059 (c)	402	6	354	6	319	6	359	6
DBW173(c)	417	3	362	5	333	4	371	5
PBW771(c)	411	5	369	3	335	3	371	4
Mean	415		368		332		372	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	7.11		8.01		NS		NS	
Grains/Earhead								
HD3298	36.77	4	48.46	4	56.81	4	47.35	4
WH1124(c)	34.29	5	39.94	5	62.09	2	45.44	5
WH1021(c)	30.82	6	35.67	6	59.67	3	42.05	6
HD3059 (c)	38.90	1	50.00	3	75.23	1	54.71	1
DBW173(c)	37.58	2	61.00	1	55.97	5	51.52	2
PBW771(c)	37.26	3	50.80	2	54.46	6	47.50	3
Mean	35.94		47.65		60.70		48.10	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	1.17		3.56		6.17		5.70	
1000 Grains Weight, g								
HD3298	32.31	5	33.36	3	31.61	6	32.43	6
WH1124(c)	33.35	4	31.63	6	33.50	4	32.83	4
WH1021(c)	32.23	6	32.34	5	33.62	3	32.73	5
HD3059 (c)	36.45	1	35.47	2	37.81	1	36.58	1
DBW173(c)	36.39	2	35.59	1	33.76	2	35.24	2
PBW771(c)	35.16	3	33.18	4	33.31	5	33.89	3
Mean	34.31		33.59		33.94		33.95	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	0.76		1.13		1.96		1.94	

Centres: Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar, Sriganaganagar

The perusal of pooled data presented in Table 2.1 revealed that there was a significant decline in yield from timely (55.52 q/ha) to late (45.74 q/ha) and very late (36.69 q/ha) sown conditions. This yield reduction was due to significant reduction in earhead/m² and thousand grains weight with delay sown conditions. Yield decline in late and very late sown conditions was 17.61 and 33.91%, respectively as compared to timely sown condition.

On average basis, test entry HD 3298 ranked 4th in all sowing conditions with mean yield of 46.39 q/ha. Check entry HD 3059 and PBW 771 produced significantly higher grain yield under timely (57.50 and 58.04 q/ha), late (47.47 and 47.28 q/ha) and very late (48.09 and 47.08 q/ha, respectively) sown conditions as compared with all other entries. The centre wise data are presented in Tables 2.1.1 to 2.1.10 in Annexure-I.

High Yield Potential Trial

This experiment was conducted to maximise the wheat yield with target yield of 8 t/ha by using higher level of inorganic and organic fertilisers and spraying of growth retardant for control of lodging. Experiment consists of three fertiliser treatments *viz.* recommended doses of fertilizers (RDF), RDF + 15 t FYM/ha and 150% RDF + 15 t FYM/ha + two sprays as tank mix-Chlormequat chloride (Lihocin) @0.2% + tebuconazole (Folicur 430 SC) @0.1% of commercial product dose at first node and flag leaf (tank mix application) stage in main plots. Sub plots consist of 15 high yielding wheat varieties. The trial was conducted in split plot design with three replications at six centres namely BISA Ladowal, Gurdaspur, Hisar, Karnal, Ludhiana and Pantnagar. The sowing was done using 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.

The pooled analysis showed significant effect of fertiliser application and growth regulators on grain yield and yield attributes (Table 2.2 and 2.2a). The grain yield enhanced significantly with increasing fertiliser doses. Addition of 15 t FYM/ha + 150% RDF significantly increased the grain yield (60.79 q/ha) as compared to RDF (59.76 q/ha). Also, 150% RDF and two sprays of growth retardants increased the grain yield (66.77 q/ha) significantly as compared to other nutrient management levels. This increase was to the tune of 11.7% as compared with RDF. This showed that growth retardant in combination with fungicide tebuconazole was more effective for control of lodging and enhancing the grain yield. The application of growth retardant significantly increased the earheads/m² and biomass but reduced the plant height as compared to either recommended fertiliser application or RDF + 15 t FYM/ha application. This confirms hypothesis that growth retardant reduced the height and at the same time produced more tillers and biomass that resulted in increased grain yield. Variety DBW 329 ranked first on mean basis with mean yield of 66.38 q/ha which was significantly higher than other varieties except genotypes DBW 332 and DBW 222. However, variety DBW 327 yielded 71.13 q/ha under 150% RDF + 15 t FYM/ha + two sprays as tank mix-Chlormequat chloride (Lihocin) @0.2% + tebuconazole (Folicur 430 SC) @0.1% of commercial product dose at first node and flag leaf (tank mix application) stage which was higher than other varieties except varieties DBW 332, DBW 222 and DBW 303 which were at par among themselves. High yield in DBW 329 was probably due to its highest yield with RDF and RDF + 15t/ha FYM nutrients levels as well as on mean (66.38 q/ha) basis. The second and third ranked high yielding varieties were DBW 332 (65.98 q/ha) and DBW 222 (65.68 q/ha), respectively on mean basis. The lowest yielding (58.14 q/ha) variety was WH 1270 on mean basis. Centre wise data are presented in Annexure-I in Tables 2.2.1 to 2.2.6.

Table 2.2. North Western Plains Zone IR-ES-HYPT Pooled 2019-20

Nutrient management		IR-ES-HYPT		Pooled		2019-20		
Genotypes	Rec.NPK	Rk	RDF+ 15 t FYM	Rk	150% RDF + FYM+GR	Rk	Mean	Rk
Yield,q/ha								
DBW327	60.93	8	62.87	6	71.13	1	64.98	4
HD3086 (C)	56.15	14	60.43	7	66.64	9	61.07	10
DBW332	63.56	2	63.84	2	70.54	2	65.98	2
DBW303*	60.80	9	63.30	5	69.62	4	64.57	5
HD2967 (C)	56.88	10	56.73	15	63.25	14	58.95	14
DBW187*	61.27	5	59.93	8	67.94	6	63.05	7
DBW329	64.75	1	65.71	1	68.68	5	66.38	1
WH1252	61.09	6	63.75	3	67.78	7	64.21	6
HD3378	56.75	11	57.82	13	64.07	12	59.55	13
WH1270*	56.37	12	57.10	14	60.94	15	58.14	15
DBW333	55.22	15	58.12	12	65.55	10	59.63	12
DBW330	56.35	13	59.12	11	63.44	13	59.64	11
DBW328	60.96	7	59.51	10	66.82	8	62.43	8
DBW331	62.10	4	59.92	9	65.09	11	62.37	9
DBW 222 (C)	63.30	3	63.64	4	70.09	3	65.68	3
Mean	59.76		60.79		66.77		62.44	
CD (0.05)	Nutrient (A) 0.92		Genotypes (B) 1.39		B within A 2.41		A within B 2.50	
Earhead/sqm								
DBW327	391	6	387	13	444	3	407	6
HD3086 (C)	410	1	403	4	448	1	420	2
DBW332	359	15	396	10	424	12	393	14
DBW303*	370	14	383	15	407	15	387	15
HD2967 (C)	399	5	400	5	439	5	412	3
DBW187*	381	11	387	14	440	4	403	10
DBW329	386	8	399	7	418	13	401	12
WH1252	409	2	425	1	445	2	426	1
HD3378	374	13	416	2	426	11	405	9
WH1270*	377	12	400	6	412	14	396	13
DBW333	384	10	392	11	432	8	403	11
DBW330	385	9	405	3	429	10	406	7
DBW328	405	3	389	12	432	9	409	5
DBW331	402	4	399	8	434	6	412	4
DBW 222 (C)	387	7	397	9	434	7	406	8
Mean	388		398		431		406	
CD (0.05)	Nutrient (A) 8.50		Genotypes (B) 14.75		B within A NS		A within B NS	
Grains/Earhead								
DBW327	32.43	15	32.56	13	32.98	15	32.66	15
HD3086 (C)	35.15	9	37.77	6	37.75	6	36.89	6
DBW332	42.21	1	40.25	2	42.83	2	41.76	2
DBW303*	41.74	2	40.41	1	43.48	1	41.88	1
HD2967 (C)	35.44	7	34.23	8	37.34	9	35.67	8
DBW187*	33.02	13	35.07	7	37.52	8	35.20	9
DBW329	38.51	4	38.92	3	40.66	3	39.36	3
WH1252	33.78	10	33.79	11	36.02	12	34.53	12
HD3378	35.41	8	32.18	15	37.52	7	35.04	10
WH1270*	35.51	6	34.13	9	37.91	5	35.85	7
DBW333	32.56	14	32.46	14	35.70	14	33.57	14
DBW330	33.67	11	32.98	12	35.77	13	34.14	13
DBW328	33.24	12	34.12	10	37.24	10	34.87	11
DBW331	39.88	3	38.02	5	37.21	11	38.37	5
DBW 222 (C)	38.21	5	38.33	4	39.81	4	38.78	4
Mean	36.05		35.68		37.98		36.57	
CD (0.05)	Nutrient (A) 1.10		Genotypes (B) 1.74		B within A NS		A within B NS	

Table 2.2a. North Western Plains Zone IR-ES-HYT Pooled 2019-20

Nutrient management			IR-ES-HYT Pooled				2019-20	
Genotypes	Rec.NPK	Rk	RDF+ 15 t FYM	Rk	150% RDF + FYM+GR	Rk	Mean	Rk
1000 Grains Weight, g								
DBW327	49.22	2	51.24	1	50.44	1	50.30	1
HD3086 (C)	41.04	14	41.43	15	40.64	12	41.03	15
DBW332	42.86	11	42.16	13	40.64	13	41.88	11
DBW303*	41.05	13	42.46	12	40.81	11	41.44	12
HD2967 (C)	41.16	12	42.94	11	39.85	15	41.32	14
DBW187*	49.27	1	45.10	6	42.95	5	45.77	2
DBW329	44.40	8	44.17	8	41.50	9	43.36	9
WH1252	45.72	4	46.64	4	44.25	2	45.54	4
HD3378	43.92	9	46.16	5	41.80	7	43.96	7
WH1270*	43.27	10	43.20	10	40.12	14	42.20	10
DBW333	45.05	5	46.96	2	43.83	3	45.28	5
DBW330	44.62	7	45.09	7	42.60	6	44.10	6
DBW328	46.99	3	46.77	3	43.06	4	45.61	3
DBW331	40.78	15	42.14	14	41.13	10	41.35	13
DBW 222 (C)	44.79	6	43.83	9	41.78	8	43.47	8
Mean	44.28		44.69		42.36		43.77	
CD (0.05)	Nutrient (A) 0.49		Genotypes (B) 1.18		B within A 2.05		A within B 2.04	
Biomass, q/ha								
DBW327	156.82	7	160.85	6	172.91	3	163.52	3
HD3086 (C)	145.22	14	151.14	14	161.04	10	152.47	13
DBW332	149.81	11	154.08	11	164.59	6	156.16	9
DBW303*	157.12	6	161.40	5	163.69	7	160.74	6
HD2967 (C)	169.27	2	174.27	1	176.85	1	173.46	1
DBW187*	158.90	3	157.52	8	161.64	9	159.35	7
DBW329	157.63	5	163.21	3	165.93	4	162.25	4
WH1252	151.58	10	158.76	7	161.79	8	157.38	8
HD3378	158.68	4	162.56	4	165.43	5	162.22	5
WH1270*	147.11	13	151.39	13	153.48	14	150.66	14
DBW333	140.33	15	149.31	15	147.36	15	145.66	15
DBW330	149.17	12	153.84	12	155.86	11	152.96	12
DBW328	152.51	8	154.62	9	155.37	12	154.17	10
DBW331	152.36	9	154.57	10	154.82	13	153.92	11
DBW 222 (C)	170.29	1	169.74	2	176.83	2	172.29	2
Mean	154.45		158.48		162.51		158.48	
CD (0.05)	Nutrient (A) 2.22		Genotypes (B) 3.44		B within A 5.95		A within B 6.15	
Plant Height, cm								
DBW327	95.28	14	98.58	14	85.70	12	93.19	14
HD3086 (C)	96.91	12	99.44	12	84.30	14	93.55	13
DBW332	96.58	13	98.85	13	87.33	10	94.25	11
DBW303*	100.97	8	102.39	8	89.73	8	97.70	7
HD2967 (C)	103.78	4	104.20	6	94.95	3	100.98	4
DBW187*	101.43	7	104.16	7	86.45	11	97.34	8
DBW329	98.71	10	101.19	9	89.86	7	96.59	10
WH1252	93.88	15	96.52	15	84.44	13	91.61	15
HD3378	109.26	1	107.54	1	98.05	1	104.95	1
WH1270*	102.64	5	104.49	5	89.59	9	98.91	6
DBW333	98.40	11	100.06	11	83.66	15	94.04	12
DBW330	102.40	6	104.61	4	91.56	5	99.52	5
DBW328	99.34	9	100.67	10	89.98	6	96.66	9
DBW331	104.98	3	104.86	2	94.63	4	101.49	3
DBW 222 (C)	106.41	2	104.75	3	96.78	2	102.65	2
Mean	100.73		102.15		89.80		97.56	
CD (0.05)	Nutrient (A) 1.33		Genotypes (B) 1.55		B within A 2.68		A within B 2.90	
Centres: BISA Ladawal, Gurdaspur, Hisar, Karnal, Ludhiana and Pantnagar								

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, RPCAU 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 0.40 per cent at Ranchi to 1.16 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 are more dependent on weather conditions during the crop season. The temperature is an important factor affecting the wheat productivity. Rainfall received varied from 42.8 mm at Kalyani to 225.6 mm at RPCAU Pusa during the wheat season starting from November 2019 to March, 2020. The rainfall (November to April) received in decreasing order was RPCAU Pusa (225.6 mm) followed by Faizabad (190.4 mm), Ranchi (169.5 mm), Sabour (166.3 mm), Kanpur (155.4 mm), Burdwan (139.3 mm), Shillongani (133.7 mm), Varanasi (96.9 mm), Coochbehar (55.4 mm), IARI Pusa (50 mm) and Kalyani (42.8 mm). The maximum and minimum temperatures at different locations from November to March were 31.6 °C and 9.9 °C at Burdwan, 31.1°C and 8.2°C at Coochbehar, 32.1°C and 5.2°C at Faizabad, 34.0 °C and 5.9 °C at IARI Pusa, 34.4°C and 8.3°C at Kalyani, 31.0°C and 5.3°C at Kanpur, 35.5°C and 4.3°C at Ranchi, 32.9 °C and 5.9 °C at RPCAU Pusa, 32.9°C and 5.5°C at Sabour, 31.7°C and 7.5°C at Shillongani and 33.5 °C and 7.0 °C at Varanasi, respectively.

EVALUATION UNDER DIFFERENT SOWING CONDITIONS

The performance of test genotypes was evaluated under different restricted irrigation conditions at different locations and the results are summarized here under:

Restricted Irrigation

In this trial, one test entry HD 3293 and five check varieties (K 1317, HD 3171, HI 1612, HD 2888, and DBW 252) were evaluated with no, one (CRI stage) and two irrigations (CRI and boot leaf stage) in split plot design and replicated thrice. Main plots consisted of irrigation levels and the genotypes were kept in the sub-plots. The trial was conducted at eleven locations (Burdman, Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RPCAU Pusa, Sabour, Shillongani and Varanasi). Full dose NPK (90:60:40) was applied as basal in no irrigation treatment and 1/3rd nitrogen, full phosphorus (60 kg P₂O₅/ha) and potash (40 kg K₂O/ha) were applied at the time of sowing and remaining N was top dressed at 1st irrigation 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).

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 20.8 and 37.2% higher grain yield, respectively over no irrigation. All the yield attributing parameters were significantly improved as level of irrigation increased. So, the yield increase was due to cumulative effect of all yield attributing parameters. The check genotype HI 1612 ranked 1st and produced significantly higher grain yield (36.82 q/ha) than new test entry HD 3293 (35.90 q/ha) and all the other check genotypes except HD 2888 (36.31 q/ha). Check genotypes K 1317 ranked first in number of earhead/m² (280). The boldest grains were of the test genotype HD 3293 having thousand grains weight of 43.26 g and were significantly better to all the checks except K 1317. Centre wise data are given in Tables 3.1.1 to 3.1.11 of Annexure I.

Table 3.1. North Eastern Plains Zone **RIR-TS-TAS** **Pooled** **2019-20**

Genotype	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	30.16	3	36.78	2	40.75	4	35.90	3
K 1317 (c)	29.35	5	35.72	5	40.12	5	35.06	5
HD 3171 (c)	28.64	6	35.93	4	39.64	6	34.74	6
DBW 252 (c)	29.95	4	35.37	6	41.82	3	35.71	4
HI 1612 (c)	31.15	1	36.93	1	42.39	1	36.82	1
HD 2888 (c)	30.55	2	36.41	3	41.96	2	36.31	2
Mean	29.97		36.19		41.11		35.76	
	Irrigation (A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.71		0.90		NS		NS	
Earheads/sqm								
HD 3293	239.98	6	268.35	6	288.06	6	265.46	6
K 1317 (c)	249.55	3	285.21	1	305.29	1	280.02	1
HD 3171 (c)	251.52	1	280.56	3	304.22	2	278.76	3
DBW 252 (c)	242.19	5	275.45	5	299.99	4	272.55	5
HI 1612 (c)	250.69	2	283.41	2	303.07	3	279.06	2
HD 2888 (c)	247.75	4	277.51	4	299.44	5	274.90	4
Mean	246.94		278.42		300.01		275.12	
	Irrigation (A)		Genotype (B)		B within A		A within B	
CD (0.05)	6.32		6.07		NS		NS	
Grains/Earhead								
HD 3293	31.64	2	32.96	1	33.45	3	32.68	1
K 1317 (c)	28.20	6	29.24	6	30.40	6	29.28	6
HD 3171 (c)	28.73	5	30.89	5	31.31	5	30.31	5
DBW 252 (c)	31.49	3	31.40	4	33.25	4	32.05	4
HI 1612 (c)	31.80	1	32.30	2	33.68	2	32.59	2
HD 2888 (c)	30.68	4	31.87	3	33.84	1	32.13	3
Mean	30.42		31.44		32.65		31.51	
	Irrigation (A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.88		1.24		NS		NS	
1000 Grains Weight, g								
HD 3293	41.84	2	43.57	1	44.37	1	43.26	1
K 1317 (c)	42.08	1	43.33	2	43.85	2	43.09	2
HD 3171 (c)	40.78	5	42.26	4	43.26	5	42.10	5
DBW 252 (c)	40.91	4	42.24	5	43.29	3	42.14	4
HI 1612 (c)	40.28	6	41.96	6	42.98	6	41.74	6
HD 2888 (c)	41.82	3	42.62	3	43.27	4	42.57	3
Mean	41.29		42.66		43.50		42.48	
	Irrigation (A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.31		0.55		NS		NS	

Centres: Burdwan, Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RPCAU Pusa, Sabour, Shillongani, Varanasi

Central Zone

In central zone, nine centres, namely Bilaspur, Dhanduka, Gwalior, Indore, Jabalpur, Junagadh, Powarkheda, Udaipur and Vijapur are actively involved in the coordinated wheat programme of Resource Management during the year 2019-20. 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 loams to clay loam in texture.

In this zone there was one varietal trial for agronomic evaluation of genotypes under different date of sowing conducted at all locations. Besides this trial, three production technology trials were conducted at different locations of this zone. The soils at centres of Bilaspur and Gwalior was sandy clay loam, at Indore and Jabalpur centres soil were Vertisols, at Junagadh centre soil was medium black, at Udaipur soil was clay loam and at Vijapur the soil was sandy loam, which were neutral to slightly alkaline in reaction (pH: 7.2 to 7.87). Soils of all the centres were low to medium in organic carbon (0.24-0.69 per cent), low to medium available N (95-483 kg/ha), medium to high phosphorus (12.30-61.04 kg/ha) and high in potassium (200-435 kg/ha) at all the locations. The maximum rainfall in this zone during the wheat growing season 2019-20 was recorded at Bilaspur (452.7 mm), followed by Dhanduka (305.2 mm), Jabalpur (280 mm), Indore (164.1 mm), Gwalior (110.2 mm), Udaipur (107.6 mm), Junagadh (53.4 mm), Powarkheda (51.3 mm) and Vijapur (37.5 mm). The average maximum and minimum temperatures were Bilaspur (27.9 and 14.0°C), Dhanduka (32.73 and 15.26°C), Gwalior (27.6 and 13.1°C), Indore (31.42 and 16.2°C), Jabalpur (27.3 and 13.4°C), Junagadh (32.7 and 18.6°C), Powarkheda (32.71 and 13.06°C), Udaipur (28.0 and 11.51°C) and Vijapur (27.1 and 13.6°C).

EVALUATION OF GENOTYPES UNDER DIFFERENT SOWING DATES

In this trial two test entries (CG 1029 and HI 1634) were evaluated against three check varieties (HD 2864, HD 2932 and MP 3336) under timely, late and very late sown conditions. The trial was conducted at eight centres (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Powerkheda, Udaipur and Vijapur) in split plot design with date of sowing in main plots and genotypes in sub plots. The sowing was done using the normalized (adjusted considering 1000 grains weight as 38 g) seed rate of 100 kg/ha at a row to row spacing of 20 cm. Recommended rate of nitrogen, phosphorus and potash (120:60:40 kg N, P₂O₅ and K₂O) were applied. Full dose of phosphorus and potash and 1/3rd N was applied as basal dose and remaining 2/3rd N was applied in two equal splits with first and second irrigations.

For pooled analysis out of the eight centres, seven centres were considered and data of Udaipur centre was rejected due to improper data reporting. The pooled analysis of seven centres (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Powarkheda and Vijapur) is presented in Table 4.1. The centre wise data have presented in Annexure-I in Tables 4.1.1 to 4.1.8. The perusal of data in Table 4.1 revealed that the test entries CG 1029 (51.42 q/ha) and HI 1634 (50.88 q/ha) were significantly superior in grain yield as compared to check varieties. Test entry CG 1029 ranked first in grain yield under normal (56.64 q/ha) and late sown (55.14) conditions. On an average basis there was significant increase in yield when crop sown under normal sown conditions compared to late (3.85%) and very late (28.95%) conditions. The significantly higher number of earhead/m² and thousand grain weight are the main possible reason for maximum yield of test entry CG 1029 as compared to other entries and checks. Interaction between sowing time and genotypes was found significant for yield, grains/earhead and thousand grain weight.

Table 4.1 Central Zone		IR-TAS-DOS		Pooled		2019-20		
Variety	Sowing time				V. Late	Rk	Mean	Rk
	Normal	Rk	Late	Rk				
Yield, q/ha								
CG1029	56.64	1	55.14	1	42.48	2	51.42	1
HI 1634	54.95	3	53.45	2	44.25	1	50.88	2
HD 2864(c)	52.13	4	48.32	5	41.49	3	47.32	4
HD 2932(c)	55.10	2	53.21	3	40.68	4	49.67	3
MP 3336(c)	49.61	5	48.35	4	39.25	5	45.73	5
Mean	53.69		51.69		41.63		49.00	
	Sowing (A)	Genotypes (B)		B within A		A within B		
CD (0.05)	0.91	1.00		1.72		1.78		
Earhead/sq.m.								
CG1029	409	1	383	1	347	1	379	1
HI 1634	354	5	341	5	321	5	339	5
HD 2864(c)	396	2	374	3	343	2	371	2
HD 2932(c)	389	4	376	2	333	4	366	3
MP 3336(c)	395	3	359	4	335	3	363	4
Mean	389		366		336		364	
	Sowing (A)	Genotypes (B)		B within A		A within B		
CD (0.05)	5.85	8.12		NS		NS		
Grains/Earhead								
CG1029	26.76	5	29.97	5	28.25	5	28.33	5
HI 1634	34.89	1	38.89	1	38.22	1	37.34	1
HD 2864(c)	31.79	2	32.29	3	33.61	3	32.56	3
HD 2932(c)	30.87	3	34.67	2	34.84	2	33.46	2
MP 3336(c)	28.85	4	32.13	4	32.59	4	31.19	4
Mean	30.63		33.59		33.50		32.57	
	Sowing (A)	Genotypes (B)		B within A		A within B		
CD (0.05)	0.81	1.00		1.73		1.74		
1000 Grains Weight, g								
CG1029	52.77	1	48.27	1	44.96	1	48.67	1
HI 1634	46.25	3	43.13	2	39.57	2	42.99	2
HD 2864(c)	41.85	5	40.77	5	37.21	4	39.94	5
HD 2932(c)	46.35	2	41.07	4	36.70	5	41.37	4
MP 3336(c)	44.47	4	42.47	3	37.57	3	41.50	3
Mean	46.34		43.14		39.20		42.90	
	Sowing (A)	Genotypes (B)		B within A		A within B		
CD (0.05)	0.56	0.63		1.09		1.12		

Centres: Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Powerkheda, Vijapur

Peninsular Zone

In Peninsular zone, three centres (Dharwad, Niphad and Pune) were actively engaged in research activities of coordinated wheat agronomy programme. The data on weather and soil parameters are reported in Annexure II and Annexure III, respectively. The soils of this zone fall under the order vertisols and predominantly are clayey in nature with low to high organic carbon ranging between 0.32-1.05 per cent. The available soil nitrogen is low in content ranging between (184 to 272 kg N/ha), while the content of phosphorus is generally high (up to 43 kg/ha) except in few cases where it falls under medium category. The potash content in soil is very high (up to 570 kg/ha) except in few cases where it falls under low category. The soils of this region are predominantly alkaline in reaction. The majority of rainfall was received in the months of October-November except a few showers which were received during later stages in the crop season. The maximum rainfall received was 188.7 mm at Pune, followed by 169.8 mm at Niphad and 159.4 mm at Dharwad. The average maximum and minimum temperatures were 31.8°C and 17.4°C at Pune, 26.9°C and 14.5°C at Niphad and 31.2°C and 18.2°C at Dharwad.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

The performance of genotypes was evaluated for sowing time and restricted irrigation conditions at different locations and the results are summarized under the following heads:

Irrigated Timely, Late and Very Late Sown Conditions

The performance of three *durum* test entries DDW 48 (d), DDW 49 (d) and HI 1633 against six checks (MACS 6478, MACS 6222, MACS 3949 (d), UAS 428 (d), RAJ 4083, HD 2932) was evaluated at three centres *i.e.* Dharwad, Niphad and Pune under timely, late and very late sown conditions. There was no rejection of data from any centre and hence, pooled analysis was done using the data from all centres. The timely sowing time was from 5th to 11th November, late sowing was from 26th November to 2nd December and very late sowing was from 17th to 23rd December. 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 100 kg/ha at a row-to-row spacing of 20 cm for timely sown and 125 kg/ha for late and very late sown conditions. One-third nitrogen and full phosphorus and potash were applied as basal. One-third nitrogen from remaining two-third dose was applied at first irrigation *i.e.* at 20-25 days after sowing and one-third at second irrigation *i.e.* 40-45 days after sowing.

Table 5.1. Peninsular Zone

Genotypes	IR-TAS-DOS		Pooled		2019-20			
	Normal	Rk	Late	Rk	V. Late	Rk	Mean	Rk
	Sowing time							
	Yield, q/ha							
DDW 48 (d)	36.28	7	35.54	6	30.11	7	33.98	7
DDW 49 (d)	37.00	5	32.68	9	25.88	9	31.85	9
HI 1633	37.61	3	35.85	5	31.85	3	35.10	2
MACS 6478 (c)	40.66	1	36.59	2	27.84	8	35.03	3
MACS 6222 (c)	35.46	8	34.32	8	30.31	6	33.36	8
MACS 3949 (d)(c)	34.69	9	36.26	3	32.15	2	34.37	5
UAS 428 (d)(c)	36.37	6	36.16	4	30.35	5	34.29	6
RAJ 4083 (c)	37.42	4	34.86	7	31.35	4	34.54	4
HD 2932 (c)	38.81	2	36.86	1	33.23	1	36.30	1
Mean	37.14		35.46		30.34		34.31	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	1.19		1.67		2.88		2.95	
	Earheads/sqm							
DDW 48 (d)	335	4	333	3	328	5	332	3
DDW 49 (d)	341	3	337	1	330	2	336	1
HI 1633	319	6	331	4	329	4	326	5
MACS 6478 (c)	344	2	330	5	334	1	336	2
MACS 6222 (c)	319	5	318	9	313	9	316	9
MACS 3949 (d)(c)	316	8	327	7	330	3	324	6
UAS 428 (d)(c)	344	1	329	6	317	7	330	4
RAJ 4083 (c)	312	9	319	8	320	6	317	8
HD 2932 (c)	317	7	333	2	314	8	322	7
Mean	328		329		324		327	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	N.S.		9.71		N.S.		N.S.	
	Grains/Earhead							
DDW 48 (d)	29.30	7	27.93	9	23.51	6	26.91	7
DDW 49 (d)	29.45	5	28.31	8	22.40	9	26.72	8
HI 1633	30.27	4	28.95	6	25.73	3	28.31	5
MACS 6478 (c)	32.92	1	31.92	1	22.64	8	29.16	2
MACS 6222 (c)	29.43	6	31.18	2	26.62	2	29.08	3
MACS 3949 (d)(c)	26.16	9	29.18	5	24.80	4	26.71	9
UAS 428 (d)(c)	27.13	8	30.56	4	23.32	7	27.00	6
RAJ 4083 (c)	31.28	3	30.99	3	24.03	5	28.77	4
HD 2932 (c)	31.94	2	28.56	7	27.93	1	29.48	1
Mean	29.77		29.73		24.55		28.02	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	1.28		1.70		2.95		3.05	
	1000 Grains Weight, g							
DDW 48 (d)	39.79	7	40.74	2	41.91	4	40.82	3
DDW 49 (d)	39.20	8	36.89	7	36.79	9	37.63	9
HI 1633	40.61	3	39.60	4	40.33	5	40.18	5
MACS 6478 (c)	38.68	9	36.84	8	39.40	8	38.31	8
MACS 6222 (c)	40.01	6	36.26	9	39.61	6	38.63	7
MACS 3949 (d)(c)	42.86	1	40.91	1	42.58	3	42.12	1
UAS 428 (d)(c)	41.49	2	38.83	5	43.82	1	41.38	2
RAJ 4083 (c)	40.61	4	38.07	6	42.80	2	40.49	4
HD 2932 (c)	40.06	5	40.24	3	39.59	7	39.97	6
Mean	40.37		38.71		40.76		39.95	
CD (0.05)	Sowing (A)		Genotype (B)		B within A		A within B	
	0.56		0.60		1.05		1.12	

Centres: Dharwad, Niphad, Pune

The pooled data presented in Table 5.1 showed that there was a significant decline in yield from timely (37.14 q/ha) to late (35.46 q/ha) and very late (30.34 q/ha) sown condition. With delayed sown conditions, yield reduction was due to shorter grain filling period due to onset of early higher temperature causing early maturity of late sown wheat. The yield reduction in late and very late sown conditions was found to be 4.52 and 18.31%, respectively as compared to timely sown condition.

On average basis, check genotype HD 2932 emerged as top performer in terms of mean yield (36.30 q/ha) under all sown conditions followed by test entry HI 1633 (35.1 q/ha). Test entry HI 1633 produced at par yield with the best check variety HD 2932. Under timely sown condition, check genotype performed well with a mean yield of 40.66 q/ha. Check genotype HD 2932 produced the highest yield of 36.86 q/ha under late sown condition. Check genotypes MACS 6478, MACS 3949 (d) and UAS 428 (d) also performed similarly under late sown conditions. Even durum test entries namely DDW 48(d) and DDW 49(d) were inferior to their respective best check MACS 3949 (d). The highest mean grains/earhead were produced by check entry HD 2932. The mean yield of test entry DDW 49 was lower over best check HD 2932 even though it produced the highest earhead density. The highest yield of 33.23 q/ha under very late sown condition was recorded for check genotype HD 2932. The boldest grains were produced by check entry MACS 3949 (d). The centre wise data are presented in Tables 5.1.1 to 5.1.3 in Annexure-I.

Restricted Irrigation

In this trial one durum entry NIDW 1149 (d) was evaluated against four checks *viz.* HI 1605, AKDW2997-16 (d), UAS446 (d), NIAW 3170 and HI 8805 (d). The trial was conducted to evaluate the performance of timely sown genotypes with no, one (at CRI) and two irrigations (at CRI and boot leaf) at three locations (Dharwad, Niphad and Pune) in split plot design with irrigation levels in main and genotypes in sub plots with three replications. Sowing was done using the normalized (adjusted considering 1000 grains weight as 38g) seed rate of 100 kg/ha. NPK fertilizers @ 90:60:40 were applied as full basal in no irrigation treatment, whereas 1/3rd N, full P and K as basal application at sowing and the remaining 2/3rd N at first irrigation *i.e.* at 20-25 days after sowing in treatments having one and two irrigation levels.

The pooled analysis and the centre wise data have been presented in Table 5.2 and as Annexure-I (Tables 5.2.1 to 5.2.3), respectively. The data from all centres were considered for pooled analysis. The perusal of pooled data showed that grain yield significantly increased with irrigation levels. The maximum grain yield (26.01 q/ha) was achieved under two irrigations which were imposed at CRI and boot leaf stage followed by one irrigation (21.63 q/ha) and no irrigation (19.60 q/ha) treatments. Increased irrigation level enhanced the grain yield mainly due to significant increase in earheads/sqm and grains weight. The

maximum mean yield (24.54 q/ha), significantly higher than other varieties, was recorded for test entry NIDW 1149 (d) which recorded the highest yield of 21.63, 25.07 and 26.92 q/ha under zero, one and two irrigation levels, respectively.

Table 5.2. Peninsular Zone **RIR-TS-TAS** **Pooled** **2019-20**

Genotype	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
NIDW 1149 (d)	21.63	1	25.07	1	26.92	3	24.54	1
HI 1605 (c)	19.18	3	20.82	5	23.74	6	21.25	6
AKDW2997-16 (d)(c)	19.80	2	21.43	3	24.49	5	21.91	4
UAS446 (d)(c)	19.02	5	21.73	2	27.39	2	22.72	2
NIAW 3170 (c)	19.05	4	20.87	4	28.04	1	22.66	3
HI 8805 (d)(c)	18.91	6	19.86	6	25.47	4	21.41	5
Mean	19.60		21.63		26.01		22.41	
CD (0.05)	Irrigation (A)		Genotype (B)		B within A		A within B	
	1.78		1.79		N.S.		N.S.	
Earheads/sqm								
NIDW 1149 (d)	191	6	265	5	311	3	256	6
HI 1605 (c)	235	2	293	1	325	1	285	1
AKDW2997-16 (d)(c)	205	4	280	4	311	4	265	4
UAS446 (d)(c)	224	3	285	3	303	6	270	3
NIAW 3170 (c)	238	1	287	2	305	5	277	2
HI 8805 (d)(c)	196	5	248	6	323	2	256	5
Mean	215		276		313		268	
CD (0.05)	Irrigation (A)		Genotype (B)		B within A		A within B	
	5.14		16.72		N.S.		N.S.	
Grains/Earhead								
NIDW 1149 (d)	28.52	1	23.27	1	21.78	4	24.52	1
HI 1605 (c)	22.75	5	19.95	6	20.12	6	20.94	6
AKDW2997-16 (d)(c)	26.92	2	21.18	2	22.22	3	23.44	2
UAS446 (d)(c)	24.15	4	20.87	3	24.59	1	23.20	3
NIAW 3170 (c)	21.35	6	20.05	5	24.41	2	21.94	5
HI 8805 (d)(c)	25.10	3	20.50	4	21.07	5	22.22	4
Mean	24.80		20.97		22.37		22.71	
CD (0.05)	Irrigation (A)		Genotype (B)		B within A		A within B	
	2.05		N.S.		N.S.		N.S.	
1000 Grains Weight, g								
NIDW 1149 (d)	40.32	1	44.18	1	44.09	1	42.86	1
HI 1605 (c)	36.27	6	37.76	6	39.46	6	37.83	6
AKDW2997-16 (d)(c)	36.84	4	39.35	3	39.67	5	38.62	4
UAS446 (d)(c)	36.82	5	38.23	5	39.91	4	38.32	5
NIAW 3170 (c)	38.10	3	38.72	4	40.63	3	39.15	3
HI 8805 (d)(c)	38.88	2	40.67	2	42.77	2	40.77	2
Mean	37.87		39.82		41.09		39.59	
CD (0.05)	Irrigation (A)		Genotype (B)		B within A		A within B	
	0.58		0.68		1.17		1.21	

Centres: Dharwad, Niphad, Pune

PRODUCTION TECHNOLOGIES

In this section, the results of various experiments on updating the package of practices of various wheat growing zones are presented. Various special coordinated trials on early wheat sowing with higher N rate and use of growth regulators, optimising nutrient usage, maximising production, phosphorus use efficiency in wheat, management of delayed wheat sowing, surface seeding, seed priming, precision N management through NDVI and silica fertilization in wheat were conducted to address the various issues in different wheat growing zones of the country.

SPL-1: Maximizing the wheat productivity by fine tuning sowing time and fertilizer rates

The trial was laid out in a split plot design with sowing time (25th October, 05th November, 15th November and 25th November) in main plots and nutrient management {Recommended Fertilizer Dose (RFD), 150% RFD + FYM15 t/ha and 150% RFD + FYM15 t/ha + Growth Regulators} in sub plots with three replications. Two sprays of growth regulators as tank mix-Chlormequat chloride (Lihocin) @0.2% + tebuconazole (Folicur 430 SC) @0.1% of commercial product dose at First Node and Flag leaf (tank mix application) were done. The sowing was done using the normalized (adjusted considering 1000 grains weight of 38 g) seed rate of 100 kg/ha at a row-to-row spacing of 20 cm. One third nitrogen, full phosphorus and potash as basal dose as per treatments and the remaining 2/3rd nitrogen as 1/3rd at first irrigation and 1/3rd at second irrigation. Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone. This trial was carried out across the zones.

In NHZ, this experiment was conducted at three locations (Almora, Bajaura and Malan) to maximize the wheat productivity by response of varieties to early sowing and higher fertilization under varying climatic conditions. The pooled analysis data of three centres namely Almora, Bajaura and Malan are presented in Table 6.1. The perusal of data revealed that highest mean grain yield (59.82 q/ha) was obtained by the application of 150% RFD + FYM15 t/ha + growth regulators and this yield gain was due to improvement in the earhead density and thousand grains weight. The increase in nutrient application over recommended

rate caused an increase of 4.52 to 8.93 q/ha. Sowing dates also significantly affected the wheat grain yield. Sowing on 25th October produced the highest and significantly higher grain yield as compared to other dates of sowing. Grain yield reduction in wheat sown on 15th and 25th November was 7.86 and 14.58 per cent, respectively as compared to wheat sown on 25th October. Centre wise data are given in Annexure- I as Tables 6.1.1 and 6.1.3.

Table 6.1. Northern Hill Zone **SPL-1** **Pooled** **2019-20**

Nutrient Management	Date of sowing				Mean	Rk		
	25 th Oct	Rk	5 th Nov	Rk				
Yield, q/ha								
RFD	53.82	3	52.44	3	50.10	3		
150% RDF + FYM	59.86	2	55.77	2	54.33	2		
150% RDF+FYM+GR	64.28	1	62.30	1	59.56	1		
Mean	59.32		56.84		54.66	50.67		
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	2.50		1.66		NS		NS	
Earhead/sqm								
RFD	424	3	444	3	409	3		
150% RDF + FYM	471	2	474	2	458	2		
150% RDF+FYM+GR	480	1	488	1	469	1		
Mean	458		469		445	396		
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	15.47		7.62		NS		NS	
Grains/earhead								
RFD	28.56	1	25.84	3	26.52	3		
150% RDF + FYM	27.79	3	26.52	2	27.36	2		
150% RDF+FYM+GR	28.42	2	27.97	1	28.52	1		
Mean	28.26		26.78		27.47	29.41		
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	NS		0.90		NS		NS	
1000 Grains Weight, g								
RFD	44.84	3	46.17	2	45.43	2		
150% RDF + FYM	45.96	2	45.46	3	44.85	3		
150% RDF+FYM+GR	47.86	1	47.32	1	46.32	1		
Mean	46.22		46.32		45.53	43.51		
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	0.94		0.78		NS		NS	
Centres: Almora, Bajaura and Malan								

In NWPZ, this experiment was conducted at nine locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar). The data revealed that maximum wheat grain yield (57.68 q/ha) was obtained by application of 150% RDF + FYM15 t/ha + Growth Regulators and this yield gain was due to significantly more

earheads/m² and thousand grain weight. Sowing of wheat up to 5th of November resulted in significantly higher grain yield as compared to delayed sowing. Grain yield reduction in wheat sown on 15th and 25th November was 6.08 and 12 percent, respectively as compared to 5th November sowing. Centre wise data are given in Tables 6.2.1 to 6.2.9 of Annexure- I.

Nutrient Management	SPL -1		Pooled		2019-20					
	Date of Sowing				Mean	Rk				
	25 th Oct	Rk	5 th Nov	Rk	15 th Nov	Rk	25 th Nov	Rk	Mean	Rk
Yield, q/ha										
RFD	53.41	3	53.16	3	50.59	3	47.19	3	51.09	3
150% RFD + FYM	57.02	2	56.99	2	53.51	2	50.42	2	54.48	2
150% RFD+FYM +GR	60.81	1	60.76	1	56.42	1	52.73	1	57.68	1
Mean	57.08		56.97		53.51		50.11		54.42	
CD (0.05)	Sowing (A) 0.87		Nutrient (B) 0.74		B within A NS		A within B NS			
Earhead/m²										
RFD	380	3	402	3	395	3	369	3	387	3
150% RFD + FYM	396	2	421	2	412	2	385	2	403	2
150% RFD+FYM +GR	410	1	435	1	426	1	397	1	417	1
Mean	395		420		411		384		402	
CD (0.05)	Sowing (A) 7.20		Nutrient (B) 6.42		B within A NS		A within B NS			
Grains/Earhead										
RFD	35.48	3	35.10	3	34.59	3	35.03	3	35.05	3
150% RFD + FYM	36.67	2	36.69	2	35.27	2	35.36	2	36.00	2
150% RFD+FYM +GR	36.94	1	37.26	1	35.39	1	35.63	1	36.30	1
Mean	36.36		36.35		35.08		35.34		35.79	
CD (0.05)	Sowing (A) 1.02		Nutrient (B) 0.82		B within A NS		A within B NS			
1000 Grain Weight, g										
RFD	40.21	2	39.59	2	38.74	2	37.55	3	39.02	2
150% RFD + FYM	40.13	3	38.98	3	38.42	3	37.98	2	38.88	3
150% RFD+FYM +GR	41.20	1	39.92	1	39.26	1	38.37	1	39.69	1
Mean	40.51		39.50		38.81		37.96		39.20	
CD (0.05)	Sowing (A) 0.62		Nutrient (B) 0.46		B within A NS		A within B NS			
Centres: Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar										

In NEPZ, this experiment was conducted at five locations (Burdwan, Kalyani, RPCAU, Pusa, Sabour and Shillongani). The first date of sowing was not implemented by two centres namely Burdwan and Sabour. The pooled analysis data of three centres namely Kalyani, RPCAU, Pusa and Shillongani are presented in Table 6.3 and data of two centres namely Burdwan and Sabour were pooled separately (Table 6.3a) due to non-implementation of first date of sowing. The perusal of data revealed that the maximum grain yield (44.97 q/ha) was

obtained by application of 150% RFD + FYM15 t/ha + growth regulators and this yield gain was due to improvement in the earhead density and thousand grains weight. Similar results were obtained based on two centres pooled data (Table 6.3a). The increase in nutrient application over recommended rate caused an increase of 3.0 to 3.92 q/ha in wheat yield. Sowing date also significantly affected the wheat grain yield. Sowing on 5th November and 15th November produced significantly higher grain yield compared to 25th October and 25th November sowing based on three centres pooled data. Whereas pooled analysis of Burdwan and Sabour centre (Table 6.3a) revealed that 25th November sowing produced significantly higher grain yield compared to two other dates. Centre wise data are given in Tables 6.3.1 to 6.3.5 of Annexure-I.

Table 6.3 North Eastern Plains Zone SPL-1 Pooled 2019-20

Nutrient Management	Date of sowing				Mean	Rk		
	25 th Oct	Rk	5 th Nov	Rk				
Yield,q/ha								
RFD	38.28	3	42.19	3	43.14	3		
150% RFD + FYM	41.80	2	46.55	2	45.01	2		
150% RFD+FYM+GR	42.51	1	47.44	1	45.39	1		
Mean	40.86		45.39		44.52			
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	1.62		1.22		NS		NS	
Earhead/sqm								
RFD	260	3	310	3	293	3		
150% RFD + FYM	280	1	315	2	314	2		
150% RFD+FYM+GR	273	2	334	1	314	1		
Mean	271		320		307			
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	18.26		11.26		NS		NS	
Grains/earhead								
RFD	35.99	3	33.09	2	36.15	1		
150% RFD + FYM	36.16	2	35.70	1	33.49	3		
150% RFD+FYM+GR	37.71	1	32.89	3	33.58	2		
Mean	36.62		33.90		34.41			
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	
1000 Grains Weight, g								
RFD	42.15	3	41.36	3	41.21	3		
150% RFD + FYM	42.33	2	42.39	2	43.22	2		
150% RFD+FYM+GR	43.65	1	43.62	1	43.44	1		
Mean	42.71		42.46		42.63			
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	0.83		0.64		NS		NS	

Centres: Kalyani, RPCAU, Pusa and Shillongani

Table 6.3a North Eastern Plains Zone			SPL-1		Pooled		2019-20	
Nutrient Management	Date of sowing				25 th Nov	Rk	Mean	Rk
	5 th Nov	Rk	15 th Nov	Rk				
Yield,q/ha								
RFD	42.58	3	44.65	3	46.57	3	44.60	3
150% RFD + FYM	44.32	2	45.53	2	48.68	2	46.18	2
150% RFD+FYM+GR	44.71	1	47.08	1	50.33	1	47.38	1
Mean	43.87		45.75		48.53		46.05	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	2.32		NS		NS		NS	
Earhead/sqm								
RFD	291	3	301	3	317	3	303	3
150% RFD + FYM	303	2	309	2	323	2	312	2
150% RFD+FYM+GR	308	1	321	1	329	1	320	1
Mean	301		310		323		311	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	13.42		NS		NS		NS	
Grains/earhead								
RFD	33.75	1	33.92	1	32.93	3	33.54	1
150% RFD + FYM	32.90	2	33.22	2	33.71	2	33.28	2
150% RFD+FYM+GR	32.52	3	32.60	3	33.94	1	33.02	3
Mean	33.06		33.25		33.53		33.28	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	
1000 Grains Weight, g								
RFD	43.62	3	44.34	3	45.06	3	44.34	3
150% RFD + FYM	44.75	2	44.87	2	45.12	2	44.92	2
150% RFD+FYM+GR	44.93	1	45.21	1	45.39	1	45.18	1
Mean	44.43		44.81		45.19		44.81	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	

Centres: Burdwan and Sabour

In CZ, this trial was conducted with an objective to maximize the wheat productivity by response of varieties to early sowing and higher fertilization under climatic variations with three date of sowing at two locations (Bilaspur and Jabalpur) and with four dates of sowing at four centres (Gwalior, Junagadh, Udaipur and Vijapur). The data of Udaipur centre were not included in pooled analysis due to improper data reporting. In sub plot three nutrient management options viz. recommended fertiliser dose (RDF), 150% RFD + FYM15 t/ha and 150% RFD + FYM15 t/ha + growth regulators were used.

The pooled analysis of data of two centres (Bilaspur and Jabalpur) is presented in Table 6.4. A perusal of pooled data revealed that among various nutrient management options there

were significant differences in grain yield and yield attributing characters. Treatment having 150% RFD + FYM15 t/ha + growth regulators produced significantly higher grain yield, earhead/m² and thousand grains weight as compared other treatments. Among sowing time, 05th November sowing recorded the highest yield (49.41q/ha) which was significantly higher than late (45.92 q/ha) and very late (41.29 q/ha) sown conditions. The centre wise data have been illustrated in Tables 6.4.1 to 6.4.2 of Annexure-I.

Table 6.4 Central Zone **SPL- 1** **Pooled** **2019-20**

Nutrient Management	Sowing time				25 th Nov	Rk	Mean	Rk
	5 th Nov	Rk	15 th Nov	Rk				
Yield, q/ha								
RFD	45.71	3	41.61	3	37.04	3	41.46	3
150% RFD + FYM	50.17	2	46.66	2	42.46	2	46.43	2
150% RFD + FYM +GR	52.35	1	49.48	1	44.37	1	48.73	1
Mean	49.41		45.92		41.29		45.54	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	1.03		1.49		NS		NS	
Earhead/Sqm								
RFD	352	3	333	3	303	3	329	3
150% RFD + FYM	368	2	359	2	329	2	352	2
150% RFD + FYM +GR	395	1	379	1	352	1	375	1
Mean	372		357		328		352	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	5.79		7.38		NS		NS	
Grains/earhead								
RFD	32.71	1	32.47	1	33.08	1	32.75	1
150% RFD + FYM	31.81	2	32.37	2	32.53	2	32.23	2
150% RFD + FYM +GR	29.81	3	30.34	3	30.29	3	30.15	3
Mean	31.44		31.73		31.96		31.71	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	NS		1.31		NS		NS	
1000 grains weight, g								
RFD	41.34	3	39.72	3	38.05	3	39.70	3
150% RFD + FYM	43.52	2	41.36	2	41.30	2	42.06	2
150% RFD + FYM +GR	44.63	1	43.74	1	43.36	1	43.91	1
Mean	43.17		41.60		40.90		41.89	
	Sowing (A)		Nutrient (B)		B within A		A within B	
CD (0.05)	NS		1.16		NS		NS	

Centers: Bilaspur, Jabalpur

The pooled data of three centres (Gwalior, Junagadh and Vijapur) are presented in Table 6.4a. A perusal of pooled data revealed that among various nutrient management options there were significant differences in grain yield. Nutrient management option having 150%

RFD + FYM15 t/ha + growth regulators produced the maximum grain yield, earhead/m² and grains per earhead. Among sowing time, 25th November recorded the highest yield (62.73 q/ha) which was significantly higher than early sown crops (25th October - 15th November). The centre wise data have been illustrated in Tables 6.4.1a to 6.4.3a of Annexure-I.

Table 6.4a Central Zone

Nutrient Management	Sowing time				SPL -1		Pooled		2019-20	
	25 th Oct	Rk	5 th Nov	Rk	15 th Nov	Rk	25 th Nov	Rk	Mean	Rk
Yield, q/ha										
RFD	30.52	3	49.62	3	55.89	3	59.17	3	48.80	3
150% RFD + FYM	30.94	2	50.55	2	59.89	2	62.96	2	51.08	2
150% RFD + FYM +GR	31.79	1	52.22	1	62.17	1	66.07	1	53.06	1
Mean	31.08		50.79		59.32		62.73		50.98	
	Sowing (A)		Nutrient (B)		B within A				A within B	
CD (0.05)	2.27		1.70		NS				NS	
Earhead/Sqm										
RFD	334	2	370	3	395	3	370	3	367	3
150% RFD + FYM	329	3	382	2	399	2	377	2	372	2
150% RFD + FYM +GR	343	1	396	1	420	1	390	1	387	1
Mean	335		383		405		379		375	
	Sowing (A)		Nutrient (B)		B within A				A within B	
CD (0.05)	11.50		11.26		NS				NS	
Grains/earhead										
RFD	16.35	3	24.88	1	25.54	3	29.44	3	24.05	3
150% RFD + FYM	16.97	1	24.03	3	27.16	2	31.86	1	25.01	2
150% RFD + FYM +GR	16.80	2	24.12	2	27.99	1	31.59	2	25.13	1
Mean	16.71		24.34		26.90		30.97		24.73	
	Sowing (A)		Nutrient (B)		B within A				A within B	
CD (0.05)	1.77		NS		NS				NS	
1000 Grains weight, g										
RFD	52.11	1	56.47	3	57.68	1	54.94	1	55.30	1
150% RFD + FYM	51.30	3	56.94	1	56.92	2	53.01	3	54.55	2
150% RFD + FYM +GR	51.79	2	56.56	2	54.77	3	54.30	2	54.36	3
Mean	51.74		56.66		56.46		54.08		54.73	
	Sowing (A)		Nutrient (B)		B within A				A within B	
CD (0.05)	1.27		NS		NS				NS	

Centers: Gwalior, Junagadh, Vijapur

In Peninsular Zone, this trial was conducted at Dharwad centre. The analysis of pooled data shown in Table 6.5 revealed that wheat sown on 15th November yielded the highest followed by 05th November, 25th October and 25th November sowing. However, yield of wheat sown on 15th November and 05th November were similar. FYM application with 150% RFD

enhanced the wheat yield which was further significantly increased with inclusion of growth regulators. The maximum mean yield was recorded to be 39.04 q/ha with the treatment having 150% RFD + FYM15 t/ha + GR. The highest yield of wheat sown on 25th October, 05th November, 15th November and 25th November was found to be 38.16, 40.06, 38.48 and 39.48 q/ha, respectively when 150% recommended fertiliser dose with 15 t/ha FYM and growth regulators was used.

Table 6.5 Peninsular Zone SPL-1 Dharwad 2019-20

Nutrient Management	25 th Oct		05 th Nov		15 th Nov		25 th Nov		Mean	Rk
	Rk		Rk		Rk		Rk			
Yield, q/ha										
RFD	31.17	3	31.66	3	34.36	3	29.37	2	31.64	3
150% RFD + FYM	34.29	2	38.34	2	37.47	2	26.88	3	34.25	2
150% RFD + FYM +GR	38.16	1	40.06	1	38.48	1	39.48	1	39.04	1
Mean	34.54		36.69		36.77		31.91		34.98	
CD (0.05)										
	Sowing (A)		Nutrient (B)		B within A		A within B			
	6.20		4.48		8.95		8.99			
Earheads/sqm										
RFD	270	1	260	2	247	3	271	1	262	1
150% RFD + FYM	264	2	260	3	260	1	246	3	258	3
150% RFD + FYM +GR	253	3	264	1	256	2	259	2	258	2
Mean	262		262		254		259		259	
CD (0.05)										
	Sowing (A)		Nutrient (B)		B within A		A within B			
	5.60		5.60		11.20		10.29			
Grains/Earhead										
RFD	29.65	3	30.64	3	34.62	2	26.93	2	30.46	3
150% RFD + FYM	31.31	2	34.63	2	37.62	1	26.30	3	32.47	2
150% RFD + FYM +GR	36.15	1	36.82	1	33.55	3	37.84	1	36.09	1
Mean	32.37		34.03		35.26		30.35		33.00	
CD (0.05)										
	Sowing (A)		Nutrient (B)		B within A		A within B			
	6.04		4.63		9.25		9.11			
1000 Grains Weight, g										
RFD	38.99	3	39.72	3	40.26	2	40.31	3	39.82	3
150% RFD + FYM	41.33	2	42.62	1	38.36	3	41.50	1	40.95	2
150% RFD + FYM +GR	41.80	1	41.36	2	44.93	1	40.46	2	42.14	1
Mean	40.70		41.23		41.19		40.76		40.97	
CD (0.05)										
	Sowing (A)		Nutrient (B)		B within A		A within B			
	0.29		0.17		0.33		0.37			

SPL-2: Optimising phosphorus usage in wheat

This experiment was designed to lessen the P requirement under rice-wheat system. Experiment consists of 13 treatments namely 0, 30, 60, Kg P₂O₅/ha and each along with PSB was tried in wheat.

In NHZ, this experiment was conducted with thirteen treatments combinations at two locations (Bajaura and Malan). The perusal of pooled data presented in Table 6.6 revealed that maximum wheat grain yield (44.45 q/ha) was obtained with 60 kg/ha P in wheat and 30 kg P₂O₅ in rice with PSB inoculation. The addition of PSB significantly increased the grain yield in comparison to treatments where no P or 30 kg P₂O₅/ha was applied. This showed that PSB application had benefit in wheat crop. No application of P and PSB recorded the minimum yield of 33.98 q/ha and even the 30 kg P₂O₅/ha application in rice improve the wheat yield to the extent of 0.47 q/ha. However, to draw valid conclusions, long term experimentation is required. The centre wise data have been illustrated in Tables 6.6.1 to 6.6.2 of Annexure-I.

Table 6.6. Northern Hill Zone			SPL-2	Pooled		2019-20	
Wheat, P ₂ O ₅ , kg/ha	Rice, P ₂ O ₅ , kg/ha	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Biomass q/ha	Yield, q/ha	Plant height, cm
0	0	296	38.67	29.82	84.93	33.98	80.78
0	30	289	38.65	31.08	86.80	34.45	82.40
30	0	318	39.90	29.34	89.37	36.95	83.83
30	30	320	40.33	28.34	88.59	36.28	87.12
60	0	345	42.18	28.76	100.77	41.73	94.63
60	30	345	42.32	29.69	100.83	43.22	94.08
0+PSB	0	314	39.38	29.45	93.94	36.11	84.85
0+PSB	30	321	40.30	28.30	94.51	36.25	85.48
30+PSB	0	350	40.78	27.67	96.25	38.91	91.95
30+PSB	30	363	40.97	27.28	95.95	39.67	93.40
60+PSB	0	362	41.95	29.18	104.81	44.04	94.12
60+PSB	30	357	43.28	29.00	105.38	44.45	94.28
60	60	356	42.17	29.30	103.94	43.76	92.58
SEm		6.67	0.81	0.89	2.18	0.72	0.96
CD (0.05)		15.81	1.91	2.10	5.17	1.71	2.28

Centres: Bajaura and Malan

In NWPZ, experiment consisted of 12 treatments namely 0, 30 and 60 kg P₂O₅/ha and each along with PSB was tried in wheat. In rice each treatment was tested at 0 and 30 kg P₂O₅/ha in Ludhiana whereas in Karnal one more treatment *i.e.* application of 60 kg P₂O₅/ha in both the crops was added. The data presented in Table 6.7 showed that maximum wheat grain yield (58.09 q/ha) at Karnal location was obtained when P₂O₅ was applied @60 kg/ha in both the crops. Additional application of PSB did not increase any yield across the P (0, 30 60) levels. This showed that PSB application do not have any advantage in wheat crop.

Wheat, P ₂ O ₅ , kg/ha	Rice P ₂ O ₅ , kg/ha	Earheads/ sqm	Rk	1000 grains weight, g	Rk	Grains/ earhead	Rk	Yield, q/ha	Rk
0	0	508	13	36.24	2	30.03	6	55.03	12
0	30	528	7	36.39	1	28.90	13	55.45	10
30	0	518	10	36.18	5	29.40	10	55.03	12
30	30	547	1	36.20	3	28.93	12	57.22	3
60	0	527	8	35.10	12	30.07	5	55.31	11
60	30	538	5	35.68	7	30.10	4	57.81	2
0+PSB	0	540	3	35.53	8	29.87	7	56.77	4
0+PSB	30	522	9	36.19	4	29.73	8	55.73	9
30+PSB	0	530	6	35.09	13	30.20	3	56.08	7
30+PSB	30	540	3	35.69	6	29.23	11	56.22	6
60+PSB	0	518	10	35.23	10	30.60	2	55.80	8
60+PSB	30	543	2	35.42	9	29.40	9	56.53	5
60	-	512	12	35.22	11	32.47	1	58.09	1
Mean		529		35.71		29.92		56.24	
CD(0.05)		41.69		1.40		2.06		1.71	

At Ludhiana location maximum wheat grain yield (62.13 q/ha) was obtained at 60 kg P₂O₅ application to wheat and 30 kg P₂O₅ in rice due to maximum earheads/m² and thousand grains weight (Table 6.7a). Additional application of PSB increased grain yield across the P₂O₅ (0, 30 60) levels. This showed that PSB application have advantage in wheat crop.

Wheat, P ₂ O ₅ , kg/ha	Rice P ₂ O ₅ , kg/ha	Earheads/ sqm	Rk	1000 grains weight, g	Rk	Grains/ earhead	Rk	Yield, q/ha	Rk
0	0	281	11	34.03	12	48.59	8	46.43	12
0	30	281	12	35.03	10	47.40	12	46.62	11
30	0	312	8	36.04	8	48.40	9	53.85	8
30	30	315	7	36.10	7	47.75	11	54.23	7
60	0	316	6	36.86	4	51.54	3	59.91	5
60	30	318	5	36.69	6	51.15	6	59.55	6
0+PSB	0	291	10	34.89	11	48.99	7	49.75	10
0+PSB	30	292	9	35.92	9	48.02	10	50.03	9
30+PSB	0	323	4	36.70	5	51.77	1	61.18	3
30+PSB	30	324	3	37.00	2	51.66	2	61.60	2
60+PSB	0	324	2	36.98	3	51.21	5	60.96	4
60+PSB	30	328	1	37.16	1	51.25	4	62.13	1
Mean		309		36.12		49.81		55.52	
CD(0.05)		30.05		2.31		6.36		5.33	

In NEPZ, this experiment was conducted at two locations (Faizabad and Shillongani). The perusal of pooled data presented in Table 6.8 revealed that maximum wheat grain yield (49.27 q/ha) was obtained at recommended dose of P₂O₅ application (60 kg/ha) with PSB inoculation in wheat and 30 kg/ha P₂O₅ was applied in rice. The addition of PSB significantly increased the yield in comparison to treatments where no P₂O₅ or 30 kg P₂O₅/ha was

applied. This showed that PSB application have benefit in wheat crop. No application of P₂O₅ and PSB recorded minimum yield of 36.63 and even the 30 kg P₂O₅/ha application in rice improve the wheat yield to the extent of 38.75 q/ha. However, to draw valid conclusions long term experimentation is required. The centre wise data have been illustrated in Tables 6.8.1 to 6.8.2 of Annexure-I.

Table 6.8. North Eastern Plains Zone				SPL-2	Pooled	2019-20	
Wheat, P ₂ O ₅ ,kg/ha	Rice, P ₂ O ₅ , kg/ha	Earheads/ sqm	1000 grains weight, g	Grains/ Earhead	Biomass q/ha	Yield, q/ha	Plant height, cm
0	0	294.3	39.38	31.66	90.62	36.63	95.7
0	30	297.2	40.49	32.40	96.08	38.75	95.7
30	0	312.0	41.23	33.13	101.17	42.18	96.7
30	30	313.5	41.32	32.67	101.01	42.10	97.4
60	0	316.2	41.95	34.94	107.49	46.25	98.8
60	30	317.8	42.10	35.33	109.21	47.15	98.3
0+PSB	0	303.2	40.12	34.52	102.46	41.51	94.8
0+PSB	30	312.0	40.35	33.98	104.93	42.52	95.5
30+PSB	0	319.0	41.54	34.84	108.75	46.04	97.6
30+PSB	30	321.8	42.14	33.47	106.52	45.14	97.8
60+PSB	0	326.8	42.13	35.50	112.46	48.81	99.8
60+PSB	30	329.0	42.20	35.55	113.93	49.27	99.1
60	60	322.0	42.48	36.16	114.17	49.13	98.0
SEm		3.34	0.29	0.94	2.62	1.20	0.38
CD (0.05)		7.93	0.70	2.23	6.22	2.85	0.90

Centres: Faizabad and Shillongani

SPL-3: Exploring timely sowing of wheat in NEPZ through surface seeding, seed priming and seed rate under rice-wheat system

In NEPZ, this experiment was conducted to explore the possibility of surface seeding for timely wheat seeding to maximize wheat productivity in situations where field remain wet for longer periods after harvesting of rice. The experiment was laid out in randomised complete block design with twelve seeding treatments *viz.* dry seed surface seeding with 100, 125 and 150 kg/ha seed rate; 12 hour soaked seed surface seeding with 100, 125 and 150 kg/ha seed rate; seed priming (1% KNO₃ *i.e.* 10 g/litre) with 100, 125 and 150 kg/ha seed rate and seed priming (1% CaCl₂ *i.e.* 10 g/litre) with 100, 125 and 150 kg/ha seed rate. One third nitrogen, full phosphorus and potash as basal dose as per treatments and the remaining 2/3rd nitrogen as 1/3rd at first irrigation and 1/3rd at second irrigation. Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone. This trial was conducted at five locations namely Faizabad, IARI, Pusa, RPCAU, Pusa, Sabour and Varanasi.

The pooled analysis data of five locations are presented in Table 6.9. The surface seeding of 150 kg/ha primed seed with 1% KNO₃ produced the significantly highest wheat grain yield of 41.92 q/ha except surface seeding of 150 kg/ha primed seed with 1% CaCl₂ (40.75 q/ha). In comparison to dry seed-surface seeding all the treatments produced significantly higher grain yield except soaked seed-surface seeding at lower seed rate of 100 kg/ha. These yield differences were due to differences in earhead density. Centre wise data are given in Tables 6.9.1 to 6.9.5 of Annexure- I.

Table 6.9. North Eastern Plains Zone	SPL-3		Pooled		2019-20	
	Earheads /sqm	1000 grains weight, g	Grains/ earhead	Biomass q/ha	Yield, q/ha	Plant height, cm
Dry surface seeding- 100 kg/ha	261.0	36.85	37.10	79.98	34.10	89.69
Dry surface seeding with- 125 kg/ha	269.1	38.41	35.57	84.11	35.06	91.19
Dry surface seeding- 150 kg/ha	283.1	36.72	35.59	85.99	35.86	90.05
Soaked seed surface seeding- 100 kg/ha	275.4	38.66	34.34	88.84	35.06	89.39
Soaked seed surface seeding- 125 kg/ha	290.1	37.98	35.96	90.39	38.48	90.77
Soaked seed surface seeding- 150 kg/ha	297.8	36.99	35.91	91.32	38.19	92.33
Seed priming (1% KNO ₃)-100 kg/ha	288.1	38.80	36.50	93.29	39.29	92.04
Seed priming (1% KNO ₃)-125 kg/ha	304.9	38.00	34.30	92.15	38.99	93.11
Seed priming (1% KNO ₃)-150 kg/ha	310.9	37.78	36.47	98.83	41.92	91.69
Seed priming (1% CaCl ₂)-100 kg/ha	282.8	38.47	37.09	93.58	38.93	91.25
Seed priming (1% CaCl ₂)-125 kg/ha	290.9	38.02	36.18	92.52	39.24	91.58
Seed priming (1% CaCl ₂)-150 kg/ha	310.6	37.88	35.14	96.84	40.75	92.10
SEm	4.66	0.56	1.12	1.43	0.73	0.92
CD(0.05)	10.42	1.24	2.50	3.20	1.64	2.17

Centres: Faizabad, IARI, Pusa, RPCAU, Pusa, Sabour and Varanasi

SPL- 4: Optimisation of nitrogen doses for high yield potential

The experiment was laid out in randomised complete block design with ten fertilizer treatments *viz.* absolute control, 50, 75, 100, 125 and 150% recommended dose of N, 100% recommended dose of NPK, 125 and 150% recommended dose of N with growth regulators spray at first node and at boot leaf stage and 150% recommended dose of NPK with growth regulators spray at first node and at boot leaf stage. The sowing was done using normalized seed rate @100 kg/ha (adjusted considering 1000 grain weight as 38 g). Weed control and irrigation measures were followed as per recommended package of practices for the respective zones.

In NHZ, this trial was conducted to maximize wheat productivity by optimizing the nitrogen dose by performing experiments at 4 locations namely Almora, Bajaura Khudwani and Malan. The pooled analysis data presented in Table 6.10 revealed that the highest grain

yield (49.68 q/ha) was obtained by applying 150% recommended dose of NPK and two sprays of growth regulators at first node and boot leaf stage which was significantly higher than all other fertilizer treatments. The second best treatment was the application of 150% recommended N fertilizer with GR, which produced a yield of 46.66 q/ha. The yield gain over 100% recommended dose of NPK was 12.6%. The application of growth regulators at first node and boot leaf stage resulted in significant yield gain as compared to when same dose of either N or NPK were applied without growth regulators. Centre wise data are given in Tables 6.10.1 and 6.10.4 of Annexure-I.

Table 6.10. Northern Hill Zone			SPL-4	Pooled 2019-20		
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ Earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	277	37.91	22.78	22.73	58.24	75.88
50% Rec. N	334	39.23	25.26	32.03	84.42	85.16
75% Rec N	353	39.66	25.99	36.10	94.37	89.00
100 % Rec. N	376	39.88	27.43	41.66	108.70	92.75
125% Rec. N	386	40.02	26.91	42.49	110.21	95.35
150% Rec. N	391	40.45	27.06	43.87	113.49	97.54
100% Rec NPK	392	41.04	27.17	44.13	115.81	99.60
125% Rec. N+ GR	398	40.77	27.53	45.28	114.58	93.47
150% Rec N + GR	399	41.30	28.09	46.66	116.99	96.44
150% Rec. NPK + GR	414	42.73	27.98	49.68	123.64	97.80
SEm	5.22	0.48	0.70	0.82	1.82	0.94
CD(0.05)	12.28	1.14	1.65	1.94	4.29	2.22

Centres: Almora, Bajaura, Khudwani and Malan

In NWPZ, this experiment was conducted at nine locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar). The data presented in Table 6.11 clearly revealed that significantly maximum wheat grain yield (63.35 q/ha) was obtained by applying 150% recommended dose of NPK and two sprays of growth regulators at first node and boot leaf stage as compared to all other fertilizer treatments and the yield gain over 100% recommended dose of NPK was 8.58%. Two sprays of growth regulators at first node and boot leaf stage also resulted in significantly higher yield over only application of recommended dose of N. Centre wise data are given in Tables 6.11.1 to 6.11.9 of Annexure-I.

Treatments	Earheads/sqm	SPL-4		Pooled	2019-20
		1000 grains weight, g		Grains/earhead	Yield, q/ha
Absolute control	314	37.1		29.1	32.56
50% Rec. N	351	38.7		33.8	44.07
75% Rec N	382	39.2		33.0	47.58
100 % Rec. N	398	39.1		34.5	51.63
125% Rec. N	407	38.4		35.8	53.93
150% Rec. N	409	38.6		36.6	54.60
100% Rec NPK	423	40.4		35.7	58.34
125% Rec. N+ GR	423	40.4		36.4	59.57
150% Rec N + GR	429	40.3		36.0	60.02
150% Rec. NPK + GR	447	41.2		36.1	63.35
CD(0.05)	66	0.96		1.76	1.54

Centres: Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana and Pantnagar

In NEPZ, this trial was conducted at 10 locations namely Burdwan, Coochbehar, Faizabad, Kalyani, Kanpur, Ranchi, RPCAU Pusa, Sabour, Shillongani and Varanasi. The pooled analysis data presented in Table 6.12 revealed that the highest grain yield (53.25 q/ha) was obtained by applying 150% recommended dose of NPK and two sprays of growth regulators at first node and boot leaf stage as compared to other fertilizer treatments.

Treatments	Earheads /sqm	SPL-4		Yield, q/ha	Pooled	2019-20
		1000 Grains Weight, g	Grains/ Earhead		Biomass, q/ha	Plant height, cm
Absolute control	233	37.2	29.18	23.92	59.12	84.9
50% Rec. N	273	39.9	32.48	34.48	84.02	93.1
75% Rec N	286	40.5	34.28	38.45	94.26	96.3
100 % Rec. N	306	40.7	33.74	41.20	101.13	98.7
125% Rec. N	310	41.0	34.73	43.36	106.52	100.7
150% Rec. N	308	41.3	35.48	44.23	108.71	101.7
100% Rec NPK	320	42.7	37.53	49.59	109.42	99.3
125% Rec. N+ GR	311	41.2	35.76	45.16	109.49	94.9
150% Rec N + GR	319	42.1	35.94	47.17	109.98	96.4
150% Rec. NPK+GR	348	43.3	35.75	53.25	123.60	96.1
SEm	3.56	0.32	0.78	0.56	1.74	1.32
CD(0.05)	8.34	0.76	1.82	1.32	4.08	3.08

Centres: Burdwan, Coochbehar, Faizabad, Kalyani, Kanpur, Ranchi, RPCAU Pusa, Sabour, Shillongani, Varanasi

The second best treatment was the application of 100% recommended NPK fertilizer, which produced a yield of 49.59 q/ha. The yield gain over 100% recommended dose of NPK was 8.58%. The application of growth regulators at first node and boot leaf stage resulted in significant yield gain compared to when same dose of either N or NPK was applied without growth regulators. Centre wise data are given in Tables 6.12.1 to 6.12.10 Annexure-I.

In CZ, this trial was conducted at seven locations *i.e.* Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Udaipur and Vijapur. Udaipur centres data were not included in pooled analysis due to reporting improper data. All agronomic practices were followed as per recommendations except N application. The pooled data presented in Table 6.13 revealed that there was significant difference in grain yield and other parameters due to graded dose of N and growth regulators. The highest yield (53.92 q/ha) was obtained in treatment where 150 per cent of recommended dose of NPK was applied plus growth regulators spray at first node and boot leaf stages followed by 100 per cent of recommended dose of NPK (51.25 q/ha) and both treatments remained significantly different. The third highest yield was obtained with treatment having 150 per cent recommended dose of N with growth regulators sprays at first node and boot leaf stage. Centre wise data have been illustrated in Tables 6.13.1 to 6.13.7 of Annexure-I.

Treatments	Table 6.13. Central Zone					
	Earhead/ sqm	1000 grains weight, g	SPL 4 Grains/ earhead	Yield, q/ha	Pooled Plant height, cm	2019-20 Physiological maturity, DAS
Absolute control	251	41.02	27.57	27.69	77.0	110
50% Rec. N	299	41.88	30.77	38.54	82.9	112
75% Rec N	322	42.15	30.55	41.31	86.0	113
100 % Rec. N	357	43.23	29.16	45.31	88.5	113
125% Rec. N	363	42.61	29.41	45.59	88.5	115
150% Rec. N	366	42.58	31.10	48.80	89.0	116
100% Rec NPK	382	44.09	30.42	51.25	91.4	115
125% Rec. N+ GR	390	42.69	29.64	49.29	79.8	115
150% Rec N + GR	391	42.27	30.59	50.60	81.6	117
150% Rec. NPK+GR	410	43.44	30.13	53.92	83.6	117
CD (0.05)	10.25	0.71	1.35	1.42	1.5	0.49

Centres: Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Vijapur

In PZ, this trial was conducted at three locations (Dharwad, Niphad and Pune). Nitrogen fertilization was imposed in varying doses. The recommended dose of NPK was kept at 120:60:30 kg NPK /ha. The analysis of pooled data was done by considering all three centres. A perusal of pooled data revealed that yield increased with nitrogen dose up to a certain level (125% of recommended dose of N). The maximum yield was found to be 51.02 q/ha with the treatment having 150% recommended NPK + GR spray at first node and boot leaf stage. However, similar yield (without significant difference) was obtained with 125% recommended N + GR spray at first node and boot leaf stage indicating no response of phosphorus and potassium. The centre wise data have been illustrated in Table 6.14.1 to 6.14.3 of Annexure-I.

Table 6.14. Peninsular Zone	SPL-4		Pooled	2019-20
	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Yield, q/ha
Absolute control	304	36.81	25.17	27.08
50% Rec. N	319	39.93	32.64	40.32
75% Rec N	351	41.43	31.31	44.29
100 % Rec. N	344	41.85	34.58	48.13
125% Rec. N	361	42.59	32.22	48.40
150% Rec. N	342	42.55	33.82	47.81
100% Rec NPK	339	42.72	34.49	48.55
125% Rec. N+ GR	357	42.64	35.02	51.02
150% Rec N + GR	364	42.82	33.52	50.67
150% Rec. NPK + GR	371	42.92	32.85	51.02
CD (0.05)	6.20	4.48	8.95	8.98

Centres: Dharwad, Niphad, Pune

SPL-5: Precision nitrogen management in irrigated wheat using NDVI sensor

The experiment was conducted in randomized block design consisting of eight treatments viz. Absolute Control, 75 kg basal + 37.5 kg N/ha at CRI and tillering, 60 kg N/ha basal + 30 kg N/ha at CRI and tillering, 30 kg N/ha basal + 30 kg N/ha at CRI and rest using Green Seeker at 40-45 & 60-65 DAS, 30 kg N/ha basal + 60 kg N/ha at CRI and rest using Green Seeker at 40-45 & 60-65 DAS, ½ N as basal and ½ at CRI, 1/3rd N as basal + 1/3rd at CRI + 1/3rd at first node (around 45 days after seeding) and rich plot-90 kg N/ha basal + 90 at CRI; replicated thrice. Trial was conducted in randomized block design at two locations *i.e.* Coochbehar and Ranchi in NEPZ. All agronomic practices were followed as per recommendations except N application

The pooled data presented in table 6.15 revealed that there was significant difference in grain yield and yield attributes due to various N application treatments. The highest grain yield (51.62 q/ha) was obtained in N rich plot, where 90 kg N/ha basal + 90 kg/ha at CRI were applied and the second best treatment was where 30 kg N/ha basal + 60 kg N/ha CRI + rest using Green Seeker at 40-45 & 60-65 DAS (50.73 q/ha) was applied. Both these treatments were at par with treatment having 150 kg N/ha applied half as basal and half at CRI (49.08 q/ha); 75 kg basal + 37.5 kg/ha at CRI and tillering; 30 kg N/ha basal + 30 kg/ha at CRI + GS at 40-45 & 60-65 DAS. The N rich plots also produced the maximum biomass and plant height of wheat crop as compared to other treatments. Unfertilized control plot yielded minimum (15.55 q/ha) mainly due to poor yield attributes in this treatment. Centre wise data are given in Tables 6.15.1 and 6.15.2 of Annexure-I.

Table 6.15. North Eastern Plains Zone	SPL-5	Pooled	2019-20			
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Biomass, q/ha	Yield, q/ha	Plant height, cm
Absolute Control	172	32.27	29.02	39.98	15.55	74.40
75 kg basal+37.5 kg N/ha at CRI and tillering	311	38.80	41.69	111.20	49.37	101.60
60 kg basal+30 kg N/ha at CRI and tillering	289	38.83	40.73	99.98	44.37	96.33
30 basal+30 CRI+GS at 40-45 & 60-65 DAS	322	39.17	39.62	108.70	48.62	95.83
30 basal+60 CRI+GS at 40-45 & 60-65 DAS	333	39.22	39.66	116.30	50.73	101.27
½ N basal and ½ at CRI	321	39.83	39.54	112.75	49.08	98.65
1/3 rd N basal+1/3 rd CRI+1/3 rd first node	314	38.53	39.86	108.07	47.07	99.15
Rich plot-90 kg N/ha basal+90 at CRI	329	39.73	40.46	121.03	51.62	106.32
CD(0.05)	31.66	1.64	4.24	9.66	3.10	5.73

Centres: Coochbehar and Ranchi

In Peninsular Zone, this experiment was conducted at two locations (Dharwad and Pune) to improve nitrogen use efficiency in wheat by need based application. The pooled analysis of the data from two locations revealed significant effect of precision nutrient management on grain yield (Table 6.16). The maximum grain yield of 45.70 q/ha was recorded for the treatment having 75 kg N/ha basal + 37.5 kg N/ha at CRI and tillering followed by 45.22 q/ha for the treatment having 75 kgN/ha basal +30.0 kg N/ha at CRI and tillering. The centre wise data are presented in Table 6.16.1 to 6.16.2 of Annexure-I.

Table 6.16. Peninsular Zone	SPL-5	Pooled	2019-20	
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ earheads	Yield, q/ha
Absolute Control	257	40.02	28.60	28.82
75 kg basal+37.5 kg N/ha at CRI and tillering	304	41.75	36.23	45.70
60 kg basal+30 kg N/ha at CRI and tillering	289	39.78	39.45	45.22
30 basal+30 CRI+GS at 40-45 & 60-65 DAS	274	42.68	34.61	40.80
30 basal+60 CRI+GS at 40-45 & 60-65 DAS	286	40.47	37.53	43.37
½ N basal and ½ at CRI	286	40.36	36.92	42.42
1/3 rd N basal+1/3 rd CRI+1/3 rd first node	292	40.96	35.99	43.19
Rich plot-90 kg N/ha basal+90 at CRI	315	38.21	36.60	44.26
CD (0.05)	17.20	0.64	4.94	4.50

Centres: Dharwad and Pune

SPL-6: Performance of wheat under different silicon and irrigation levels

This trial was conducted in split plot design with an objective to evaluate the performance of silicon fertilizer under restricted irrigation conditions at five locations (Bilaspur, Dhanduka, Junagadh, Udaipur and Vijapur) with three replications.

Table 6.17. Central Zone		SPL 6		Pooled		2019-20				
		Irrigation Levels								
Silicon Levels	zero	Rk	One	Rk	Two	Rk	Three	Rk	Mean	Rk
Yield, q/ha										
Control	11.65	4	23.66	4	29.90	4	33.63	4	24.71	4
Silicon@100 kg/ha	12.55	3	26.85	3	30.90	3	37.46	3	26.94	3
Silicon@150 kg/ha	14.66	2	28.12	1	33.11	1	38.31	2	28.55	1
Silicon@200 kg/ha	14.70	1	27.40	2	32.67	2	39.15	1	28.48	2
Mean	13.39		26.51		31.65		37.14		27.17	
CD (0.05)	Irrigation (A)		Silicon (B)		B within A		A within B			
	1.02		0.66		1.33		1.53			
Earhead/sqm										
Control	193	4	244	4	288	4	319	4	261	4
Silicon@100 kg/ha	215	2	268	3	294	3	322	3	275	3
Silicon@150 kg/ha	221	1	279	2	325	1	356	1	295	1
Silicon@200 kg/ha	214	3	286	1	309	2	355	2	291	2
Mean	211		269		304		338		280	
CD (0.05)	Irrigation (A)		Silicon (B)		B within A		A within B			
	7.20		6.46		12.92		13.28			
Grains/earhead										
Control	18.34	3	25.51	2	25.81	1	24.89	3	23.64	2
Silicon@100 kg/ha	16.90	4	26.77	1	25.77	2	27.20	1	24.16	1
Silicon@150 kg/ha	18.83	2	24.77	3	23.78	4	24.24	4	22.91	4
Silicon@200 kg/ha	19.83	1	21.67	4	24.98	3	25.62	2	23.02	3
Mean	18.47		24.68		25.08		25.49		23.43	
CD (0.05)	Irrigation (A)		Silicon (B)		B within A		A within B			
	1.09		0.91		1.81		1.91			
1000 grains weight, g										
Control	40.28	3	41.24	3	42.50	4	44.41	4	42.11	4
Silicon@100 kg/ha	40.93	1	41.16	4	43.00	3	45.01	3	42.52	3
Silicon@150 kg/ha	40.43	2	42.59	2	43.92	1	46.08	1	43.25	2
Silicon@200 kg/ha	39.68	4	45.70	1	43.67	2	45.09	2	43.53	1
Mean	40.33		42.67		43.27		45.15		42.85	
CD (0.05)	Irrigation (A)		Silicon (B)		B within A		A within B			
	1.26		1.08		2.16		2.25			
Plant height, cm										
Control	55.75	4	67.95	4	72.73	3	74.21	4	67.66	4
Silicon@100 kg/ha	56.90	3	69.14	3	72.66	4	74.34	3	68.26	3
Silicon@150 kg/ha	57.24	2	69.57	2	74.10	1	75.74	2	69.16	2
Silicon@200 kg/ha	58.41	1	69.80	1	74.00	2	76.38	1	69.65	1
Mean	57.07		69.11		73.37		75.17		68.68	
CD (0.05)	Irrigation (A)		Silicon (B)		B within A		A within B			
	1.49		0.99							
Physiological maturity, Days										
Control	86.42	4	94.17	4	97.42	4	100.67	4	94.67	4
Silicon@100 kg/ha	88.83	3	94.83	3	99.92	3	103.42	3	96.75	3
Silicon@150 kg/ha	90.17	2	98.42	2	101.33	2	103.67	2	98.40	2
Silicon@200 kg/ha	91.83	1	99.75	1	102.83	1	105.00	1	99.85	1
Mean	89.31		96.79		100.38		103.19		97.42	
CD (0.05)	Irrigation (A)		Silicon (B)		B within A		A within B			
	0.93		0.61		1.23		1.41			

Centres: Bilaspur, Dhanduka, Junagadh, Vijapur

The main plots comprising four levels of irrigation (zero, one, two and three) and the sub plot four level of silicon fertilizer (control, silicon@100, 150 and 200 kg/ha). The data of Udaipur centre were not included in pooled analysis due to improper data reporting. The pooled data presented in Table 6.17 showed that increasing the irrigation frequency significantly

increased the grain yield. The maximum mean grain yield (37.14 q/ha) was produced with three irrigations which were applied at CRI, late jointing stage and milk stage (100-105 DAS) followed by the treatment where two irrigations were applied (31.65 q/ha). Increased irrigation level enhanced the grain yield mainly due to significant increase in earheads/m². Among silicon fertilizer treatments, the maximum mean grain yield was produced by the treatment having silicon @150 kg/ha (28.55 q/ha) followed by silicon @200 kg/ha (28.48 q/ha) and both treatments remained at par but significantly superior over silicon@100 kg/ha (26.94 q/ha) and control (24.71 q/ha). The centre wise data have been given in Tables 6.17.1 to 6.17.5 of Annexure-I.

Table 2.1.1. North Western Plains Zone			IR-TAS-DOS		Agra		2019-20	
Genotypes	Date of sowing				Mean	Rk		
	Normal	Rk	Late	Rk			Very late	Rk
Yield,q/ha								
HD3298	48.86	4	50.33	4	38.38	4	45.86	4
WH1124(c)	51.55	2	53.92	2	44.45	2	49.97	2
WH1021(c)	43.14	6	45.43	6	34.85	6	41.14	6
HD3059 (c)	52.51	1	57.47	1	46.02	1	52.00	1
DBW173(c)	47.14	5	48.68	5	36.20	5	44.01	5
PBW771(c)	50.95	3	52.95	3	41.77	3	48.56	3
Mean	49.03		51.46		40.28		46.92	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		0.26		1.01		2.32	
Genotypes (B)	**		0.66		1.92		4.24	
B within A	N.S.		1.15		3.32			
A within B			1.08		3.12			
Earhead/sqm								
HD3298	247	4	248	4	238	4	244	4
WH1124(c)	251	2	253	2	243	2	249	2
WH1021(c)	241	6	243	6	238	6	241	6
HD3059 (c)	251	1	255	1	244	1	250	1
DBW173(c)	245	5	246	5	238	5	243	5
PBW771(c)	249	3	252	3	239	3	247	3
Mean	247		250		240		246	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		0.66		2.59		1.14	
Genotypes (B)	**		1.22		3.52		1.49	
B within A	N.S.		2.11		6.10			
A within B			2.04		5.88			
Grains/earhead								
HD3298	49.56	1	49.86	2	44.53	4	47.98	2
WH1124(c)	46.96	5	45.99	6	47.34	3	46.76	5
WH1021(c)	46.94	6	49.06	3	44.14	6	46.71	6
HD3059 (c)	47.59	4	47.85	4	49.40	1	48.28	1
DBW173(c)	48.60	3	50.85	1	44.24	5	47.90	3
PBW771(c)	48.74	2	46.75	5	47.54	2	47.68	4
Mean	48.07		48.39		46.20		47.55	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		1.43		5.60		12.73	
Genotypes (B)	N.S.		2.12		6.11		13.35	
B within A	N.S.		3.67		10.58			
A within B			3.64		10.50			
1000 Grains Weight, g								
HD3298	40.10	4	40.90	4	36.33	4	39.11	4
WH1124(c)	43.89	2	46.32	2	39.00	2	43.07	2
WH1021(c)	38.72	6	39.12	6	34.00	6	37.28	6
HD3059 (c)	44.12	1	47.66	1	39.14	1	43.64	1
DBW173(c)	39.99	5	40.01	5	35.18	5	38.39	5
PBW771(c)	42.10	3	45.18	3	37.23	3	41.50	3
Mean	41.49		43.20		36.81		40.50	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	*		1.18		4.62		12.32	
Genotypes (B)	N.S.		1.84		5.30		13.61	
B within A	N.S.		3.18		9.19			
A within B			3.13		9.05			
Date of Sowing:	08.11.2019		10.12.2019		01.01.2020			
Date of Harvesting:	26.03.2020		05.04.2020		14.04.2020			

Table 2.1.2. North Western Plains Zone IR-TAS-DOS Delhi 2019-20

Genotypes	Date of sowing				Mean	Rk		
	Normal	Rk	Late	Rk			Very late	Rk
Yield,q/ha								
HD3298	61.08	1	51.42	2	29.92	2	47.47	1
WH1124(c)	58.50	4	49.58	4	29.17	4	45.75	3
WH1021(c)	60.17	2	51.50	1	30.67	1	47.44	2
HD3059 (c)	57.50	6	49.25	5	28.33	5	45.03	6
DBW173(c)	58.75	3	50.42	3	26.92	6	45.36	5
PBW771(c)	57.92	5	49.00	6	29.50	3	45.47	4
Mean	58.99		50.19		29.08		46.09	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		0.77		3.01		7.06	
Genotypes (B)	**		0.32		0.91		2.06	
B within A	N.S.		0.55		1.58			
A within B			0.92		2.64			
Earhead/sqm								
HD3298	483	4	362	5	267	4	371	4
WH1124(c)	510	3	483	1	336	1	443	2
WH1021(c)	588	1	448	2	298	3	444	1
HD3059 (c)	440	5	358	6	227	6	342	6
DBW173(c)	532	2	402	4	307	2	413	3
PBW771(c)	405	6	407	3	264	5	358	5
Mean	493		410		283		395	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		11.08		43.49		11.89	
Genotypes (B)	**		16.11		46.53		12.23	
B within A	N.S.		27.91		80.59			
A within B			27.78		80.22			
Grains/earhead								
HD3298	30.31	3	37.96	2	37.95	4	35.41	3
WH1124(c)	29.45	4	29.06	6	30.70	5	29.74	6
WH1021(c)	27.21	6	33.75	5	38.61	3	33.19	4
HD3059 (c)	32.77	2	38.50	1	44.24	1	38.50	1
DBW173(c)	29.08	5	36.71	3	30.15	6	31.98	5
PBW771(c)	37.23	1	35.20	4	40.30	2	37.58	2
Mean	31.01		35.20		36.99		34.40	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	*		1.21		4.76		14.97	
Genotypes (B)	*		1.85		5.35		16.15	
B within A	N.S.		3.21		9.26			
A within B			3.17		9.15			
1000 Grains Weight, g								
HD3298	41.76	1	37.84	1	29.54	2	36.38	1
WH1124(c)	38.96	3	35.67	3	28.80	4	34.47	3
WH1021(c)	37.68	6	34.38	6	28.02	6	33.36	6
HD3059 (c)	39.92	2	36.48	2	29.06	3	35.15	2
DBW173(c)	37.99	5	35.02	5	29.59	1	34.20	4
PBW771(c)	38.53	4	35.11	4	28.71	5	34.12	5
Mean	39.14		35.75		28.95		34.61	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		0.47		1.84		5.73	
Genotypes (B)	**		0.43		1.24		3.73	
B within A	N.S.		0.75		2.15			
A within B			0.83		2.38			
Date of Sowing:	05.11.2019		12.12.2019		15.01.2020			
Date of Harvesting:	15.04.2020		20.04.2020		22.04.2020			

Table 2.1.3. North Western Plains Zone IR-TAS-DOS Durgapura 2019-20

Genotypes	Date of sowing		Date of sowing		Date of sowing		Mean	Rk
	Normal	Rk	Late	Rk	Very late	Rk		
Yield,q/ha								
HD3298	64.03	1	43.29	2	28.33	3	45.22	1
WH1124(c)	41.05	6	36.89	4	20.74	6	32.89	6
WH1021(c)	52.13	2	44.03	1	22.06	5	39.41	2
HD3059 (c)	46.36	4	33.62	6	24.00	4	34.66	5
DBW173(c)	43.14	5	35.48	5	28.99	2	35.87	4
PBW771(c)	47.80	3	37.73	3	29.30	1	38.27	3
Mean	49.08		38.50		25.57		37.72	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		0.92		3.62		10.38	
Genotypes (B)	**		0.98		2.83		7.80	
B within A	**		1.70		4.91			
A within B			1.80		5.21			
Earhead/sqm								
HD3298	404	1	366	2	297	2	356	1
WH1124(c)	337	6	286	6	252	6	292	6
WH1021(c)	395	2	368	1	258	5	340	3
HD3059 (c)	378	4	305	5	268	4	317	5
DBW173(c)	359	5	308	4	293	3	320	4
PBW771(c)	389	3	364	3	302	1	352	2
Mean	377		333		278		329	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		6.70		26.29		8.63	
Genotypes (B)	**		6.26		18.09		5.71	
B within A	*		10.85		31.33			
A within B			11.96		34.53			
Grains/earhead								
HD3298	37.37	1	28.59	5	24.19	3	30.05	2
WH1124(c)	32.22	2	35.00	1	23.80	4	30.34	1
WH1021(c)	31.79	3	30.80	2	22.70	6	28.43	3
HD3059 (c)	31.35	4	29.42	3	22.99	5	27.92	5
DBW173(c)	30.72	6	29.01	4	25.53	2	28.42	4
PBW771(c)	30.72	5	27.32	6	25.56	1	27.87	6
Mean	32.36		30.02		24.13		28.84	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	**		0.54		2.11		7.91	
Genotypes (B)	**		0.55		1.58		5.68	
B within A	**		0.95		2.73			
A within B			1.02		2.94			
1000 Grains Weight, g								
HD3298	42.30	1	41.36	1	39.39	1	41.02	1
WH1124(c)	38.17	6	37.02	6	34.44	6	36.54	6
WH1021(c)	41.56	2	38.90	3	37.70	5	39.39	2
HD3059 (c)	39.23	4	37.53	5	38.99	2	38.59	5
DBW173(c)	39.15	5	39.70	2	38.63	3	39.16	3
PBW771(c)	40.07	3	38.10	4	38.04	4	38.73	4
Mean	40.08		38.77		37.86		38.90	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	*		0.49		1.91		5.30	
Genotypes (B)	**		0.63		1.81		4.82	
B within A	N.S.		1.08		3.13			
A within B			1.10		3.18			
Date of Sowing:	07.11.2019		11.12.2019		06.01.2020			
Date of Harvesting:	18.03.2020		10.04.2020		26.04.2020			

Table 2.1.4. North Western Plains Zone IR-TAS-DOS Gurdaspur 2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield,q/ha						
HD3298	47.49	5	38.13	3	40.16	4
WH1124(c)	62.79	3	30.52	5	40.92	3
WH1021(c)	45.97	6	31.05	4	35.57	6
HD3059 (c)	75.65	1	43.23	1	53.02	1
DBW173(c)	74.96	2	42.54	2	52.69	2
PBW771(c)	53.81	4	27.93	6	36.25	5
Mean	60.11		35.57		43.10	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		1.26		4.94	12.38
Genotypes (B)	**		1.83		5.27	12.71
B within A	**		3.16		9.13	
A within B			3.15		9.09	
Earhead/sqm						
HD3298	318	4	339	4	331	5
WH1124(c)	351	1	373	1	359	1
WH1021(c)	304	6	365	2	341	2
HD3059 (c)	337	3	352	3	335	3
DBW173(c)	348	2	329	5	331	4
PBW771(c)	307	5	318	6	310	6
Mean	328		346		331	335
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	N.S.		5.88		23.10	7.46
Genotypes (B)	**		8.10		23.39	7.26
B within A	N.S.		14.03		40.52	
A within B			14.09		40.70	
Grains/earhead						
HD3298	35.46	6	35.71	3	33.88	3
WH1124(c)	44.88	3	28.12	5	33.63	5
WH1021(c)	40.60	5	30.96	4	33.70	4
HD3059 (c)	59.65	1	38.77	1	45.69	1
DBW173(c)	57.64	2	38.24	2	45.29	2
PBW771(c)	42.65	4	26.51	6	32.09	6
Mean	46.81		33.05		37.38	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		1.09		4.30	12.42
Genotypes (B)	**		1.36		3.92	10.88
B within A	**		2.35		6.78	
A within B			2.41		6.95	
1000 Grains Weight, g						
HD3298	42.23	1	31.54	4	35.99	1
WH1124(c)	39.89	3	29.11	5	32.84	5
WH1021(c)	37.50	5	27.59	6	31.32	6
HD3059 (c)	37.64	4	31.68	3	34.02	4
DBW173(c)	37.37	6	34.06	1	34.48	3
PBW771(c)	41.34	2	33.21	2	35.73	2
Mean	39.33		31.20		34.06	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.30		1.19	3.77
Genotypes (B)	**		0.45		1.30	3.95
B within A	**		0.78		2.24	
A within B			0.77		2.23	
Date of Sowing:	06.11.2019		10.12.2019		01.01.2020	
Date of Harvesting:	07.05.2020		17.05.2020		17.05.2020	

Table 2.1.5. North Western Plains Zone

IR-TAS-DOS

Hisar

2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield,q/ha						
HD3298	48.25	5	43.89	4	29.01	6
WH1124(c)	57.96	2	46.83	3	34.29	4
WH1021(c)	52.62	3	38.53	6	32.94	5
HD3059 (c)	52.61	4	43.49	5	37.22	3
DBW173(c)	48.02	6	48.10	2	44.52	2
PBW771(c)	63.34	1	55.44	1	45.32	1
Mean	53.80		46.04		37.22	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.73		2.88	6.81
Genotypes (B)	**		0.87		2.50	5.70
B within A	**		1.50		4.34	
A within B			1.56		4.49	
Earhead/sqm						
HD3298	468	6	433	6	410	5
WH1124(c)	495	2	452	3	425	3
WH1021(c)	482	3	442	4	410	5
HD3059 (c)	470	5	442	4	418	4
DBW173(c)	480	4	485	2	450	2
PBW771(c)	508	1	487	1	458	1
Mean	484		457		429	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		5.70		22.36	5.30
Genotypes (B)	**		6.24		18.01	4.10
B within A	N.S.		10.80		31.20	
A within B			11.39		32.89	
Grains/earhead						
HD3298	22.18	6	24.58	6	18.02	6
WH1124(c)	29.29	3	27.55	3	28.37	3
WH1021(c)	30.67	2	28.06	2	27.15	4
HD3059 (c)	26.15	5	25.79	4	26.96	5
DBW173(c)	26.32	4	25.18	5	29.71	1
PBW771(c)	32.27	1	30.12	1	28.85	2
Mean	27.81		26.88		26.51	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	N.S.		0.51		1.98	7.92
Genotypes (B)	**		0.75		2.16	8.29
B within A	*		1.30		3.74	
A within B			1.29		3.72	
1000 Grains Weight, g						
HD3298	46.48	1	41.29	1	39.28	1
WH1124(c)	40.03	3	37.64	5	28.47	6
WH1021(c)	35.60	6	31.46	6	29.58	5
HD3059 (c)	42.80	2	38.35	3	33.08	4
DBW173(c)	38.00	5	39.63	2	33.46	3
PBW771(c)	38.65	4	37.96	4	34.40	2
Mean	40.26		37.72		33.04	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.26		1.03	3.01
Genotypes (B)	**		0.47		1.35	3.79
B within A	**		0.81		2.34	
A within B			0.78		2.27	
Date of Sowing:	9.11.2019		15.12.2019		5.1.2020	
Date of Harvesting:	18.4.2020		28.4.2020		4.5.2020	

Table 2.1.6. North Western Plains Zone IR-TAS-DOS Jammu 2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield,q/ha						
HD3298	39.35	6	37.29	6	36.74	6
WH1124(c)	42.50	5	40.22	5	38.78	5
WH1021(c)	42.87	4	41.08	3	39.79	4
HD3059 (c)	44.53	3	43.14	1	41.81	2
DBW173(c)	45.54	2	42.98	2	42.32	1
PBW771(c)	46.00	1	40.73	4	41.18	3
Mean	43.47		40.90		40.10	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.51		1.99	5.35
Genotypes (B)	**		0.69		1.98	5.14
B within A	N.S.		1.19		3.44	
A within B			1.20		3.46	
Earhead/sqm						
HD3298	435	3	393	1	396	2
WH1124(c)	433	4	372	5	387	3
WH1021(c)	436	2	382	2	381	4
HD3059 (c)	392	6	354	6	363	6
DBW173(c)	423	5	379	4	379	5
PBW771(c)	466	1	382	3	403	1
Mean	431		377		385	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		4.40		17.26	4.84
Genotypes (B)	*		7.33		21.17	5.71
B within A	N.S.		12.70		36.67	
A within B			12.40		35.80	
Grains/earhead						
HD3298	23.22	6	25.81	6	24.83	6
WH1124(c)	26.43	4	28.10	4	27.00	5
WH1021(c)	25.89	5	28.63	3	28.32	3
HD3059 (c)	29.85	1	32.19	1	30.90	1
DBW173(c)	28.91	2	31.35	2	30.28	2
PBW771(c)	26.61	3	27.88	5	27.20	4
Mean	26.82		29.00		28.09	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	*		0.62		2.43	9.33
Genotypes (B)	**		0.72		2.09	7.74
B within A	N.S.		1.25		3.62	
A within B			1.30		3.76	
1000 Grains Weight, g						
HD3298	39.08	1	36.95	5	37.62	2
WH1124(c)	37.27	5	38.72	1	37.30	4
WH1021(c)	38.15	2	37.63	4	37.20	5
HD3059 (c)	38.15	2	38.00	3	37.30	3
DBW173(c)	37.27	5	36.23	6	37.03	6
PBW771(c)	37.28	4	38.32	2	37.77	1
Mean	37.87		37.64		37.37	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	N.S.		0.43		1.70	4.92
Genotypes (B)	N.S.		0.39		1.14	3.17
B within A	N.S.		0.68		1.98	
A within B			0.76		2.19	
Date of Sowing:	11.11.2019		16.12.2019		03.01.2020	
Date of Harvesting:	25.04.2020		04.05.2020		09.05.2020	

Table 2.1.7. North Western Plains Zone IR-TAS-DOS Karnal 2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield,q/ha						
HD3298	44.47	5	46.32	2	44.53	4
WH1124(c)	50.33	3	37.87	6	41.45	5
WH1021(c)	37.73	6	44.22	4	40.23	6
HD3059 (c)	51.11	2	43.37	5	46.32	2
DBW173(c)	49.78	4	44.44	3	45.56	3
PBW771(c)	54.98	1	47.00	1	47.66	1
Mean	48.07		43.87		44.29	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	*		1.18		4.62	11.27
Genotypes (B)	**		1.15		3.31	7.77
B within A	**		1.99		5.74	
A within B			2.16		6.25	
Earhead/sqm						
HD3298	423	4	368	3	427	1
WH1124(c)	438	1	397	1	417	2
WH1021(c)	425	3	360	4	402	4
HD3059 (c)	335	6	313	6	350	6
DBW173(c)	352	5	343	5	372	5
PBW771(c)	433	2	373	2	417	3
Mean	401		359		397	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	*		10.14		39.82	10.83
Genotypes (B)	**		13.31		38.43	10.05
B within A	N.S.		23.05		66.57	
A within B			23.36		67.46	
Grains/earhead						
HD3298	25.80	6	30.33	5	27.05	6
WH1124(c)	31.04	4	24.64	6	27.46	5
WH1021(c)	25.86	5	32.57	2	29.51	4
HD3059 (c)	37.93	1	34.72	1	34.71	1
DBW173(c)	36.04	2	32.43	3	32.57	2
PBW771(c)	31.58	3	31.71	4	29.68	3
Mean	31.38		31.07		30.17	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	*		0.89		3.51	12.59
Genotypes (B)	**		1.29		3.73	12.86
B within A	N.S.		2.24		6.47	
A within B			2.23		6.44	
1000 Grains Weight, g						
HD3298	41.63	1	41.57	1	39.43	1
WH1124(c)	37.17	5	38.71	5	36.11	5
WH1021(c)	34.49	6	38.47	6	34.49	6
HD3059 (c)	40.52	2	40.59	2	38.86	2
DBW173(c)	39.49	4	40.08	3	38.22	4
PBW771(c)	40.27	3	39.81	4	38.65	3
Mean	38.93		39.87		37.63	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.55		2.15	6.16
Genotypes (B)	**		0.42		1.21	3.33
B within A	N.S.		0.72		2.09	
A within B			0.86		2.48	
Date of Sowing:	07.11.2019		10.12.2019		03.01.2020	
Date of Harvesting:	12.04.2020		30.04.2020			

Table 2.1.8. North Western Plains Zone IR-TAS-DOS Ludhiana 2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield, q/ha						
HD3298	71.88	1	46.35	2	54.43	2
WH1124(c)	65.21	5	44.53	4	50.38	4
WH1021(c)	61.77	6	45.26	3	47.43	6
HD3059 (c)	68.02	4	43.91	5	50.59	3
DBW173(c)	70.73	2	43.80	6	50.35	5
PBW771(c)	70.21	3	48.49	1	55.00	1
Mean	67.97		45.39		51.36	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.72		2.83	5.95
Genotypes (B)	**		1.01		2.92	5.91
B within A	N.S.		1.75		5.06	
A within B			1.76		5.07	
Earhead/sqm						
HD3298	381	4	363	2	364	2
WH1124(c)	374	5	354	4	361	4
WH1021(c)	399	2	338	6	360	5
HD3059 (c)	409	1	357	3	361	3
DBW173(c)	386	3	344	5	353	6
PBW771(c)	373	6	367	1	369	1
Mean	387		354		361	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		4.59		18.04	5.39
Genotypes (B)	N.S.		6.60		19.07	5.48
B within A	N.S.		11.44		33.03	
A within B			11.41		32.95	
Grains/earhead						
HD3298	36.98	4	26.23	5	30.58	2
WH1124(c)	34.64	6	27.74	2	30.20	4
WH1021(c)	35.06	5	28.53	1	29.72	5
HD3059 (c)	37.17	2	25.63	6	29.19	6
DBW173(c)	40.54	1	27.64	3	30.78	1
PBW771(c)	37.12	3	27.27	4	30.57	3
Mean	36.92		27.17		30.18	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.57		2.23	7.99
Genotypes (B)	N.S.		0.94		2.72	9.37
B within A	N.S.		1.63		4.72	
A within B			1.60		4.61	
1000 Grains Weight, g						
HD3298	51.06	1	48.69	2	48.42	2
WH1124(c)	50.57	3	45.30	6	45.90	4
WH1021(c)	44.46	6	46.94	4	43.92	6
HD3059 (c)	44.79	5	48.02	3	47.88	3
DBW173(c)	45.37	4	46.32	5	45.81	5
PBW771(c)	50.85	2	48.80	1	48.64	1
Mean	47.85		47.35		46.76	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.22		0.85	1.96
Genotypes (B)	**		0.58		1.66	3.70
B within A	**		1.00		2.88	
A within B			0.94		2.70	
Date of Sowing:	5.11.2019		10.12.2019		1.1.2020	
Date of Harvesting:	15.04.2020		20.04.2020		22.04.2020	

Table 2.1.9. North Western Plains Zone

IR-TAS-DOS

Pantnagar

2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield,q/ha						
HD3298	52.90	3	44.31	5	40.73	5
WH1124(c)	48.66	5	44.64	4	42.53	4
WH1021(c)	45.83	6	41.34	6	37.00	6
HD3059 (c)	49.01	4	55.38	1	48.21	2
DBW173(c)	54.04	2	50.53	3	46.67	3
PBW771(c)	56.03	1	54.43	2	50.40	1
Mean	51.08		48.44		44.26	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.49		1.94	4.37
Genotypes (B)	**		1.05		3.04	6.60
B within A	N.S.		1.83		5.27	
A within B			1.74		5.02	
Earhead/sqm						
HD3298	436	5	415	6	413	5
WH1124(c)	481	1	459	3	439	1
WH1021(c)	418	6	473	2	429	3
HD3059 (c)	468	3	453	4	439	1
DBW173(c)	474	2	473	1	423	4
PBW771(c)	458	4	426	5	412	6
Mean	456		450		426	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	N.S.		14.73		57.82	14.08
Genotypes (B)	N.S.		10.58		30.54	7.15
B within A	N.S.		18.32		52.90	
A within B			22.28		64.35	
Grains/earhead						
HD3298	25.45	4	26.04	4	25.17	6
WH1124(c)	24.30	5	30.10	2	33.41	2
WH1021(c)	27.40	3	25.35	5	28.25	4
HD3059 (c)	23.09	6	31.86	1	33.73	1
DBW173(c)	28.45	1	23.47	6	27.98	5
PBW771(c)	27.42	2	28.27	3	29.15	3
Mean	26.02		27.52		29.62	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	*		0.61		2.40	9.36
Genotypes (B)	N.S.		1.22		3.52	13.21
B within A	N.S.		2.11		6.11	
A within B			2.02		5.85	
1000 Grains Weight, g						
HD3298	47.98	1	41.14	3	39.39	3
WH1124(c)	42.15	4	32.89	6	29.67	6
WH1021(c)	40.17	5	34.76	5	30.63	5
HD3059 (c)	45.46	3	39.06	4	32.74	4
DBW173(c)	40.08	6	46.61	1	39.90	2
PBW771(c)	46.10	2	45.52	2	42.02	1
Mean	43.66		40.00		35.72	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.74		2.91	7.91
Genotypes (B)	**		1.26		3.63	9.47
B within A	N.S.		2.18		6.28	
A within B			2.12		6.12	
Date of Sowing:	6.11.2019		10.12.2019		1.1.2020	
Date of Harvesting:	18.4.2020		22.4.2020		25.4.2020	

Table 2.1.10. North Western Plains Zone IR-TAS-DOS Sriganaganagar 2019-20

Genotypes	Date of sowing				Mean	Rk
	Normal	Rk	Late	Rk		
Yield,q/ha						
HD3298	79.61	1	67.58	1	42.19	2
WH1124(c)	68.75	5	50.56	5	42.19	3
WH1021(c)	60.94	6	43.92	6	36.46	4
HD3059 (c)	77.74	3	61.84	2	46.83	1
DBW173(c)	75.05	4	59.14	3	34.24	5
PBW771(c)	79.33	2	59.07	4	33.48	6
Mean	73.57		57.02		39.23	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.18		0.72	1.37
Genotypes (B)	**		0.52		1.49	2.73
B within A	**		0.89		2.58	
A within B			0.84		2.41	
Earhead/sqm						
HD3298	543	4	368	2	213	5
WH1124(c)	555	3	361	3	218	2
WH1021(c)	569	2	388	1	221	1
HD3059 (c)	539	5	357	4	216	3
DBW173(c)	575	1	307	6	214	4
PBW771(c)	517	6	315	5	198	6
Mean	550		349		213	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		5.49		21.56	6.28
Genotypes (B)	**		6.67		19.26	5.39
B within A	*		11.55		33.35	
A within B			11.89		34.33	
Grains/earhead						
HD3298	36.77	4	48.46	4	56.81	4
WH1124(c)	34.29	5	39.94	5	62.09	2
WH1021(c)	30.82	6	35.67	6	59.67	3
HD3059 (c)	38.90	1	50.00	3	75.23	1
DBW173(c)	37.58	2	61.00	1	55.97	5
PBW771(c)	37.26	3	50.80	2	54.46	6
Mean	35.94		47.65		60.70	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.30		1.17	2.63
Genotypes (B)	**		1.23		3.56	7.70
B within A	**		2.14		6.17	
A within B			1.97		5.70	
1000 Grains Weight, g						
HD3298	39.97	2	37.95	1	34.90	1
WH1124(c)	36.17	4	35.27	3	31.30	2
WH1021(c)	34.78	6	31.78	5	27.67	6
HD3059 (c)	37.12	3	34.67	4	28.79	4
DBW173(c)	34.79	5	31.60	6	28.76	5
PBW771(c)	41.22	1	37.00	2	31.12	3
Mean	37.34		34.71		30.42	
	F. Test		SEm		CD (0.05)	CV (%)
Date of sowing (A)	**		0.10		0.39	1.23
Genotypes (B)	**		0.16		0.47	1.43
B within A	**		0.28		0.81	
A within B			0.28		0.79	
Date of Sowing:	11.11.2019		16.12.2019		06.01.2020	
Date of Harvesting:	19.04.2020		22.04.2020		30.04.2020	

Table 2.2.1. North Western Plains Zone

IR-ES-HYT

BISA

2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
Yield,q/ha								
DBW327	63.48	3	58.54	4	67.29	2	63.11	3
HD3086 (c)	46.31	15	45.88	14	58.77	10	50.32	13
DBW332	63.78	2	61.24	3	61.16	7	62.06	4
DBW303*	61.16	4	62.73	2	72.75	1	65.55	1
HD2967 (c)	48.82	14	42.39	15	41.24	15	44.15	15
DBW187*	60.96	5	50.10	11	61.40	5	57.49	8
DBW329	57.37	8	55.34	7	60.85	8	57.85	6
WH1252	60.31	6	55.77	6	56.71	11	57.60	7
HD3378	49.62	13	51.23	9	49.62	14	50.16	14
WH1270*	51.09	11	50.46	10	51.90	13	51.15	12
DBW333	50.43	12	53.18	8	64.34	3	55.98	9
DBW330	51.77	10	48.36	13	61.29	6	53.80	10
DBW328	59.39	7	56.47	5	60.42	9	58.76	5
DBW331	53.12	9	49.02	12	55.21	12	52.45	11
DBW 222 (c)	65.06	1	64.39	1	62.13	4	63.86	2
Mean	56.18		53.67		59.00		56.29	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.98		3.86		11.71	
Genotype (B)	**		1.44		4.06		7.67	
B within A	**		2.49		7.03			
A within B			2.60		7.54			
Earhead/sqm								
DBW327	490	8	407	15	532	9	476	10
HD3086 (c)	577	1	480	7	542	7	533	1
DBW332	423	13	550	1	547	5	507	5
DBW303*	502	5	433	14	392	15	442	15
HD2967 (c)	500	6	475	8	543	6	506	6
DBW187*	413	15	448	13	578	2	480	9
DBW329	420	14	485	5	482	13	462	14
WH1252	513	4	482	6	585	1	527	3
HD3378	425	12	475	8	500	11	467	12
WH1270*	442	11	497	3	457	14	465	13
DBW333	475	9	455	11	552	4	494	8
DBW330	448	10	467	10	495	12	470	11
DBW328	563	2	452	12	578	2	531	2
DBW331	500	6	498	2	507	10	502	7
DBW 222 (c)	517	3	487	4	533	8	512	4
Mean	481		473		521		492	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		14.01		55.00		19.12	
Genotype (B)	N.S.		24.79		69.82		15.13	
B within A	N.S.		42.93		120.94			
A within B			43.78		126.79			

*AVT 2nd year entry

Grains/Earhead								
DBW327	29.09	9	29.45	6	27.05	12	28.53	11
HD3086 (c)	23.94	15	30.38	3	31.51	9	28.61	10
DBW332	38.47	1	27.88	9	29.16	10	31.84	5
DBW303*	32.07	6	41.68	1	50.19	1	41.31	1
HD2967 (c)	28.48	11	26.37	13	25.85	14	26.90	15
DBW187*	31.97	7	28.29	7	26.18	13	28.82	9
DBW329	36.48	2	30.14	4	39.03	2	35.21	3
WH1252	29.00	10	27.32	10	25.08	15	27.13	14
HD3378	32.98	4	26.65	12	31.64	8	30.42	6
WH1270*	35.00	3	26.69	11	36.53	3	32.74	4
DBW333	26.42	13	27.90	8	32.64	6	28.99	8
DBW330	27.07	12	24.71	15	32.84	5	28.21	12
DBW328	26.17	14	29.47	5	28.30	11	27.98	13
DBW331	32.08	5	25.58	14	32.27	7	29.98	7
DBW 222 (c)	30.95	8	40.53	2	34.27	4	35.25	2
Mean	30.68		29.54		32.17		30.79	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	N.S.		1.46		5.74		31.82	
Genotype (B)	**		1.87		5.27		18.22	
B within A	*		3.24		9.12			
A within B			3.45		10.00			

Table 2.2.1a. North Western Plains Zone IR-ES-HYT BISA 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
1000 Grains Weight, g								
DBW327	44.63	2	49.67	1	46.90	1	47.07	1
HD3086 (c)	34.47	14	31.70	15	34.93	9	33.70	14
DBW332	39.37	8	40.53	8	38.47	4	39.46	7
DBW303*	39.20	9	35.57	13	37.40	6	37.39	8
HD2967 (c)	34.47	13	35.97	12	29.57	15	33.33	15
DBW187*	46.50	1	40.43	10	40.87	2	42.60	2
DBW329	37.60	10	40.53	9	32.83	12	36.99	9
WH1252	40.57	6	44.20	3	39.20	3	41.32	3
HD3378	35.40	11	42.73	4	32.73	13	36.96	10
WH1270*	33.37	15	38.53	11	31.27	14	34.39	13
DBW333	40.70	5	42.23	5	36.73	8	39.89	6
DBW330	43.03	3	42.10	6	38.33	5	41.16	4
DBW328	40.40	7	45.27	2	37.07	7	40.91	5
DBW331	34.77	12	41.47	7	34.53	11	36.92	11
DBW 222 (c)	41.57	4	33.40	14	34.70	10	36.56	12
Mean	39.07		40.29		36.37		38.58	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.23		0.90		3.99	
Genotype (B)	**		0.30		0.85		2.35	
B within A	**		0.52		1.48			
A within B			0.56		1.61			

Biomass, q/ha								
DBW327	168.64	4	163.20	8	172.59	4	168.14	6
HD3086 (c)	144.46	14	149.18	14	169.63	7	154.42	14
DBW332	161.77	10	164.66	6	181.90	1	169.44	4
DBW303*	170.75	3	166.19	5	170.82	5	169.25	5
HD2967 (c)	165.92	7	172.45	2	170.68	6	169.68	3
DBW187*	172.38	2	166.90	4	179.69	2	172.99	2
DBW329	166.22	6	163.88	7	164.39	11	164.83	7
WH1252	149.80	13	168.23	3	165.99	9	161.34	10
HD3378	155.99	12	161.56	9	163.67	13	160.41	12
WH1270*	162.96	8	157.82	11	163.71	12	161.50	9
DBW333	141.05	15	145.61	15	163.23	14	149.97	15
DBW330	159.83	11	159.22	10	164.52	10	161.19	11
DBW328	167.69	5	156.39	12	166.87	8	163.65	8
DBW331	162.24	9	151.39	13	157.07	15	156.90	13
DBW 222 (c)	184.56	1	182.35	1	179.32	3	182.07	1
Mean	162.28		161.94		168.94		164.39	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		1.55		6.10		6.34	
Genotype (B)	**		3.79		10.68		6.92	
B within A	N.S.		6.56		18.49			
A within B			6.53		18.91			
Plant Height, cm								
DBW327	103.33	13	107.67	13	96.17	12	102.39	13
HD3086 (c)	109.00	8	111.50	7	97.33	11	105.94	9
DBW332	105.67	11	107.83	12	100.67	9	104.72	10
DBW303*	108.33	9	110.67	8	100.33	10	106.44	8
HD2967 (c)	118.50	2	115.83	3	107.50	5	113.94	3
DBW187*	103.33	13	111.83	6	94.83	13	103.33	12
DBW329	110.67	7	107.33	14	101.67	8	106.56	7
WH1252	102.17	15	110.33	10	93.67	14	102.06	14
HD3378	124.00	1	118.83	1	116.17	1	119.67	1
WH1270*	113.50	6	115.00	4	104.50	6	111.00	6
DBW333	108.33	9	109.17	11	87.00	15	101.50	15
DBW330	114.17	5	114.00	5	107.57	4	111.91	4
DBW328	104.83	12	106.50	15	102.00	7	104.44	11
DBW331	115.67	4	116.17	2	110.33	2	114.06	2
DBW 222 (c)	116.67	3	110.67	8	108.33	3	111.89	5
Mean	110.54		111.56		101.87		107.99	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.94		3.69		5.85	
Genotype (B)	**		1.50		4.23		4.17	
B within A	*		2.60		7.32			
A within B			2.68		7.77			
Date of Sowing:	25.10.2019				Date of Harvesting:	27.04.2020		

Table 2.2.2. North Western Plains Zone IR-ES-HYT Gurdaspur 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
Yield,q/ha								
DBW327	54.11	13	72.60	5	76.90	7	67.87	9
HD3086 (c)	57.08	12	71.58	6	77.28	6	68.65	7
DBW332	70.85	2	77.09	3	81.32	4	76.42	2
DBW303*	59.44	9	63.77	12	73.55	9	65.59	12
HD2967 (c)	61.57	8	67.43	10	69.56	12	66.18	10
DBW187*	64.92	7	68.42	8	82.50	2	71.94	5
DBW329	76.56	1	78.54	1	83.18	1	79.43	1
WH1252	68.72	3	75.11	4	82.04	3	75.29	3
HD3378	58.45	10	64.31	11	75.72	8	66.16	11
WH1270*	57.91	11	60.50	13	62.71	14	60.38	13
DBW333	51.52	14	59.40	14	63.93	13	58.28	14
DBW330	50.68	15	58.18	15	60.81	15	56.56	15
DBW328	67.05	5	69.18	7	72.30	10	69.51	6
DBW331	66.59	6	68.26	9	69.86	11	68.24	8
DBW 222 (c)	67.96	4	77.44	2	78.31	5	74.57	4
Mean	62.23		68.79		74.00		68.34	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.97		3.82		9.55	
Genotype (B)	**		1.33		3.75		5.84	
B within A	**		2.31		6.50			
A within B			2.43		7.04			
Earhead/sqm								
DBW327	331	7	346	4	360	8	346	8
HD3086 (c)	318	13	325	13	406	1	349	6
DBW332	331	7	346	6	351	12	342	11
DBW303*	285	15	296	15	360	9	314	15
HD2967 (c)	342	3	346	5	362	7	350	5
DBW187*	337	4	345	7	355	11	346	9
DBW329	348	2	352	2	383	6	361	2
WH1252	348	1	352	1	384	4	362	1
HD3378	329	10	335	10	384	5	349	7
WH1270*	326	12	332	12	346	13	335	12
DBW333	317	14	324	14	340	14	327	14
DBW330	327	11	350	3	357	10	344	10
DBW328	332	6	333	11	336	15	334	13
DBW331	334	5	343	8	396	2	358	3
DBW 222 (c)	330	9	340	9	393	3	354	4
Mean	329		338		368		345	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		2.29		8.98		4.45	
Genotype (B)	**		5.63		15.85		4.90	
B within A	**		9.75		27.45			
A within B			9.69		28.06			

Grains/Earhead								
DBW327	36.83	13	43.16	11	42.95	13	40.98	13
HD3086 (c)	46.80	6	52.81	5	53.26	5	50.96	5
DBW332	48.83	5	58.23	1	58.30	1	55.12	1
DBW303*	54.00	1	54.20	4	53.61	4	53.93	3
HD2967 (c)	45.40	8	45.93	10	48.28	10	46.54	10
DBW187*	38.62	12	40.61	13	55.79	2	45.00	11
DBW329	51.72	2	56.83	2	54.40	3	54.32	2
WH1252	46.76	7	50.28	8	52.93	7	49.99	6
HD3378	45.02	9	49.49	9	53.26	6	49.26	7
WH1270*	41.11	11	42.74	12	44.18	12	42.68	12
DBW333	34.61	15	40.11	14	42.31	15	39.01	15
DBW330	36.03	14	38.73	15	44.49	11	39.75	14
DBW328	41.93	10	50.29	7	49.32	9	47.18	9
DBW331	50.79	3	52.33	6	42.78	14	48.63	8
DBW 222 (c)	49.93	4	54.91	3	52.10	8	52.31	4
Mean	44.56		48.71		49.86		47.71	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.94		3.69		13.20	
Genotype (B)	**		1.54		4.34		9.68	
B within A	N.S.		2.67		7.51			
A within B			2.74		7.94			

Table 2.2.2a. North Western Plains Zone IR-ES-HYT Gurdaspur 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
1000 Grains Weight, g								
DBW327	44.44	4	48.78	2	49.90	1	47.71	1
HD3086 (c)	38.68	15	41.85	8	35.92	15	38.82	14
DBW332	44.13	5	38.63	14	39.81	10	40.86	9
DBW303*	38.73	14	39.91	11	38.20	13	38.95	13
HD2967 (c)	39.80	11	42.52	6	39.95	9	40.76	10
DBW187*	49.94	1	49.01	1	41.69	4	46.88	2
DBW329	42.64	8	39.54	12	40.74	7	40.97	8
WH1252	42.54	9	42.40	7	40.57	8	41.83	6
HD3378	39.61	12	38.91	13	37.20	14	38.57	15
WH1270*	43.64	6	42.66	5	41.21	6	42.50	5
DBW333	47.01	3	46.10	3	44.52	2	45.88	3
DBW330	43.17	7	42.99	4	38.56	11	41.58	7
DBW328	48.29	2	41.37	10	43.69	3	44.45	4
DBW331	39.43	13	38.36	15	41.40	5	39.73	12
DBW 222 (c)	41.52	10	41.71	9	38.31	12	40.52	11
Mean	42.90		42.32		40.78		42.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.22		0.87		3.53	
Genotype (B)	**		0.89		2.50		6.33	
B within A	**		1.53		4.32			
A within B			1.50		4.34			

Biomass, q/ha								
DBW327	163.62	8	175.04	8	201.67	5	180.11	7
HD3086 (c)	156.01	14	171.23	10	190.26	8	172.50	10
DBW332	163.62	8	175.04	8	186.45	9	175.04	9
DBW303*	182.65	5	186.45	5	194.06	6	187.72	5
HD2967 (c)	194.06	2	197.87	2	201.67	3	197.87	3
DBW187*	190.26	3	194.06	4	201.67	3	195.33	4
DBW329	186.45	4	197.87	2	216.89	2	200.41	2
WH1252	159.82	12	167.43	13	178.84	11	168.70	13
HD3378	178.84	6	186.45	5	194.06	6	186.45	6
WH1270*	140.79	15	156.01	15	163.62	15	153.48	15
DBW333	163.62	8	171.23	10	178.84	11	171.23	11
DBW330	159.82	12	163.62	14	171.23	14	164.89	14
DBW328	167.43	7	169.71	12	175.04	13	170.73	12
DBW331	163.62	8	178.84	7	182.65	10	175.04	8
DBW 222 (c)	205.48	1	220.70	1	224.51	1	216.89	1
Mean	171.74		180.77		190.77		181.09	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		2.80		11.00		10.38	
Genotype (B)	**		3.71		10.46		6.15	
B within A	N.S.		6.43		18.11			
A within B			6.81		19.73			
Plant Height, cm								
DBW327	86.53	11	86.73	12	73.27	15	82.18	13
HD3086 (c)	85.53	14	85.67	14	73.47	14	81.56	15
DBW332	86.33	13	86.60	13	78.33	10	83.76	11
DBW303*	91.07	3	92.53	2	78.47	9	87.36	3
HD2967 (c)	88.00	8	89.67	8	79.80	8	85.82	9
DBW187*	91.20	2	91.80	3	76.53	12	86.51	7
DBW329	86.67	10	88.07	10	82.47	6	85.73	10
WH1252	83.40	15	84.20	15	77.73	11	81.78	14
HD3378	93.73	1	94.33	1	89.67	1	92.58	1
WH1270*	89.13	5	90.13	5	82.60	5	87.29	4
DBW333	86.40	12	87.13	11	74.47	13	82.67	12
DBW330	88.80	6	89.73	7	83.13	3	87.22	5
DBW328	87.27	9	89.33	9	81.13	7	85.91	8
DBW331	88.07	7	90.13	5	82.73	4	86.98	6
DBW 222 (c)	89.53	4	90.33	4	86.40	2	88.76	2
Mean	88.11		89.09		80.01		85.74	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.72		2.83		5.64	
Genotype (B)	**		1.16		3.28		4.08	
B within A	N.S.		2.02		5.68			
A within B			2.08		6.02			
Date of Sowing:	22.10.2019				Date of Harvesting:	5.05.2020		

Table 2.2.3. North Western Plains Zone IR-ES-HYT Hisar 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
Yield,q/ha								
DBW327	65.07	2	66.46	1	81.02	1	70.85	1
HD3086 (c)	56.60	8	58.23	8	67.86	4	60.90	8
DBW332	55.75	10	56.80	12	62.69	11	58.41	12
DBW303*	58.47	6	63.64	2	64.80	7	62.30	5
HD2967 (c)	49.73	15	48.50	15	53.13	15	50.45	15
DBW187*	52.82	13	55.88	14	55.61	14	54.77	14
DBW329	61.09	3	60.61	5	64.52	9	62.07	6
WH1252	59.35	5	62.24	4	67.31	6	62.97	4
HD3378	56.36	9	58.23	9	62.38	12	58.99	10
WH1270*	51.02	14	56.60	13	61.43	13	56.35	13
DBW333	55.51	11	59.05	7	69.49	3	61.35	7
DBW330	55.10	12	56.90	11	64.73	8	58.91	11
DBW328	59.49	4	60.48	6	70.95	2	63.64	3
DBW331	65.58	1	63.27	3	67.69	5	65.51	2
DBW 222 (c)	57.41	7	58.23	9	64.35	10	60.00	9
Mean	57.29		59.01		65.20		60.50	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.54		2.13		6.01	
Genotype (B)	**		1.03		2.89		5.09	
B within A	**		1.78		5.01			
A within B			1.80		5.22			
Earhead/sqm								
DBW327	418	4	432	2	458	1	436	1
HD3086 (c)	397	10	417	7	442	7	418	7
DBW332	390	12	407	10	433	8	410	11
DBW303*	402	7	433	1	453	2	429	4
HD2967 (c)	387	13	395	14	427	12	403	14
DBW187*	380	14	387	15	425	13	397	15
DBW329	398	8	425	4	452	3	425	6
WH1252	420	3	420	6	445	5	428	5
HD3378	373	15	410	9	430	9	404	13
WH1270*	393	11	398	13	425	13	406	12
DBW333	405	6	402	11	428	11	412	10
DBW330	417	5	402	11	422	15	413	9
DBW328	427	2	425	4	448	4	433	2
DBW331	428	1	427	3	445	5	433	2
DBW 222 (c)	398	8	415	8	430	9	414	8
Mean	402		413		438		418	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		3.21		12.62		5.16	
Genotype (B)	**		8.09		22.80		5.81	
B within A	N.S.		14.02		39.49			
A within B			13.92		40.31			

Grains/Earhead								
DBW327	36.46	4	35.03	6	37.92	5	36.47	5
HD3086 (c)	38.17	1	37.09	1	37.57	6	37.61	1
DBW332	36.27	5	35.34	5	38.79	2	36.80	2
DBW303*	36.96	3	35.44	4	37.23	7	36.54	4
HD2967 (c)	31.83	14	28.87	15	30.02	15	30.24	15
DBW187*	33.73	10	34.34	8	35.08	13	34.38	10
DBW329	34.10	8	32.70	11	35.31	12	34.04	12
WH1252	32.87	13	35.99	2	36.42	9	35.09	8
HD3378	35.47	7	31.20	14	33.59	14	33.42	13
WH1270*	33.40	11	33.57	9	38.51	3	35.16	7
DBW333	30.51	15	32.29	12	37.17	8	33.32	14
DBW330	33.20	12	33.12	10	36.35	10	34.22	11
DBW328	33.84	9	31.61	13	38.19	4	34.55	9
DBW331	36.01	6	34.45	7	39.89	1	36.79	3
DBW 222 (c)	37.63	2	35.67	3	35.69	11	36.33	6
Mean	34.70		33.78		36.51		35.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.56		2.21		10.80	
Genotype (B)	**		1.04		2.93		8.91	
B within A	N.S.		1.80		5.07			
A within B			1.83		5.30			

Table 2.2.3a. North Western Plains Zone IR-ES-HYT Hisar 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
1000 Grains Weight, g								
DBW327	42.82	5	44.15	4	46.72	1	44.56	2
HD3086 (c)	37.51	15	37.67	15	41.01	9	38.73	15
DBW332	39.43	12	39.56	14	37.41	15	38.80	14
DBW303*	39.49	11	41.48	11	38.46	11	39.81	12
HD2967 (c)	40.49	9	42.49	9	41.63	7	41.54	8
DBW187*	41.41	7	42.17	10	37.43	14	40.34	10
DBW329	45.01	2	43.93	5	40.68	10	43.21	4
WH1252	43.04	3	41.26	12	41.64	6	41.98	6
HD3378	42.98	4	45.58	2	43.17	3	43.91	3
WH1270*	38.87	14	42.64	8	37.64	13	39.72	13
DBW333	45.04	1	45.61	1	43.75	2	44.80	1
DBW330	40.04	10	42.84	7	42.25	4	41.71	7
DBW328	41.36	8	45.24	3	41.53	8	42.71	5
DBW331	42.56	6	43.35	6	38.21	12	41.37	9
DBW 222 (c)	38.94	13	39.75	13	42.03	5	40.24	11
Mean	41.27		42.51		40.90		41.56	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.28		1.11		4.56	
Genotype (B)	**		0.47		1.34		3.42	
B within A	**		0.82		2.31			
A within B			0.84		2.44			

Biomass, q/ha								
DBW327	183.67	1	198.64	1	212.93	1	198.41	1
HD3086 (c)	162.93	10	177.21	8	185.37	4	175.17	8
DBW332	158.16	13	166.67	14	172.11	12	165.65	14
DBW303*	168.37	8	179.25	7	180.27	7	175.96	7
HD2967 (c)	169.73	7	172.11	10	157.14	15	166.33	12
DBW187*	161.56	11	171.77	11	165.31	13	166.21	13
DBW329	183.33	2	182.65	4	177.21	9	181.07	4
WH1252	171.77	6	179.93	6	183.33	5	178.34	6
HD3378	178.57	3	188.10	2	186.39	3	184.35	3
WH1270*	156.46	14	169.05	12	178.91	8	168.14	10
DBW333	147.28	15	155.10	15	163.61	14	155.33	15
DBW330	158.84	12	168.71	13	172.79	11	166.78	11
DBW328	167.69	9	173.81	9	182.99	6	174.83	9
DBW331	176.87	5	185.37	3	173.47	10	178.57	5
DBW 222 (c)	177.89	4	182.31	5	194.56	2	184.92	2
Mean	168.21		176.71		179.09		174.67	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		1.47		5.78		5.66	
Genotype (B)	**		2.73		7.68		4.68	
B within A	*		4.72		13.30			
A within B			4.79		13.88			
Plant Height, cm								
DBW327	104.67	14	108.67	13	93.67	11	102.33	14
HD3086 (c)	106.67	11	110.67	12	92.67	14	103.33	13
DBW332	105.00	13	111.00	11	97.00	7	104.33	12
DBW303*	113.00	6	112.33	9	98.33	5	107.89	7
HD2967 (c)	106.33	12	108.67	13	99.33	3	104.78	11
DBW187*	113.67	5	117.67	3	96.33	9	109.22	5
DBW329	109.67	10	113.00	7	93.33	13	105.33	10
WH1252	103.67	15	104.33	15	88.67	15	98.89	15
HD3378	113.00	6	117.33	4	102.67	1	111.00	1
WH1270*	115.33	1	118.33	1	97.00	7	110.22	3
DBW333	114.00	3	112.67	8	93.67	11	106.78	9
DBW330	112.00	9	117.00	5	95.67	10	108.22	6
DBW328	113.00	6	112.00	10	98.00	6	107.67	8
DBW331	115.33	1	115.67	6	99.33	3	110.11	4
DBW 222 (c)	114.00	3	118.33	1	100.33	2	110.89	2
Mean	110.62		113.18		96.40		106.73	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.34		1.35		2.16	
Genotype (B)	**		0.88		2.48		2.47	
B within A	**		1.52		4.29			
A within B			1.51		4.37			
Date of Sowing:					Date of Harvesting:		16.04.2020	

Table 2.2.4. North Western Plains Zone		IR-ES-HYT		Karnal		2019-20		
Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
Yield,q/ha								
DBW327	63.56	4	65.43	3	72.29	7	67.09	4
HD3086 (c)	61.05	10	64.49	4	74.83	2	66.79	5
DBW332	62.12	6	62.06	11	72.27	8	65.48	9
DBW303*	60.33	12	63.18	7	74.49	3	66.00	7
HD2967 (c)	60.38	11	60.08	15	68.43	12	62.96	13
DBW187*	66.90	1	64.44	5	75.86	1	69.07	1
DBW329	63.83	3	66.06	1	74.31	4	68.07	2
WH1252	59.11	13	61.06	12	66.81	14	62.33	15
HD3378	58.87	14	60.32	13	69.72	10	62.97	12
WH1270*	61.36	9	62.87	10	66.34	15	63.52	11
DBW333	58.83	15	60.23	14	68.33	13	62.46	14
DBW330	62.07	8	63.15	8	71.72	9	65.65	8
DBW328	62.11	7	63.66	6	72.82	5	66.20	6
DBW331	62.44	5	62.96	9	69.26	11	64.89	10
DBW 222 (c)	64.29	2	65.88	2	72.69	6	67.62	3
Mean	61.82		63.06		71.34		65.41	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.55		2.14		5.59	
Genotype (B)	**		0.95		2.68		4.36	
B within A	N.S.		1.65		4.64			
A within B			1.68		4.87			
Earhead/sqm								
DBW327	325	13	341	14	360	14	342	14
HD3086 (c)	377	3	393	1	424	1	398	1
DBW332	293	15	305	15	356	15	318	15
DBW303*	334	11	353	7	365	12	351	11
HD2967 (c)	392	1	367	5	420	2	393	2
DBW187*	378	2	364	6	419	3	387	3
DBW329	363	6	346	11	374	11	361	7
WH1252	360	7	378	2	392	6	376	6
HD3378	327	12	351	9	364	13	347	12
WH1270*	348	8	343	12	381	7	357	9
DBW333	348	8	352	8	376	10	358	8
DBW330	364	5	377	3	418	4	386	4
DBW328	337	10	347	10	379	8	354	10
DBW331	320	14	343	12	378	9	347	13
DBW 222 (c)	366	4	368	4	417	5	383	5
Mean	349		355		388		364	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		6.21		24.37		11.44	
Genotype (B)	**		11.38		32.05		9.38	
B within A	N.S.		19.71		55.51			
A within B			20.02		58.00			

Grains/Earhead								
DBW327	34.83	10	34.45	12	36.12	13	35.13	12
HD3086 (c)	34.48	11	36.46	8	38.42	9	36.45	9
DBW332	45.11	1	43.40	1	45.05	2	44.52	1
DBW303*	40.44	3	41.50	2	48.76	1	43.57	2
HD2967 (c)	36.08	8	38.04	7	39.91	6	38.01	8
DBW187*	33.79	13	33.99	13	36.89	12	34.89	13
DBW329	37.25	7	39.38	4	41.38	4	39.34	4
WH1252	33.11	15	32.84	15	35.47	14	33.80	15
HD3378	37.32	6	35.39	9	41.60	3	38.10	7
WH1270*	37.73	5	38.25	6	38.46	8	38.14	6
DBW333	34.46	12	34.81	11	38.15	10	35.81	11
DBW330	33.21	14	33.71	14	34.75	15	33.89	14
DBW328	34.89	9	35.36	10	37.19	11	35.81	10
DBW331	43.33	2	40.29	3	41.18	5	41.60	3
DBW 222 (c)	38.73	4	38.38	5	38.73	7	38.61	5
Mean	36.98		37.08		39.47		37.85	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.40		1.58		7.13	
Genotype (B)	**		1.20		3.39		9.53	
B within A	N.S.		2.08		5.87			
A within B			2.05		5.94			

Table 2.2.4a. North Western Plains Zone IR-ES-HYT Karnal 2019 -20

Genotypes	Nutrient management						Mean	Rk
	NPK		150% NPK		150%NPK + FYM+GR			
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
1000 Grains Weight, g								
DBW327	56.46	1	56.05	1	56.21	1	56.24	1
HD3086 (c)	47.10	11	45.36	13	46.17	8	46.21	11
DBW332	47.22	10	46.99	10	45.30	11	46.50	10
DBW303*	44.64	14	43.29	15	41.93	14	43.29	14
HD2967 (c)	43.14	15	43.37	14	41.42	15	42.64	15
DBW187*	52.30	3	52.08	3	49.19	4	51.19	3
DBW329	47.28	9	48.57	8	48.39	5	48.08	7
WH1252	49.86	6	49.58	5	48.28	6	49.24	5
HD3378	48.42	7	49.17	7	46.07	9	47.88	8
WH1270*	47.30	8	47.93	9	45.85	10	47.02	9
DBW333	50.11	5	49.46	6	47.87	7	49.15	6
DBW330	51.29	4	50.09	4	49.89	3	50.42	4
DBW328	52.93	2	52.15	2	51.66	2	52.25	2
DBW331	45.03	13	45.61	12	44.73	13	45.13	13
DBW 222 (c)	46.17	12	46.95	11	45.29	12	46.14	12
Mean	48.62		48.44		47.22		48.09	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.38		1.51		5.35	
Genotype (B)	**		0.42		1.17		2.59	
B within A	N.S.		0.72		2.03			
A within B			0.79		2.30			

Biomass, q/ha								
DBW327	168.35	5	174.08	3	176.50	5	172.98	4
HD3086 (c)	156.69	13	160.07	12	171.24	9	162.67	13
DBW332	153.28	14	153.52	14	166.20	13	157.67	14
DBW303*	169.95	4	166.07	6	173.15	8	169.72	6
HD2967 (c)	203.17	1	204.17	1	231.48	1	212.94	1
DBW187*	165.26	7	164.81	7	166.67	12	165.58	9
DBW329	163.03	9	163.43	8	175.46	6	167.31	7
WH1252	165.26	7	167.59	5	179.17	4	170.67	5
HD3378	178.40	3	174.07	4	188.19	2	180.22	3
WH1270*	166.67	6	161.57	10	171.06	10	166.44	8
DBW333	147.89	15	145.83	15	150.93	15	148.22	15
DBW330	160.09	11	159.26	13	173.90	7	164.42	10
DBW328	160.56	10	162.50	9	166.20	13	163.09	12
DBW331	160.09	11	160.65	11	169.44	11	163.40	11
DBW 222 (c)	180.80	2	175.93	2	187.50	3	181.41	2
Mean	166.63		166.24		176.47		169.78	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.52		2.05		2.06	
Genotype (B)	**		2.25		6.34		3.98	
B within A	N.S.		3.90		10.98			
A within B			3.80		11.01			
Plant Height, cm								
DBW327	102.07	12	103.27	12	93.67	11	99.67	12
HD3086 (c)	101.27	14	104.33	11	90.40	14	98.67	13
DBW332	102.27	11	101.93	14	95.33	9	99.84	11
DBW303*	108.47	8	111.20	3	97.27	5	105.64	5
HD2967 (c)	111.27	4	111.20	3	101.73	2	108.07	3
DBW187*	109.40	6	109.00	8	95.07	10	104.49	8
DBW329	105.40	10	107.00	10	96.97	7	103.12	10
WH1252	99.67	15	101.00	15	90.47	13	97.04	14
HD3378	116.60	1	116.13	1	100.27	3	111.00	1
WH1270*	111.40	3	111.87	2	93.60	12	105.62	6
DBW333	102.00	13	102.47	13	86.33	15	96.93	15
DBW330	109.07	7	110.87	5	98.11	4	106.02	4
DBW328	106.73	9	108.53	9	96.53	8	103.93	9
DBW331	110.53	5	109.07	7	97.27	5	105.62	6
DBW 222 (c)	112.27	2	110.53	6	104.07	1	108.96	2
Mean	107.23		107.89		95.81		103.64	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		1.25		4.93		8.12	
Genotype (B)	**		0.69		1.94		1.99	
B within A	**		1.19		3.36			
A within B			1.70		4.93			
Date of Sowing:	24.10.2019				Date of Harvesting:	12.04.2020		

Table 2.2.5. North Western Plains Zone		IR-ES-HYT		Ludhiana		2019-20		
Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
Yield,q/ha								
DBW327	60.28	14	61.11	11	64.73	13	62.04	14
HD3086 (c)	65.28	9	67.81	3	71.53	7	68.21	5
DBW332	70.28	3	67.48	4	77.09	1	71.62	1
DBW303*	65.84	8	63.37	7	69.73	10	66.31	10
HD2967 (c)	65.84	7	61.39	10	74.37	4	67.20	7
DBW187*	60.14	15	60.14	12	71.25	8	63.85	11
DBW329	73.06	1	73.20	1	66.31	12	70.86	2
WH1252	67.45	6	68.51	2	76.26	2	70.74	3
HD3378	64.53	10	55.84	15	68.63	11	63.00	13
WH1270*	72.78	2	64.10	6	72.09	5	69.66	4
DBW333	64.31	11	65.98	5	71.20	9	67.16	9
DBW330	62.42	12	63.25	8	64.38	15	63.35	12
DBW328	61.12	13	57.09	14	64.73	14	60.98	15
DBW331	67.78	5	61.95	9	71.84	6	67.19	8
DBW 222 (c)	69.45	4	59.17	13	75.17	3	67.93	6
Mean	66.04		63.36		70.62		66.67	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.80		3.13		8.03	
Genotype (B)	**		1.35		3.80		6.08	
B within A	**		2.34		6.59			
A within B			2.40		6.94			
Earhead/sqm								
DBW327	395	3	395	7	426	3	405	4
HD3086 (c)	403	1	406	2	424	4	411	1
DBW332	364	13	368	15	384	14	372	15
DBW303*	387	6	393	11	398	9	392	8
HD2967 (c)	392	4	404	4	407	7	401	6
DBW187*	383	10	393	9	408	6	394	7
DBW329	361	15	379	13	385	13	375	14
WH1252	398	2	405	3	413	5	405	4
HD3378	384	8	399	5	384	14	389	9
WH1270*	375	12	377	14	387	12	379	13
DBW333	387	6	407	1	428	2	407	3
DBW330	380	11	393	9	392	11	388	10
DBW328	383	9	388	12	393	10	388	11
DBW331	391	5	396	6	438	1	408	2
DBW 222 (c)	363	14	394	8	403	8	387	12
Mean	383		393		405		394	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		2.63		10.32		4.48	
Genotype (B)	*		8.98		25.29		6.84	
B within A	N.S.		15.55		43.81			
A within B			15.25		44.18			

Grains/Earhead								
DBW327	30.33	14	29.27	14	29.24	15	29.61	15
HD3086 (c)	38.99	8	43.82	3	39.06	12	40.62	7
DBW332	48.57	1	43.99	2	51.98	1	48.18	1
DBW303*	44.75	3	37.64	7	41.95	6	41.44	5
HD2967 (c)	37.71	9	38.58	5	47.55	2	41.28	6
DBW187*	29.73	15	36.67	8	43.28	5	36.56	10
DBW329	42.16	5	43.24	4	40.07	8	41.82	4
WH1252	36.00	10	33.68	11	39.12	11	36.27	11
HD3378	34.69	12	30.22	13	39.44	9	34.78	13
WH1270*	42.73	4	37.88	6	44.99	3	41.87	3
DBW333	35.95	11	36.21	10	35.25	14	35.80	12
DBW330	41.85	7	36.43	9	40.18	7	39.49	9
DBW328	32.35	13	28.98	15	39.17	10	33.50	14
DBW331	48.37	2	44.38	1	38.79	13	43.85	2
DBW 222 (c)	42.02	6	33.07	12	44.80	4	39.97	8
Mean	39.08		36.94		40.99		39.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.78		3.05		13.37	
Genotype (B)	**		2.04		5.76		15.72	
B within A	N.S.		3.54		9.97			
A within B			3.51		10.16			

Table 2.2.5a. North Western Plains Zone IR-ES-HYT Ludhiana 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK		150% NPK		150%NPK + FYM+GR			
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
1000 Grains Weight, g								
DBW327	50.57	2	53.90	1	52.51	1	52.32	1
HD3086 (c)	42.52	11	38.51	14	43.96	5	41.67	11
DBW332	40.72	13	42.19	12	39.12	14	40.68	14
DBW303*	38.41	14	43.77	10	42.54	8	41.57	12
HD2967 (c)	45.11	10	39.68	13	39.00	15	41.27	13
DBW187*	53.51	1	43.58	11	40.52	13	45.87	6
DBW329	48.49	5	45.00	8	42.98	6	45.49	7
WH1252	47.61	6	50.40	3	47.86	3	48.62	2
HD3378	48.66	4	46.68	4	45.56	4	46.97	4
WH1270*	45.64	9	45.33	6	41.59	11	44.18	9
DBW333	46.65	7	45.20	7	48.31	2	46.72	5
DBW330	40.79	12	44.36	9	41.37	12	42.18	10
DBW328	49.95	3	51.45	2	42.31	9	47.90	3
DBW331	36.48	15	38.17	15	42.55	7	39.06	15
DBW 222 (c)	45.76	8	46.27	5	42.14	10	44.72	8
Mean	45.39		44.96		43.49		44.62	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.42		1.64		6.28	
Genotype (B)	**		1.85		5.21		12.44	
B within A	N.S.		3.20		9.03			
A within B			3.12		9.05			

Biomass, q/ha								
DBW327	134.73	9	137.79	14	147.23	2	139.92	8
HD3086 (c)	136.68	7	141.68	10	136.12	11	138.16	11
DBW332	146.40	2	150.29	4	142.79	4	146.49	3
DBW303*	133.90	10	151.40	3	142.79	3	142.70	6
HD2967 (c)	139.18	6	155.01	2	151.79	1	148.66	2
DBW187*	131.96	13	136.68	15	130.57	14	133.07	15
DBW329	130.57	15	147.90	7	137.79	9	138.75	9
WH1252	144.46	4	148.34	6	142.34	5	145.05	4
HD3378	136.12	8	139.45	11	137.23	10	137.60	12
WH1270*	148.64	1	157.79	1	142.23	6	149.55	1
DBW333	146.12	3	150.01	5	130.57	14	142.23	7
DBW330	131.96	13	143.01	9	139.79	8	138.25	10
DBW328	132.79	12	138.90	12	133.90	12	135.20	13
DBW331	133.62	11	138.45	13	133.34	13	135.14	14
DBW 222 (c)	144.46	4	144.46	8	141.68	7	143.53	5
Mean	138.10		145.41		139.34		140.95	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		1.38		5.41		6.55	
Genotype (B)	**		2.37		6.68		5.05	
B within A	N.S.		4.11		11.57			
A within B			4.20		12.17			
Plant Height, cm								
DBW327	87.25	11	90.33	13	80.58	9	86.06	11
HD3086 (c)	88.08	10	87.75	14	77.50	13	84.44	13
DBW332	88.33	9	90.92	12	72.33	15	83.86	14
DBW303*	89.25	6	97.33	4	81.58	8	89.39	5
HD2967 (c)	88.42	8	94.75	6	83.08	4	88.75	6
DBW187*	93.50	4	94.00	8	78.25	12	88.58	8
DBW329	80.75	15	94.92	5	80.17	11	85.28	12
WH1252	84.25	14	83.00	15	75.33	14	80.86	15
HD3378	96.83	3	99.83	2	87.58	3	94.75	2
WH1270*	90.58	5	93.50	9	82.08	7	88.72	7
DBW333	85.83	13	93.08	10	82.17	5	87.03	9
DBW330	89.25	6	97.42	3	82.17	5	89.61	4
DBW328	86.67	12	91.58	11	80.25	10	86.17	10
DBW331	99.67	2	94.50	7	89.08	2	94.42	3
DBW 222 (c)	104.92	1	101.08	1	91.08	1	99.03	1
Mean	90.24		93.60		81.55		88.46	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		1.67		6.55		12.66	
Genotype (B)	**		2.04		5.76		6.93	
B within A	N.S.		3.54		9.98			
A within B			3.81		11.03			
Date of Sowing:	4.11.2019				Date of Harvesting:	20.04.2020		

Table 2.2.6. North Western Plains Zone		IR-ES-HYT		Pantnagar		2019-20		
Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
Yield,q/ha								
DBW327	59.08	3	53.07	12	64.56	4	58.90	8
HD3086 (c)	50.57	14	54.57	10	49.56	15	51.57	14
DBW332	58.58	4	58.37	7	68.70	2	61.88	2
DBW303*	59.59	2	63.09	2	62.39	6	61.69	3
HD2967 (c)	54.93	10	60.56	4	72.80	1	62.76	1
DBW187*	61.88	1	60.60	3	61.01	7	61.16	4
DBW329	56.58	6	60.53	5	62.89	5	60.00	6
WH1252	51.57	12	59.81	6	57.57	11	56.32	9
HD3378	52.65	11	57.01	8	58.33	9	56.00	10
WH1270*	44.06	15	48.07	15	51.14	14	47.76	15
DBW333	50.72	13	50.91	13	56.03	13	52.55	13
DBW330	56.08	8	64.89	1	57.68	10	59.55	7
DBW328	56.58	6	50.21	14	59.72	8	55.50	12
DBW331	57.07	5	54.07	11	56.71	12	55.95	11
DBW 222 (c)	55.63	9	56.75	9	67.91	3	60.09	5
Mean	55.04		56.83		60.47		57.45	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		0.65		2.55		7.58	
Genotype (B)	**		1.21		3.40		6.29	
B within A	**		2.09		5.88			
A within B			2.12		6.14			
Earhead/sqm								
DBW327	388	8	403	8	528	1	440	3
HD3086 (c)	389	6	397	10	449	12	412	11
DBW332	355	13	400	9	475	6	410	13
DBW303*	312	15	391	11	474	7	392	14
HD2967 (c)	380	9	411	6	475	5	422	8
DBW187*	398	5	386	13	456	10	413	10
DBW329	428	2	410	7	431	14	423	6
WH1252	412	3	514	2	450	11	459	2
HD3378	403	4	527	1	496	2	475	1
WH1270*	380	9	450	3	479	4	437	4
DBW333	374	12	413	5	469	8	419	9
DBW330	376	11	442	4	490	3	436	5
DBW328	389	6	388	12	457	9	411	12
DBW331	440	1	384	14	443	13	422	7
DBW 222 (c)	346	14	378	15	424	15	383	15
Mean	385		420		466		424	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		6.93		27.19		10.97	
Genotype (B)	**		9.93		27.98		7.04	
B within A	**		17.20		48.46			
A within B			18.01		52.15			

Grains/Earhead								
DBW327	27.06	12	23.99	12	24.60	15	25.21	12
HD3086 (c)	28.49	11	26.05	10	26.67	11	27.07	11
DBW332	36.00	2	32.67	2	33.73	2	34.13	2
DBW303*	42.24	1	31.98	3	29.16	6	34.46	1
HD2967 (c)	33.13	4	27.61	8	32.44	4	31.06	5
DBW187*	30.24	7	36.53	1	27.91	9	31.56	3
DBW329	29.34	9	31.26	4	33.78	1	31.46	4
WH1252	24.91	14	22.64	14	27.10	10	24.88	13
HD3378	27.00	13	20.15	15	25.60	13	24.25	15
WH1270*	23.06	15	25.69	11	24.80	14	24.52	14
DBW333	33.42	3	23.40	13	28.68	7	28.50	10
DBW330	30.66	5	31.17	5	26.03	12	29.29	9
DBW328	30.27	6	29.00	7	31.28	5	30.18	7
DBW331	28.67	10	31.08	6	28.37	8	29.38	8
DBW 222 (c)	29.98	8	27.40	9	33.26	3	30.21	6
Mean	30.30		28.04		28.89		29.08	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	N.S.		0.99		3.89		22.87	
Genotype (B)	**		1.25		3.52		12.91	
B within A	**		2.17		6.10			
A within B			2.32		6.71			

Table 2.2.6a. North Western Plains Zone IR-ES-HYT Pantnagar 2019-20

Genotypes	Nutrient management						Mean	Rk
	NPK	Rk	150% NPK	Rk	150%NPK + FYM+GR	Rk		
1000 Grains Weight, g								
DBW327	56.42	1	54.92	1	50.41	1	53.92	1
HD3086 (c)	45.94	11	53.48	5	41.82	14	47.08	9
DBW332	46.30	10	45.04	13	43.71	10	45.02	15
DBW303*	45.85	12	50.72	8	46.32	6	47.63	7
HD2967 (c)	43.95	14	53.63	4	47.54	5	48.37	5
DBW187*	51.95	3	43.31	14	48.00	3	47.76	6
DBW329	45.36	13	47.48	10	43.39	11	45.41	12
WH1252	50.70	5	52.00	7	47.95	4	50.22	3
HD3378	48.45	8	53.88	3	46.04	7	49.45	4
WH1270*	50.80	4	42.14	15	43.19	12	45.38	13
DBW333	40.79	15	53.14	6	41.82	15	45.25	14
DBW330	49.38	6	48.16	9	45.18	9	47.57	8
DBW328	49.04	7	45.15	12	42.07	13	45.42	11
DBW331	46.41	9	45.89	11	45.34	8	45.88	10
DBW 222 (c)	54.79	2	54.90	2	48.22	2	52.64	2
Mean	48.41		49.59		45.40		47.80	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	*		0.71		2.77		9.92	
Genotype (B)	**		1.37		3.85		8.57	
B within A	**		2.37		6.66			
A within B			2.39		6.93			

Biomass, q/ha								
DBW327	121.90	6	116.33	9	126.53	4	121.59	7
HD3086 (c)	114.56	13	107.48	14	113.61	10	111.88	13
DBW332	115.65	12	114.29	10	138.10	2	122.68	5
DBW303*	117.11	10	119.05	8	121.02	9	119.06	10
HD2967 (c)	143.54	1	143.99	1	148.33	1	145.29	1
DBW187*	131.97	2	110.88	13	125.93	5	122.93	4
DBW329	116.18	11	123.51	6	123.81	6	121.17	8
WH1252	118.37	8	121.02	7	121.09	8	120.16	9
HD3378	124.15	5	125.71	5	123.05	7	124.30	3
WH1270*	107.15	14	106.12	15	101.36	14	104.88	15
DBW333	96.00	15	128.07	3	96.96	15	107.01	14
DBW330	124.49	4	129.25	2	112.93	11	122.22	6
DBW328	118.88	7	126.41	4	107.23	13	117.51	11
DBW331	117.69	9	112.73	11	112.93	11	114.45	12
DBW 222 (c)	128.57	3	112.71	12	133.41	3	124.90	2
Mean	119.75		119.84		120.42		120.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	N.S.		2.49		9.77		13.92	
Genotype (B)	**		3.01		8.48		7.52	
B within A	**		5.21		14.68			
A within B			5.62		16.27			
Plant Height, cm								
DBW327	87.83	15	94.83	13	76.83	14	86.50	15
HD3086 (c)	90.93	13	96.70	9	74.43	15	87.36	14
DBW332	91.87	12	94.83	13	80.30	10	89.00	13
DBW303*	95.70	10	90.27	15	82.40	7	89.46	10
HD2967 (c)	110.17	2	105.07	1	98.27	1	104.50	1
DBW187*	97.47	8	100.63	3	77.67	13	91.92	7
DBW329	99.13	6	96.80	8	84.57	5	93.50	6
WH1252	90.13	14	96.23	10	80.77	9	89.04	12
HD3378	111.40	1	98.80	4	91.93	2	100.71	2
WH1270*	95.90	9	98.10	6	77.73	12	90.58	9
DBW333	93.83	11	95.83	12	78.33	11	89.33	11
DBW330	101.10	3	98.63	5	82.70	6	94.14	5
DBW328	97.53	7	96.07	11	81.93	8	91.84	8
DBW331	100.63	5	103.63	2	89.03	4	97.77	3
DBW 222 (c)	101.07	4	97.57	7	90.43	3	96.36	4
Mean	97.65		97.60		83.16		92.80	
	F. Test		SEm		CD (0.05)		CV (%)	
Nutrients (A)	**		1.27		5.00		9.20	
Genotype (B)	**		1.48		4.17		4.79	
B within A	*		2.56		7.22			
A within B			2.78		8.07			
Date of Sowing:					Date of Harvesting:		16.4.2020	

Table 3.1.1. North Eastern Plains Zone		RIR-TS-TAS		Burdwan		2019-20		
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	22.68	1	29.56	2	31.51	2	27.92	2
K 1317 (c)	20.78	2	27.63	3	29.01	4	25.81	3
HD 3171 (c)	15.70	5	22.42	5	28.26	6	22.13	6
DBW 252 (c)	15.26	6	22.11	6	30.00	3	22.46	5
HI 1612 (c)	20.26	3	30.05	1	33.64	1	27.99	1
HD 2888 (c)	18.26	4	25.57	4	28.33	5	24.05	4
Mean	18.82		26.23		30.13		25.06	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.31		1.23		5.31	
Genotype(B)	**		0.58		1.68		6.95	
B within A	*		1.01		2.90			
A within B			0.97		2.80			
Earheads/sqm								
HD 3293	243	1	277	2	280	2	267	2
K 1317 (c)	215	5	257	4	263	5	245	5
HD 3171 (c)	225	3	252	6	265	4	247	3
DBW 252 (c)	212	6	253	5	267	3	244	6
HI 1612 (c)	235	2	282	1	288	1	268	1
HD 2888 (c)	218	4	258	3	260	6	246	4
Mean	225		263		271		253	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		4.15		16.28		6.96	
Genotype(B)	*		6.80		19.64		8.07	
B within A	N.S.		11.78		34.02			
A within B			11.53		33.29			
Grains/Earhead								
HD 3293	21.6	2	24.1	3	24.1	4	23.3	3
K 1317 (c)	22.4	1	24.4	2	24.3	3	23.7	2
HD 3171 (c)	17.1	6	20.9	5	23.9	5	20.6	5
DBW 252 (c)	17.2	5	20.2	6	24.4	2	20.6	6
HI 1612 (c)	21.3	3	25.4	1	25.9	1	24.2	1
HD 2888 (c)	19.4	4	22.5	4	23.7	6	21.8	4
Mean	19.82		22.91		24.39		22.38	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.21		0.82		3.96	
Genotype(B)	**		0.43		1.25		5.79	
B within A	*		0.75		2.16			
A within B			0.71		2.06			
1000 Grains Weight, g								
HD 3293	43.20	1	44.41	1	46.67	1	44.76	1
K 1317 (c)	43.20	1	44.15	2	45.39	4	44.25	3
HD 3171 (c)	41.06	5	42.82	5	44.80	6	42.89	5
DBW 252 (c)	41.97	4	43.31	4	46.18	2	43.82	4
HI 1612 (c)	40.45	6	42.16	6	45.08	5	42.56	6
HD 2888 (c)	43.16	3	44.13	3	46.07	3	44.45	2
Mean	42.17		43.50		45.70		43.79	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.15		0.57		1.41	
Genotype(B)	**		0.36		1.05		2.49	
B within A	N.S.		0.63		1.82			
A within B			0.59		1.71			
Date of Sowing:			19.11.19					
Date of Harvesting:			05.03.20		11.03.20		13.03.20	

Table 3.1.2 North Eastern Plains Zone			RIR-TS-TAS		Coochbehar		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	30.33	3	39.13	1	42.87	1	37.44	2
K 1317 (c)	26.83	5	30.13	5	34.23	5	30.40	5
HD 3171 (c)	24.97	6	28.37	6	32.63	6	28.66	6
DBW 252 (c)	29.57	4	36.50	4	41.07	3	35.71	4
HI 1612 (c)	31.83	1	38.40	2	42.37	2	37.53	1
HD 2888 (c)	31.10	2	36.67	3	40.33	4	36.03	3
Mean	29.11		34.87		38.92		34.30	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.60		2.37		7.48	
Genotype(B)	**		1.55		4.47		13.54	
B within A	N.S.		2.68		7.74			
A within B			2.52		7.28			
Earheads/sqm								
HD 3293	215	3	227	3	254	2	232	2
K 1317 (c)	207	5	226	4	238	5	224	5
HD 3171 (c)	190	6	199	6	208	6	199	6
DBW 252 (c)	212	4	212	5	250	3	225	4
HI 1612 (c)	221	1	229	2	257	1	236	1
HD 2888 (c)	219	2	231	1	241	4	230	3
Mean	211		221		241		224	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		6.82		26.79		12.91	
Genotype(B)	N.S.		8.57		24.75		11.46	
B within A	N.S.		14.84		42.87			
A within B			15.17		43.82			
Grains/Earhead								
HD 3293	39.5	1	42.9	3	42.1	2	41.5	2
K 1317 (c)	34.2	6	33.3	6	35.6	6	34.4	6
HD 3171 (c)	35.8	5	36.3	5	39.7	5	37.3	5
DBW 252 (c)	38.6	4	43.7	2	41.8	3	41.4	3
HI 1612 (c)	39.2	2	44.2	1	41.2	4	41.5	1
HD 2888 (c)	38.7	3	41.2	4	42.4	1	40.8	4
Mean	37.66		40.26		40.47		39.46	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		1.62		6.35		17.40	
Genotype(B)	N.S.		2.77		8.00		21.07	
B within A	N.S.		4.80		13.86			
A within B			4.67		13.49			
1000 Grains Weight, g								
HD 3293	35.97	6	40.30	2	40.70	1	38.99	4
K 1317 (c)	38.43	1	40.10	3	40.50	3	39.68	1
HD 3171 (c)	37.33	3	39.32	5	40.54	2	39.06	3
DBW 252 (c)	36.67	5	40.77	1	40.07	5	39.17	2
HI 1612 (c)	36.70	4	39.67	4	40.33	4	38.90	5
HD 2888 (c)	37.86	2	39.07	6	39.53	6	38.82	6
Mean	37.16		39.87		40.28		39.10	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		0.43		1.68		4.65	
Genotype(B)	N.S.		0.87		2.51		6.68	
B within A	N.S.		1.51		4.36			
A within B			1.44		4.16			
Date of Sowing:	14.11.2019							
Date of Harvesting:			05.03.2020		10.03.2020		14.03.2020	

Table 3.1.3 North Eastern Plains Zone			RIR-TS-TAS		Faizabad		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	26.25	6	36.01	6	41.07	6	34.44	6
K 1317 (c)	27.86	3	37.00	3	42.52	4	35.79	4
HD 3171 (c)	30.54	2	41.01	2	46.01	2	39.19	2
DBW 252 (c)	31.84	1	44.05	1	50.00	1	41.96	1
HI 1612 (c)	26.89	5	36.29	5	41.53	5	34.90	5
HD 2888 (c)	27.78	4	36.71	4	43.06	3	35.85	3
Mean	28.53		38.51		44.03		37.02	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.88		3.47		10.14	
Genotype(B)	**		1.10		3.19		8.95	
B within A	N.S.		1.91		5.52			
A within B			1.96		5.65			
Earheads/sqm								
HD 3293	168	6	268	6	283	6	240	6
K 1317 (c)	190	4	292	3	316	4	266	3
HD 3171 (c)	198	2	304	2	334	2	278	2
DBW 252 (c)	208	1	319	1	355	1	294	1
HI 1612 (c)	174	5	284	5	297	5	252	5
HD 2888 (c)	191	3	285	4	320	3	265	4
Mean	188		292		317		266	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		3.35		13.15		5.35	
Genotype(B)	**		6.17		17.83		6.97	
B within A	N.S.		10.69		30.88			
A within B			10.32		29.80			
Grains/Earhead								
HD 3293	45.0	1	36.4	1	38.1	1	39.8	1
K 1317 (c)	41.4	4	33.6	5	34.5	3	36.5	5
HD 3171 (c)	43.1	3	34.9	2	34.3	5	37.4	3
DBW 252 (c)	41.0	5	34.7	3	34.4	4	36.7	4
HI 1612 (c)	44.6	2	33.7	4	36.4	2	38.2	2
HD 2888 (c)	40.4	6	33.2	6	34.3	6	35.9	6
Mean	42.59		34.41		35.32		37.44	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.86		3.37		9.74	
Genotype(B)	N.S.		1.63		4.70		13.04	
B within A	N.S.		2.82		8.14			
A within B			2.71		7.84			
1000 Grains Weight, g								
HD 3293	34.63	6	37.00	6	38.47	6	36.70	6
K 1317 (c)	35.47	4	37.77	5	39.27	4	37.50	4
HD 3171 (c)	36.20	2	38.73	3	40.20	2	38.38	2
DBW 252 (c)	37.33	1	40.00	1	41.27	1	39.53	1
HI 1612 (c)	35.20	5	37.87	4	38.70	5	37.26	5
HD 2888 (c)	36.20	2	38.87	2	39.30	3	38.12	3
Mean	35.84		38.37		39.53		37.91	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.09		0.36		1.03	
Genotype(B)	**		0.16		0.46		1.25	
B within A	N.S.		0.27		0.79			
A within B			0.27		0.77			
Date of Sowing:	23.11.2019							
Date of Harvesting:			20.03.2020		26.03.2020		29.03.2020	

Table 3.1.4 North Eastern Plains Zone				RIR-TS-TAS		IARI Pusa		2019-20	
Genotypes	Irrigation levels								
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	
Yield, q/ha									
HD 3293	35.54	6	38.33	5	37.10	6	36.99	6	
K 1317 (c)	36.37	3	39.88	4	40.32	5	38.86	5	
HD 3171 (c)	37.96	1	47.54	1	41.25	3	42.25	1	
DBW 252 (c)	35.97	4	37.70	6	44.05	1	39.24	4	
HI 1612 (c)	36.94	2	40.50	3	41.31	2	39.58	3	
HD 2888 (c)	35.54	5	43.08	2	40.87	4	39.83	2	
Mean	36.39		41.17		40.82		39.46		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	*		1.52		5.96		16.32		
Genotype(B)	*		0.94		2.71		7.14		
B within A	N.S.		1.63		4.70				
A within B			2.12		6.13				
Earheads/sqm									
HD 3293	200	6	231	5	233	5	221	6	
K 1317 (c)	244	1	270	1	264	1	259	1	
HD 3171 (c)	216	3	235	4	222	6	224	5	
DBW 252 (c)	221	2	215	6	259	2	232	3	
HI 1612 (c)	211	4	237	3	253	3	234	2	
HD 2888 (c)	206	5	241	2	241	4	229	4	
Mean	216		238		245		233		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	*		6.48		25.44		11.79		
Genotype(B)	**		5.92		17.09		7.61		
B within A	N.S.		10.25		29.60				
A within B			11.38		32.87				
Grains/Earhead									
HD 3293	32.6	5	30.6	6	31.7	5	31.6	5	
K 1317 (c)	28.9	6	31.2	5	30.6	6	30.2	6	
HD 3171 (c)	41.3	1	45.8	1	39.1	1	42.1	1	
DBW 252 (c)	34.7	4	35.4	4	33.9	4	34.6	4	
HI 1612 (c)	40.1	2	37.4	3	35.6	3	37.7	3	
HD 2888 (c)	35.3	3	41.7	2	36.3	2	37.8	2	
Mean	35.48		36.99		34.55		35.67		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	*		0.41		1.61		4.86		
Genotype(B)	**		1.62		4.67		13.60		
B within A	N.S.		2.80		8.09				
A within B			2.59		7.48				
1000 Grains Weight, g									
HD 3293	54.67	1	54.37	1	50.52	1	53.19	1	
K 1317 (c)	51.61	2	47.51	3	50.16	3	49.76	2	
HD 3171 (c)	43.35	6	44.46	5	47.52	4	45.11	6	
DBW 252 (c)	47.39	4	49.62	2	50.37	2	49.13	3	
HI 1612 (c)	43.89	5	45.77	4	47.03	5	45.56	5	
HD 2888 (c)	49.47	3	43.40	6	46.70	6	46.52	4	
Mean	48.40		47.52		48.71		48.21		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	N.S.		0.49		1.92		4.30		
Genotype(B)	**		0.98		2.83		6.10		
B within A	N.S.		1.70		4.90				
A within B			1.62		4.69				
Date of Sowing:	23.11.2019								
Date of Harvesting:	24.4.2020								

Table 3.1.5 North Eastern Plains Zone			RIR-TS-TAS		Kalyani		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	24.41	1	31.15	1	34.48	2	30.02	1
K 1317 (c)	21.98	5	27.06	3	35.68	1	28.24	3
HD 3171 (c)	19.56	6	25.03	6	31.39	5	25.33	5
DBW 252 (c)	22.11	4	25.07	5	34.17	3	27.12	4
HI 1612 (c)	22.79	2	25.26	4	27.16	6	25.07	6
HD 2888 (c)	22.28	3	30.45	2	33.89	4	28.87	2
Mean	22.19		27.34		32.80		27.44	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.89		3.48		13.69	
Genotype(B)	**		0.89		2.58		9.77	
B within A	N.S.		1.55		4.47			
A within B			1.67		4.82			
Earheads/sqm								
HD 3293	209	2	243	5	306	1	253	3
K 1317 (c)	231	1	245	4	264	6	247	5
HD 3171 (c)	200	5	233	6	274	5	236	6
DBW 252 (c)	194	6	266	1	304	2	255	1
HI 1612 (c)	209	3	260	3	287	4	252	4
HD 2888 (c)	201	4	264	2	296	3	254	2
Mean	207		252		289		249	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		14.35		56.36		24.44	
Genotype(B)	N.S.		11.09		32.01		13.35	
B within A	N.S.		19.20		55.45			
A within B			22.66		65.42			
Grains/Earhead								
HD 3293	30.0	2	32.3	1	29.1	3	30.5	1
K 1317 (c)	24.6	6	25.9	4	33.9	1	28.1	3
HD 3171 (c)	27.9	5	26.4	3	31.8	2	28.7	2
DBW 252 (c)	32.3	1	24.5	6	26.5	4	27.8	4
HI 1612 (c)	29.7	3	24.5	5	22.4	6	25.5	6
HD 2888 (c)	28.5	4	26.9	2	25.6	5	27.0	5
Mean	28.85		26.75		28.20		27.93	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		1.91		7.49		28.97	
Genotype(B)	N.S.		1.68		4.86		18.09	
B within A	N.S.		2.92		8.42			
A within B			3.28		9.46			
1000 Grains Weight, g								
HD 3293	39.17	2	40.07	4	41.05	4	40.09	3
K 1317 (c)	39.00	3	43.03	2	40.40	5	40.81	2
HD 3171 (c)	35.73	6	40.63	3	37.73	6	38.03	6
DBW 252 (c)	35.90	5	38.60	6	43.53	2	39.34	5
HI 1612 (c)	37.17	4	39.67	5	43.04	3	39.96	4
HD 2888 (c)	39.23	1	44.30	1	45.20	1	42.91	1
Mean	37.70		41.05		41.83		40.19	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.14		0.55		1.48	
Genotype(B)	*		0.91		2.64		6.81	
B within A	N.S.		1.58		4.57			
A within B			1.45		4.19			
Date of Sowing:			12.11.19					
Date of Harvesting:			18.03.2020		23.03.2020		25.03.2020	

Table 3.1.6 North Eastern Plains Zone			RIR-TS-TAS		Kanpur		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	29.32	5	39.19	3	48.75	6	39.09	5
K 1317 (c)	28.49	6	38.59	5	49.28	4	38.78	6
HD 3171 (c)	29.70	4	39.53	2	52.55	1	40.59	1
DBW 252 (c)	30.68	2	38.74	4	49.19	5	39.54	4
HI 1612 (c)	30.55	3	39.53	1	50.72	3	40.27	3
HD 2888 (c)	32.03	1	37.68	6	51.44	2	40.38	2
Mean	30.13		38.88		50.32		39.78	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.29		1.12		3.05	
Genotype(B)	N.S.		0.56		1.63		4.25	
B within A	N.S.		0.98		2.82			
A within B			0.94		2.70			
Earheads/sqm								
HD 3293	328	4	349	3	359	3	345	3
K 1317 (c)	299	6	359	1	363	1	340	6
HD 3171 (c)	318	5	355	2	362	2	345	4
DBW 252 (c)	339	2	343	5	358	4	347	1
HI 1612 (c)	331	3	349	3	356	5	345	2
HD 2888 (c)	344	1	336	6	343	6	341	5
Mean	326		348		357		344	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		2.19		8.61		2.71	
Genotype(B)	N.S.		2.10		6.06		1.83	
B within A	**		3.63		10.49			
A within B			3.98		11.48			
Grains/Earhead								
HD 3293	25.8	1	28.7	2	32.6	6	29.0	3
K 1317 (c)	25.2	2	26.5	6	32.6	5	28.1	6
HD 3171 (c)	24.6	3	27.6	5	34.0	3	28.7	4
DBW 252 (c)	22.9	6	28.1	3	33.9	4	28.3	5
HI 1612 (c)	24.1	4	29.2	1	35.0	2	29.4	1
HD 2888 (c)	23.7	5	27.8	4	36.0	1	29.2	2
Mean	24.37		27.97		34.02		28.79	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.30		1.18		4.45	
Genotype(B)	N.S.		0.49		1.40		5.06	
B within A	N.S.		0.84		2.43			
A within B			0.82		2.38			
1000 Grains Weight, g								
HD 3293	34.74	6	39.24	5	41.76	2	38.58	6
K 1317 (c)	37.83	5	40.62	1	41.65	3	40.04	4
HD 3171 (c)	38.15	4	40.47	2	42.73	1	40.45	1
DBW 252 (c)	39.54	1	40.15	4	40.61	6	40.10	3
HI 1612 (c)	38.37	3	38.88	6	40.64	5	39.30	5
HD 2888 (c)	39.31	2	40.31	3	41.63	4	40.41	2
Mean	37.99		39.95		41.50		39.81	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.16		0.63		1.72	
Genotype(B)	**		0.37		1.07		2.80	
B within A	**		0.64		1.86			
A within B			0.61		1.76			
Date of Sowing:	02.12.2019							
Date of Harvesting:	24.04.2020							

Table 3.1.7 North Eastern Plains Zone			RIR-TS-TAS		Ranchi		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	51.87	4	52.37	4	55.53	4	53.26	5
K 1317 (c)	58.53	1	58.57	1	54.97	5	57.36	1
HD 3171 (c)	47.83	6	47.73	6	47.30	6	47.62	6
DBW 252 (c)	53.33	3	52.93	3	55.97	2	54.08	2
HI 1612 (c)	53.67	2	50.07	5	58.00	1	53.91	3
HD 2888 (c)	50.67	5	54.70	2	55.93	3	53.77	4
Mean	52.65		52.73		54.62		53.33	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		0.96		3.75		7.60	
Genotype(B)	**		1.14		3.28		6.40	
B within A	N.S.		1.97		5.69			
A within B			2.04		5.88			
Earheads/sqm								
HD 3293	323	6	300	6	307	6	310	6
K 1317 (c)	375	1	377	1	433	2	395	2
HD 3171 (c)	333	4	347	3	390	4	357	4
DBW 252 (c)	330	5	310	5	317	5	319	5
HI 1612 (c)	340	3	347	3	417	3	368	3
HD 2888 (c)	363	2	370	2	457	1	397	1
Mean	344		342		387		358	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		14.93		58.59		17.71	
Genotype(B)	**		14.68		42.38		12.32	
B within A	N.S.		25.42		73.41			
A within B			27.59		79.68			
Grains/Earhead								
HD 3293	37.9	2	39.9	2	40.1	2	39.3	2
K 1317 (c)	35.4	3	34.9	3	27.8	5	32.7	4
HD 3171 (c)	31.8	5	30.8	6	28.8	4	30.4	5
DBW 252 (c)	39.7	1	40.7	1	40.3	1	40.2	1
HI 1612 (c)	34.9	4	32.4	4	31.1	3	32.8	3
HD 2888 (c)	31.1	6	32.0	5	25.7	6	29.6	6
Mean	35.12		35.12		32.30		34.18	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		1.49		5.83		18.45	
Genotype(B)	**		1.53		4.43		13.46	
B within A	N.S.		2.66		7.67			
A within B			2.84		8.21			
1000 Grains Weight, g								
HD 3293	42.87	5	44.47	5	45.60	3	44.31	5
K 1317 (c)	44.43	4	44.67	4	46.23	2	45.11	3
HD 3171 (c)	45.17	2	45.03	3	43.23	6	44.48	4
DBW 252 (c)	41.07	6	42.13	6	44.80	5	42.67	6
HI 1612 (c)	45.17	2	46.03	2	45.13	4	45.44	2
HD 2888 (c)	45.80	1	46.53	1	48.83	1	47.06	1
Mean	44.08		44.81		45.64		44.84	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		0.25		0.97		2.34	
Genotype(B)	**		0.35		1.00		2.32	
B within A	**		0.60		1.74			
A within B			0.60		1.74			
Date of Sowing:			14.11.19					
Date of Harvesting:			01.4.20		05.04.20		07.04.20	

Table 3.1.8 North Eastern Plains Zone			RIR-TS-TAS		RPCAU Pusa		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	27.49	5	34.25	5	38.61	5	33.45	5
K 1317 (c)	30.08	2	38.89	2	42.97	2	37.31	2
HD 3171 (c)	31.72	1	39.42	1	44.35	1	38.50	1
DBW 252 (c)	26.68	6	32.75	6	36.72	6	32.05	6
HI 1612 (c)	29.25	3	36.48	3	40.85	3	35.53	3
HD 2888 (c)	28.65	4	35.52	4	39.72	4	34.63	4
Mean	28.98		36.22		40.54		35.24	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.86		3.39		10.40	
Genotype(B)	**		0.66		1.92		5.66	
B within A	N.S.		1.15		3.32			
A within B			1.36		3.93			
Earheads/sqm								
HD 3293	302	5	326	5	340	5	323	5
K 1317 (c)	306	2	331	2	348	2	328	2
HD 3171 (c)	309	1	335	1	351	1	332	1
DBW 252 (c)	301	6	324	6	339	6	321	6
HI 1612 (c)	304	3	329	3	343	3	325	3
HD 2888 (c)	303	4	327	4	341	4	324	4
Mean	304		329		344		326	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.30		1.18		0.39	
Genotype(B)	**		0.91		2.64		0.84	
B within A	N.S.		1.58		4.57			
A within B			1.48		4.26			
Grains/Earhead								
HD 3293	24.9	5	27.7	5	29.0	5	27.2	5
K 1317 (c)	25.6	3	29.6	1	30.4	2	28.5	2
HD 3171 (c)	26.1	1	29.2	2	30.8	1	28.7	1
DBW 252 (c)	24.8	6	27.3	6	28.0	6	26.7	6
HI 1612 (c)	25.4	4	28.5	4	29.5	4	27.8	4
HD 2888 (c)	25.8	2	28.6	3	29.5	3	28.0	3
Mean	25.46		28.47		29.54		27.82	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		0.72		2.82		10.94	
Genotype(B)	N.S.		0.62		1.78		6.66	
B within A	N.S.		1.07		3.09			
A within B			1.21		3.50			
1000 Grains Weight, g								
HD 3293	36.49	5	37.95	5	39.23	5	37.89	5
K 1317 (c)	38.42	2	39.79	2	40.68	2	39.63	2
HD 3171 (c)	39.31	1	40.41	1	40.97	1	40.23	1
DBW 252 (c)	35.66	6	37.08	6	38.67	6	37.14	6
HI 1612 (c)	37.98	3	38.87	3	40.35	3	39.07	3
HD 2888 (c)	36.64	4	38.01	4	39.41	4	38.02	4
Mean	37.42		38.69		39.89		38.66	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.10		0.38		1.06	
Genotype(B)	**		0.33		0.94		2.54	
B within A	N.S.		0.57		1.63			
A within B			0.53		1.52			
Date of Sowing:	29.11.2019							
Date of Harvesting:			07.04.2020		10.04,2020		12.04.2020	

Table 3.1.9 North Eastern Plains Zone			RIR-TS-TAS		Sabour		2019-20	
Genotypes	Irrigation levels				Mean	Rk		
	Zero	Rk	One	Rk			Two	Rk
Yield, q/ha								
HD 3293	27.65	5	31.33	5	32.36	5	30.45	5
K 1317 (c)	24.69	6	28.26	6	29.28	6	27.41	6
HD 3171 (c)	35.63	1	38.70	1	41.17	1	38.50	1
DBW 252 (c)	32.28	2	36.33	2	39.56	2	36.06	2
HI 1612 (c)	31.96	3	35.53	3	37.37	3	34.95	3
HD 2888 (c)	29.78	4	32.99	4	34.67	4	32.48	4
Mean	30.33		33.86		35.74		33.31	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.57		2.22		7.21	
Genotype(B)	**		1.90		5.50		17.15	
B within A	N.S.		3.30		9.52			
A within B			3.06		8.85			
Earheads/sqm								
HD 3293	290	5	328	5	330	5	316	5
K 1317 (c)	285	6	319	6	328	6	311	6
HD 3171 (c)	331	1	357	1	363	1	350	1
DBW 252 (c)	325	2	355	2	361	2	347	2
HI 1612 (c)	308	3	342	3	349	3	333	3
HD 2888 (c)	297	4	338	4	343	4	326	4
Mean	306		340		346		331	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		4.62		18.13		5.93	
Genotype(B)	**		3.94		11.38		3.58	
B within A	N.S.		6.83		19.71			
A within B			7.76		22.40			
Grains/Earhead								
HD 3293	25.3	5	24.6	5	25.1	5	25.0	5
K 1317 (c)	23.1	6	23.0	6	22.8	6	22.9	6
HD 3171 (c)	27.5	3	27.3	1	28.2	2	27.7	1
DBW 252 (c)	26.1	4	26.0	3	28.7	1	26.9	3
HI 1612 (c)	27.9	2	26.4	2	27.0	3	27.1	2
HD 2888 (c)	28.0	1	25.6	4	26.1	4	26.6	4
Mean	26.32		25.48		26.30		26.03	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		0.62		2.45		10.17	
Genotype(B)	N.S.		1.79		5.16		20.58	
B within A	N.S.		3.09		8.93			
A within B			2.89		8.35			
1000 Grains Weight, g								
HD 3293	37.33	5	39.00	4	40.00	2	38.78	3
K 1317 (c)	37.67	3	39.00	4	39.00	4	38.56	5
HD 3171 (c)	39.67	1	40.67	1	40.33	1	40.22	1
DBW 252 (c)	38.33	2	39.33	2	38.67	5	38.78	3
HI 1612 (c)	37.67	3	39.33	2	39.67	3	38.89	2
HD 2888 (c)	36.00	6	38.33	6	38.67	5	37.67	6
Mean	37.78		39.28		39.39		38.81	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		0.57		2.24		6.25	
Genotype(B)	N.S.		0.96		2.78		7.44	
B within A	N.S.		1.67		4.81			
A within B			1.63		4.69			
Date of Sowing:	14.11.2019							
Date of Harvesting:	5.04.2020		8.04.2020		12.04.2020			

Table 3.1.10 North Eastern Plains Zone			RIR-TS-TAS		Shillongani		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	24.87	4	37.58	2	46.31	2	36.25	3
K 1317 (c)	18.65	5	34.73	3	36.23	5	29.87	5
HD 3171 (c)	16.81	6	31.00	6	33.81	6	27.20	6
DBW 252 (c)	26.34	3	33.91	5	42.05	4	34.10	4
HI 1612 (c)	29.19	2	40.01	1	44.90	3	38.04	1
HD 2888 (c)	30.60	1	34.19	4	47.32	1	37.37	2
Mean	24.41		35.24		41.77		33.81	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.64		2.52		8.06	
Genotype(B)	**		0.85		2.45		7.53	
B within A	**		1.47		4.25			
A within B			1.49		4.30			
Earheads/sqm								
HD 3293	126	6	153	6	173	6	151	6
K 1317 (c)	156	4	202	2	234	1	197	1
HD 3171 (c)	162	3	210	1	212	2	195	2
DBW 252 (c)	130	5	181	4	193	4	168	5
HI 1612 (c)	177	1	182	3	193	5	184	3
HD 2888 (c)	163	2	175	5	201	3	180	4
Mean	152		184		201		179	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		2.56		10.05		6.07	
Genotype(B)	**		3.32		9.58		5.56	
B within A	**		5.75		16.60			
A within B			5.84		16.86			
Grains/Earhead								
HD 3293	38.2	2	46.6	2	50.6	2	45.1	1
K 1317 (c)	25.2	5	34.6	5	31.4	6	30.4	5
HD 3171 (c)	21.5	6	31.7	6	33.1	5	28.7	6
DBW 252 (c)	41.3	1	39.7	4	45.2	4	42.1	4
HI 1612 (c)	35.0	4	47.1	1	50.4	3	44.2	2
HD 2888 (c)	38.2	3	40.9	3	51.6	1	43.6	3
Mean	33.22		40.07		43.72		39.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.89		3.48		9.63	
Genotype(B)	**		1.15		3.32		8.85	
B within A	*		1.99		5.76			
A within B			2.02		5.84			
1000 Grains Weight, g								
HD 3293	51.70	1	52.88	1	53.23	1	52.60	1
K 1317 (c)	47.40	5	49.84	2	49.38	2	48.87	2
HD 3171 (c)	48.38	4	46.80	5	48.15	4	47.78	4
DBW 252 (c)	48.76	3	47.33	4	48.37	3	48.15	3
HI 1612 (c)	47.27	6	46.79	6	46.76	5	46.94	6
HD 2888 (c)	49.28	2	47.88	3	45.69	6	47.62	5
Mean	48.80		48.59		48.60		48.66	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		0.66		2.58		5.72	
Genotype(B)	**		0.84		2.42		5.16	
B within A	N.S.		1.45		4.19			
A within B			1.48		4.27			
Date of Sowing:			13.11.2019					
Date of Harvesting:			17.03.2020		22.03.2020		24.03.2020	

Table 3.1.11 North Eastern Plains Zone			RIR-TS-TAS		Varanasi		2019-20	
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
HD 3293	31.34	1	35.70	1	39.67	4	35.57	4
K 1317 (c)	28.56	4	32.13	5	46.81	2	35.83	3
HD 3171 (c)	24.59	6	34.51	2	37.29	6	32.13	5
DBW 252 (c)	25.39	5	28.96	6	37.29	5	30.54	6
HI 1612 (c)	29.35	2	34.11	3	48.39	1	37.29	1
HD 2888 (c)	29.35	2	32.92	4	46.01	3	36.10	2
Mean	28.10		33.06		42.58		34.58	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.80		3.16		9.87	
Genotype(B)	**		0.87		2.50		7.51	
B within A	**		1.50		4.33			
A within B			1.59		4.59			
Earheads/sqm								
HD 3293	234	4	251	5	304	3	263	4
K 1317 (c)	238	3	259	3	308	2	268	3
HD 3171 (c)	286	1	260	2	366	1	304	1
DBW 252 (c)	192	6	251	4	298	4	247	5
HI 1612 (c)	248	2	278	1	293	5	273	2
HD 2888 (c)	221	5	227	6	250	6	233	6
Mean	237		254		303		265	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		4.07		15.99		6.53	
Genotype(B)	**		4.26		12.30		4.83	
B within A	**		7.38		21.30			
A within B			7.87		22.73			
Grains/Earhead								
HD 3293	27.2	4	28.8	3	25.7	5	27.2	4
K 1317 (c)	24.3	5	24.8	6	30.6	3	26.6	5
HD 3171 (c)	19.5	6	29.1	2	20.6	6	23.1	6
DBW 252 (c)	27.9	2	25.1	5	28.7	4	27.2	3
HI 1612 (c)	27.4	3	26.4	4	35.9	2	29.9	2
HD 2888 (c)	28.2	1	30.3	1	41.0	1	33.2	1
Mean	25.75		27.43		30.40		27.86	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		0.56		2.18		8.48	
Genotype(B)	**		0.84		2.42		9.02	
B within A	**		1.45		4.19			
A within B			1.44		4.15			
1000 Grains Weight, g								
HD 3293	49.53	1	49.53	2	50.80	1	49.96	1
K 1317 (c)	49.47	2	50.20	1	49.67	2	49.78	2
HD 3171 (c)	44.26	5	45.53	6	49.63	3	46.48	4
DBW 252 (c)	47.37	3	46.27	5	43.67	6	45.77	5
HI 1612 (c)	43.20	6	46.53	4	46.07	4	45.27	6
HD 2888 (c)	47.07	4	47.97	3	44.93	5	46.66	3
Mean	46.82		47.67		47.46		47.32	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		0.35		1.39		3.18	
Genotype(B)	**		0.30		0.87		1.92	
B within A	**		0.52		1.51			
A within B			0.60		1.72			
Date of Sowing:	13.11.2019							
Date of Harvesting:	10.04.2020							

Table 4.1.1 Central Zone		IR-TAS-DOS					Bilaspur 2019-20	
Genotypes	Sowing time							
	Normal	Rk	Late	Rk	V. Late	Rk	Mean	Rk
Yield, q/ha								
CG1029	46.00	1	42.92	1	35.63	1	41.51	1
HI 1634	42.23	3	38.52	4	34.43	2	38.40	3
HD 2864(c)	41.86	4	39.53	3	31.21	4	37.53	4
HD 2932(c)	44.95	2	40.90	2	32.75	3	39.53	2
MP 3336(c)	40.34	5	33.32	5	28.37	5	34.01	5
Mean	43.08		39.04		32.48		38.20	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.44		1.71		4.42	
Genotypes (B)	**		0.73		2.12		5.70	
B within A	N.S.		1.26		3.67			
A within B			1.21		3.52			
Earhead/Sqm								
CG1029	405	1	338	1	277	1	340	1
HI 1634	377	3	298	4	243	2	306	3
HD 2864(c)	356	4	306	2	220	4	294	4
HD 2932(c)	391	2	302	3	238	3	310	2
MP 3336(c)	346	5	273	5	215	5	278	5
Mean	375		303		239		306	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		8.34		32.75		10.57	
Genotypes (B)	**		2.40		7.02		2.36	
B within A	**		4.16		12.16			
A within B			9.14		26.67			
Grains/earhead								
CG1029	25.90	5	29.04	5	31.28	5	28.74	5
HI 1634	26.10	4	29.53	4	35.64	2	30.42	4
HD 2864(c)	28.54	2	32.90	2	37.58	1	33.01	1
HD 2932(c)	27.03	3	33.07	1	34.74	4	31.61	3
MP 3336(c)	29.58	1	31.41	3	35.09	3	32.03	2
Mean	27.43		31.19		34.87		31.16	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.50		1.98		6.26	
Genotypes(B)	*		0.84		2.45		8.07	
B within A	N.S.		1.45		4.24			
A within B			1.39		4.06			
1000 Grains weight,g								
CG1029	44.21	1	43.83	2	41.34	1	43.13	1
HI 1634	43.18	2	43.97	1	39.99	2	42.38	2
HD 2864(c)	41.52	4	39.39	4	37.83	4	39.58	4
HD 2932(c)	42.70	3	41.13	3	39.68	3	41.17	3
MP 3336(c)	39.47	5	38.97	5	37.72	5	38.72	5
Mean	42.22		41.46		39.31		41.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		0.42		1.65		3.97	
Genotypes(B)	**		0.68		1.99		4.99	
B within A	N.S.		1.18		3.45			
A within B			1.14		3.32			
Date of Sowing:			05.11.2019		03.12.2019		24.12.2019	
Date of harvesting:			19.03.2020		10.04.2020		13.04.2020	

Table 4.1.2 Central Zone		IR-TAS-DOS					Gwalior 2019-20	
Genotypes	Sowing time							
	Normal	Rk	Late	Rk	V. Late	Rk	Mean	Rk
Yield, q/ha								
CG1029	62.38	1	58.57	2	51.74	2	57.56	2
HI 1634	61.23	2	59.63	1	52.28	1	57.71	1
HD 2864(c)	60.30	4	53.73	5	50.87	3	54.97	5
HD 2932(c)	60.65	3	57.93	3	48.26	5	55.61	3
MP 3336(c)	60.20	5	55.18	4	50.33	4	55.24	4
Mean	60.95		57.01		50.70		56.22	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.22		0.86		1.51	
Genotypes (B)	**		0.32		0.94		1.72	
B within A	**		0.56		1.63			
A within B			0.54		1.59			
Earhead/Sqm								
CG1029	444	1	391	2	371	4	402	1
HI 1634	416	2	411	1	374	2	400	2
HD 2864(c)	397	5	377	5	369	5	381	5
HD 2932(c)	405	3	391	3	372	3	389	3
MP 3336(c)	399	4	380	4	378	1	386	4
Mean	412		390		373		392	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		2.50		9.83		2.47	
Genotypes (B)	**		2.69		7.86		2.06	
B within A	**		4.66		13.62			
A within B			4.87		14.20			
Grains/earhead								
CG1029	28.15	5	32.00	5	38.35	2	32.83	5
HI 1634	34.79	3	36.15	3	35.76	5	35.57	3
HD 2864(c)	37.43	1	37.65	2	35.82	4	36.96	2
HD 2932(c)	36.20	2	37.66	1	41.56	1	38.48	1
MP 3336(c)	34.00	4	33.60	4	37.66	3	35.09	4
Mean	34.12		35.41		37.83		35.79	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		0.46		1.81		4.98	
Genotypes(B)	**		0.42		1.23		3.54	
B within A	**		0.73		2.13			
A within B			0.80		2.33			
1000 Grains weight,g								
CG1029	49.97	1	46.79	1	36.55	3	44.44	1
HI 1634	42.41	3	40.11	3	39.13	1	40.55	3
HD 2864(c)	40.55	5	37.84	5	38.51	2	38.97	4
HD 2932(c)	41.44	4	39.42	4	31.19	5	37.35	5
MP 3336(c)	44.44	2	43.23	2	35.34	4	41.00	2
Mean	43.76		41.48		36.14		40.46	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.38		1.49		3.64	
Genotypes(B)	**		0.49		1.42		3.62	
B within A	**		0.84		2.47			
A within B			0.85		2.47			
Date of Sowing:			10.11.2019		03.12.2019		24.12.2019	
ate of harvesting:			12.04.2020		14.04.2020		21.04.2020	

Table 4.1.3 Central Zone		IR-TAS-DOS					Indore 2019-20	
Genotypes	Sowing time						Mean	Rk
	Normal	Rk	Late	Rk	V. Late	Rk		
Yield, q/ha								
CG1029	58.23	2	58.30	2	44.57	3	53.70	2
HI 1634	58.43	1	58.63	1	48.23	1	55.10	1
HD 2864(c)	51.83	5	57.23	3	46.70	2	51.92	3
HD 2932(c)	56.33	4	51.80	5	42.43	4	50.19	5
MP 3336(c)	56.87	3	52.43	4	41.90	5	50.40	4
Mean	56.34		55.68		44.77		52.26	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.59		2.33		4.39	
Genotypes (B)	**		0.63		1.85		3.64	
B within A	**		1.10		3.20			
A within B			1.15		3.35			
Earhead/Sqm								
CG1029	338	5	387	5	371	5	365	5
HI 1634	341	4	417	4	410	3	389	4
HD 2864(c)	440	2	463	1	421	2	441	1
HD 2932(c)	386	3	426	2	400	4	404	3
MP 3336(c)	454	1	424	3	422	1	433	2
Mean	392		423		405		407	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		5.11		20.05		4.87	
Genotypes (B)	**		6.10		17.79		4.50	
B within A	**		10.56		30.82			
A within B			10.74		31.34			
Grains/earhead								
CG1029	31.43	3	29.09	5	24.63	5	28.38	5
HI 1634	37.44	1	32.23	1	31.46	1	33.71	1
HD 2864(c)	29.12	5	30.20	3	30.37	3	29.90	3
HD 2932(c)	33.00	2	31.66	2	31.38	2	32.01	2
MP 3336(c)	29.50	4	29.66	4	28.61	4	29.26	4
Mean	32.10		30.57		29.29		30.65	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.24		0.93		2.99	
Genotypes(B)	**		0.38		1.12		3.77	
B within A	**		0.67		1.95			
A within B			0.64		1.87			
1000 Grains weight,g								
CG1029	54.97	1	51.87	1	48.80	1	51.88	1
HI 1634	45.87	2	43.63	2	37.47	2	42.32	2
HD 2864(c)	40.53	5	40.93	4	36.60	3	39.36	4
HD 2932(c)	44.27	3	38.47	5	33.87	5	38.87	5
MP 3336(c)	42.47	4	41.73	3	34.73	4	39.64	3
Mean	45.62		43.33		38.29		42.41	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.11		0.42		0.97	
Genotypes(B)	**		0.39		1.14		2.76	
B within A	**		0.67		1.97			
A within B			0.61		1.79			
Date of Sowing:			12.11.2019		03.12.2019		26.12.2019	
Date of harvesting:			25.04.2020		25.04.2020		25.04.2020	

Table 4.1.4 Central Zone		IR-TAS-DOS					Jabalpur 2019-20	
Genotypes	Sowing time							
	Normal	Rk	Late	Rk	V. Late	Rk	Mean	Rk
Yield, q/ha								
CG1029	56.28	1	49.78	1	43.60	1	49.89	1
HI 1634	53.16	2	45.29	2	41.61	2	46.69	2
HD 2864(c)	43.96	4	41.18	4	37.11	4	40.75	4
HD 2932(c)	46.53	3	43.58	3	38.78	3	42.96	3
MP 3336(c)	40.65	5	40.81	5	32.06	5	37.84	5
Mean	48.11		44.13		38.63		43.63	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.39		1.51		3.42	
Genotypes (B)	**		0.55		1.62		3.81	
B within A	**		0.96		2.80			
A within B			0.94		2.75			
Earhead/Sqm								
CG1029	381	1	337	1	325	1	348	1
HI 1634	364	2	333	2	297	2	331	2
HD 2864(c)	334	4	297	4	277	4	303	4
HD 2932(c)	345	3	327	3	294	3	322	3
MP 3336(c)	321	5	283	5	259	5	288	5
Mean	349		315		290		318	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.66		2.58		0.80	
Genotypes (B)	**		2.76		8.06		2.60	
B within A	N.S.		4.78		13.96			
A within B			4.33		12.63			
Grains/earhead								
CG1029	31.99	5	33.29	4	31.98	5	32.42	5
HI 1634	33.27	2	32.84	5	35.35	4	33.82	4
HD 2864(c)	33.18	3	37.18	2	40.42	1	36.92	2
HD 2932(c)	32.19	4	33.51	3	36.60	3	34.10	3
MP 3336(c)	33.37	1	41.11	1	38.12	2	37.53	1
Mean	32.80		35.59		36.49		34.96	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.34		1.35		3.81	
Genotypes(B)	**		0.68		2.00		5.88	
B within A	*		1.19		3.46			
A within B			1.12		3.26			
1000 Grains weight,g								
CG1029	46.26	1	44.39	1	41.95	1	44.20	1
HI 1634	43.95	2	41.40	2	39.61	2	41.65	2
HD 2864(c)	39.65	4	37.38	4	33.23	4	36.75	4
HD 2932(c)	41.89	3	40.14	3	36.11	3	39.38	3
MP 3336(c)	37.90	5	35.13	5	32.61	5	35.21	5
Mean	41.93		39.69		36.70		39.44	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.49		1.93		4.83	
Genotypes(B)	**		0.48		1.41		3.66	
B within A	N.S.		0.83		2.43			
A within B			0.89		2.61			
Date of Sowing:			05.11.2019		03.12.2019		24.12.2019	
Date of harvesting:			28.03.2020		10.04.2020		20.04.2020	

Table 4.1.5 Central Zone		IR-TAS-DOS					Junagadh 2019-20	
Genotypes	Sowing time							
	Normal	Rk	Late	Rk	V. Late	Rk	Mean	Rk
Yield, q/ha								
CG1029	58.84	4	60.07	2	41.73	5	53.55	3
HI 1634	60.37	2	56.25	3	44.45	2	53.69	2
HD 2864(c)	61.22	1	43.47	5	46.39	1	50.36	5
HD 2932(c)	60.30	3	66.29	1	44.21	3	56.94	1
MP 3336(c)	57.82	5	51.56	4	44.01	4	51.13	4
Mean	59.71		55.53		44.16		53.13	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.95		3.72		6.90	
Genotypes (B)	**		1.00		2.93		5.66	
B within A	**		1.74		5.07			
A within B			1.82		5.31			
Earhead/Sqm								
CG1029	450	3	430	2	383	4	421	3
HI 1634	408	5	390	4	361	5	386	5
HD 2864(c)	505	1	443	1	417	1	455	1
HD 2932(c)	448	4	387	5	396	3	410	4
MP 3336(c)	472	2	407	3	400	2	426	2
Mean	457		411		392		420	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		8.05		31.60		7.42	
Genotypes (B)	*		12.37		36.09		8.84	
B within A	N.S.		21.42		62.52			
A within B			20.78		60.65			
Grains/earhead								
CG1029	23.97	5	29.57	3	19.67	5	24.40	5
HI 1634	31.23	1	29.85	2	27.72	1	29.60	2
HD 2864(c)	28.09	3	22.86	5	26.16	3	25.70	4
HD 2932(c)	28.62	2	38.39	1	26.70	2	31.24	1
MP 3336(c)	27.46	4	26.41	4	25.58	4	26.49	3
Mean	27.87		29.42		25.17		27.49	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		0.72		2.83		10.16	
Genotypes(B)	**		1.08		3.14		11.75	
B within A	**		1.86		5.44			
A within B			1.82		5.30			
1000 Grains weight,g								
CG1029	54.67	1	47.33	3	55.47	1	52.49	1
HI 1634	47.60	3	49.07	1	44.67	2	47.11	2
HD 2864(c)	43.20	5	43.47	5	42.53	4	43.07	5
HD 2932(c)	47.73	2	44.80	4	42.00	5	44.84	4
MP 3336(c)	44.93	4	48.13	2	43.20	3	45.42	3
Mean	47.63		46.56		45.57		46.59	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		0.28		1.08		2.29	
Genotypes(B)	**		0.57		1.66		3.67	
B within A	**		0.99		2.88			
A within B			0.92		2.70			
Date of Sowing:			06.11.2019		05.12.2019		26.12.2019	
Date of harvesting:			24.02.2020		11.03.2020		29.03.2020	

Table 4.1.6 Central Zone		IR-TAS-DOS		Powerkheda		2019-20		
Genotypes	Sowing time				V. Late	Rk	Mean	Rk
	Normal	Rk	Late	Rk				
Yield, q/ha								
CG1029	61.39	1	55.63	1	44.39	2	53.81	1
HI 1634	59.69	3	54.93	3	44.90	1	53.17	3
HD 2864(c)	57.82	4	44.56	5	40.65	4	47.68	4
HD 2932(c)	60.79	2	55.10	2	44.05	3	53.31	2
MP 3336(c)	51.87	5	46.26	4	40.31	5	46.14	5
Mean	58.31		51.30		42.86		50.82	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.68		2.67		5.19	
Genotypes (B)	**		1.35		3.93		7.95	
B within A	N.S.		2.33		6.81			
A within B			2.19		6.41			
Earhead/Sqm								
CG1029	460	1	417	1	303	1	393	1
HI 1634	238	5	195	5	176	5	203	5
HD 2864(c)	345	4	323	4	293	2	320	4
HD 2932(c)	405	2	381	2	246	4	344	2
MP 3336(c)	380	3	351	3	268	3	333	3
Mean	366		333		257		319	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		4.47		17.55		5.43	
Genotypes (B)	**		8.32		24.29		7.83	
B within A	**		14.41		42.07			
A within B			13.64		39.83			
Grains/earhead								
CG1029	23.45	5	28.43	5	31.49	5	27.79	5
HI 1634	53.59	1	70.41	1	73.17	1	65.72	1
HD 2864(c)	38.82	2	33.58	3	39.37	4	37.26	3
HD 2932(c)	29.74	4	34.66	2	47.89	2	37.43	2
MP 3336(c)	29.90	3	33.30	4	40.83	3	34.67	4
Mean	35.10		40.08		46.55		40.58	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		1.30		5.12		12.46	
Genotypes(B)	**		1.40		4.08		10.34	
B within A	**		2.42		7.07			
A within B			2.53		7.38			
1000 Grains weight,g								
CG1029	57.00	1	47.00	1	46.83	1	50.28	1
HI 1634	47.33	3	40.17	4	35.17	5	40.89	3
HD 2864(c)	43.00	5	41.17	3	35.50	4	39.89	5
HD 2932(c)	50.67	2	41.83	2	38.33	2	43.61	2
MP 3336(c)	45.83	4	39.67	5	37.00	3	40.83	4
Mean	48.77		41.97		38.57		43.10	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.17		0.66		1.51	
Genotypes(B)	**		0.16		0.48		1.14	
B within A	**		0.28		0.83			
A within B			0.30		0.89			
Date of Sowing:			05.11.2019		03.12.2019		24.12.2019	
Date of harvesting:			30.03.2020		15.04.2020		25.04.2020	

Table 4.1.7 Central Zone		IR-TAS-DOS		Udaipur		2019-20		
Genotypes	Sowing time				Mean	Rk		
	Normal	Rk	Late	Rk				
Yield, q/ha								
CG1029	50.39	5	47.97	4	41.79	3	46.72	4
HI 1634	56.95	1	56.07	1	49.81	1	54.27	1
HD 2864(c)	53.58	3	49.81	3	41.72	4	48.37	3
HD 2932(c)	56.03	2	51.44	2	47.80	2	51.76	2
MP 3336(c)	52.49	4	43.89	5	40.36	5	45.58	5
Mean	53.89		49.84		44.30		49.34	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		1.19		4.66		9.33	
Genotypes (B)	*		1.82		5.31		11.07	
B within A	N.S.		3.15		9.20			
A within B			3.06		8.93			
Earhead/Sqm								
CG1029	410	4	372	4	288	4	357	4
HI 1634	445	1	402	1	338	2	397	1
HD 2864(c)	427	3	398	2	338	3	388	3
HD 2932(c)	440	2	392	3	347	1	393	2
MP 3336(c)	400	5	355	5	277	5	344	5
Mean	424		384		319		376	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		4.87		16.83		4.42	
Genotypes (B)	**		1.87		14.23		3.89	
B within A	N.S.		8.44		24.65			
A within B			8.68		25.35			
Grains/earhead								
CG1029	27.52	4	29.43	2	34.84	2	30.60	2
HI 1634	27.27	5	30.38	1	33.11	3	30.25	3
HD 2864(c)	27.11	3	28.40	4	29.10	5	28.40	5
HD 2932(c)	28.32	2	29.33	3	32.14	4	29.93	4
MP 3336(c)	29.80	1	28.31	5	35.13	1	31.08	1
Mean	28.12		29.17		32.86		30.05	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.53		2.06		6.77	
Genotypes(B)	N.S.		1.22		3.56		12.18	
B within A	N.S.		2.11		6.17			
A within B			1.96		5.73			
1000 Grains weight,g								
CG1029	44.68	4	43.95	4	41.77	4	43.47	4
HI 1634	46.93	1	45.97	1	43.83	1	45.58	1
HD 2864(c)	45.32	3	44.37	3	42.28	3	43.99	3
HD 2932(c)	45.33	2	45.05	2	42.79	2	44.39	2
MP 3336(c)	44.27	5	43.82	5	41.67	5	43.25	5
Mean	45.31		44.63		42.47		44.13	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		0.56		2.20		4.92	
Genotypes(B)	N.S.		0.67		1.96		4.57	
B within A	N.S.		1.16		3.40			
A within B			1.18		3.45			
Date of Sowing:			05.11.2019		05.12.2019		25.12.2019	
Date of harvesting:			20.02.2020		02.04.2020		13.04.2020	

Table 4.1.8 Central Zone		IR-TAS-DOS					Vijapur 2019-20	
Genotypes	Sowing time							
	Normal	Rk	Late	Rk	V. Late	Rk	Mean	Rk
Yield, q/ha								
CG1029	53.33	2	60.69	2	35.71	4	49.91	2
HI 1634	49.54	3	60.92	1	43.83	1	51.43	1
HD 2864(c)	47.92	4	58.56	4	37.54	3	48.01	4
HD 2932(c)	56.17	1	56.88	5	34.29	5	49.11	3
MP 3336(c)	39.50	5	58.85	3	37.75	2	45.37	5
Mean	49.29		59.18		37.83		48.77	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		1.64		6.45		13.06	
Genotypes (B)	N.S.		1.43		4.16		8.77	
B within A	*		2.47		7.21			
A within B			2.75		8.04			
Earhead/Sqm								
CG1029	385	3	378	4	398	3	387	3
HI 1634	336	5	339	5	385	4	353	5
HD 2864(c)	394	1	409	2	405	1	403	1
HD 2932(c)	346	4	418	1	382	5	382	4
MP 3336(c)	390	2	397	3	401	2	396	2
Mean	370		388		394		384	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		3.56		13.98		3.59	
Genotypes (B)	N.S.		11.51		33.61		8.99	
B within A	N.S.		19.94		58.21			
A within B			18.19		53.09			
Grains/earhead								
CG1029	22.42	4	28.37	5	20.34	5	23.71	4
HI 1634	27.84	2	41.24	1	28.48	1	32.52	1
HD 2864(c)	27.32	3	31.68	3	25.54	2	28.18	3
HD 2932(c)	29.31	1	33.75	2	25.01	3	29.36	2
MP 3336(c)	18.14	5	29.41	4	22.25	4	23.27	5
Mean	25.01		32.89		24.32		27.41	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		1.00		3.91		14.07	
Genotypes(B)	**		1.27		3.72		13.95	
B within A	N.S.		2.21		6.44			
A within B			2.21		6.45			
1000 Grains weight,g								
CG1029	62.29	1	56.71	1	43.82	1	54.27	1
HI 1634	53.45	4	43.58	4	40.99	3	46.01	3
HD 2864(c)	44.49	5	45.23	3	36.28	4	42.00	5
HD 2932(c)	55.73	3	41.74	5	35.73	5	44.40	4
MP 3336(c)	56.23	2	50.42	2	42.38	2	49.67	2
Mean	54.44		47.54		39.84		47.27	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		1.08		4.24		8.86	
Genotypes(B)	**		1.02		2.98		6.47	
B within A	**		1.77		5.16			
A within B			1.91		5.59			
Date of Sowing:			09.11.2019		03.12.2019		24.12.2019	
Date of harvesting:			17.03.2020		23.03.2020		02.04.2020	

Table 5.1.1. Peninsular Zone		IR-TAS-DOS		Dharwad		2019-20		
Genotypes	Sowing time				V. Late	Rk	Mean	Rk
	Normal	Rk	Late	Rk				
Yield, q/ha								
DDW 48 (d)	36.22	3	35.19	4	32.68	4	34.70	3
DDW 49 (d)	35.64	7	34.32	7	26.58	9	32.18	9
HI 1633	35.94	5	33.44	8	33.78	1	34.39	5
MACS 6478 (c)	39.52	1	35.79	3	27.89	8	34.40	4
MACS 6222 (c)	35.46	8	36.71	2	33.57	2	35.25	2
MACS 3949 (d)(c)	31.86	9	34.84	5	33.09	3	33.26	8
UAS 428 (d)(c)	36.64	2	42.22	1	32.51	6	37.12	1
RAJ 4083 (c)	35.83	6	34.60	6	32.54	5	34.32	6
HD 2932 (c)	36.19	4	33.31	9	32.42	7	33.97	7
Mean	35.92		35.60		31.67		34.40	
	F. Test		S.E.m		CD (0.05)		CV (%)	
Sowing (A)	*		1.09		4.29		16.51	
Genotypes (B)	N.S.		1.23		3.50		10.73	
B within A	N.S.		2.13		6.06			
A within B			2.29		6.86			
Earheads/sqm								
DDW 48 (d)	212	7	222	2	237	2	224	2
DDW 49 (d)	221	3	216	8	238	1	225	1
HI 1633	224	2	220	5	218	7	221	6
MACS 6478 (c)	220	5	221	4	227	4	223	4
MACS 6222 (c)	211	8	222	1	215	9	216	9
MACS 3949 (d)(c)	232	1	211	9	226	5	223	3
UAS 428 (d)(c)	221	3	219	6	217	8	219	7
RAJ 4083 (c)	211	8	219	7	226	6	219	8
HD 2932 (c)	216	6	222	2	227	3	222	5
Mean	219		219		226		221	
	F. Test		S.E.m		CD (0.05)		CV (%)	
Sowing (A)	*		1.36		5.32		3.18	
Genotypes(B)	N.S.		2.94		8.37		3.99	
B within A	*		5.10		14.50			
A within B			4.99		14.97			
Grains/Earhead								
DDW 48 (d)	42.22	3	38.73	7	33.43	5	38.13	5
DDW 49 (d)	38.29	7	40.59	6	32.15	7	37.01	8
HI 1633	39.25	5	38.11	8	36.92	2	38.09	6
MACS 6478 (c)	44.97	1	41.71	5	31.25	8	39.31	3
MACS 6222 (c)	38.34	6	41.74	4	39.72	1	39.93	1
MACS 3949 (d)(c)	30.20	9	41.78	3	35.64	3	35.87	9
UAS 428 (d)(c)	37.72	8	46.47	1	32.41	6	38.87	4
RAJ 4083 (c)	43.26	2	44.64	2	30.80	9	39.56	2
HD 2932 (c)	42.20	4	35.56	9	34.25	4	37.34	7
Mean	39.61		41.04		34.06		38.23	
	F. Test		S.E.m		CD (0.05)		CV (%)	
Sowing (A)	*		1.18		4.62		15.99	
Genotypes (B)	N.S.		1.48		4.21		11.61	
B within A	**		2.56		7.29			
A within B			2.69		8.06			

1000 Grains Weight, g								
DDW 48 (d)	40.49	6	41.11	3	41.97	3	41.19	4
DDW 49 (d)	42.26	4	39.01	7	34.91	9	38.73	9
HI 1633	41.03	5	39.84	4	41.82	5	40.90	6
MACS 6478 (c)	40.03	7	38.84	8	39.47	7	39.45	8
MACS 6222 (c)	43.83	3	39.64	5	39.26	8	40.91	5
MACS 3949 (d)(c)	45.38	1	39.52	6	41.04	6	41.98	2
UAS 428 (d)(c)	43.99	2	41.61	2	46.33	2	43.98	1
RAJ 4083 (c)	39.29	9	35.42	9	46.78	1	40.50	7
HD 2932 (c)	39.72	8	42.24	1	41.87	4	41.28	3
Mean	41.78		39.69		41.49		40.99	
	F. Test		S.E.m		CD (0.05)		CV (%)	
Sowing (A)	**		0.22		0.86		2.76	
Genotypes(B)	**		0.39		1.11		2.85	
B within A	**		0.67		1.92			
A within B			0.67		2.01			
Date of Sowing:			18.11.2019		28.11.2019		16.12.2019	
Date of Harvesting:			15.03.2020		20.03.2020		10.04.2020	

Table 5.1.2. Peninsular Zone IR-TAS-DOS Niphad 2019-20

Genotypes	Sowing time						Mean	Rk
	Normal	Rk	Late	Rk	V. Late	Rk		
Yield, q/ha								
DDW 48 (d)	44.39	6	42.37	3	37.15	2	41.30	4
DDW 49 (d)	44.40	5	39.64	9	35.44	7	39.83	8
HI 1633	44.03	8	41.73	5	36.14	6	40.63	6
MACS 6478 (c)	44.53	4	40.50	7	35.25	8	40.09	7
MACS 6222 (c)	43.44	9	40.47	8	34.72	9	39.54	9
MACS 3949 (d)(c)	44.37	7	43.10	2	39.74	1	42.40	2
UAS 428 (d)(c)	45.05	3	41.77	4	37.08	3	41.30	5
RAJ 4083 (c)	46.73	2	40.53	6	36.68	5	41.32	3
HD 2932 (c)	47.67	1	46.07	1	36.69	4	43.48	1
Mean	44.96		41.80		36.54		41.10	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.09		0.34		1.09	
Genotypes (B)	**		0.64		1.83		4.69	
B within A	N.S.		1.11		3.17			
A within B			1.05		3.16			
Earheads/sqm								
DDW 48 (d)	409	3	390	9	395	5	398	5
DDW 49 (d)	389	6	413	1	387	8	396	6
HI 1633	390	5	399	3	411	1	400	3
MACS 6478 (c)	403	4	394	7	400	4	399	4
MACS 6222 (c)	376	8	391	8	373	9	380	9
MACS 3949 (d)(c)	350	9	396	6	406	3	384	8
UAS 428 (d)(c)	414	2	398	4	390	6	401	2
RAJ 4083 (c)	416	1	407	2	409	2	411	1
HD 2932 (c)	384	7	397	5	388	7	390	7
Mean	392		398		395		395	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	N.S.		2.12		8.32		2.79	
Genotypes(B)	**		4.36		12.40		3.31	
B within A	**		7.55		21.48			
A within B			7.43		22.28			

Grains/Earhead								
DDW 48 (d)	25.30	8	25.84	4	24.10	4	25.08	6
DDW 49 (d)	29.79	3	25.26	6	23.22	8	26.09	4
HI 1633	26.79	7	24.37	8	20.88	9	24.01	9
MACS 6478 (c)	30.45	2	26.35	3	23.39	7	26.73	2
MACS 6222 (c)	31.12	1	27.19	1	24.35	3	27.55	1
MACS 3949 (d)(c)	28.99	4	24.63	7	24.65	1	26.09	5
UAS 428 (d)(c)	24.82	9	25.27	5	23.52	5	24.54	8
RAJ 4083 (c)	27.29	6	22.95	9	23.45	6	24.56	7
HD 2932 (c)	27.90	5	26.52	2	24.54	2	26.32	3
Mean	28.05		25.38		23.57		25.66	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.14		0.55		2.86	
Genotypes (B)	**		0.52		1.48		6.08	
B within A	*		0.90		2.56			
A within B			0.86		2.58			
1000 Grains Weight, g								
DDW 48 (d)	42.89	4	42.10	5	39.11	5	41.37	5
DDW 49 (d)	38.35	7	38.00	9	39.47	4	38.61	7
HI 1633	42.14	5	42.96	4	42.19	1	42.43	2
MACS 6478 (c)	36.35	9	39.02	7	37.73	9	37.70	9
MACS 6222 (c)	37.21	8	38.12	8	38.25	8	37.86	8
MACS 3949 (d)(c)	43.88	2	44.20	1	39.70	3	42.59	1
UAS 428 (d)(c)	43.82	3	41.54	6	40.47	2	41.94	4
RAJ 4083 (c)	41.22	6	43.44	3	38.27	7	40.98	6
HD 2932 (c)	44.47	1	43.82	2	38.57	6	42.28	3
Mean	41.15		41.47		39.30		40.64	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.09		0.36		1.17	
Genotypes(B)	**		0.21		0.59		1.52	
B within A	**		0.36		1.01			
A within B			0.35		1.04			
Date of Sowing:			10.11.2019		02.12.2019		18.12.2019	
Date of Harvesting:			20.03.2020		15.04.2020		28.04.2020	

Table 5.1.3. Peninsular Zone IR-TAS-DOS Pune 2019-20

Genotypes	Sowing time						Mean	Rk
	Normal	Rk	Late	Rk	V. Late	Rk		
	Yield, q/ha							
DDW 48 (d)	28.22	6	29.06	6	20.51	7	25.93	6
DDW 49 (d)	30.95	4	24.07	9	15.61	9	23.54	9
HI 1633	32.85	2	32.38	2	25.64	2	30.29	3
MACS 6478 (c)	37.92	1	33.49	1	20.38	8	30.60	2
MACS 6222 (c)	27.48	8	25.78	7	22.65	5	25.30	7
MACS 3949 (d)(c)	27.86	7	30.83	4	23.61	4	27.43	5
UAS 428 (d)(c)	27.41	9	24.49	8	21.45	6	24.45	8
RAJ 4083 (c)	29.70	5	29.44	5	24.84	3	27.99	4
HD 2932 (c)	32.56	3	31.21	3	30.59	1	31.45	1
Mean	30.55		28.97		22.81		27.44	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.39		1.52		7.31	
Genotypes (B)	**		1.14		3.23		12.41	
B within A	*		1.97		5.59			
A within B			1.89		5.68			

Earheads/sqm								
DDW 48 (d)	383	4	388	1	353	5	375	3
DDW 49 (d)	415	1	382	2	367	2	388	1
HI 1633	342	8	375	4	357	3	358	6
MACS 6478 (c)	410	2	375	4	377	1	387	2
MACS 6222 (c)	370	5	340	8	350	6	353	8
MACS 3949 (d)(c)	365	6	373	6	357	3	365	5
UAS 428 (d)(c)	398	3	370	7	345	7	371	4
RAJ 4083 (c)	310	9	330	9	325	9	322	9
HD 2932 (c)	352	7	382	2	328	8	354	7
Mean	372		368		351		364	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		3.31		13.00		4.73	
Genotypes(B)	**		9.04		25.71		7.46	
B within A	N.S.		15.66		44.52			
A within B			15.13		45.35			
Grains/Earhead								
DDW 48 (d)	20.38	5	19.23	8	13.00	8	17.53	8
DDW 49 (d)	20.28	6	19.07	9	11.84	9	17.06	9
HI 1633	24.76	2	24.36	4	19.39	2	22.83	2
MACS 6478 (c)	23.34	3	27.71	1	13.27	7	21.44	4
MACS 6222 (c)	18.84	9	24.61	3	15.80	4	19.75	5
MACS 3949 (d)(c)	19.29	7	21.13	6	14.12	5	18.18	6
UAS 428 (d)(c)	18.86	8	19.93	7	14.04	6	17.61	7
RAJ 4083 (c)	23.31	4	25.38	2	17.83	3	22.17	3
HD 2932 (c)	25.73	1	23.61	5	25.00	1	24.78	1
Mean	21.64		22.78		16.03		20.15	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.40		1.56		10.24	
Genotypes (B)	**		0.95		2.70		14.16	
B within A	*		1.65		4.68			
A within B			1.60		4.81			
1000 Grains Weight, g								
DDW 48 (d)	36.00	8	39.00	1	44.67	2	39.89	3
DDW 49 (d)	37.00	6	33.67	6	36.00	9	35.56	9
HI 1633	38.67	5	36.00	3	37.00	8	37.22	6
MACS 6478(c)	39.67	2	32.67	8	41.00	6	37.78	5
MACS 6222(c)	39.00	4	31.00	9	41.33	5	37.11	7
MACS 3949 (d)(c)	39.33	3	39.00	1	47.00	1	41.78	1
UAS 428 (d)(c)	36.67	7	33.33	7	44.67	2	38.22	4
RAJ 4083 (c)	41.33	1	35.33	4	43.33	4	40.00	2
HD 2932 (c)	36.00	8	34.67	5	38.33	7	36.33	8
Mean	38.19		34.96		41.48		38.21	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.09		0.36		1.17	
Genotypes(B)	**		0.21		0.59		1.52	
B within A	**		0.36		1.01			
A within B			0.35		1.04			
Date of Sowing:			10.11.2019		02.12.2019		18.12.2019	
Date of Harvesting:			20.03.2020		15.04.2020		28.04.2020	

Table 5.2.1. Peninsular Zone		RIR-TS-TAS				Dharwad 2019-20			
Genotypes	Irrigation levels								
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk	
Yield, q/ha									
NIDW 1149 (d)	23.88	3	27.87	1	28.46	5	26.74	4	
HI 1605 (c)	20.80	6	22.85	4	28.04	6	23.90	6	
AKDW 2997-16 (d)(c)	25.66	1	25.88	2	31.43	4	27.66	1	
UAS 446 (d)(c)	25.06	2	22.26	5	35.41	1	27.58	2	
NIAW 3170 (c)	22.39	4	23.33	3	34.69	2	26.80	3	
HI 8805 (d)(c)	22.10	5	20.63	6	33.38	3	25.37	5	
Mean	23.31		23.80		31.90		26.34		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	*		1.17		4.60		18.88		
Genotypes (B)	N.S.		1.41		4.06		16.02		
B within A	N.S.		2.44		7.04				
A within B			2.51		7.26				
Earheads/sqm									
NIDW 1149 (d)	225	1	217	4	230	2	224	1	
HI 1605 (c)	219	3	214	5	226	4	220	5	
AKDW 2997-16 (d)(c)	214	5	221	2	224	6	220	6	
UAS 446 (d)(c)	216	4	220	3	232	1	223	2	
NIAW 3170 (c)	222	2	214	5	227	3	221	4	
HI 8805 (d)(c)	212	6	226	1	226	5	221	3	
Mean	218		219		228		221		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	**		0.74		2.92		1.43		
Genotypes (B)	N.S.		1.73		5.01		2.35		
B within A	*		3.00		8.67				
A within B			2.84		8.20				
Grains/Earhead									
NIDW 1149 (d)	28.58	4	29.90	1	28.08	6	28.85	5	
HI 1605 (c)	26.63	5	28.08	2	28.49	5	27.73	6	
AKDW 2997-16 (d)(c)	33.22	2	27.49	3	32.77	4	31.16	2	
UAS 446 (d)(c)	34.45	1	25.21	5	36.07	1	31.91	1	
NIAW 3170 (c)	25.87	6	26.39	4	35.78	2	29.34	3	
HI 8805 (d)(c)	29.88	3	23.34	6	33.90	3	29.04	4	
Mean	29.77		26.73		32.51		29.67		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	*		1.45		5.67		20.67		
Genotypes (B)	N.S.		1.64		4.74		16.58		
B within A	N.S.		2.84		8.20				
A within B			2.97		8.57				
1000 Grains Weight, g									
NIDW 1149 (d)	37.37	2	43.07	1	44.34	1	41.59	1	
HI 1605 (c)	35.27	4	38.12	6	43.44	3	38.94	5	
AKDW 2997-16 (d)(c)	36.09	3	42.77	2	42.92	4	40.59	3	
UAS 446 (d)(c)	33.35	6	40.34	4	42.38	6	38.69	6	
NIAW 3170 (c)	39.10	1	41.22	3	42.64	5	40.99	2	
HI 8805 (d)(c)	34.93	5	39.01	5	43.61	2	39.18	4	
Mean	36.02		40.75		43.22		40.00		
	F. Test		SEm		CD (0.05)		CV (%)		
Irrigation (A)	**		0.48		1.87		5.05		
Genotypes (B)	**		0.44		1.28		3.32		
B within A	**		0.77		2.21				
A within B			0.85		2.44				
Date of Sowing:					12.11.2019				
Date of Harvesting:			05.03.2020			08.03.2020	15.03.2020		

Table 5.2.2 Peninsular Zone		RIR-TS-TAS		Niphad		2019-20		
Genotypes	Irrigation levels						Mean	Rk
	Zero	Rk	One	Rk	Two	Rk		
Yield, q/ha								
NIDW 1149 (d)	19.50	1	24.09	1	28.15	1	23.91	1
HI 1605 (c)	15.81	2	19.25	5	21.70	4	18.92	4
AKDW 2997-16 (d)(c)	14.25	5	16.81	6	21.59	5	17.55	6
UAS 446 (d)(c)	15.53	3	21.94	2	25.78	2	21.08	2
NIAW 3170 (c)	13.16	6	20.31	3	23.76	3	19.08	3
HI 8805 (d)(c)	15.39	4	19.44	4	20.39	6	18.40	5
Mean	15.61		20.30		23.56		19.82	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		1.17		4.61		25.11	
Genotypes (B)	**		1.13		3.25		17.05	
B within A	N.S.		1.95		5.64			
A within B			2.13		6.16			
Earheads/sqm								
NIDW 1149 (d)	165	5	378	1	470	1	338	1
HI 1605 (c)	196	1	313	5	422	5	310	4
AKDW 2997-16 (d)(c)	157	6	359	4	426	3	314	3
UAS 446 (d)(c)	183	2	368	3	422	4	324	2
NIAW 3170 (c)	176	3	369	2	377	6	307	5
HI 8805 (d)(c)	173	4	294	6	452	2	306	6
Mean	175		347		428		317	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		2.59		10.18		3.47	
Genotypes (B)	**		4.82		13.93		4.57	
B within A	**		8.35		24.12			
A within B			8.05		23.26			
Grains/Earhead								
NIDW 1149 (d)	30.02	1	16.00	2	14.04	3	20.02	1
HI 1605 (c)	21.63	5	15.60	3	12.99	4	16.74	5
AKDW 2997-16 (d)(c)	26.10	2	12.08	6	12.85	5	17.01	4
UAS 446 (d)(c)	21.81	4	15.35	4	15.51	2	17.56	2
NIAW 3170 (c)	20.34	6	13.92	5	15.51	1	16.59	6
HI 8805 (d)(c)	24.57	3	16.91	1	11.02	6	17.50	3
Mean	24.08		14.98		13.66		17.57	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		1.30		5.11		31.41	
Genotypes (B)	N.S.		1.27		3.66		21.63	
B within A	N.S.		2.19		6.34			
A within B			2.39		6.90			
1000 Grains Weight, g								
NIDW 1149 (d)	39.26	1	40.13	1	42.60	1	40.67	1
HI 1605 (c)	37.21	3	39.51	3	39.60	4	38.77	5
AKDW 2997-16 (d)(c)	35.44	6	38.94	5	39.41	5	37.93	6
UAS 446 (d)(c)	38.78	2	38.68	6	39.35	6	38.93	3
NIAW 3170 (c)	36.54	5	39.60	2	40.93	2	39.02	2
HI 8805 (d)(c)	36.72	4	39.00	4	40.70	3	38.81	4
Mean	37.32		39.31		40.43		39.02	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	**		0.27		1.05		2.89	
Genotypes (B)	**		0.45		1.31		3.48	
B within A	N.S.		0.78		2.26			
A within B			0.76		2.21			
Date of Sowing:					22.11.2019			
Date of Harvesting:			10.03.2020			19.03.2020	26.03.2020	

Table 5.2.3 Peninsular Zone		RIR-TS-TAS				Pune 2019-20		
Genotypes	Irrigation levels							
	Zero	Rk	One	Rk	Two	Rk	Mean	Rk
Yield, q/ha								
NIDW 1149 (d)	21.51	2	23.25	1	24.14	2	22.97	1
HI 1605 (c)	20.94	3	20.36	4	21.49	4	20.93	3
AKDW 2997-16 (d)(c)	19.48	4	21.59	2	20.47	6	20.51	4
UAS 446 (d)(c)	16.49	6	21.00	3	20.99	5	19.49	6
NIAW 3170 (c)	21.61	1	18.98	6	25.68	1	22.09	2
HI 8805 (d)(c)	19.24	5	19.51	5	22.64	3	20.47	5
Mean	19.88		20.78		22.57		21.08	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		0.49		1.94		9.93	
Genotypes (B)	**		0.63		1.81		8.90	
B within A	*		1.08		3.13			
A within B			1.11		3.19			
Earheads/sqm								
NIDW 1149 (d)	183	6	200	6	233	6	206	6
HI 1605 (c)	290	2	353	1	327	1	323	1
AKDW 2997-16 (d)(c)	245	4	260	4	283	4	263	4
UAS 446 (d)(c)	272	3	268	3	253	5	264	3
NIAW 3170 (c)	317	1	278	2	310	2	302	2
HI 8805 (d)(c)	204	5	223	5	292	3	240	5
Mean	252		264		283		266	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		4.21		16.53		6.71	
Genotypes (B)	**		17.10		49.39		19.27	
B within A	N.S.		29.62		85.55			
A within B			27.37		79.04			
Grains/Earhead								
NIDW 1149 (d)	26.95	1	23.92	2	23.21	1	24.69	1
HI 1605 (c)	20.00	4	16.18	6	18.89	5	18.36	6
AKDW 2997-16 (d)(c)	21.44	2	23.97	1	21.03	4	22.15	2
UAS 446 (d)(c)	16.19	6	22.04	3	22.20	2	20.15	3
NIAW 3170 (c)	17.83	5	19.84	5	21.94	3	19.87	5
HI 8805 (d)(c)	20.85	3	21.24	4	18.29	6	20.13	4
Mean	20.55		21.20		20.93		20.89	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	N.S.		0.46		1.81		9.38	
Genotypes (B)	N.S.		1.55		4.49		22.32	
B within A	N.S.		2.69		7.77			
A within B			2.50		7.22			
1000 Grains Weight, g								
NIDW 1149 (d)	44.33	2	49.33	1	45.33	1	46.33	1
HI 1605 (c)	36.33	6	35.67	4	35.33	6	35.78	6
AKDW 2997-16 (d)(c)	39.00	3	36.33	3	36.67	5	37.33	4
UAS 446 (d)(c)	38.33	5	35.67	4	38.00	4	37.33	4
NIAW 3170 (c)	38.67	4	35.33	6	38.33	3	37.44	3
HI 8805 (d)(c)	45.00	1	44.00	2	44.00	2	44.33	2
Mean	40.28		39.39		39.61		39.76	
	F. Test		SEm		CD (0.05)		CV (%)	
Irrigation (A)	*		0.13		0.50		1.37	
Genotypes (B)	**		0.35		1.00		2.62	
B within A	**		0.60		1.74			
A within B			0.56		1.63			
Date of Sowing:					13.11.2019			
Date of Harvesting:			08.03.2020			12.03.2020	19.03.2020	

Table 6.1.1. Northern Hill Zone

SPL-1 Almora

2019-20

Nutrient management	Date of sowing		Date of sowing		Date of sowing		Date of sowing		Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	70.32	3	69.75	3	67.14	3	67.38	3	68.65	3
150% RFD + FYM	79.21	2	70.89	2	73.45	2	74.64	1	74.55	2
150% RFD+FYM+GR	84.20	1	83.30	1	82.14	1	72.69	2	80.58	1
Mean	77.91		74.65		74.24		71.57		74.59	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		2.80		9.71		11.28	
Nutrient management (B)			**		1.81		5.28		8.40	
B within A			N.S.		3.62		10.57			
A within B					4.07		11.89			
Earhead/sqm										
RFD	443	3	465	3	435	3	415	3	440	3
150% RFD + FYM	507	2	473	2	457	2	433	1	468	2
150% RFD+FYM+GR	518	1	485	1	475	1	427	2	476	1
Mean	489		474		456		425		461	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		15.61		54.03		10.16	
Nutrient management (B)			**		7.39		21.57		5.55	
B within A			N.S.		14.78		43.14			
A within B					19.73		57.59			
Grains/earhead										
RFD	33.22	1	30.56	2	31.30	3	34.88	3	32.49	3
150% RFD + FYM	31.20	3	30.35	3	33.76	2	39.70	1	33.75	2
150% RFD+FYM+GR	32.91	2	36.48	1	36.79	1	38.88	2	36.26	1
Mean	32.44		32.46		33.95		37.82		34.17	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		0.66		2.30		5.83	
Nutrient management (B)			*		0.86		2.52		8.74	
B within A			N.S.		1.72		5.03			
A within B					1.56		4.54			
1000 Grains Weight, g										
RFD	47.68	3	48.96	2	49.37	1	46.71	1	48.18	1
150% RFD + FYM	50.10	1	49.47	1	47.63	2	43.55	3	47.69	2
150% RFD+FYM+GR	49.35	2	47.47	3	47.00	3	43.93	2	46.94	3
Mean	49.04		48.63		48.00		44.73		47.60	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			*		0.65		2.25		4.10	
Nutrient management (B)			N.S.		0.47		1.38		3.45	
B within A			N.S.		0.95		2.77			
A within B					1.01		2.95			
Plant Height, cm										
RFD	113.3	2	115.2	2	107.9	2	101.7	2	109.5	2
150% RFD + FYM	118.9	1	119.3	1	118.6	1	107.0	1	116.0	1
150% RFD+FYM+GR	108.6	3	113.1	3	106.3	3	96.1	3	106.1	3
Mean	113.6		115.9		111.0		101.6		110.5	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		1.40		4.85		3.80	
Nutrient management (B)			**		0.90		2.63		2.83	
B within A			N.S.		1.80		5.26			
A within B					2.03		5.93			
Biomass,q/ha										
RFD	173.61	3	186.84	3	174.27	3	167.00	3	175.43	3
150% RFD + FYM	202.05	2	187.83	2	197.09	2	191.14	1	194.53	2
150% RFD+FYM+GR	211.64	1	212.96	1	207.01	1	178.90	2	202.63	1
Mean	195.77		195.88		192.79		179.01		190.86	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		5.30		18.35		8.33	
Nutrient management (B)			**		3.74		10.91		6.79	
B within A			N.S.		7.48		21.83			
A within B					8.09		23.60			
Date of Sowing:			25.10.2019		05.11.2019		15.11.2019		25.11.2019	
Date of Harvesting:			18.05.2020		18.05.2020		25.05.2020		25.05.2020	

Table 6.1.2. Northern Hill Zone				SPL-1		Bajaura		2019-20		
				Date of sowing						
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield,q/ha										
RFD	39.51	3	36.18	3	32.08	3	27.68	3	33.86	3
150% RFD + FYM	44.72	2	42.34	2	36.94	2	31.27	2	38.82	2
150% RFD+FYM+GR	51.05	1	47.06	1	41.89	1	36.01	1	44.00	1
Mean	45.09		41.86		36.97		31.65		38.89	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		1.21		4.18		9.31	
Nutrient management (B)			**		1.03		3.01		9.18	
B within A			N.S.		2.06		6.02			
A within B					2.07		6.05			
Earhead/sqm										
RFD	321	3	316	3	311	3	288	3	309	3
150% RFD + FYM	361	1	363	2	323	2	295	2	335	2
150% RFD+FYM+GR	359	2	368	1	325	1	296	1	337	1
Mean	347		349		319		293		327	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			*		10.25		35.47		9.40	
Nutrient management (B)			**		5.83		17.01		6.17	
B within A			N.S.		11.66		34.02			
A within B					13.99		40.82			
Grains/earhead										
RFD	30.22	3	27.44	3	25.71	3	25.91	3	27.32	3
150% RFD + FYM	30.53	2	29.79	1	30.14	2	28.73	2	29.80	2
150% RFD+FYM+GR	31.50	1	28.70	2	30.44	1	31.38	1	30.50	1
Mean	30.75		28.64		28.76		28.67		29.21	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		1.81		6.28		18.64	
Nutrient management (B)			*		0.72		2.11		8.58	
B within A			N.S.		1.45		4.22			
A within B					2.17		6.32			
1000 Grains Weight, g										
RFD	41.03	2	41.78	2	39.70	2	37.47	2	40.00	2
150% RFD + FYM	40.68	3	39.47	3	38.10	3	37.12	3	38.84	3
150% RFD+FYM+GR	45.20	1	45.03	1	42.83	1	39.20	1	43.07	1
Mean	42.31		42.09		40.21		37.93		40.63	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		0.63		2.17		4.64	
Nutrient management (B)			**		0.84		2.45		7.17	
B within A			N.S.		1.68		4.91			
A within B					1.51		4.41			
Plant Height, cm										
RFD	96.1	2	95.4	2	94.9	1	92.4	2	94.7	2
150% RFD + FYM	99.3	1	99.4	1	93.6	2	93.8	1	96.5	1
150% RFD+FYM+GR	82.2	3	82.9	3	80.4	3	79.2	3	81.2	3
Mean	92.5		92.6		89.7		88.5		90.8	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		1.38		4.79		4.57	
Nutrient management (B)			**		0.69		2.01		2.62	
B within A			N.S.		1.38		4.02			
A within B					1.78		5.20			
Biomass,q/ha										
RFD	106.48	3	103.75	3	90.97	3	79.47	3	95.17	3
150% RFD + FYM	118.69	1	112.26	1	102.65	1	88.25	1	105.46	1
150% RFD+FYM+GR	117.62	2	107.22	2	98.86	2	86.35	2	102.51	2
Mean	114.26		107.74		97.49		84.69		101.05	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		2.83		9.78		8.39	
Nutrient management (B)			*		2.61		7.61		8.94	
B within A			N.S.		5.21		15.22			
A within B					5.11		14.91			
Date of Sowing:			25.10.2019		05.11.2019		15.11.2019		25.11.2019	
Date of Harvesting:			20.05.2020		20.05.2020		25.05.2020		25.05.2020	

Table 6.1.3 Northern Hill Zone				SPL-1		Malan		2019-20		
				Date of sowing						
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield,q/ha										
RFD	51.63	3	51.41	3	51.07	3	46.57	3	50.17	3
150% RFD + FYM	55.65	2	54.07	2	52.61	2	49.09	2	52.86	2
150% RFD+FYM+GR	57.60	1	56.54	1	54.65	1	50.70	1	54.87	1
Mean	54.96		54.00		52.78		48.78		52.63	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	0.19		0.67		1.10		
Nutrient management (B)			**	0.29		0.84		1.90		
B within A			N.S.	0.58		1.69				
A within B				0.51		1.49				
Earhead/sqm										
RFD	507	3	552	3	481	3	415	3	489	3
150% RFD + FYM	546	2	587	2	594	2	489	2	554	2
150% RFD+FYM+GR	563	1	610	1	607	1	508	1	572	1
Mean	539		583		561		471		538	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	3.12		10.79		1.74		
Nutrient management (B)			**	2.09		6.10		1.35		
B within A			**	4.18		12.21				
A within B				4.63		13.50				
Grains/earhead										
RFD	22.24	1	19.52	1	22.55	1	22.87	1	21.79	1
150% RFD + FYM	21.64	2	19.43	2	18.17	3	21.28	2	20.13	2
150% RFD+FYM+GR	20.86	3	18.74	3	18.33	2	21.08	3	19.75	3
Mean	21.58		19.23		19.68		21.74		20.56	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	0.39		1.35		5.69		
Nutrient management (B)			**	0.16		0.48		2.77		
B within A			**	0.33		0.96				
A within B				0.47		1.38				
1000 Grains Weight, g										
RFD	45.81	3	47.78	2	47.22	3	49.04	1	47.46	3
150% RFD + FYM	47.11	2	47.46	3	48.81	2	47.15	3	47.63	2
150% RFD+FYM+GR	49.03	1	49.44	1	49.12	1	47.39	2	48.75	1
Mean	47.31		48.23		48.38		47.86		47.95	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			N.S.	0.71		2.45		4.43		
Nutrient management (B)			**	0.19		0.55		1.37		
B within A			**	0.38		1.11				
A within B				0.77		2.25				
Plant Height, cm										
RFD	104.0	3	98.0	3	94.3	3	86.0	3	95.6	3
150% RFD + FYM	105.3	2	99.3	2	94.7	2	90.7	2	97.5	2
150% RFD+FYM+GR	110.7	1	104.0	1	98.3	1	98.0	1	102.8	1
Mean	106.7		100.4		95.8		91.6		98.6	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	0.70		2.42		2.13		
Nutrient management (B)			**	0.56		1.62		1.95		
B within A			N.S.	1.11		3.25				
A within B				1.15		3.35				
Biomass,q/ha										
RFD	124.93	3	124.23	3	123.70	3	112.40	3	121.32	3
150% RFD + FYM	134.30	2	130.83	2	127.33	2	118.30	2	127.69	2
150% RFD+FYM+GR	139.40	1	136.83	1	132.23	1	118.90	1	131.84	1
Mean	132.88		130.63		127.76		116.53		126.95	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	0.87		3.02		2.06		
Nutrient management (B)			**	0.88		2.56		2.39		
B within A			N.S.	1.75		5.11				
A within B				1.67		4.89				
Date of Sowing:			25.10.2019	05.11.2019		15.11.2019		25.11.2019		
Date of Harvesting:			01.05.2020	05.05.2020		08.05.2020		12.05.2020		

Table 6.2.1. North Western Plains Zone

	SPL-1				Agra				2019-20	
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	42.07	3	45.56	3	49.20	3	50.96	3	46.95	3
150% RFD + FYM	44.69	2	49.95	2	51.86	2	52.58	2	49.77	2
150% RFD+FYM+GR	46.13	1	51.48	1	53.75	1	55.33	1	51.67	1
Mean	44.30		49.00		51.60		52.96		49.46	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.57		1.96		3.43			
Nutrient management (B)	**		0.64		1.88		4.51			
B within A	N.S.		1.29		3.76					
A within B			1.20		3.49					
Earhead/sqm										
RFD	248	3	253	3	258	3	260	3	254.96	3
150% RFD + FYM	251	2	260	2	263	2	265	2	259.54	2
150% RFD+FYM+GR	254	1	262	1	268	1	270	1	263.56	1
Mean	251		258		263		265		259.35	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.82		2.83		0.95			
Nutrient management (B)	**		1.36		3.96		1.81			
B within A	N.S.		2.71		7.91					
A within B			2.36		6.89					
Grains/earhead										
RFD	48.19	3	49.57	3	51.12	1	51.22	1	50.03	2
150% RFD + FYM	49.33	2	50.94	2	50.77	2	49.93	2	50.24	1
150% RFD+FYM+GR	49.58	1	51.47	1	48.86	3	47.97	3	49.47	3
Mean	49.03		50.66		50.25		49.71		49.91	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		1.00		3.46		6.01			
Nutrient management (B)	N.S.		1.10		3.21		7.63			
B within A	N.S.		2.20		6.42					
A within B			2.05		6.00					
1000 Grains Weight, g										
RFD	35.28	3	36.41	3	37.32	3	38.25	3	36.82	3
150% RFD + FYM	36.19	2	37.78	2	38.98	2	39.86	2	38.20	2
150% RFD+FYM+GR	36.61	1	38.36	1	41.22	1	42.78	1	39.74	1
Mean	36.03		37.52		39.17		40.30		38.25	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.41		1.43		3.25			
Nutrient management (B)	*		0.69		2.02		6.26			
B within A	N.S.		1.38		4.04					
A within B			1.20		3.51					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	14.03.20		21.03.20		26.03.20		03.04.20			

Table 6.2.2. North Western Plains Zone

SPL-1

Delhi

2019-20

Nutrient management	25th Oct		5th Nov		15th Nov		25th Nov		Mean	Rk
	Rk		Rk		Rk		Rk			
Date of sowing										
Yield,q/ha										
RFD	45.92	3	56.58	3	57.17	3	57.42	3	54.27	3
150% RFD + FYM	50.58	2	59.17	2	60.83	2	59.83	2	57.60	2
150% RFD+FYM+GR	51.08	1	61.17	1	62.25	1	61.33	1	58.96	1
Mean	49.19		58.97		60.08		59.53		56.94	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.52		1.80		2.74			
Nutrient management (B)	**		0.57		1.67		3.48			
B within A	N.S.		1.15		3.34					
A within B			1.07		3.12					
Earhead/sqm										
RFD	413	3	593	3	530	3	418	3	488.75	3
150% RFD + FYM	447	2	645	2	565	2	457	2	528.33	2
150% RFD+FYM+GR	470	1	692	1	607	1	488	1	564.17	1
Mean	443		643		567		454		527.08	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		7.27		25.17		4.14			
Nutrient management (B)	**		2.47		7.21		1.62			
B within A	*		4.94		14.42					
A within B			8.32		24.28					
Grains/earhead										
RFD	27.98	2	23.19	1	26.72	1	36.60	1	28.62	1
150% RFD + FYM	28.43	1	21.70	2	26.48	2	33.88	2	27.62	2
150% RFD+FYM+GR	26.95	3	20.61	3	24.88	3	33.01	3	26.36	3
Mean	27.79		21.83		26.03		34.50		27.54	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.65		2.26		7.12			
Nutrient management (B)	**		0.41		1.21		5.21			
B within A	N.S.		0.83		2.42					
A within B			0.94		2.74					
1000 Grains Weight, g										
RFD	39.71	3	41.26	3	40.34	3	37.51	3	39.71	3
150% RFD + FYM	39.88	2	42.34	2	40.66	2	38.17	1	40.26	2
150% RFD+FYM+GR	40.48	1	43.11	1	41.32	1	38.13	2	40.76	1
Mean	40.03		42.24		40.77		37.94		40.24	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	*		0.81		2.82		6.07			
Nutrient management (B)	**		0.15		0.43		1.27			
B within A	N.S.		0.30		0.86					
A within B			0.85		2.48					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	08.04.20		15.04.20		20.4.20		20.04.20			

Table 6.2.3. North Western Plains Zone		SPL-1		Durgapura				2019-20		
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield, q/ha										
RFD	38.11	3	41.68	3	41.85	3	41.14	3	40.69	3
150% RFD + FYM	45.96	2	54.13	2	55.92	2	54.23	2	52.56	2
150% RFD+FYM+GR	51.93	1	60.24	1	60.24	1	60.59	1	58.25	1
Mean	45.34		52.01		52.67		51.99		50.50	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.85		2.94		5.05			
Nutrient management (B)	**		1.03		3.01		7.08			
B within A	N.S.		2.06		6.02					
A within B			1.89		5.51					
Earhead/sqm										
RFD	366	3	388	3	404	3	393	3	387.67	3
150% RFD + FYM	376	2	420	2	430	2	406	2	407.83	2
150% RFD+FYM+GR	398	1	429	1	436	1	429	1	423.00	1
Mean	380		412		423		409		406.17	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		4.47		15.48		3.30			
Nutrient management (B)	**		4.39		12.82		3.75			
B within A	N.S.		8.78		25.64					
A within B			8.45		24.67					
Grains/earhead										
RFD	28.10	3	26.93	3	26.33	3	29.01	3	27.59	3
150% RFD + FYM	30.16	2	32.36	2	35.11	1	33.88	2	32.88	2
150% RFD+FYM+GR	32.55	1	37.47	1	34.81	2	35.58	1	35.10	1
Mean	30.27		32.25		32.08		32.82		31.86	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.89		3.07		8.36			
Nutrient management (B)	**		0.56		1.62		6.04			
B within A	N.S.		1.11		3.24					
A within B			1.27		3.70					
1000 Grains Weight, g										
RFD	37.13	3	40.47	1	39.60	2	36.20	3	38.35	3
150% RFD + FYM	40.60	1	39.87	2	37.60	3	39.37	2	39.36	2
150% RFD+FYM+GR	40.37	2	37.60	3	40.07	1	39.60	1	39.41	1
Mean	39.37		39.31		39.09		38.39		39.04	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		1.00		3.46		7.67			
Nutrient management (B)	N.S.		0.49		1.43		4.33			
B within A	*		0.98		2.85					
A within B			1.28		3.73					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	18.03.2020		20.03.2020		20.04.2020		22.04.2020			

Table 6.2.4. North Western Plains Zone		SPL-1		Gurdaspur		2019-20				
		Date of sowing								
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield,q/ha										
RFD	68.76	3	67.50	3	57.99	3	47.95	3	60.55	3
150% RFD + FYM	83.22	2	77.13	2	67.20	2	55.67	2	70.80	2
150% RFD+FYM+GR	88.17	1	80.90	1	69.25	1	58.90	1	74.31	1
Mean	80.05		75.18		64.81		54.17		68.55	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		1.57		5.42		6.85			
Nutrient management (B)	**		1.26		3.68		6.37			
B within A	N.S.		2.52		7.35					
A within B			2.58		7.55					
Earhead/sqm										
RFD	342	3	337	3	316	3	310	3	326.21	3
150% RFD + FYM	371	2	367	2	354	2	349	2	360.25	2
150% RFD+FYM+GR	377	1	370	1	361	1	353	1	365.09	1
Mean	363		358		344		337		350.52	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		8.16		28.23		6.98			
Nutrient management (B)	**		4.39		12.82		4.34			
B within A	N.S.		8.79		25.65					
A within B			10.86		31.71					
Grains/earhead										
RFD	47.30	3	50.56	3	46.90	3	40.07	3	46.21	3
150% RFD + FYM	52.99	2	55.40	2	49.46	2	41.74	2	49.90	2
150% RFD+FYM+GR	55.51	1	57.09	1	50.87	1	44.67	1	52.03	1
Mean	51.93		54.35		49.08		42.16		49.38	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		2.44		8.44		14.81			
Nutrient management (B)	*		1.48		4.33		10.41			
B within A	N.S.		2.97		8.66					
A within B			3.44		10.03					
1000 Grains Weight, g										
RFD	42.52	1	39.65	1	39.19	1	38.57	1	39.98	1
150% RFD + FYM	42.49	2	38.81	2	38.68	2	38.28	2	39.56	2
150% RFD+FYM+GR	42.28	3	38.37	3	37.76	3	37.56	3	38.99	3
Mean	42.43		38.94		38.54		38.14		39.51	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.45		1.55		3.40			
Nutrient management (B)	N.S.		0.47		1.38		4.14			
B within A	N.S.		0.94		2.76					
A within B			0.89		2.60					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	06.05.20		06.05.20		08.05.20		08.05.20			

Table 6.2.5. North Western Plains Zone		SPL-1		Hisar		2019-20				
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	62.11	3	53.24	3	47.20	3	43.51	3	51.52	3
150% RFD + FYM	64.61	2	55.89	2	49.11	2	45.77	2	53.85	2
150% RFD+FYM+GR	72.62	1	61.31	1	52.17	1	46.85	1	58.24	1
Mean	66.45		56.82		49.49		45.38		54.53	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.99		3.44		5.46			
Nutrient management (B)	**		0.66		1.94		4.22			
B within A	N.S.		1.33		3.87					
A within B			1.47		4.29					
Earhead/sqm										
RFD	413	3	400	3	375	3	361	3	387.33	3
150% RFD + FYM	424	2	425	1	407	2	379	2	408.67	2
150% RFD+FYM+GR	437	1	425	1	423	1	395	1	420.00	1
Mean	425		417		401		378		405.33	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		5.61		19.41		4.15			
Nutrient management (B)	**		6.29		18.37		5.38			
B within A	N.S.		12.59		36.74					
A within B			11.71		34.18					
Grains/earhead										
RFD	36.50	3	33.12	2	32.91	1	31.67	1	33.55	1
150% RFD + FYM	37.17	2	32.94	3	30.22	3	30.90	2	32.81	3
150% RFD+FYM+GR	38.76	1	34.14	1	30.24	2	30.50	3	33.41	2
Mean	37.48		33.40		31.12		31.02		33.26	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.77		2.67		6.97			
Nutrient management (B)	N.S.		0.83		2.42		8.65			
B within A	N.S.		1.66		4.85					
A within B			1.56		4.56					
1000 Grains Weight, g										
RFD	41.24	2	40.22	2	38.43	3	38.14	3	39.51	3
150% RFD + FYM	41.03	3	39.94	3	40.10	2	39.19	1	40.07	2
150% RFD+FYM+GR	42.97	1	42.37	1	40.92	1	39.15	2	41.35	1
Mean	41.75		40.85		39.82		38.83		40.31	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	*		0.53		1.82		3.91			
Nutrient management (B)	*		0.38		1.11		3.28			
B within A	N.S.		0.76		2.23					
A within B			0.81		2.38					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	12.04.2020		16.04.2020		21.04.2020		24.04.2020			

Table 6.2.6. North Western Plains Zone		SPL-1		Jammu		2019-20				
		Date of sowing								
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield,q/ha										
RFD	52.32	2	51.48	1	50.45	1	45.63	3	49.97	2
150% RFD + FYM	50.09	3	50.65	3	50.11	2	46.71	1	49.39	3
150% RFD+FYM+GR	54.15	1	51.46	2	50.07	3	46.23	2	50.48	1
Mean	52.19		51.20		50.21		46.19		49.95	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	*		1.04		3.61		6.27			
Nutrient management (B)	N.S.		0.50		1.46		3.47			
B within A	N.S.		1.00		2.92					
A within B			1.33		3.87					
Earhead/sqm										
RFD	395	2	382	1	377	1	352	2	376.58	2
150% RFD + FYM	375	3	374	3	369	3	347	3	366.25	3
150% RFD+FYM+GR	396	1	381	2	376	2	356	1	377.33	1
Mean	389		379		374		352		373.39	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	*		7.04		24.38		5.66			
Nutrient management (B)	*		3.24		9.46		3.01			
B within A	N.S.		6.48		18.93					
A within B			8.81		25.72					
Grains/earhead										
RFD	32.06	3	33.47	2	33.55	2	32.57	3	32.91	2
150% RFD + FYM	34.43	1	35.57	1	34.18	1	33.88	1	34.52	1
150% RFD+FYM+GR	33.04	2	32.36	3	32.88	3	33.01	2	32.82	3
Mean	33.18		33.80		33.54		33.15		33.42	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.55		1.90		4.94			
Nutrient management (B)	N.S.		0.54		1.59		5.63			
B within A	N.S.		1.09		3.17					
A within B			1.04		3.05					
1000 Grains Weight, g										
RFD	41.36	1	40.26	2	40.01	2	39.90	1	40.38	2
150% RFD + FYM	38.93	3	38.13	3	39.85	3	39.71	2	39.15	3
150% RFD+FYM+GR	41.34	2	41.73	1	40.54	1	39.46	3	40.77	1
Mean	40.54		40.04		40.13		39.69		40.10	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.50		1.72		3.73			
Nutrient management (B)	*		0.40		1.17		3.47			
B within A	N.S.		0.80		2.35					
A within B			0.82		2.41					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	14.04.2020		16.04.2020		25.04.2020		29.04.2020			

Table 6.2.7. North Western Plains Zone			SPL-1		Karnal		2019-20			
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	62.69	3	61.34	3	58.75	2	56.37	2	59.79	3
150% RFD + FYM	65.01	2	63.63	2	58.29	3	55.95	3	60.72	2
150% RFD+FYM+GR	68.68	1	68.70	1	61.78	1	57.04	1	64.05	1
Mean	65.46		64.56		59.61		56.45		61.52	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		1.10		3.82		5.38			
Nutrient management (B)	**		0.78		2.26		4.36			
B within A	N.S.		1.55		4.53					
A within B			1.68		4.90					
Earhead/sqm										
RFD	442	3	447	3	483	3	487	3	464.38	3
150% RFD + FYM	500	2	482	2	499	2	492	2	493.13	2
150% RFD+FYM+GR	506	1	503	1	528	1	532	1	516.88	1
Mean	483		477		503		503		491.46	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		13.85		47.94		8.46			
Nutrient management (B)	**		7.17		20.92		5.05			
B within A	N.S.		14.34		41.84					
A within B			18.14		52.94					
Grains/earhead										
RFD	34.04	2	32.09	3	30.25	2	29.04	2	31.35	3
150% RFD + FYM	33.52	3	34.04	2	29.78	3	29.61	1	31.74	2
150% RFD+FYM+GR	34.57	1	34.15	1	30.55	1	27.92	3	31.80	1
Mean	34.04		33.43		30.19		28.86		31.63	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.68		2.34		6.42			
Nutrient management (B)	N.S.		0.79		2.32		8.69			
B within A	N.S.		1.59		4.63					
A within B			1.46		4.27					
1000 Grains Weight, g										
RFD	41.71	1	42.81	1	40.83	1	40.09	1	41.36	1
150% RFD + FYM	38.80	3	38.82	3	39.32	2	38.61	2	38.89	3
150% RFD+FYM+GR	39.36	2	40.15	2	38.49	3	38.57	3	39.14	2
Mean	39.96		40.59		39.55		39.09		39.80	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.39		1.33		2.90			
Nutrient management (B)	**		0.28		0.83		2.46			
B within A	N.S.		0.57		1.65					
A within B			0.60		1.76					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	20.04.2020		20.04.2020		25.04.2020		29.04.2020			

Table 6.2.8. North Western Plains Zone			SPL-1		Ludhiana			2019-20		
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	64.66	2	51.52	2	44.52	2	43.04	2	50.93	2
150% RFD + FYM	62.18	3	49.52	3	38.19	3	40.59	3	47.62	3
150% RFD+FYM+GR	66.18	1	56.78	1	45.90	1	43.49	1	53.09	1
Mean	64.34		52.61		42.87		42.38		50.55	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.42		1.46		2.50			
Nutrient management (B)	**		0.57		1.66		3.90			
B within A	N.S.		1.14		3.32					
A within B			1.02		2.98					
Earhead/sqm										
RFD	414	2	403	2	387	3	386	1	397.13	2
150% RFD + FYM	411	3	400	3	392	2	383	2	396.25	3
150% RFD+FYM+GR	439	1	417	1	405	1	373	3	408.33	1
Mean	421		406		394		380		400.57	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	*		7.02		24.28		5.26			
Nutrient management (B)	N.S.		5.88		17.18		5.09			
B within A	N.S.		11.77		34.35					
A within B			11.90		34.73					
Grains/earhead										
RFD	36.80	1	37.41	2	35.75	1	37.49	2	36.86	1
150% RFD + FYM	35.97	2	36.82	3	32.65	3	35.82	3	35.32	3
150% RFD+FYM+GR	33.42	3	37.72	1	35.64	2	37.71	1	36.12	2
Mean	35.40		37.32		34.68		37.01		36.10	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.69		2.40		5.76			
Nutrient management (B)	N.S.		0.91		2.65		8.70			
B within A	N.S.		1.81		5.29					
A within B			1.63		4.77					
1000 Grains Weight, g										
RFD	42.77	2	34.37	2	32.30	1	29.82	2	34.82	2
150% RFD + FYM	42.19	3	33.80	3	29.91	3	29.70	3	33.90	3
150% RFD+FYM+GR	45.27	1	36.26	1	32.01	2	31.01	1	36.14	1
Mean	43.41		34.81		31.40		30.18		34.95	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.73		2.54		6.29			
Nutrient management (B)	N.S.		0.64		1.88		6.39			
B within A	N.S.		1.29		3.76					
A within B			1.28		3.74					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	24.04.2020		24.04.2020		24.04.2020		24.04.2020			

Table 6.2.9. North Western Plains Zone		SPL-1		Pantnagar		2019-20				
		Date of sowing								
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield,q/ha										
RFD	44.02	3	49.54	3	48.14	3	38.73	3	45.11	3
150% RFD + FYM	46.82	2	52.81	2	50.05	2	42.41	2	48.02	2
150% RFD+FYM+GR	48.33	1	54.76	1	52.38	1	44.83	1	50.08	1
Mean	46.39		52.37		50.19		41.99		47.74	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	**		0.67		2.33		4.23			
Nutrient management (B)	**		0.81		2.37		5.88			
B within A	N.S.		1.62		4.73					
A within B			1.48		4.33					
Earhead/sqm										
RFD	389	3	417	3	426	3	358	3	397.33	3
150% RFD + FYM	409	2	419	2	429	2	386	1	410.83	2
150% RFD+FYM+GR	412	1	438	1	431	1	380	2	415.04	1
Mean	403		425		429		374		407.74	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		14.20		49.15		10.45			
Nutrient management (B)	N.S.		9.42		27.50		8.01			
B within A	N.S.		18.85		55.01					
A within B			20.94		61.12					
Grains/earhead										
RFD	28.37	1	29.59	3	27.77	3	27.64	3	28.34	3
150% RFD + FYM	28.06	2	30.47	1	28.81	2	28.60	2	28.98	2
150% RFD+FYM+GR	28.03	3	30.30	2	29.76	1	30.27	1	29.59	1
Mean	28.15		30.12		28.78		28.83		28.97	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.76		2.64		7.91			
Nutrient management (B)	N.S.		0.82		2.40		9.83			
B within A	N.S.		1.64		4.80					
A within B			1.54		4.51					
1000 Grains Weight, g										
RFD	40.20	3	40.89	3	40.68	3	39.44	1	40.30	3
150% RFD + FYM	41.03	2	41.33	1	40.73	2	38.90	3	40.50	2
150% RFD+FYM+GR	42.11	1	41.33	1	41.00	1	39.07	2	40.88	1
Mean	41.11		41.19		40.80		39.14		40.56	
	F. Test		SEm		CD (0.05)		CV (%)			
Date of sowing (A)	N.S.		0.83		2.86		6.12			
Nutrient management (B)	N.S.		0.62		1.80		5.26			
B within A	N.S.		1.23		3.59					
A within B			1.30		3.80					
Date of Sowing:	25.10.2019		5.11.2019		15.11.2019		25.11.2019			
Date of Harvesting:	17.04.2020		17.04.2020		18.04.2020		22.04.2020			

Table 6.3.1. North Eastern Plains Zone		SPL-1		Kalyani				2019-20		
		Date of sowing								
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield,q/ha										
RFD	38.27	3	41.47	3	37.50	3	35.90	2	38.28	3
150% RFD + FYM	40.90	1	45.00	2	41.60	1	37.40	1	41.23	1
150% RFD+FYM+GR	40.50	2	45.90	1	41.03	2	35.60	3	40.76	2
Mean	39.89		44.12		40.04		36.30		40.09	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			*		1.38		4.77		10.31	
Nutrient management (B)			N.S.		1.04		3.03		8.96	
B within A			N.S.		2.07		6.06			
A within B					2.18		6.37			
Earhead/sqm										
RFD	266	3	301	3	281	3	241	3	272	3
150% RFD + FYM	282	2	331	1	283	2	282	1	294	2
150% RFD+FYM+GR	292	1	327	2	314	1	281	2	304	1
Mean	280		320		293		268		290	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		18.69		64.68		19.33	
Nutrient management (B)			N.S.		9.67		28.23		11.55	
B within A			N.S.		19.35		56.47			
A within B							2.36			
Grains/earhead										
RFD	34.23	2	33.61	2	33.45	1	37.95	1	34.81	1
150% RFD + FYM	36.15	1	33.88	1	32.04	2	34.43	2	34.13	2
150% RFD+FYM+GR	33.37	3	32.83	3	28.61	3	32.19	3	31.75	3
Mean	34.58		33.44		31.37		34.85		33.56	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		1.67		5.77		14.90	
Nutrient management (B)			N.S.		1.55		4.54		16.04	
B within A			N.S.		3.11		9.07			
A within B					3.04		8.86			
1000 Grains Weight, g										
RFD	42.21	1	41.23	2	40.67	3	39.60	3	40.93	3
150% RFD + FYM	40.75	3	40.57	3	46.47	1	39.83	1	41.91	2
150% RFD+FYM+GR	42.03	2	43.73	1	45.77	2	39.77	2	42.82	1
Mean	41.66		41.84		44.30		39.73		41.89	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		0.59		2.03		4.19	
Nutrient management (B)			N.S.		0.62		1.82		5.17	
B within A			N.S.		1.25		3.65			
A within B					1.18		3.43			
Date of Sowing:			26.10.2019		05.11.2019		15.11.2019		25.11.2019	
Date of Harvesting:			18.03.2020		21.03.2020		25.03.2020		25.03.2020	

Table 6.3.2. North Eastern Plains Zone		SPL-1		RPCAU, Pusa				2019-20		
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	43.58	3	42.38	3	41.58	3	39.05	3	41.65	3
150% RFD + FYM	46.69	2	45.79	2	44.59	2	42.78	2	44.96	2
150% RFD+FYM+GR	47.35	1	46.68	1	45.75	1	43.29	1	45.77	1
Mean	45.87		44.95		43.97		41.71		44.13	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		1.03		3.55		6.98	
Nutrient management (B)			*		0.88		2.56		6.87	
B within A			N.S.		1.75		5.11			
A within B					1.76		5.14			
Earhead/sqm										
RFD	332	3	325	3	324	3	321	3	326	3
150% RFD + FYM	341	2	336	2	333	2	328	2	335	2
150% RFD+FYM+GR	345	1	338	1	336	1	330	1	337	1
Mean	339		333		331		326		332	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			**		0.62		2.13		0.56	
Nutrient management (B)			**		0.70		2.04		0.73	
B within A			N.S.		1.40		4.08			
A within B					1.30		3.79			
Grains/earhead										
RFD	33.07	3	33.56	3	33.39	3	32.03	3	33.01	3
150% RFD + FYM	33.35	2	33.56	2	33.53	2	33.42	1	33.47	2
150% RFD+FYM+GR	33.36	1	33.79	1	33.86	1	33.38	2	33.60	1
Mean	33.26		33.64		33.59		32.94		33.36	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		0.75		2.59		6.72	
Nutrient management (B)			N.S.		0.78		2.26		8.05	
B within A			N.S.		1.55		4.53			
A within B					1.47		4.29			
1000 Grains Weight, g										
RFD	39.68	3	38.88	3	38.49	3	38.03	3	38.77	3
150% RFD + FYM	41.05	2	40.62	2	39.97	2	39.03	2	40.17	2
150% RFD+FYM+GR	41.28	1	40.95	1	40.21	1	39.32	1	40.44	1
Mean	40.67		40.15		39.56		38.79		39.79	
			F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)			N.S.		0.50		1.74		3.79	
Nutrient management (B)			**		0.29		0.85		2.53	
B within A			N.S.		0.58		1.69			
A within B					0.69		2.02			
Date of Sowing:			25.10.2019		05.11.2019		15.11.2019		25.11.2019	
Date of Harvesting:			05.04.2020		11.04.2020		14.04.2020		17.04.2020	

Table 6.3.3. North Eastern Plains Zone		SPL-1		Shillongani		2019-20				
Nutrient management	Date of sowing								Mean	Rk
	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha										
RFD	33.00	3	42.72	3	50.35	1	46.79	3	43.21	3
150% RFD + FYM	37.81	2	48.873333	2	48.85	3	48.37	2	45.97	2
150% RFD+FYM+GR	39.67	1	49.73	1	49.39	2	54.80	1	48.39	1
Mean	36.82		47.11		49.53		49.98		45.86	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	1.00		3.46		6.55		
Nutrient management (B)			**	0.74		2.16		5.58		
B within A			*	1.48		4.32				
A within B				1.57		4.58				
Earhead/sqm										
RFD	183	2	303	2	275	3	297	2	264	3
150% RFD + FYM	216	1	278	3	325	1	259	3	269	2
150% RFD+FYM+GR	181	3	337	1	293	2	365	1	294	1
Mean	193		306		297		307		276	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	12.21		42.27		13.28		
Nutrient management (B)			N.S.	10.43		30.46		13.10		
B within A			*	20.87		60.91				
A within B				20.96		61.19				
Grains/earhead										
RFD	40.66	2	32.11	2	41.60	1	40.76	2	38.78	2
150% RFD + FYM	38.98	3	39.65	1	34.89	3	44.74	1	39.56	1
150% RFD+FYM+GR	46.39	1	32.06	3	38.28	2	37.51	3	38.56	3
Mean	42.01		34.61		38.26		41.00		38.97	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			N.S.	1.91		6.61		14.71		
Nutrient management (B)			N.S.	1.79		5.22		15.88		
B within A			N.S.	3.57		10.43				
A within B				3.49		10.18				
1000 Grains Weight, g										
RFD	44.55	3	43.97	3	44.48	1	41.00	2	43.50	3
150% RFD + FYM	45.19	2	45.97	2	43.23	3	42.35	1	44.18	2
150% RFD+FYM+GR	47.65	1	46.19	1	44.36	2	40.27	3	44.62	1
Mean	45.80		45.38		44.02		41.21		44.10	
			F. Test	SEm		CD (0.05)		CV (%)		
Date of sowing (A)			**	0.66		2.28		4.48		
Nutrient management (B)			N.S.	0.42		1.23		3.32		
B within A			N.S.	0.84		2.47				
A within B				0.95		2.78				
Date of Sowing:			25.10.2019	05.11.2019		15.11.2019		25.11.2020		
Date of Harvesting:			15.03.2020	20.03.2020		22.03.2020		24.03.2020		

Table 6.3.4. North Eastern Plains Zone			SPL-1		Burdwan		2019-20	
Nutrient management	Date of sowing						Mean	Rk
	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha								
RFD	41.64	3	45.07	3	47.18	3	44.63	3
150% RFD + FYM	43.73	2	46.88	2	49.74	2	46.78	2
150% RFD+FYM+GR	45.14	1	48.82	1	52.45	1	48.80	1
Mean	43.50		46.92		49.79		46.74	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	*		0.77		3.02		4.93	
Nutrient management (B)	**		0.45		1.37		2.86	
B within A	N.S.		0.77		2.38			
A within B			0.99		3.06			
Earhead/sqm								
RFD	268	3	290	3	298	3	286	3
150% RFD + FYM	283	2	302	2	310	2	298	2
150% RFD+FYM+GR	285	1	307	1	315	1	302	1
Mean	279		299		308		295	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	*		5.37		21.07		5.45	
Nutrient management (B)	*		4.29		13.21		4.35	
B within A	N.S.		7.42		22.87			
A within B			8.10		24.95			
Grains/earhead								
RFD	34.08	1	33.54	2	33.76	3	33.79	2
150% RFD + FYM	33.20	3	33.28	3	33.82	2	33.44	3
150% RFD+FYM+GR	33.97	2	33.89	1	34.80	1	34.22	1
Mean	33.75		33.57		34.13		33.82	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		0.39		1.54		3.49	
Nutrient management (B)	N.S.		0.45		1.37		3.95	
B within A	N.S.		0.77		2.38			
A within B			0.74		2.29			
1000 Grains Weight, g								
RFD	45.58	3	46.37	3	46.88	3	46.28	3
150% RFD + FYM	46.60	2	46.71	2	47.51	2	46.94	2
150% RFD+FYM+GR	46.66	1	47.02	1	47.85	1	47.18	1
Mean	46.28		46.70		47.42		46.80	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		0.33		1.30		2.12	
Nutrient management (B)	N.S.		0.30		0.91		1.90	
B within A	N.S.		0.51		1.58			
A within B			0.53		1.65			
Date of Sowing:			06.11.19		15.11.19		25.11.19	
Date of Harvesting:			05.03.20		11.03.20		17.03.20	

Table 6.3.5. North Eastern Plains Zone			SPL-1		Sabour			
Nutrient management	Date of sowing						Mean	Rk
	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield,q/ha								
RFD	43.51	3	44.22	2	45.95	3	44.56	3
150% RFD + FYM	44.91	1	44.19	3	47.62	2	45.57	2
150% RFD+FYM+GR	44.29	2	45.34	1	48.21	1	45.95	1
Mean	44.24		44.58		47.26		45.36	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		1.59		6.24		10.52	
Nutrient management (B)	N.S.		1.67		5.14		11.04	
B within A	N.S.		2.89		8.91			
A within B			2.85		8.77			
Earhead/sqm								
RFD	313	3	312	3	335	3	320	3
150% RFD + FYM	322	2	316	2	336	2	325	2
150% RFD+FYM+GR	332	1	336	1	343	1	337	1
Mean	322		321		338		327	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		8.68		34.07		7.96	
Nutrient management (B)	N.S.		13.37		41.19		12.25	
B within A	N.S.		23.15		71.33			
A within B			20.80		64.09			
Grains/earhead								
RFD	33.42	1	34.30	1	32.10	3	33.28	1
150% RFD + FYM	32.60	2	33.16	2	33.59	1	33.12	2
150% RFD+FYM+GR	31.08	3	31.31	3	33.08	2	31.83	3
Mean	32.37		32.93		32.92		32.74	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		2.21		8.66		20.21	
Nutrient management (B)	N.S.		1.51		4.65		13.83	
B within A	N.S.		2.61		8.06			
A within B			3.07		9.46			
1000 Grains Weight, g								
RFD	41.67	3	42.30	3	43.23	1	42.40	3
150% RFD + FYM	42.90	2	43.03	2	42.73	3	42.89	2
150% RFD+FYM+GR	43.20	1	43.40	1	42.93	2	43.18	1
Mean	42.59		42.91		42.97		42.82	
	F. Test		SEm		CD (0.05)		CV (%)	
Date of sowing (A)	N.S.		0.70		2.76		4.93	
Nutrient management (B)	N.S.		0.71		2.18		4.95	
B within A	N.S.		1.22		3.77			
A within B			1.22		3.77			
Date of Sowing:			5.11.2019		15.11.2019		25.11.2019	
Date of Harvesting:			05.04.2020		06.04.2020		07.04.2020	

Table 6.4.1 Central Zone	SPL-1				Gwalior				2019-20	
	Sowing time								Mean	Rk
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk		
Yield, q/ha										
RFD	56.27	3	58.58	3	59.10	3	56.87	3	57.70	3
150% RFD + FYM	57.53	2	58.75	2	59.70	2	58.57	2	58.64	2
150% RFD+FYM+GR	59.63	1	60.37	1	60.80	1	60.63	1	60.36	1
Mean	57.81		59.23		59.87		58.69		58.90	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	**		0.12		0.41		0.61			
Nutrient management (B)	**		0.19		0.56		1.13			
B within A	N.S.		0.39		1.12					
A within B			0.34		0.98					
Earhead/Sqm										
RFD	409	3	419	3	429	3	396	3	413	3
150% RFD + FYM	412	2	428	2	437	1	406	2	421	2
150% RFD+FYM+GR	422	1	430	1	430	2	418	1	425	1
Mean	415		426		432		407		420	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	**		1.96		6.80		1.40			
Nutrient management (B)	**		2.20		6.41		1.81			
B within A	N.S.		4.39		12.83					
A within B			4.09		11.94					
Grains/earhead										
RFD	27.82	3	30.01	1	28.05	3	28.90	3	28.69	3
150% RFD + FYM	28.06	2	27.93	3	29.10	2	29.88	2	28.74	2
150% RFD+FYM+GR	28.45	1	28.53	2	31.23	1	29.98	1	29.55	1
Mean	28.11		28.83		29.46		29.59		28.99	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	*		0.25		0.85		2.54			
Nutrient management (B)	N.S.		0.30		0.87		3.56			
B within A	*		0.60		1.74					
A within B			0.55		1.59					
1000 Grains weight,g										
RFD	49.43	3	46.62	3	49.17	1	49.67	1	48.72	1
150% RFD + FYM	49.73	1	49.21	2	47.10	2	48.39	3	48.61	2
150% RFD+FYM+GR	49.63	2	49.23	1	45.31	3	48.43	2	48.15	3
Mean	49.60		48.36		47.19		48.83		48.50	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	*		0.46		1.58		2.82			
Nutrient management (B)	N.S.		0.39		1.13		2.78			
B within A	*		0.78		2.27					
A within B			0.78		2.28					
Date of Sowing:	30.10.2019		05.11.2019		15.11.2019		25.11.2019			
Date of harvesting:	07.04.2020		09.04.2020		11.04.2020		13.04.2020			

Table 6.4.2 Central Zone		SPL-1				Junagadh				2019-20	
		Sowing time									
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk	
Yield, q/ha											
RFD	26.25	1	43.60	2	50.74	3	58.36	3	44.74	3	
150% RFD + FYM	24.25	2	43.43	3	57.68	2	59.11	2	46.12	2	
150% RFD+FYM+GR	24.11	3	46.22	1	60.34	1	65.03	1	48.92	1	
Mean	24.87		44.42		56.25		60.83		46.59		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	**		1.46		5.05		9.40				
Nutrient management (B)	**		0.75		2.19		5.57				
B within A	*		1.50		4.37						
A within B			1.91		5.56						
Earhead/Sqm											
RFD	387	2	422	2	451	2	396	2	414	2	
150% RFD + FYM	362	3	408	3	437	3	382	3	397	3	
150% RFD+FYM+GR	392	1	448	1	497	1	403	1	435	1	
Mean	380		426		461		394		415		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	**		8.79		30.41		6.35				
Nutrient management (B)	*		8.74		25.51		7.29				
B within A	N.S.		17.48		51.03						
A within B			16.76		48.93						
Grains/earhead											
RFD	12.87	1	18.22	2	18.87	3	27.24	3	19.30	3	
150% RFD + FYM	12.63	2	18.79	1	22.85	1	28.72	2	20.75	1	
150% RFD+FYM+GR	12.08	3	18.07	3	21.82	2	30.57	1	20.63	2	
Mean	12.53		18.36		21.18		28.84		20.23		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	**		0.83		2.87		12.29				
Nutrient management (B)	N.S.		0.54		1.59		9.31				
B within A	N.S.		1.09		3.17						
A within B			1.21		3.54						
1000 Grains weight,g											
RFD	52.67	2	56.67	2	59.73	1	54.13	1	55.80	1	
150% RFD + FYM	53.07	1	56.67	2	58.93	2	54.00	2	55.67	2	
150% RFD+FYM+GR	51.33	3	56.93	1	55.73	3	52.93	3	54.23	3	
Mean	52.36		56.76		58.13		53.69		55.23		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	**		0.55		1.90		2.98				
Nutrient management (B)	*		0.41		1.20		2.57				
B within A	N.S.		0.82		2.39						
A within B			0.86		2.52						
Date of Sowing:	25.10.2019		05.11.2019		15.11.2019		25.11.2019				
Date of harvesting:	20.02.2020		25.02.2020		25.02.2020		11.03.2020				

Table 6.4.3 Central Zone		SPL-1				Udaipur				2019-20	
		Sowing time									
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk	
Yield, q/ha											
RFD	50.59	3	50.79	3	48.21	3	49.65	3	49.81	3	
150% RFD + FYM	55.39	1	52.93	2	52.73	2	52.68	2	53.43	2	
150% RFD+FYM+GR	54.50	2	55.07	1	57.01	1	53.05	1	54.91	1	
Mean	53.49		52.93		52.65		51.80		52.72		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	N.S.		1.80		6.24		10.27				
Nutrient management (B)	*		1.25		3.66		8.71				
B within A	N.S.		2.51		7.32						
A within B			2.73		7.96						
Earhead/Sqm											
RFD	405	3	405	3	406	3	400	3	404	3	
150% RFD + FYM	425	2	428	2	425	1	421	2	425	2	
150% RFD+FYM+GR	432	1	430	1	425	1	423	1	427	1	
Mean	421		421		419		414		419		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	N.S.		1.87		6.46		1.34				
Nutrient management (B)	**		4.12		12.03		3.41				
B within A	N.S.		8.24		24.06						
A within B			6.98		20.39						
Grains/earhead											
RFD	27.69	2	28.10	1	26.78	3	28.36	1	27.73	2	
150% RFD + FYM	28.15	1	26.96	3	27.39	2	27.78	2	27.57	3	
150% RFD+FYM+GR	27.21	3	27.90	2	29.42	1	27.77	3	28.08	1	
Mean	27.68		27.65		27.86		27.97		27.79		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	N.S.		0.93		3.21		10.02				
Nutrient management (B)	N.S.		0.62		1.82		7.78				
B within A	N.S.		1.25		3.64						
A within B			1.38		4.02						
1000 Grains weight, g											
RFD	45.13	3	44.68	3	44.13	3	43.88	3	44.46	3	
150% RFD + FYM	46.35	2	45.90	2	45.35	2	45.10	2	45.68	2	
150% RFD+FYM+GR	46.43	1	45.98	1	45.43	1	45.18	1	45.76	1	
Mean	45.97		45.52		44.97		44.72		45.30		
	F. Test		SEm		CD (0.05)		CV (%)				
Sowing (A)	NS		0.00		0.00		0.00				
Nutrient management (B)	**		0.22		0.64		1.68				
B within A	N.S.		0.44		1.29						
A within B			0.36		1.05						
Date of Sowing:	28.10.2019		05.11.2019		15.11.2019		25.11.2019				
Date of harvesting:	10.03.2020		16.03.2020		20.03.2020		25.03.2020				

Table 6.4.4 Central Zone	SPL-1		Vijapur		2019-20					
	Sowing time									
Nutrient management	25th Oct	Rk	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield, q/ha										
RFD	9.04	3	46.67	3	57.83	3	62.29	3	43.96	3
150% RFD + FYM	11.05	2	49.45	2	62.29	2	71.20	2	48.50	2
150% RFD+FYM+GR	11.63	1	50.09	1	65.38	1	72.55	1	49.91	1
Mean	10.57		48.74		61.83		68.68		47.46	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	**		1.77		6.12		11.17			
Nutrient management (B)	*		1.62		4.71		11.79			
B within A	N.S.		3.23		9.43					
A within B			3.18		9.27					
Earhead/Sqm										
RFD	205	3	270	3	305	3	317	3	274	3
150% RFD + FYM	213	2	309	2	325	2	343	2	297	2
150% RFD+FYM+GR	215	1	311	1	335	1	348	1	302	1
Mean	211		296		322		336		291	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	**		7.33		25.38		7.55			
Nutrient management (B)	*		7.74		22.60		9.21			
B within A	N.S.		15.48		45.20					
A within B			14.62		42.66					
Grains/earhead										
RFD	8.35	3	26.41	1	29.70	2	32.20	3	24.17	3
150% RFD + FYM	10.23	1	25.36	3	29.54	3	36.98	1	25.53	1
150% RFD+FYM+GR	9.88	2	25.76	2	30.92	1	34.22	2	25.19	2
Mean	9.49		25.85		30.05		34.47		24.96	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	**		1.56		5.40		18.74			
Nutrient management (B)	N.S.		1.27		3.71		17.62			
B within A	N.S.		2.54		7.41					
A within B			2.59		7.57					
1000 Grains weight, g										
RFD	54.24	2	66.12	1	64.13	2	61.02	2	61.38	1
150% RFD + FYM	51.11	3	64.95	2	64.74	1	56.64	3	59.36	3
150% RFD+FYM+GR	54.40	1	63.52	3	63.27	3	61.54	1	60.68	2
Mean	53.25		64.86		64.05		59.73		60.47	
	F. Test		SEm		CD (0.05)		CV (%)			
Sowing (A)	**		1.06		3.67		5.26			
Nutrient management (B)	N.S.		0.67		1.95		3.83			
B within A	N.S.		1.34		3.90					
A within B			1.52		4.44					
Date of Sowing:	25.10.2019		05.11.2019		15.11.2019		25.11.2019			
Date of harvesting:	28.02.2020		05.03.2020		11.03.2020		17.03.2020			

Table 6.4.5. Central Zone	SPL-1		Bilaspur		2019-20			
	Sowing time							
Nutrient management	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield, q/ha								
RFD	41.46	3	37.79	3	32.49	3	37.25	3
150% RFD + FYM	47.19	2	42.13	2	38.52	2	42.61	2
150% RFD+FYM+GR	48.71	1	44.94	1	39.22	1	44.29	1
Mean	45.79		41.62		36.74		41.38	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.37		1.45		2.67	
Nutrient management (B)	**		0.74		2.29		5.40	
B within A	N.S.		1.29		3.97			
A within B			1.12		3.44			
Earhead/Sqm								
RFD	369	3	353	3	318	3	347	3
150% RFD + FYM	377	2	378	2	361	2	372	2
150% RFD+FYM+GR	397	1	390	1	387	1	391	1
Mean	381		374		356		370	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		3.34		13.12		2.71	
Nutrient management (B)	**		4.59		14.15		3.72	
B within A	N.S.		7.95		24.50			
A within B			7.30		22.50			
Grains/earhead								
RFD	24.32	3	24.73	3	24.86	1	24.63	3
150% RFD + FYM	27.16	2	25.39	1	24.18	2	25.58	1
150% RFD+FYM+GR	27.17	1	24.99	2	22.13	3	24.77	2
Mean	26.22		25.04		23.72		24.99	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	N.S.		0.54		2.12		6.48	
Nutrient management (B)	N.S.		0.45		1.40		5.44	
B within A	*		0.78		2.42			
A within B			0.84		2.58			
1000 Grains weight, g								
RFD	46.29	1	43.37	3	41.00	3	43.55	3
150% RFD + FYM	46.27	2	44.32	2	44.38	2	44.99	2
150% RFD+FYM+GR	45.30	3	46.22	1	45.95	1	45.82	1
Mean	45.95		44.63		43.78		44.79	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	N.S.		1.00		3.93		6.70	
Nutrient management (B)	*		0.46		1.43		3.10	
B within A	*		0.80		2.47			
A within B			1.20		3.68			
Date of Sowing:			05.11.2019		15.11.2019		25.11.2019	
Date of harvesting:			19.3.2020		21.03.20120		05.04.2020	

Table 6.4.6. Central Zone	SPL-1		Jabalpur		2019-20			
	Sowing time							
Nutrient management	5th Nov	Rk	15th Nov	Rk	25th Nov	Rk	Mean	Rk
Yield, q/ha								
RFD	49.95	3	45.44	3	41.60	3	45.66	3
150% RFD + FYM	53.15	2	51.20	2	46.40	2	50.25	2
150% RFD+FYM+GR	56.00	1	54.03	1	49.52	1	53.18	1
Mean	53.03		50.22		45.84		49.70	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		0.52		2.03		3.12	
Nutrient management (B)	**		0.70		2.15		4.21	
B within A	N.S.		1.21		3.72			
A within B			1.11		3.43			
Earhead/Sqm								
RFD	334	3	314	3	287	3	312	3
150% RFD + FYM	358	2	339	2	297	2	332	2
150% RFD+FYM+GR	393	1	367	1	316	1	359	1
Mean	362		340		300		334	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	**		1.21		4.74		1.08	
Nutrient management (B)	**		2.11		6.51		1.90	
B within A	*		3.66		11.28			
A within B			3.22		9.94			
Grains/earhead								
RFD	41.11	1	40.22	1	41.29	1	40.87	1
150% RFD + FYM	36.45	2	39.35	2	40.89	2	38.89	2
150% RFD+FYM+GR	32.44	3	35.70	3	38.44	3	35.53	3
Mean	36.67		38.42		40.20		38.43	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	*		0.45		1.78		3.53	
Nutrient management (B)	**		0.77		2.38		6.02	
B within A	N.S.		1.34		4.12			
A within B			1.18		3.64			
1000 Grains weight, g								
RFD	36.40	3	36.07	3	35.10	3	35.86	3
150% RFD + FYM	40.77	2	38.40	2	38.21	2	39.13	2
150% RFD+FYM+GR	43.96	1	41.26	1	40.76	1	41.99	1
Mean	40.38		38.57		38.03		38.99	
	F. Test		SEm		CD (0.05)		CV (%)	
Sowing (A)	N.S.		0.49		1.94		3.80	
Nutrient management (B)	**		0.65		2.00		4.99	
B within A	N.S.		1.12		3.46			
A within B			1.04		3.21			
Date of Sowing:			05.11.2019		15.11.2019		25.11.2019	
Date of harvesting:			28.03.2020		04.04.2020		08.04.2020	

Table 6.6.1. Northern Hill Zone			SPL-2	Bajaura	2019-20		
Wheat, P ₂ O ₅ , kg/ha	Rice, P ₂ O ₅ , kg/ha	Earheads/ sqm	1000 grains weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
0	0	331	36.17	31.36	103.57	37.43	86.90
0	30	314	35.73	33.62	106.97	37.71	92.80
30	0	329	37.47	32.35	105.07	39.80	90.00
30	30	333	38.00	32.10	103.56	40.36	92.90
60	0	341	40.80	29.78	107.65	41.30	94.93
60	30	341	40.73	30.66	107.53	42.48	94.50
0+PSB	0	316	36.53	33.48	108.37	38.66	93.70
0+PSB	30	337	37.40	31.58	110.05	39.63	89.30
30+PSB	0	346	37.07	31.97	109.40	41.06	89.90
30+PSB	30	344	38.10	32.58	109.40	42.64	90.80
60+PSB	0	346	41.47	31.05	111.91	44.24	92.23
60+PSB	30	349	42.00	30.79	114.06	44.90	91.57
60	60	343	41.93	31.40	110.39	44.84	90.50
CD (0.05)		32.92	4.40	4.51	10.72	2.94	0.84
CV (%)		5.81	6.75	8.42	5.87	4.24	0.51
Date of Sowing: 13.11.2019				Date of harvesting: 25.06.2020			

Table 6.6.2. Northern Hill Zone			SPL-2	Malan	2019-20		
Wheat, P ₂ O ₅ , kg/ha	Rice, P ₂ O ₅ , kg/ha	Earheads/ sqm	1000 grains weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
0	0	262	41.17	28.29	66.30	30.53	74.67
0	30	263	41.57	28.54	66.63	31.20	72.00
30	0	307	42.33	26.33	73.67	34.10	77.67
30	30	307	42.67	24.59	73.63	32.20	81.33
60	0	349	43.57	27.73	93.90	42.17	94.33
60	30	349	43.90	28.72	94.13	43.97	93.67
0+PSB	0	313	42.23	25.42	79.50	33.57	76.00
0+PSB	30	304	43.20	25.01	78.97	32.87	81.67
30+PSB	0	353	44.50	23.36	83.10	36.77	94.00
30+PSB	30	381	43.83	21.98	82.50	36.70	96.00
60+PSB	0	379	42.43	27.31	97.70	43.83	96.00
60+PSB	30	364	44.57	27.21	96.70	44.00	97.00
60	60	370	42.40	27.20	97.50	42.67	94.67
CD (0.05)		20.77	1.67	2.53	6.85	3.00	2.77
CV (%)		3.72	2.31	5.70	4.87	4.77	1.89
Date of Sowing: 16.11.2019				Date of harvesting: 07.05.2020			

Table 6.8.1. North Eastern Plains Zone				SPL-2 Faizabad		2019-20	
Wheat, P ₂ O ₅ , kg/ha	Rice, P ₂ O ₅ , kg/ha	Earheads/ sqm	1000 grains weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
0	0	326.0	37.80	32.84	98.94	40.46	96.1
0	30	325.3	37.80	32.77	98.77	40.29	96.1
30	0	347.7	38.87	34.12	106.25	46.07	98.0
30	30	347.0	38.90	34.28	106.76	46.24	98.0
60	0	355.0	39.80	37.32	115.09	52.70	100.8
60	30	355.0	39.80	37.40	114.41	52.87	100.9
0+PSB	0	340.0	38.47	32.23	102.34	42.16	96.2
0+PSB	30	339.3	38.57	32.20	102.24	42.16	96.3
30+PSB	0	350.7	39.20	35.86	110.09	49.30	99.7
30+PSB	30	351.0	39.10	36.06	110.60	49.47	99.5
60+PSB	0	362.3	40.10	37.92	118.15	55.08	101.6
60+PSB	30	362.0	40.23	37.72	118.32	54.91	101.7
60	60	355.3	39.83	37.36	114.41	52.87	100.9
CD (0.05)		11.54	0.69	2.98	4.66	3.94	0.84
CV (%)		1.97	1.05	5.02	2.54	4.86	0.51
Date of Sowing: 24.11.2019				Date of harvesting: 01.04.2020			

Table 6.8.2. North Eastern Plains Zone				SPL-2 Shillongani		2019-20	
Wheat, P ₂ O ₅ , kg/ha	Rice, P ₂ O ₅ , kg/ha	Earheads/ sqm	1000 grains weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
0	0	262.7	40.96	30.48	82.30	32.79	95.2
0	30	269.0	43.18	32.04	93.38	37.20	95.4
30	0	276.3	43.60	32.14	96.09	38.28	95.4
30	30	280.0	43.73	31.07	95.27	37.96	96.8
60	0	277.3	44.10	32.57	99.89	39.80	96.8
60	30	280.7	44.40	33.27	104.00	41.44	95.7
0+PSB	0	266.3	41.77	36.81	102.58	40.87	93.3
0+PSB	30	284.7	42.14	35.76	107.61	42.87	94.7
30+PSB	0	287.3	43.89	33.82	107.40	42.79	95.4
30+PSB	30	292.7	45.17	30.88	102.45	40.82	96.1
60+PSB	0	291.3	44.16	33.09	106.76	42.53	98.0
60+PSB	30	296.0	44.16	33.37	109.54	43.64	96.4
60	60	288.7	45.13	34.96	113.92	45.39	95.1
CD (0.05)		15.75	1.57	4.60	14.58	5.81	2.04
CV (%)		3.33	2.14	8.25	8.51	8.51	1.27
Date of Sowing: 30.11.2019				Date of harvesting: 02.04.2020			

Table 6.9.1. North Eastern Plains Zone		SPL-3	Faizabad	2019-20		
Treatments	Earheads/ sqm	1000 Grains Weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
Dry surface seeding- 100 kg/ha	216	32.50	41.84	68.34	29.41	87.47
Dry surface seeding with- 125 kg/ha	237	32.07	40.51	70.79	30.77	87.40
Dry surface seeding- 150 kg/ha	249	31.37	38.63	69.50	30.09	87.23
Soaked seed surface seeding- 100 kg/ha	234	33.03	41.62	75.31	32.13	88.53
Soaked seed surface seeding- 125 kg/ha	256	32.77	40.57	77.86	34.00	88.33
Soaked seed surface seeding- 150 kg/ha	266	31.93	39.35	76.64	33.32	88.27
Seed priming (1% KNO ₃)-100 kg/ha	260	33.90	39.74	82.96	35.02	90.20
Seed priming (1% KNO ₃)-125 kg/ha	283	33.33	38.93	84.59	36.72	90.00
Seed priming (1% KNO ₃)-150 kg/ha	293	32.50	37.97	83.64	36.21	89.00
Seed priming (1% CaCl ₂)-100 kg/ha	262	34.07	38.78	80.58	34.51	90.20
Seed priming (1% CaCl ₂)-125 kg/ha	283	33.73	37.27	81.74	35.53	90.07
Seed priming (1% CaCl ₂)-150 kg/ha	297	32.63	35.76	81.02	34.68	89.40
CD(0.05)	11.43	1.01	4.74	7.02	3.67	0.84
CV (%)	2.58	1.82	7.13	5.33	6.46	0.51
Date of Sowing:	26.11.2019		Date of harvesting: 29.03.2020			

Table 6.9.2. North Eastern Plains Zone		SPL-3	IARI, Pusa	2019-20		
Treatments	Earheads/ sqm	1000 Grains Weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
Dry surface seeding- 100 kg/ha	217	38.30	46.59	76.65	38.05	79.33
Dry surface seeding with- 125 kg/ha	220	47.87	37.57	83.61	38.42	82.33
Dry surface seeding- 150 kg/ha	231	41.47	41.43	88.50	39.66	83.33
Soaked seed surface seeding- 100 kg/ha	219	47.27	38.06	94.39	38.74	81.00
Soaked seed surface seeding- 125 kg/ha	237	44.20	41.83	88.83	42.93	82.33
Soaked seed surface seeding- 150 kg/ha	223	42.33	45.12	89.24	41.56	86.00
Seed priming (1% KNO ₃)-100 kg/ha	231	44.27	45.50	92.15	45.63	82.00
Seed priming (1% KNO ₃)-125 kg/ha	259	42.80	39.91	93.95	43.98	88.33
Seed priming (1% KNO ₃)-150 kg/ha	246	42.17	48.47	106.36	49.32	87.67
Seed priming (1% CaCl ₂)-100 kg/ha	221	43.87	46.00	97.81	44.61	85.00
Seed priming (1% CaCl ₂)-125 kg/ha	240	43.07	42.03	92.62	42.94	87.00
Seed priming (1% CaCl ₂)-150 kg/ha	271	43.47	40.82	106.22	47.79	88.00
CD(0.05)	42.83	6.56	13.24	12.95	7.39	5.69
CV (%)	10.79	8.92	18.27	8.27	10.20	3.98
Date of Sowing:	25.11.2019		Date of harvesting: 09.04.2020			

Table 6.9.3. North Eastern Plains Zone		SPL-3	RPCAU, Pusa	2019-20	
Treatments	Earheads/ sqm	1000 Grains Weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha
Dry surface seeding- 100 kg/ha	329	35.69	31.99	82.69	37.56
Dry surface seeding with- 125 kg/ha	331	35.85	32.53	85.32	38.62
Dry surface seeding- 150 kg/ha	335	36.92	32.77	90.61	40.38
Soaked seed surface seeding- 100 kg/ha	333	36.18	33.02	88.58	39.69
Soaked seed surface seeding- 125 kg/ha	337	37.61	32.82	93.48	41.55
Soaked seed surface seeding- 150 kg/ha	338	37.88	32.87	95.69	42.05
Seed priming (1% KNO ₃)-100 kg/ha	340	38.39	32.95	97.88	42.92
Seed priming (1% KNO ₃)-125 kg/ha	343	39.21	29.87	89.58	40.05
Seed priming (1% KNO ₃)-150 kg/ha	346	41.05	32.31	103.59	45.62
Seed priming (1% CaCl ₂)-100 kg/ha	341	38.86	32.98	98.86	43.69
Seed priming (1% CaCl ₂)-125 kg/ha	345	39.88	32.60	101.49	44.88
Seed priming (1% CaCl ₂)-150 kg/ha	348	41.38	32.54	106.63	46.85
CD(0.05)	5.88	3.50	3.72	5.26	2.99
CV (%)	1.02	5.40	6.78	3.29	4.21
Date of Sowing:	20.11.2019		Date of harvesting: 29.03.2020		

Table 6.9.4. North Eastern Plains Zone		SPL-3	Sabour	2019-20		
Treatments	Earheads/ sqm	1000 Grains Weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
Dry surface seeding- 100 kg/ha	314	41.00	24.19	69.20	31.14	95.67
Dry surface seeding with- 125 kg/ha	319	40.00	23.72	67.60	29.75	98.00
Dry surface seeding- 150 kg/ha	344	36.67	22.79	66.42	28.73	90.33
Soaked seed surface seeding- 100 kg/ha	318	42.00	22.63	68.28	30.05	89.00
Soaked seed surface seeding- 125 kg/ha	335	37.67	26.13	75.51	32.79	95.67
Soaked seed surface seeding- 150 kg/ha	346	36.67	25.56	76.72	32.21	98.33
Seed priming (1% KNO ₃)-100 kg/ha	316	42.67	22.74	69.03	30.37	97.67
Seed priming (1% KNO ₃)-125 kg/ha	320	38.67	23.33	68.21	28.99	95.33
Seed priming (1% KNO ₃)-150 kg/ha	327	35.67	26.28	71.36	30.52	90.33
Seed priming (1% CaCl ₂)-100 kg/ha	331	42.00	26.37	82.18	36.16	92.33
Seed priming (1% CaCl ₂)-125 kg/ha	325	35.67	28.07	74.90	32.37	93.00
Seed priming (1% CaCl ₂)-150 kg/ha	348	35.33	27.02	76.07	32.59	92.67
CD(0.05)	48.07	2.90	6.83	12.13	5.90	8.16
CV (%)	8.64	4.43	16.21	9.94	11.13	5.13
Date of Sowing:	10.12.2019		Date of harvesting: 20.04.2020			

Table 6.9.5. North Eastern Plains Zone		SPL-3	Varanasi	2019-20		
Treatments	Earheads/ sqm	1000 Grains Weight, g	Grains/E arhead	Biomass q/ha	Yield, q/ha	Plant height, cm
Dry surface seeding- 100 kg/ha	229	36.77	40.87	103.02	34.34	96.27
Dry surface seeding with- 125 kg/ha	239	36.27	43.49	113.22	37.74	97.01
Dry surface seeding- 150 kg/ha	257	37.17	42.31	114.92	40.46	99.30
Soaked seed surface seeding- 100 kg/ha	274	34.83	36.40	117.64	34.68	99.04
Soaked seed surface seeding- 125 kg/ha	285	37.63	38.42	116.28	41.14	96.75
Soaked seed surface seeding- 150 kg/ha	316	36.13	36.64	118.32	41.82	96.70
Seed priming (1% KNO ₃)-100 kg/ha	294	34.80	41.58	124.44	42.50	98.29
Seed priming (1% KNO ₃)-125 kg/ha	319	35.97	39.45	124.44	45.22	98.78
Seed priming (1% KNO ₃)-150 kg/ha	342	37.53	37.35	129.20	47.94	99.75
Seed priming (1% CaCl ₂)-100 kg/ha	258	33.53	41.31	108.46	35.70	97.45
Seed priming (1% CaCl ₂)-125 kg/ha	262	37.77	40.94	111.86	40.46	96.25
Seed priming (1% CaCl ₂)-150 kg/ha	289	36.57	39.58	114.24	41.82	98.33
CD(0.05)	19.19	1.30	3.34	7.10	1.98	4.21
CV (%)	4.04	2.12	4.94	3.61	2.90	2.54
Date of Sowing:	25.11.2019		Date of harvesting: 29.03.2020			

Table 6.10.1. Northern Hill Zone			SPL-4		Almora	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	282	48.64	16.48	22.60	59.74	77.53
50% Rec. N	340	48.17	24.61	40.08	111.52	96.53
75% Rec N	373	49.57	26.56	49.19	133.33	103.73
100 % Rec. N	418	47.18	31.68	62.45	161.15	108.60
125% Rec. N	432	47.51	30.73	63.00	155.64	110.20
150% Rec. N	432	47.96	30.89	63.98	154.72	108.67
100% Rec NPK	427	47.43	29.59	59.87	156.19	110.00
125% Rec. N+ GR	445	47.72	30.26	64.41	161.58	103.00
150% Rec N + GR	437	49.44	28.88	62.43	155.64	106.87
150% Rec. NPK + GR	443	47.39	30.71	64.56	161.76	107.80
SEm	13.04	0.74	1.04	2.62	4.64	1.45
CD (0.05)	38.74	2.20	3.10	7.80	13.80	4.30
CV (%)	5.61	2.66	6.44	8.23	5.70	2.43
Date of Sowing:	11.11.2019		Date of Harvesting: 27.05.2020			

Table 6.10.2. Northern Hill Zone			SPL-4		Bajaura	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	197	35.43	22.28	15.38	40.43	73.67
50% Rec. N	253	38.40	26.44	25.60	67.47	82.43
75% Rec N	270	39.13	26.62	27.93	75.23	85.60
100 % Rec. N	295	39.50	27.68	31.97	89.91	87.07
125% Rec. N	319	39.67	26.26	33.21	95.52	89.53
150% Rec. N	344	40.33	25.30	35.10	100.69	91.83
100% Rec NPK	313	40.93	27.77	35.40	100.85	92.73
125% Rec. N+ GR	316	42.83	28.23	38.18	90.82	78.20
150% Rec N + GR	337	42.51	28.51	40.72	95.78	80.90
150% Rec. NPK + GR	346	43.42	29.85	44.45	102.18	81.07
SEm	13.20	1.21	1.62	1.61	3.64	1.79
CD (0.05)	39.22	3.60	4.81	4.79	10.80	5.33
CV (%)	7.65	5.22	10.44	8.51	7.33	3.69
Date of Sowing:	12.11.2019		Date of Harvesting: 14.06.2020			

Table 6.10.3. Northern Hill Zone			SPL-4		Khudwani	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	296	28.44	32.73	27.39	72.66	75.00
50% Rec. N	337	30.12	29.90	29.72	79.25	79.00
75% Rec N	350	30.38	28.23	29.96	81.86	81.67
100 % Rec. N	361	32.50	26.29	30.69	84.96	87.33
125% Rec. N	366	32.79	25.12	29.98	86.55	90.33
150% Rec. N	362	32.48	25.50	29.77	88.89	96.00
100% Rec NPK	376	33.68	25.92	32.75	92.66	101.00
125% Rec. N+ GR	380	32.25	26.02	31.80	96.10	96.67
150% Rec N + GR	373	33.17	27.25	33.37	99.43	100.00
150% Rec. NPK + GR	392	35.83	25.74	36.00	104.43	104.33
SEm	8.21	1.27	1.95	0.99	4.06	2.88
CD (0.05)	24.39	3.76	5.79	2.94	12.06	8.56
CV (%)	3.96	6.82	12.38	5.51	7.93	5.47
Date of Sowing:	20.11.2019		Date of Harvesting: 12.06.2020			

Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	333	39.13	19.63	25.56	60.12	77.33
50% Rec. N	405	40.21	20.09	32.74	79.44	82.67
75% Rec N	419	39.54	22.55	37.31	87.05	85.00
100 % Rec. N	428	40.33	24.06	41.52	98.77	88.00
125% Rec. N	427	40.12	25.55	43.77	103.14	91.33
150% Rec. N	428	41.06	26.56	46.65	109.65	93.67
100% Rec NPK	454	42.13	25.41	48.50	113.53	94.67
125% Rec. N+ GR	453	40.28	25.61	46.73	109.82	96.00
150% Rec N + GR	451	40.08	27.73	50.12	117.12	98.00
150% Rec. NPK + GR	474	44.28	25.62	53.71	126.20	98.00
SEm	4.91	0.36	0.60	0.62	1.40	0.79
CD (0.05)	14.60	1.08	1.78	1.85	4.16	2.36
CV (%)	1.99	1.55	4.26	2.53	2.42	1.52
Date of Sowing:	17.11.2019		Date of Harvesting: 08.05.2020			

Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha
Absolute control	190	38.7	29.2	21.4
50% Rec. N	231	44.4	38.6	39.5
75% Rec N	233	43.5	41.1	41.6
100 % Rec. N	235	42.1	43.9	43.3
125% Rec. N	237	40.1	47.6	45.2
150% Rec. N	240	39.2	51.3	48.2
100% Rec NPK	242	41.9	48.7	49.4
125% Rec. N+ GR	252	41.8	52.9	55.5
150% Rec N + GR	246	40.4	51.6	51.3
150% Rec. NPK + GR	249	40.6	52.2	52.5
Mean	236	41.26	45.69	44.79
CD (0.05)	10	3.83	5.31	2.76
CV (%)	3	5.41	6.78	3.60
Date of Sowing:	10.11.2019		Date of Harvesting: 02.04.2020	

Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha
Absolute control	475	36.4	18.2	31.4
50% Rec. N	495	36.6	20.1	36.4
75% Rec N	508	37.4	21.0	39.8
100 % Rec. N	554	38.1	23.2	48.9
125% Rec. N	568	38.5	24.6	53.8
150% Rec. N	583	39.1	23.7	53.9
100% Rec NPK	577	40.3	24.3	56.3
125% Rec. N+ GR	597	40.7	24.0	58.1
150% Rec N + GR	618	41.4	23.1	59.0
150% Rec. NPK + GR	663	41.9	21.7	60.3
Mean	564	39.04	22.38	49.80
CD (0.05)	14.42	0.94	1.39	2.78
CV (%)	1.49	1.40	3.61	3.26
Date of Sowing:	08.11.2019		Date of Harvesting: 15.04.2020	

Table 6.11.3. North Western Plains Zone		SPL-4 Durgapura		2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha
Absolute control	282	34.0	32.2	30.9
50% Rec. N	338	35.3	32.9	38.9
75% Rec N	375	36.6	33.6	45.9
100 % Rec. N	395	38.8	35.0	53.6
125% Rec. N	402	37.9	37.8	57.4
150% Rec. N	417	38.0	38.3	60.7
100% Rec NPK	417	38.9	38.7	62.6
125% Rec. N+ GR	446	39.3	36.5	63.7
150% Rec N + GR	449	40.5	35.7	65.0
150% Rec. NPK + GR	454	41.3	35.3	66.2
Mean	397	38.06	35.60	54.47
CD (0.05)	40.08	4.80	4.84	7.61
CV (%)	5.88	7.36	7.92	8.14
Date of Sowing:	15.11.2019	Date of Harvesting:	24.04.2020	

Table 6.11.4. North Western Plains Zone		SPL-4 Gurdaspur		2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha
Absolute control	323	40.9	38.1	50.1
50% Rec. N	350	38.6	38.3	51.4
75% Rec N	384	38.6	36.7	54.0
100 % Rec. N	391	38.8	36.7	55.4
125% Rec. N	407	39.7	37.6	60.7
150% Rec. N	423	40.5	36.9	62.7
100% Rec NPK	428	41.8	39.9	71.2
125% Rec. N+ GR	412	40.5	40.0	64.7
150% Rec N + GR	421	40.8	39.1	67.3
150% Rec. NPK + GR	464	40.4	39.1	73.2
Mean	400	40.05	38.24	61.06
CD (0.05)	46.72	2.73	10.86	12.37
CV (%)	6.81	3.98	16.55	11.81
Date of Sowing:	11.11.2019	Date of Harvesting:	11.05.2020	

Table 6.11.5. North Western Plains Zone		SPL-4 Hisar		2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha
Absolute control	293	44.3	29.1	37.7
50% Rec. N	327	43.8	34.9	49.8
75% Rec N	360	43.5	35.8	55.9
100 % Rec. N	403	41.4	37.2	61.9
125% Rec. N	415	42.1	35.8	62.4
150% Rec. N	432	42.0	34.3	62.0
100% Rec NPK	428	41.7	36.6	65.2
125% Rec. N+ GR	430	42.4	39.7	72.2
150% Rec N + GR	442	44.0	38.6	74.9
150% Rec. NPK + GR	450	44.1	39.2	77.8
Mean	398	42.9	36.12	61.98
CD (0.05)	31.11	2.1	4.77	4.76
CV (%)	4.56	2.8	7.70	4.48
Date of Sowing:	29.11.2019	Date of Harvesting:	15.04.2020	

Table 6.11.6. North Western Plains Zone		SPL-4		Jammu 2019-20	
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	
Absolute control	292	32.1	34.5	31.6	
50% Rec. N	328	35.5	30.7	35.6	
75% Rec N	356	34.8	30.1	37.3	
100 % Rec. N	364	36.1	30.2	39.6	
125% Rec. N	366	36.7	31.5	42.0	
150% Rec. N	372	37.5	31.8	43.8	
100% Rec NPK	392	38.8	34.4	51.5	
125% Rec. N+ GR	374	36.8	31.5	43.1	
150% Rec N + GR	374	37.6	31.7	44.4	
150% Rec. NPK + GR	413	39.3	34.5	55.6	
Mean	363	36.52	32.10	42.45	
CD (0.05)	57.43	2.59	8.34	6.34	
CV (%)	9.22	4.14	15.14	8.70	
Date of Sowing:	06.11.2019		Date of Harvesting:	25.04.2020	

Table 6.11.7. North Western Plains Zone		SPL-4		Karnal 2019-20	
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	
Absolute control	374	39.0	18.2	26.5	
50% Rec. N	428	38.2	31.9	52.0	
75% Rec N	502	36.1	30.4	54.9	
100 % Rec. N	506	35.2	31.2	55.2	
125% Rec. N	505	34.8	31.0	54.5	
150% Rec. N	534	34.2	29.9	54.6	
100% Rec NPK	517	36.4	30.5	57.2	
125% Rec. N+ GR	510	37.7	32.9	63.3	
150% Rec N + GR	498	37.2	33.8	62.6	
150% Rec. NPK + GR	502	36.9	34.5	63.9	
Mean	488	36.57	30.41	54.46	
CD (0.05)	40.45	1.09	2.41	2.24	
CV (%)	4.84	1.74	4.62	2.40	
Date of Sowing:	06.12.2019		Date of Harvesting:	02.05.2020	

Table 6.11.8. North Western Plains Zone		SPL-4		Ludhiana 2019-20	
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	
Absolute control	362	34.5	31.7	39.0	
50% Rec. N	380	36.7	36.2	49.8	
75% Rec N	382	37.3	37.4	52.8	
100 % Rec. N	396	37.9	40.5	59.9	
125% Rec. N	394	37.3	40.7	59.7	
150% Rec. N	388	37.7	41.1	58.9	
100% Rec NPK	403	40.2	38.1	60.4	
125% Rec. N+ GR	406	42.5	37.2	63.2	
150% Rec N + GR	408	42.5	38.4	66.7	
150% Rec. NPK + GR	410	42.5	39.1	68.1	
Mean	393	38.92	38.03	57.85	
CD (0.05)	45.60	7.49	9.13	5.63	
CV (%)	6.77	11.22	13.99	5.68	
Date of Sowing:	25.10.2019		Date of Harvesting:	25.04.2020	

Table 6.11.9. North Western Plains Zone		SPL-4		Pantnagar		2019-20	
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha			
Absolute control	237	34.0	31.0	24.5			
50% Rec. N	280	38.8	40.4	43.2			
75% Rec N	337	44.9	30.6	46.0			
100 % Rec. N	336	43.3	32.5	47.0			
125% Rec. N	369	38.7	35.2	49.7			
150% Rec. N	294	38.9	41.9	46.6			
100% Rec NPK	398	43.2	30.0	51.4			
125% Rec. N+ GR	383	42.1	32.9	52.3			
150% Rec N + GR	406	38.7	31.6	49.0			
150% Rec. NPK + GR	416	43.6	29.1	52.7			
Mean	345	40.62	33.52	46.23			
CD (0.05)	66	4.04	9.50	3.77			
CV (%)	11	5.80	16.53	4.75			
Date of Sowing:	10.11.2019		Date of Harvesting:		02.04.2020		

Table 6.12.1. North Eastern Plains Zone		SPL-4		Burdwan		2019-20	
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm	
Absolute control	182	36.1	18.68	12.24	29.10	76.7	
50% Rec. N	232	40.4	28.57	26.69	63.29	85.0	
75% Rec N	252	43.4	34.39	37.50	89.33	95.3	
100 % Rec. N	283	45.6	34.26	44.26	106.50	99.0	
125% Rec. N	287	45.9	35.84	47.06	113.22	102.0	
150% Rec. N	295	47.4	34.69	48.49	116.94	105.3	
100% Rec NPK	295	47.0	33.41	46.11	112.17	100.3	
125% Rec. N+ GR	292	46.0	36.00	48.22	115.76	88.7	
150% Rec N + GR	302	47.2	35.35	50.30	120.97	93.7	
150% Rec. NPK + GR	305	47.6	35.59	51.62	125.53	98.0	
SEm	9.83	0.62	45.69	1.08	2.71	1.98	
CD (0.05)	29.20	1.84	5.31	3.22	8.06	5.88	
CV (%)	6.25	2.40	6.78	4.55	4.73	3.63	
Date of Sowing:	19.11.2019		Date of Harvesting:		18.03.2020		

Table 6.12.2. North Eastern Plains Zone		SPL-4		Coochbehar		2019-20	
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm	
Absolute control	175	34.5	34.06	20.60	48.50	81.4	
50% Rec. N	233	39.4	39.97	36.33	90.83	99.1	
75% Rec N	251	40.3	40.07	40.53	102.47	99.2	
100 % Rec. N	279	40.0	41.26	46.07	113.13	100.9	
125% Rec. N	285	40.4	42.16	48.53	126.27	98.8	
150% Rec. N	279	40.7	42.63	47.90	124.70	99.7	
100% Rec NPK	282	40.1	40.76	46.00	114.10	99.3	
125% Rec. N+ GR	290	41.5	40.97	49.23	123.53	96.2	
150% Rec N + GR	285	40.6	41.05	47.33	117.70	97.2	
150% Rec. NPK + GR	306	40.9	42.07	52.53	129.47	95.4	
SEm	11.48	0.52	2.11	2.51	6.00	1.42	
CD (0.05)	34.11	1.55	6.27	7.47	17.84	4.21	
CV (%)	7.46	2.27	9.02	10.01	9.53	2.54	
Date of Sowing:	26.11.2019		Date of Harvesting:		14.03.2020		

Table 6.12.3. North Eastern Plains Zone				SPL-4	Faizabad	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	328	36.7	23.34	28.05	46.58	93.7
50% Rec. N	348	37.6	26.90	35.19	68.17	95.5
75% Rec N	354	38.0	27.84	37.40	72.08	96.7
100 % Rec. N	353	38.8	29.34	40.22	79.39	97.9
125% Rec. N	355	39.2	29.71	41.34	80.58	98.0
150% Rec. N	359	39.6	29.74	42.23	83.13	98.8
100% Rec NPK	374	40.4	34.08	51.44	102.68	99.1
125% Rec. N+ GR	360	39.9	31.47	45.18	89.76	97.7
150% Rec N + GR	361	40.1	31.93	46.14	91.12	98.3
150% Rec. NPK + GR	382	41.5	33.71	53.24	104.55	101.5
SEm	3.11	0.57	0.99	1.11	2.05	0.93
CD (0.05)	9.24	1.68	2.93	3.28	6.10	2.77
CV (%)	1.51	2.51	5.74	4.55	4.35	1.66
Date of Sowing:	25.11.2019		Date of Harvesting: 01.04.2020			

Table 6.12.4. North Eastern Plains Zone				SPL-4	Kalyani	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	130	37.5	57.46	27.53	67.20	89.1
50% Rec. N	194	36.8	43.62	30.56	88.04	95.3
75% Rec N	195	37.7	48.21	33.05	94.96	94.2
100 % Rec. N	209	40.5	41.82	35.03	105.01	100.7
125% Rec. N	213	38.6	45.38	37.49	102.94	98.8
150% Rec. N	222	38.6	42.65	36.18	103.21	100.4
100% Rec NPK	321	45.7	35.10	50.82	132.13	103.0
125% Rec. N+ GR	242	39.6	41.17	39.39	101.81	100.2
150% Rec N + GR	222	41.6	47.51	44.00	91.33	100.4
150% Rec. NPK + GR	345	47.0	34.32	54.84	130.27	101.5
SEm	16.16	1.08	5.74	2.75	7.40	10.30
CD (0.05)	48.03	3.22	17.05	8.18	21.97	30.59
CV (%)	12.20	4.65	22.73	12.26	12.60	18.73
Date of Sowing:	07.11.2019		Date of Harvesting: 27.03.2020			

Table 6.12.5. North Eastern Plains Zone				SPL-4	Kanpur	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	344	39.3	26.96	36.09	136.45	82.6
50% Rec. N	355	40.4	34.47	49.39	132.06	92.3
75% Rec N	390	40.4	32.52	51.25	131.19	95.7
100 % Rec. N	395	39.4	33.53	52.14	137.50	94.9
125% Rec. N	395	39.1	34.97	53.95	131.15	95.7
150% Rec. N	398	40.3	33.73	54.09	138.16	92.9
100% Rec NPK	406	39.8	36.90	59.45	92.38	95.0
125% Rec. N+ GR	399	39.4	33.68	53.01	137.42	97.6
150% Rec N + GR	403	43.9	32.67	57.89	141.07	96.7
150% Rec. NPK + GR	408	42.1	35.57	61.15	148.21	95.0
SEm	8.78	0.60	1.21	1.57	12.52	2.29
CD (0.05)	26.07	1.78	3.61	4.66	37.21	6.80
CV (%)	3.90	2.57	6.28	5.14	16.36	4.23
Date of Sowing:	02.12.2019		Date of Harvesting: 26.04.2020			

Table 6.12.6. North Eastern Plains Zone				SPL-4	Ranchi	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	193	32.0	22.32	13.70	31.13	68.7
50% Rec. N	263	38.7	25.62	25.93	60.53	81.7
75% Rec N	272	39.0	25.77	27.20	63.80	96.3
100 % Rec. N	277	39.7	25.92	28.13	64.60	101.3
125% Rec. N	292	41.0	26.25	31.20	76.60	116.3
150% Rec. N	290	39.7	27.28	31.33	76.60	123.7
100% Rec NPK	363	43.3	34.00	53.27	115.93	99.0
125% Rec. N+ GR	293	41.0	31.80	37.93	83.67	107.0
150% Rec N + GR	310	42.3	31.08	40.40	84.13	108.3
150% Rec. NPK + GR	400	44.0	33.39	58.33	118.73	99.7
SEm	19.56	0.97	1.79	1.73	2.36	2.95
CD (0.05)	58.12	2.88	5.33	5.15	7.01	8.76
CV (%)	11.47	4.20	10.96	8.64	5.27	5.10
Date of Sowing:	18.11.2019		Date of Harvesting: 08.04.2020			

Table 6.12.7. North Eastern Plains Zone				SPL-4	ICPAU Pusa	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ear head	Yield, q/ha	Biomass, q/ha	
Absolute control	290	33.0	30.44	28.05	60.85	
50% Rec. N	325	35.7	30.64	35.55	85.22	
75% Rec N	328	36.0	31.55	37.26	90.86	
100 % Rec. N	335	36.0	32.73	39.52	94.75	
125% Rec. N	338	36.1	33.52	40.89	97.86	
150% Rec. N	340	36.9	33.81	42.35	101.22	
100% Rec NPK	345	38.0	36.56	45.71	105.48	
125% Rec. N+ GR	342	37.5	34.17	43.82	103.65	
150% Rec N + GR	348	38.1	35.05	46.43	105.91	
150% Rec. NPK + GR	352	38.6	35.98	48.85	108.39	
SEm	11.64	1.80	2.57	1.23	1.64	
CD (0.05)	34.58	5.35	7.63	3.64	4.88	
CV (%)	6.03	8.53	13.29	5.20	2.98	
Date of Sowing:	18.11.2019		Date of Harvesting: 08.04.2020			

Table 6.12.8. North Eastern Plains Zone				SPL-4	Sabour	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	292	38.6	26.42	29.82	71.39	93.9
50% Rec. N	317	42.9	27.27	36.90	80.00	95.7
75% Rec N	322	44.0	30.97	43.67	93.93	95.1
100 % Rec. N	329	44.3	30.23	43.83	95.96	95.2
125% Rec. N	330	44.7	30.63	45.06	97.95	96.6
150% Rec. N	331	44.1	31.15	45.62	101.38	95.2
100% Rec NPK	335	45.6	32.73	49.61	111.73	99.6
125% Rec. N+ GR	325	45.7	31.77	46.95	100.23	87.1
150% Rec N + GR	342	45.6	31.24	48.53	102.63	89.9
150% Rec. NPK + GR	357	45.5	31.74	51.57	114.61	91.5
SEm	10.85	1.28	2.15	2.60	5.41	2.28
CD (0.05)	32.24	3.81	6.39	7.73	16.06	6.79
CV (%)	5.73	5.04	12.25	10.20	9.65	4.21
Date of Sowing:	25.11.2019		Date of Harvesting: 18.04.2020			

Table 6.12.9. North Eastern Plains Zone				SPL-4	Shillongani	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	210	41.6	26.18	22.69	57.17	86.6
50% Rec. N	240	45.6	31.67	34.55	87.07	90.0
75% Rec N	245	44.8	32.94	36.15	91.09	92.0
100 % Rec. N	250	41.0	37.43	38.28	96.47	93.3
125% Rec. N	259	44.1	35.31	40.18	101.25	94.9
150% Rec. N	230	44.4	41.60	42.38	106.80	95.2
100% Rec NPK	257	44.7	39.71	45.54	114.75	95.8
125% Rec. N+ GR	253	41.5	40.67	42.65	107.49	78.1
150% Rec N + GR	265	42.1	39.38	43.77	110.29	80.7
150% Rec. NPK + GR	271	44.4	39.24	47.31	119.23	80.7
SEm	4.14	1.37	1.41	0.72	1.80	1.15
CD (0.05)	12.30	4.06	4.19	2.13	5.36	3.41
CV (%)	2.89	5.45	6.71	3.15	3.15	2.24
Date of Sowing:	05.11.2019		Date of Harvesting: 20.03.2020			

Table 6.12.10. North Eastern Plains Zone				SPL-4	Varanasi	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	184	42.9	25.97	20.40	42.84	91.6
50% Rec. N	224	41.7	36.02	33.66	85.00	103.0
75% Rec N	256	41.2	38.49	40.46	112.88	102.2
100 % Rec. N	350	41.3	30.88	44.54	117.98	105.4
125% Rec. N	351	40.9	33.49	47.94	137.36	105.6
150% Rec. N	336	41.0	37.53	51.68	134.98	104.1
100% Rec NPK	217	42.7	52.01	47.94	92.82	102.0
125% Rec. N+ GR	315	40.0	35.85	45.22	131.58	101.8
150% Rec N + GR	351	39.2	34.14	46.92	134.64	102.6
150% Rec. NPK + GR	357	41.4	35.89	53.04	137.02	101.4
SEm	6.37	0.48	1.69	1.14	2.13	2.72
CD (0.05)	18.93	1.43	5.02	3.38	6.31	8.10
CV (%)	3.75	2.02	8.12	4.56	3.27	4.63
Date of Sowing:	14.11.2019		Date of Harvesting: 11.04.2020			

Table 6.13.1. Central zone				SPL-4	Bilaspur	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	223	36.36	28.16	22.62	71.2	94.0
50% Rec. N	274	37.98	24.20	25.07	84.0	97.0
75% Rec N	304	38.69	24.62	28.89	86.8	99.0
100 % Rec. N	330	39.69	24.11	31.30	90.4	102.3
125% Rec. N	346	38.36	25.35	33.58	91.0	104.0
150% Rec. N	357	39.14	26.46	36.68	92.0	105.0
100% Rec NPK	373	41.28	27.04	41.50	93.2	104.0
125% Rec. N+ GR	364	42.03	23.33	35.60	89.3	106.0
150% Rec N + GR	373	42.63	24.31	38.22	90.7	110.0
150% Rec. NPK + GR	389	43.41	27.01	45.51	90.2	111.0
Mean	333	39.96	25.46	33.90	87.88	103.23
CD (0.05)	32.79	2.93	4.31	3.78	6.09	2.54
Date of Sowing:	15.11.2019		Date of Harvesting: 21.03.2020			

Table 6.13.2. Central Zone			SPL-4		Gwalior	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	223	42.69	35.51	39.63	86.9	125.7
50% Rec. N	274	42.11	31.90	45.87	83.1	125.3
75% Rec N	304	41.59	32.08	48.51	86.9	125.3
100 % Rec. N	330	41.88	33.61	57.79	86.0	124.3
125% Rec. N	346	41.33	36.26	57.40	87.0	124.7
150% Rec. N	357	42.59	35.88	58.15	88.8	124.7
100% Rec NPK	373	42.09	34.21	61.68	85.9	125.3
125% Rec. N+ GR	364	40.82	36.03	59.34	72.7	126.0
150% Rec N + GR	373	39.92	37.26	57.80	76.8	125.0
150% Rec. NPK + GR	389	40.74	35.08	62.29	75.4	125.3
Mean	333	41.57	34.78	54.85	82.94	125.17
CD (0.05)	32.79	1.71	3.98	1.63	3.10	1.28
Date of Sowing:	30.11.2019		Date of Harvesting: 14.04.2020			

Table 6.13.3. Central Zone			SPL-4		Indore	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	231	44.57	23.84	24.50	97.1	125.7
50% Rec. N	331	41.73	30.29	41.83	108.1	130.0
75% Rec N	350	41.30	31.19	45.07	112.2	131.3
100 % Rec. N	360	40.23	25.02	36.23	115.7	132.0
125% Rec. N	366	38.80	22.89	32.53	111.4	132.3
150% Rec. N	367	38.60	23.03	32.63	107.7	133.7
100% Rec NPK	348	39.83	27.77	38.40	113.1	132.7
125% Rec. N+ GR	429	35.97	25.06	38.63	86.7	134.3
150% Rec N + GR	413	34.83	23.92	34.40	89.3	134.3
150% Rec. NPK + GR	414	35.67	23.50	34.70	93.0	134.7
Mean	361	39.15	25.65	35.89	103.43	132.10
CD (0.05)	24.85	1.04	1.53	2.85	3.44	0.98
Date of Sowing:	22.11.2019		Date of Harvesting: 11.05.2020			

Table 6.13.4. Central Zone			SPL-4		Jabalpur	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	223	34.77	34.20	26.55	60.2	124.3
50% Rec. N	241	36.95	33.79	30.13	62.3	126.0
75% Rec N	267	38.52	31.57	32.40	68.6	126.0
100 % Rec. N	322	40.81	30.53	40.14	72.3	126.0
125% Rec. N	343	39.56	32.26	43.73	75.6	126.0
150% Rec. N	364	40.14	32.77	47.88	77.4	125.7
100% Rec NPK	409	43.30	30.34	53.62	87.4	126.0
125% Rec. N+ GR	365	40.67	33.56	49.62	81.4	126.0
150% Rec N + GR	384	39.84	33.56	51.26	83.7	128.0
150% Rec. NPK + GR	417	42.59	30.87	54.77	90.7	128.0
Mean	334	39.72	32.35	43.01	75.96	126.20
CD (0.05)	15.56	2.22	4.12	3.87	6.12	0.43
Date of Sowing:	14.11.2019		Date of Harvesting: 04.05.2020			

Table 6.13.5. Central Zone			SPL-4		Junagadh	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	373	56.00	20.66	42.99	77.5	82.3
50% Rec. N	412	57.87	22.78	54.08	81.9	84.7
75% Rec N	425	63.07	22.96	61.39	83.3	86.7
100 % Rec. N	447	66.80	19.91	59.45	85.3	89.0
125% Rec. N	446	66.67	18.50	55.00	85.4	91.0
150% Rec. N	468	63.73	20.93	62.41	87.2	93.7
100% Rec NPK	472	65.33	20.29	62.34	84.5	89.7
125% Rec. N+ GR	459	64.27	21.10	62.17	75.9	88.7
150% Rec N + GR	468	66.00	20.12	62.17	73.9	89.0
150% Rec. NPK + GR	455	66.67	21.30	64.66	72.0	89.7
Mean	443	63.64	20.86	58.67	80.69	88.43
CD (0.05)	24.21	2.39	2.78	6.76	2.17	1.31
Date of Sowing:	16.11.2019		Date of Harvesting: 02.03.2020			

Table 6.13.6. Central Zone			SPL-4		Udaipur	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	290	39.58	27.87	31.86	67.7	117.7
50% Rec. N	295	40.40	36.99	44.00	71.8	119.0
75% Rec N	315	41.38	36.84	47.67	74.8	120.3
100 % Rec. N	378	43.32	29.76	48.72	77.7	123.7
125% Rec. N	383	43.65	30.40	49.20	79.7	123.3
150% Rec. N	388	43.83	30.55	51.96	80.8	125.0
100% Rec NPK	395	44.08	30.09	52.17	80.7	123.0
125% Rec. N+ GR	418	44.33	28.45	52.68	83.0	125.0
150% Rec N + GR	422	44.87	28.18	53.01	84.3	126.3
150% Rec. NPK + GR	435	45.77	26.91	53.51	85.2	127.0
Mean	372	43.11	30.51	48.48	78.57	123.03
CD (0.05)	27.82	1.77	8.40	3.07	3.53	1.95
Date of Sowing:	15.11.2019		Date of Harvesting: 21.03.2020			

Table 6.13.7. Central Zone			SPL-4		Vijapur	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead	Yield, q/ha	Biomass, q/ha	Plant height, cm
Absolute control	275	48.19	15.83	20.96	69.3	109.3
50% Rec. N	310	52.12	27.46	44.29	77.7	107.7
75% Rec N	330	51.39	26.99	45.35	78.3	108.3
100 % Rec. N	338	53.45	31.93	57.67	81.3	106.7
125% Rec. N	353	53.94	30.27	57.08	80.9	110.0
150% Rec. N	341	51.20	37.92	65.50	81.0	111.7
100% Rec NPK	336	54.09	33.07	60.13	84.6	110.0
125% Rec. N+ GR	363	52.31	31.38	59.88	72.7	110.7
150% Rec N + GR	367	51.55	36.31	68.92	75.0	112.7
150% Rec. NPK + GR	371	52.48	37.41	72.75	80.0	111.0
Mean	338	52.07	30.86	55.25	78.08	109.80
CD (0.05)	48.72	2.89	5.61	8.22	4.88	1.71
Date of Sowing:	15.11.2019		Date of Harvesting: 07.03.2020			

Table 6.14.1. Peninsular Zone		SPL-4		Dharwad	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead		Yield, q/ha
Absolute control	243	39.12	32.01		30.47
50% Rec. N	247	41.71	37.98		39.13
75% Rec N	266	41.18	38.27		41.79
100 % Rec. N	257	39.64	43.15		44.07
125% Rec. N	265	41.83	38.05		42.23
150% Rec. N	249	42.01	39.00		40.62
100% Rec NPK	266	41.93	39.36		43.82
125% Rec. N+ GR	254	41.93	44.08		46.44
150% Rec N + GR	259	42.91	39.98		44.35
150% Rec. NPK + GR	266	42.20	38.74		43.45
Mean	257	41.45	39.06		41.64
CD (0.05)	13.78	0.97	10.34		10.90
CV (%)	3.12	1.36	15.44		15.25
Date of Sowing :	18.11.2019		Date of Harvesting:	20.03.2020	

Table 6.14.2. Peninsular Zone		SPL-4		Niphad	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead		Yield, q/ha
Absolute control	385	29.65	16.79		19.06
50% Rec. N	393	35.74	23.46		32.88
75% Rec N	393	41.45	22.26		36.25
100 % Rec. N	402	43.24	26.50		46.07
125% Rec. N	406	43.29	26.97		47.37
150% Rec. N	407	43.64	27.24		48.36
100% Rec NPK	408	43.89	27.82		49.89
125% Rec. N+ GR	412	43.98	28.19		51.06
150% Rec N + GR	415	44.21	28.08		51.54
150% Rec. NPK + GR	421	44.22	27.94		52.08
Mean	404	41.33	25.53		43.45
CD (0.05)	17.79	1.90	2.65		3.95
CV (%)	2.57	2.68	6.04		5.30
Date of Sowing :	03.12.2019		Date of Harvesting:	05.04.2020	

Table 6.14.3. Peninsular Zone		SPL-4		Pune	2019-20
Treatments	Earheads/s qm	1000 grains weight,g	Grains/ earhead		Yield, q/ha
Absolute control	285	41.67	26.69		31.71
50% Rec. N	318	42.33	36.48		48.94
75% Rec N	394	41.67	33.40		54.82
100 % Rec. N	373	42.67	34.08		54.25
125% Rec. N	413	42.67	31.64		55.60
150% Rec. N	369	42.00	35.22		54.46
100% Rec NPK	342	42.33	36.29		51.95
125% Rec. N+ GR	404	42.00	32.80		55.56
150% Rec N + GR	419	41.33	32.50		56.10
150% Rec. NPK + GR	427	42.33	31.87		57.54
Mean	374	42.10	33.10		52.09
CD (0.05)	42.38	1.08	4.22		4.06
CV (%)	6.60	1.50	7.44		4.55
Date of Sowing :	20.11.2019		Date of Harvesting:	12.03.2020	

Table 6.15.1. North Eastern Plains Zone		SPL-5		Coochbehar		2019-20	
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Biomass q/ha	Yield, q/ha	Plant height, cm	
Absolute control	133.67	34.53	29.09	37.30	13.37	80.13	
75 kg basal +37.5 kg N/ha at CRI and tillering	279.00	40.60	45.63	124.40	51.63	101.53	
60 kg basal +30 kg N/ha at CRI and tillering	240.67	40.33	45.96	112.50	44.47	96.33	
30 basal+30 CRI + 58 kg by GS at 40-45 & 60-65	260.00	39.67	44.32	114.73	45.67	95.33	
30 basal+60 CRI+ 42 kg by GS at 40-45 & 60-65	294.00	40.43	43.62	130.73	51.73	100.20	
½ N basal and ½ at CRI	278.33	40.67	45.87	128.63	51.77	98.97	
1/3 rd N basal+1/3 rd CRI +1/3 rd first node	264.00	40.07	44.37	116.93	46.93	99.30	
Rich Plot-90 kg N/ha basal+90 at CRI	281.67	41.47	44.77	137.00	52.03	105.63	
SEm	10.72	0.39	2.14	5.15	1.87	3.48	
CD (0.05)	32.53	1.18	6.49	15.62	5.67	10.55	
CV (%)	7.32	1.70	8.62	7.91	7.25	6.20	
Date of Sowing:	26.11.2019		Date of Harvesting:	05.04.2020			

Table 6.15.2. North Eastern Plains Zone		SPL-5		Ranchi		2019-20	
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Biomass q/ha	Yield, q/ha	Plant height, cm	
Absolute control	210.00	30.00	28.96	42.67	17.73	68.67	
75 kg basal +37.5 kg N/ha at CRI and tillering	342.67	37.00	37.76	98.00	47.10	101.67	
60 kg basal +30 kg N/ha at CRI and tillering	336.67	37.33	35.50	87.47	44.27	96.33	
30 basal+30 CRI +GS at 40-45 & 60-65 DAS	383.33	38.67	34.92	102.67	51.57	96.33	
30 basal+60 CRI+GS at 40-45 & 60-65 DAS	371.67	38.00	35.71	101.87	49.73	102.33	
½ N basal and ½ at CRI	363.33	39.00	33.20	96.87	46.40	98.33	
1/3 rd N basal+1/3 rd CRI +1/3 rd first node	363.33	37.00	35.34	99.20	47.20	99.00	
Rich Plot-90 kg N/ha basal+90 at CRI	376.67	38.00	36.16	105.07	51.20	107.00	
SEm	23.87	1.29	2.78	6.10	1.75	3.22	
CD (0.05)	72.41	3.93	8.43	18.51	5.32	9.77	
CV (%)	12.04	6.08	13.87	11.52	6.84	5.80	
Date of Sowing:	29.11.2019		Date of Harvesting:	10.04.2020			

Table 6.16.1. Peninsular Zone		SPL-5		Dharwad		2019-20	
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Yield, q/ha			
Absolute control	248	38.04	34.62	32.51			
75 kg basal +37.5 kg N/ha at CRI and tillering	254	41.16	37.16	38.90			
60 kg basal +30 kg N/ha at CRI and tillering	246	38.56	40.82	38.68			
30 basal+30 CRI +GS at 40-45 & 60-65 DAS	259	39.37	34.09	34.77			
30 basal+60 CRI+GS at 40-45 & 60-65 DAS	253	38.95	38.23	37.56			
½ N basal and ½ at CRI	267	38.71	35.22	36.34			
1/3 rd N basal+1/3 rd CRI +1/3 rd first node	260	40.59	33.84	35.72			
Rich Plot-90 kg N/ha basal+90 at CRI	263	38.75	34.92	35.62			
Mean	256	39.27	36.11	36.26			
CD (0.05)	11.48	1.33	9.85	9.14			
CV (%)	2.56	1.94	15.58	14.39			
Date of Sowing:	19.11.2019		Date of Harvesting:	20.03.2020			

Table 6.16.2. Peninsular Zone		SPL-5		Pune		2019-20	
Treatments	Earheads/ sqm	1000 grains weight, g	Grains/ earhead	Yield, q/ha			
Absolute control	267	42.00	22.58	25.14			
75 kg basal +37.5 kg N/ha at CRI and tillering	353	42.33	35.30	52.50			
60 kg basal +30 kg N/ha at CRI and tillering	332	41.00	38.08	51.76			
30 basal+30 CRI +GS at 40-45 & 60-65 DAS	290	46.00	35.14	46.82			
30 basal+60 CRI+GS at 40-45 & 60-65 DAS	318	42.00	36.84	49.18			
½ N basal and ½ at CRI	305	42.00	38.62	48.49			
1/3 rd N basal+1/3 rd CRI +1/3 rd first node	323	41.33	38.15	50.67			
Rich Plot-90 kg N/ha basal+90 at CRI	367	37.67	38.28	52.90			
Mean	319	41.79	35.37	47.18			
CD (0.05)	41.84	0.90	7.64	6.75			
CV (%)	7.48	1.22	12.33	8.16			
Date of Sowing:	20.11.2019		Date of Harvesting:	12.03.2020			

Table 6.17.1 Central Zone

SPL 6

Bilaspur 2019-20

Silicon Level	Irrigation Levels								Mean	Rk
	Zero	Rk	One	Rk	Two	Rk	Three	Rk		
Yield, q/ha										
Control	20.74	4	25.54	4	27.64	4	30.08	4	26.00	4
Silicon@100 kg/ha	23.79	3	31.23	3	33.69	3	37.83	3	31.63	3
Silicon@150 kg/ha	29.02	2	33.41	2	37.68	2	39.78	2	34.97	2
Silicon@200 kg/ha	30.69	1	34.72	1	38.87	1	41.06	1	36.33	1
Mean	26.06		31.22		34.47		37.19		32.23	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.36		1.23		3.82			
Silicon (B)	**		0.38		1.10		4.03			
B within A	N.S.		0.75		2.19					
A within B			0.74		2.16					
Earhead/Sqm										
Control	154	4	174	4	208	4	257	4	198	4
Silicon@100 kg/ha	178	3	210	3	224	3	280	3	223	3
Silicon@150 kg/ha	199	2	245	2	280	2	368	2	273	2
Silicon@200 kg/ha	201	1	257	1	289	1	377	1	281	1
Mean	183		222		250		320		244	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		2.89		10.01		4.11			
Silicon (B)	**		2.63		7.68		3.74			
B within A	**		5.26		15.36					
A within B			5.40		15.76					
Grains/earhead										
Control	38.43	2	41.46	1	33.69	2	28.71	2	35.57	2
Silicon@100 kg/ha	36.06	4	38.88	2	36.74	1	32.08	1	35.94	1
Silicon@150 kg/ha	37.00	3	33.24	3	31.31	3	24.64	4	31.55	3
Silicon@200 kg/ha	38.79	1	31.52	4	31.02	4	24.71	3	31.51	4
Mean	37.57		36.28		33.19		27.53		33.64	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.52		1.80		5.37			
Silicon (B)	**		0.54		1.58		5.59			
B within A	**		1.08		3.17					
A within B			1.07		3.14					
1000 Grains weight,g										
Control	35.11	4	35.59	4	39.75	4	40.87	4	37.83	4
Silicon@100 kg/ha	37.32	3	38.30	3	41.05	3	42.26	3	39.73	3
Silicon@150 kg/ha	39.52	1	41.13	2	43.00	2	43.94	2	41.90	2
Silicon@200 kg/ha	39.42	2	42.86	1	43.47	1	44.13	1	42.47	1
Mean	37.84		39.47		41.82		42.80		40.48	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.71		2.45		6.06			
Silicon (B)	**		0.29		0.84		2.47			
B within A	N.S.		0.58		1.68					
A within B			0.87		2.53					

Plant height, cm										
Control	63.67	4	71.00	4	76.33	4	77.67	4	72.17	4
Silicon@100 kg/ha	66.67	2	76.67	3	77.33	3	78.00	3	74.67	3
Silicon@150 kg/ha	65.33	3	77.33	2	78.00	2	80.67	1	75.33	2
Silicon@200 kg/ha	69.33	1	77.67	1	78.33	1	80.33	2	76.42	1
Mean	66.25		75.67		77.50		79.17		74.65	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.69		2.38		3.19			
Silicon (B)	**		0.31		0.92		1.46			
B within A	**		0.63		1.83					
A within B			0.88		2.56					
Physiological maturity, days										
Control	93	4	96	4	99	4	105	4	98	4
Silicon@100 kg/ha	97	3	103	3	107	3	111	3	105	3
Silicon@150 kg/ha	101	2	108	2	111	2	113	2	108	2
Silicon@200 kg/ha	104	1	110	1	113	1	115	1	110	1
Mean	99		104		107		111		105	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.36		1.24		1.18			
Silicon (B)	**		0.32		0.93		1.04			
B within A	*		0.63		1.85					
A within B			0.66		1.92					
Date of Sowing:	05.11.2019				Date of harvesting:		19.03.2020			

Table 6.17.2. Central Zone

SPL 6

Dhandhuka 2019-20

Silicon Levels (kg/ha)	Irrigation Levels								Mean	Rk
	I0	Rk	I1	Rk	I2	Rk	I3	Rk		
Yield, q/ha										
Control	7.12	4	22.58	4	31.64	4	29.92	4	22.81	4
Silicon@100 kg/ha	7.29	3	27.30	3	34.28	3	32.98	3	25.46	3
Silicon@150 kg/ha	8.36	1	31.28	1	37.58	1	36.59	1	28.45	1
Silicon@200 kg/ha	8.27	2	28.22	2	34.84	2	34.23	2	26.39	2
Mean	7.76		27.34		34.59		33.43		25.78	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.51		1.78		6.90			
Silicon (B)	**		0.53		1.55		7.12			
B within A	N.S.		1.06		3.09					
A within B			1.05		3.07					
Earhead/Sqm										
Control	174	4	246	4	254	4	267	4	235	4
Silicon@100 kg/ha	186	3	249	3	281	2	273	3	247	3
Silicon@150 kg/ha	205	2	280	1	318	1	289	1	273	1
Silicon@200 kg/ha	207	1	279	2	261	3	276	2	256	2
Mean	193		264		279		276		253	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		5.36		18.55		7.34			
Silicon (B)	**		4.91		14.33		6.73			
B within A	N.S.		9.82		28.66					
A within B			10.05		29.34					

Grains/earhead										
Control	9.36	1	21.72	4	27.83	2	25.19	4	21.03	4
Silicon@100 kg/ha	8.96	3	24.38	2	26.59	3	26.10	3	21.51	2
Silicon@150 kg/ha	9.18	2	24.44	1	25.08	4	26.82	2	21.38	3
Silicon@200 kg/ha	8.92	4	22.26	3	28.36	1	27.03	1	21.64	1
Mean	9.11		23.20		26.97		26.28		21.39	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.49		1.71		8.01			
Silicon (B)	N.S.		0.63		1.85		10.27			
B within A	N.S.		1.27		3.70					
A within B			1.20		3.52					
1000 Grains weight,g										
Control	43.73	4	42.37	4	44.87	4	44.72	4	43.92	4
Silicon@100 kg/ha	44.07	3	45.40	3	46.11	3	46.44	2	45.51	3
Silicon@150 kg/ha	44.52	2	45.75	1	47.14	1	47.27	1	46.17	1
Silicon@200 kg/ha	44.63	1	45.54	2	47.05	2	45.99	3	45.80	2
Mean	44.24		44.77		46.29		46.11		45.35	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.24		0.85		1.87			
Silicon (B)	**		0.22		0.65		1.70			
B within A	N.S.		0.44		1.30					
A within B			0.46		1.33					
Plant height, cm										
Control	57.99	4	71.13	4	73.98	4	74.90	3	69.50	4
Silicon@100 kg/ha	59.20	3	72.43	3	75.32	3	74.83	4	70.45	3
Silicon@150 kg/ha	60.16	2	74.07	2	78.22	1	76.50	1	72.24	1
Silicon@200 kg/ha	61.64	1	75.32	1	75.87	2	75.73	2	72.14	2
Mean	59.75		73.24		75.85		75.49		71.08	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.26		0.89		1.26			
Silicon (B)	**		0.33		0.95		1.59			
B within A	N.S.		0.65		1.90					
A within B			0.62		1.81					
Physiological maturity, days										
Control	91	4	102	3	106	4	107	3	102	4
Silicon@100 kg/ha	94	3	98	4	107	3	110	1	102	3
Silicon@150 kg/ha	95	2	105	2	108	2	107	4	103	2
Silicon@200 kg/ha	95	1	105	1	108	1	109	2	104	1
Mean	94		103		107		108		103	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.02		3.54		3.44			
Silicon (B)	N.S.		0.75		2.18		2.52			
B within A	N.S.		1.49		4.36					
A within B			1.65		4.81					
Date of Sowing:	20.11.2019				Date of harvesting:				23.03.2020	

Table 6.17.3. Central Zone

SPL 6

Junagadh 2019-20

Silicon Levels (kg/ha)	Irrigation Levels								Mean	Rk
	I0	Rk	I1	Rk	I2	Rk	I3	Rk		
Yield, q/ha										
Control	10.37	4	26.49	4	34.58	1	40.27	2	27.93	2
Silicon@100 kg/ha	10.68	2	26.90	3	32.85	4	40.44	1	27.72	3
Silicon@150 kg/ha	10.47	3	27.58	2	33.19	2	39.18	4	27.60	4
Silicon@200 kg/ha	11.93	1	28.91	1	32.96	3	40.23	3	28.51	1
Mean	10.86		27.47		33.40		40.03		27.94	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.73		2.52		9.02			
Silicon (B)	N.S.		0.33		0.97		4.14			
B within A	N.S.		0.67		1.95					
A within B			0.93		2.71					
Earhead/Sqm										
Control	333	4	322	4	391	4	435	4	370	4
Silicon@100 kg/ha	361	1	400	1	396	3	438	3	399	1
Silicon@150 kg/ha	346	3	371	3	401	2	443	1	390	3
Silicon@200 kg/ha	347	2	380	2	407	1	442	2	394	2
Mean	347		368		399		440		388	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		4.34		15.00		3.87			
Silicon (B)	**		4.78		13.95		4.26			
B within A	*		9.56		27.90					
A within B			9.34		27.27					
Grains/earhead										
Control	7.48	3	18.73	1	18.92	1	17.59	2	15.68	1
Silicon@100 kg/ha	7.39	4	15.12	4	17.58	2	17.96	1	14.51	4
Silicon@150 kg/ha	7.68	2	16.68	2	17.25	4	17.36	4	14.74	3
Silicon@200 kg/ha	8.67	1	16.43	3	17.27	3	17.51	3	14.97	2
Mean	7.80		16.74		17.76		17.61		14.98	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.50		1.74		11.64			
Silicon (B)	*		0.27		0.79		6.28			
B within A	*		0.54		1.58					
A within B			0.69		2.01					
1000 Grains weight,g										
Control	41.20	1	44.13	4	46.93	3	52.67	1	46.23	2
Silicon@100 kg/ha	40.67	2	44.80	2	47.20	2	51.47	3	46.03	3
Silicon@150 kg/ha	39.20	4	44.73	3	48.13	1	50.93	4	45.75	4
Silicon@200 kg/ha	40.00	3	46.40	1	46.93	3	52.13	2	46.37	1
Mean	40.27		45.02		47.30		51.80		46.10	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.63		2.19		4.76			
Silicon (B)	N.S.		0.41		1.21		3.12			
B within A	N.S.		0.83		2.42					
A within B			0.96		2.80					

Plant height, cm										
Control	46.40	2	62.33	1	64.87	4	66.73	3	60.08	3
Silicon@100 kg/ha	45.27	3	61.80	4	66.60	2	66.73	3	60.10	2
Silicon@150 kg/ha	44.73	4	61.93	3	66.40	3	67.00	2	60.02	4
Silicon@200 kg/ha	47.47	1	62.27	2	67.80	1	68.33	1	61.47	1
Mean	45.97		62.08		66.42		67.20		60.42	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.40		1.37		2.28			
Silicon (B)	N.S.		0.57		1.65		3.24			
B within A	N.S.		1.13		3.30					
A within B			1.06		3.08					
Physiological maturity, days										
Control	69	4	80	4	84	4	85	4	80	4
Silicon@100 kg/ha	71	3	82	3	86	3	89	3	82	3
Silicon@150 kg/ha	73	2	83	2	86	2	90	2	83	2
Silicon@200 kg/ha	75	1	85	1	89	1	91	1	85	1
Mean	72		83		86		89		82	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.24		0.82		1.00			
Silicon (B)	**		0.20		0.58		0.84			
B within A	N.S.		0.40		1.17					
A within B			0.42		1.22					
Date of Sowing:	16.11.2019				Date of harvesting:				24.02.2020	

Table 6.17.4. Central Zone SPL 6 Udaipur 2019-20

Silicon Levels (kg/ha)	Irrigation Levels								Mean	Rk
	I0	Rk	I1	Rk	I2	Rk	I3	Rk		
Yield, q/ha										
Control	18.22	4	31.80	4	38.11	4	44.00	4	33.04	4
Silicon@100 kg/ha	23.97	3	34.29	3	39.63	3	44.62	3	35.62	3
Silicon@150 kg/ha	27.13	2	39.71	2	44.06	2	47.45	2	39.59	2
Silicon@200 kg/ha	30.46	1	42.14	1	44.59	1	47.79	1	41.25	1
Mean	24.95		36.98		41.60		45.97		37.37	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.00		3.45		9.23			
Silicon (B)	**		1.06		3.09		9.82			
B within A	N.S.		2.13		6.19					
A within B			0.99		6.09					
Grain yield/ha										
Control	258	4	398	4	416	4	432	4	376	4
Silicon@100 kg/ha	311	3	403	3	418	3	443	3	393	3
Silicon@150 kg/ha	342	2	405	2	428	1	458	2	408	2
Silicon@200 kg/ha	362	1	406	1	428	1	464	1	415	1
Mean	318		403		423		449		398	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		4.74		16.41		4.13			
Silicon (B)	**		5.55		16.21		4.83			
B within A	*		11.11		32.43					
A within B			10.73		31.31					

Grains/earhead										
Control	19.94	4	21.15	4	23.42	3	25.47	1	22.50	3
Silicon@100 kg/ha	20.80	3	21.32	3	22.84	4	23.86	4	22.20	4
Silicon@150 kg/ha	21.09	2	24.45	2	24.80	2	24.45	2	23.70	2
Silicon@200 kg/ha	22.06	1	25.79	1	24.83	1	24.24	3	24.23	1
Mean	20.97		23.18		23.97		24.51		23.16	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	*		0.64		2.22		9.60			
Silicon (B)	N.S.		0.69		2.02		10.34			
B within A	N.S.		1.38		4.04					
A within B			1.36		3.96					
1000 Grains weight,g										
Control	35.50	4	37.70	4	39.57	4	40.05	4	38.11	4
Silicon@100 kg/ha	37.73	3	39.93	3	41.43	3	42.28	3	40.35	3
Silicon@150 kg/ha	37.93	2	40.13	2	41.63	2	42.48	2	40.55	2
Silicon@200 kg/ha	38.17	1	40.37	1	41.87	1	42.72	1	40.78	1
Mean	37.33		39.57		41.03		41.88		39.95	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.22		0.76		1.91			
Silicon (B)	*		0.61		1.78		5.29			
B within A	N.S.		1.22		3.56					
A within B			1.08		3.15					
Plant height, cm										
Control	63.40	4	76.13	4	78.98	4	80.53	4	74.76	4
Silicon@100 kg/ha	65.33	3	77.43	3	80.32	3	81.00	3	76.02	3
Silicon@150 kg/ha	66.32	2	79.07	2	80.68	2	81.50	2	76.89	2
Silicon@200 kg/ha	67.40	1	80.77	1	80.87	1	81.90	1	77.73	1
Mean	65.61		78.35		80.21		81.23		76.35	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.28		0.98		1.29			
Silicon (B)	**		0.30		0.87		1.36			
B within A	N.S.		0.60		1.75					
A within B			0.59		1.73					
Physiological maturity, days										
Control	90	4	99	3	103	4	106	4	100	3
Silicon@100 kg/ha	91	3	95	4	104	3	107	3	99	4
Silicon@150 kg/ha	92	2	102	2	105	2	108	1	102	2
Silicon@200 kg/ha	92	1	102	1	105	1	108	2	102	1
Mean	91		100		104		107		101	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.22		4.23		4.21			
Silicon (B)	N.S.		0.78		2.27		2.67			
B within A	N.S.		1.55		4.53					
A within B			1.82		5.30					
Date of Sowing:	15.11.2019				Date of harvesting:				10.03.2020	

Table 6.17.5. Central Zone

SPL 6

Vijapur

2019-20

Silicon Levels (kg/ha)	Irrigation Levels								Mean	Rk
	I0	Rk	I1	Rk	I2	Rk	I3	Rk		
Yield, q/ha										
Control	8.37	3	20.04	3	25.75	1	34.25	4	22.10	4
Silicon@100 kg/ha	8.46	2	21.95	1	22.79	4	38.58	2	22.95	2
Silicon@150 kg/ha	10.79	1	20.21	2	23.98	3	37.71	3	23.17	1
Silicon@200 kg/ha	7.90	4	17.75	4	24.00	2	41.08	1	22.68	3
Mean	8.88		19.99		24.13		37.91		22.73	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.02		3.53		15.53			
Silicon (B)	N.S.		0.60		1.76		9.21			
B within A	*		1.21		3.53					
A within B			1.46		4.26					
Earhead/Sqm										
Control	113	3	234	1	298	2	316	3	240	2
Silicon@100 kg/ha	134	1	212	4	276	4	297	4	230	4
Silicon@150 kg/ha	133	2	218	3	300	1	324	2	244	1
Silicon@200 kg/ha	100	4	226	2	279	3	327	1	233	3
Mean	120		222		288		316		237	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		6.44		22.28		9.42			
Silicon (B)	N.S.		5.57		16.25		8.15			
B within A	N.S.		11.14		32.50					
A within B			11.60		33.85					
Grains/earhead										
Control	18.07	3	20.13	3	22.81	2	28.06	4	22.27	4
Silicon@100 kg/ha	15.20	4	28.70	1	22.15	3	32.67	2	24.68	1
Silicon@150 kg/ha	21.47	2	24.73	2	21.47	4	28.16	3	23.96	3
Silicon@200 kg/ha	22.91	1	16.45	4	23.27	1	33.21	1	23.96	2
Mean	19.41		22.50		22.42		30.53		23.72	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.21		4.20		17.71			
Silicon (B)	N.S.		0.95		2.77		13.85			
B within A	**		1.90		5.53					
A within B			2.04		5.96					
1000 Grains weight,g										
Control	41.09	2	42.85	2	38.43	1	39.36	3	40.43	1
Silicon@100 kg/ha	41.65	1	36.15	4	37.63	2	39.86	2	38.82	4
Silicon@150 kg/ha	38.46	3	38.74	3	37.42	3	42.19	1	39.20	3
Silicon@200 kg/ha	34.65	4	47.98	1	37.24	4	38.10	4	39.49	2
Mean	38.96		41.43		37.68		39.88		39.49	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	N.S.		1.41		4.89		12.40			
Silicon (B)	N.S.		1.44		4.19		12.60			
B within A	N.S.		2.87		8.39					
A within B			2.86		8.35					

Plant height, cm										
Control	54.93	4	67.33	1	75.73	1	77.53	4	68.88	2
Silicon@100 kg/ha	56.47	2	65.67	2	71.40	4	77.80	3	67.83	4
Silicon@150 kg/ha	58.73	1	64.93	3	73.80	3	78.80	2	69.07	1
Silicon@200 kg/ha	55.20	3	63.93	4	74.00	2	81.13	1	68.57	3
Mean	56.33		65.47		73.73		78.82		68.59	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		1.87		6.46		9.43			
Silicon (B)	N.S.		1.21		3.53		6.10			
B within A	N.S.		2.42		7.05					
A within B			2.80		8.19					
Physiological maturity, days										
Control	93	2	98	2	101	2	105	1	99	2
Silicon@100 kg/ha	93	2	96	4	100	4	104	4	98	4
Silicon@150 kg/ha	93	4	98	2	100	3	104	3	99	3
Silicon@200 kg/ha	93	1	99	1	102	1	105	1	100	1
Mean	93		98		101		105		99	
	F. Test		SEm		CD (0.05)		CV (%)			
Irrigation (A)	**		0.64		2.21		2.24			
Silicon (B)	**		0.25		0.74		0.88			
B within A	N.S.		0.50		1.47					
A within B			0.77		2.26					
Date of Sowing:	16.11.2019				Date of harvesting:			16.03.2020		

METEOROLOGICAL INFORMATION: 2019-2020

Julian weeks	Temperature ^o C		RH (%)		Rainfall mm	Pan-E mm	Wind Speed km/hr	Sunshine hrs/day
	Max	Min	Max	Min				
NORTHERN HILLS ZONE								
ALMORA	Latitude 29^o36' N		Longitude 79^o40' E		Height above MSL 1250 m			
40 (01-07 Oct)	27.9	15.1	90.1	56.9	10.5	3.0		5.89
41 (08-14 Oct)	27.4	11.5	93.5	44.9	6.0	2.9		7.25
42 (15-21 Oct)	27.4	8.8	92.3	54.6	0.0	2.7		8.21
43 (22-28 Oct)	26.5	9.0	95.3	37.7	0.0	2.5		7.64
44 (29-04 Nov)	25.9	10.7	98.4	41.2	0.0	2.3		6.25
45 (05-11 Nov)	25.6	5.8	95.3	41.4	0.0	2.2		6.94
46 (12-18 Nov)	25.6	6.1	89.9	35.6	0.0	2.3		7.07
47 (19-25 Nov)	23.3	4.3	93.6	41.4	0.0	1.9		6.68
48 (26-02 Dec)	20.1	4.6	94.8	46.0	10.5	1.1		5.00
49 (03-09 Dec)	21.4	0.1	96.3	34.3	0.0	1.3		7.67
50 (10-16 Dec)	14.6	2.4	97.0	59.4	50.5	0.8		4.35
51 (17-23 Dec)	19.5	2.8	90.9	37.3	0.0	1.1		6.93
52 (24-31 Dec)	17.8	-2.7	98.9	27.3	0.0	1.0		7.50
1 (01-07 Jan)	13.4	0.5	94.3	55.6	16.5	0.4		3.00
2 (08-14 Jan)	16.4	2.6	100.0	61.3	17.0	0.5		4.22
3 (15-21 Jan)	14.3	2.5	97.9	55.4	21.3	0.4		3.39
4 (22-28 Jan)	17.4	0.9	92.4	44.2	14.8	0.6		5.36
5 (29-04 Feb)	15.4	0.6	96.6	47.4	13.5	0.6		5.29
6 (05-11 Feb)	17.5	-1.0	96.3	26.4	0.0	1.1		8.04
7 (12-18 Feb)	24.8	3.6	95.1	29.1	0.0	1.7		8.32
8 (19-25 Feb)	18.9	5.2	99.0	50.4	48.0	1.3		4.97
9 (26-04 Mar)	20.6	7.0	94.8	49.3	17.5	2.0		6.25
10 (05-11 Mar)	18.4	5.8	94.8	61.5	31.5	1.4		5.14
11 (12-18 Mar)	20.8	5.6	95.1	42.2	51.0	2.1		7.32
12 (19-25 Mar)	23.9	7.4	94.9	34.9	10.5	3.0		8.89
13 (26-01 Apr)	24.8	7.9	94.9	41.6	15.0	2.7		8.29
14 (02-08 Apr)	26.5	5.9	86.1	26.8	0.0	3.3		10.29
15 (09-15 Apr)	29.0	8.8	90.8	30.1	0.0	3.4		8.97
16 (16-22 Apr)	26.4	10.1	91.9	40.5	8.5	2.7		6.61
17 (23-29 Apr)	24.5	11.5	88.9	49.5	19.5	2.6		6.32
18 (30-06 May)	27.0	13.6	90.3	46.3	21.5	3.3		7.50
19 (7-13 May)	27.6	11.9	88.5	44.7	6.3	3.3		7.18
20 (14-20 May)	31.8	10.9	74.2	25.6	0.0	4.6		11.18
21 (21-27 May)	34.1	13.1	65.2	24.0	0.0	5.4		11.25
22 (28-03 June)								
BAJAURA	Latitude 31^o48' N		Longitude 77^o00' E		Height above MSL 1090 m			
44 (29-04 Nov)	26.6	7.3	94.0	56.0	8.2			
45 (05-11 Nov)	23.1	4.9	93.0	57.0	35.4			
46 (12-18 Nov)	20.6	5.9	90.0	46.0	0.0			
47 (19-25 Nov)	19.4	4.4	92.0	63.0	7.4			
48 (26-02 Dec)	17.8	2.6	92.0	55.0	10.4			
49 (03-09 Dec)	20.8	-2.6	91.0	39.0	0.0			
50 (10-16 Dec)	14.0	0.8	93.0	62.0	40.6			
51 (17-23 Dec)	15.7	-1.0	92.0	50.0	1.8			
52 (24-31 Dec)	18.1	-3.8	88.0	40.0	0.0			
1 (01-07 Jan)	12.1	1.1	91.0	63.0	26.4			
2 (08-14 Jan)	9.9	1.3	92.0	71.0	68.3			
3 (15-21 Jan)	14.6	1.8	91.0	47.0	8.0			
4 (22-28 Jan)	17.0	0.8	90.0	37.0	1.0			
5 (29-04 Feb)	15.3	-1.1	91.0	36.0	24.5			

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
6 (05-11 Feb)	19.2	-1.3	92.0	30.0	0.0			
7 (12-18 Feb)	23.1	1.9	90.0	27.0	0.0			
8 (19-25 Feb)	21.7	3.0	89.0	33.0	0.0			
9 (26-04 Mar)	21.4	3.1	89.0	33.0	11.2			
10 (05-11 Mar)	21.3	3.9	92.0	39.0	30.1			
11 (12-18 Mar)	19.8	4.1	93.0	42.0	38.2			
12 (19-25 Mar)	23.9	5.0	89.0	36.0	14.2			
13 (26-01 Apr)	21.3	3.9	92.0	39.0	30.1			
14 (02-08 Apr)	24.7	4.9	91.0	35.0	6.4			
15 (09-15 Apr)	27.4	7.6	84.0	36.0	2.4			
16 (16-22 Apr)	23.0	7.9	78.0	49.0	56.7			
17 (23-29 Apr)	26.1	9.8	73.0	41.0	15.4			
18 (30-06 May)	26.6	10.9	83.0	42.0	5.4			
19 (7-13 May)	27.5	10.1	56.0	40.0	9.0			
20 (14-20 May)	27.8	10.0	89.0	40.0	1.0			
KHUDWANI	Latitude 34^o N		Longitude 74^o E			Height above MSL 1560 m		
40 (01-07 Oct)	21.6	7.3	86.0	62.1	7.0			
41 (08-14 Oct)	22.5	7.0	89.9	72.1	13.0			
42 (15-21 Oct)	21.4	2.9	70.7	62.6	0.0			
43 (22-28 Oct)	20.3	4.0	79.1	63.7	7.0			
44 (29-04 Nov)	8.3	1.4	76.4	65.7	199.5			
45 (05-11 Nov)	5.9	1.3	85.1	74.7	17.0			
46 (12-18 Nov)	9.4	2.8	95.9	92.1	25.6			
47 (19-25 Nov)	8.9	2.0	93.9	85.1	51.8			
48 (26-02 Dec)	8.9	-3.8	93.4	87.1	0.0			
49 (03-09 Dec)	3.9	-1.5	90.1	84.4	52.0			
50 (10-16 Dec)	6.6	-2.7	90.3	77.0	4.2			
51 (17-23 Dec)	8.4	-5.7	91.1	88.3	0.0			
52 (24-31 Dec)	7.0	-3.9	86.6	82.6	0.0			
1 (01-07 Jan)	3.1	-2.9	83.1	78.1	34.6			
2 (08-14 Jan)	4.3	-2.9	91.0	72.9	197.0			
3 (15-21 Jan)	7.1	-3.4	93.4	86.0	8.0			
4 (22-28 Jan)	7.8	-2.7	88.3	76.3	9.4			
5 (29-04 Feb)	10.2	-4.4	95.1	78.4	0.0			
6 (05-11 Feb)	10.9	-0.6	94.4	85.1	1.4			
7 (12-18 Feb)	14.1	-0.4	93.7	75.9	1.0			
8 (19-25 Feb)	14.1	-0.4	95.1	75.3	7.6			
9 (26-04 Mar)	12.9	2.3	95.9	75.0	18.3			
10 (05-11 Mar)	15.1	1.7	93.0	73.9	24.2			
11 (12-18 Mar)	19.4	3.9	83.6	68.4	3.3			
12 (19-25 Mar)	12.7	4.0	81.6	55.1	70.0			
13 (26-01 Apr)	17.4	3.7	72.0	55.4	29.6			
14 (02-08 Apr)	20.2	5.0	69.1	58.7	47.0			
15 (09-15 Apr)	20.2	5.0	55.5	44.3	40.4			
16 (16-22 Apr)	23.7	6.9	71.4	33.6	1.0			
17 (23-29 Apr)	22.2	8.8	75.3	52.9	2.6			
18 (30-06 May)	21.7	6.1	75.6	54.4	1.0			
19 (7-13 May)	24.6	9.6	76.9	57.9	4.5			
20 (14-20 May)	21.4	10.4	73.1	66.7	2.6			
21 (21-27 May)	21.1	9.5	81.7	65.9	5.2			
22 (28-3 June)	26.5	10.7	80.2	63.0	3.5			
MALAN	Latitude 32^o1' N		Longitude 76^o2' E			Height above MSL 950 m		
41 (08-14 Oct)	24.1	13.0	76.6	68.4	18.4			
42 (15-21 Oct)	24.2	14.5	77.4	68.6	-			
43 (22-28 Oct)	23.9	12.7	78.9	68.3	-			
44 (29-04 Nov)	23.9	14.7	74.4	71.1	-			
45 (05-11 Nov)	25.5	15.2	81.0	71.3	8.4			
46 (12-18 Nov)	22.5	12.8	76.4	70.3	-			

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
47 (19-25 Nov)	23.4	13.0	75.4	69.4	-			
48 (26-02 Dec)	22.9	13.5	74.9	65.1	-			
49 (03-09 Dec)	23.6	10.7	70.9	65.0	-			
50 (10-16 Dec)	22.9	6.5	72.0	66.6	79.6			
51 (17-23 Dec)	23.4	5.2	71.1	68.9	-			
52 (24-31 Dec)	23.8	4.8	73.9	67.9	-			
1 (01-07 Jan)	22.8	5.8	70.7	66.1	43.6			
2 (08-14 Jan)	22.7	5.9	73.3	70.0	34.4			
3 (15-21 Jan)	23.5	5.8	75.0	64.7	-			
4 (22-28 Jan)	23.9	5.6	77.0	69.9	42.2			
5 (29-04 Feb)	24.1	5.7	76.0	70.9	-			
6 (05-11 Feb)	25.8	6.8	71.9	65.9	-			
7 (12-18 Feb)	26.5	6.5	78.4	74.4	-			
8 (19-25 Feb)	25.3	6.5	74.6	71.3	6.2			
9 (26-04 Mar)	24.6	7.4	78.4	72.1	14.7			
10 (05-11 Mar)	23.7	6.6	77.0	70.9	172.9			
11 (12-18 Mar)	26.1	7.9	77.0	71.0	36.5			
12 (19-25 Mar)	27.9	11.3	73.4	68.6	-			
13 (26-01 Apr)	28.8	11.9	77.7	69.9	-			
14 (02-08 Apr)	31.0	14.2	74.7	70.4	-			
15 (09-15 Apr)	32.5	16.2	78.4	72.9	8.2			
16 (16-22 Apr)	32.8	16.3	72.4	66.7	-			
17 (23-29 Apr)	31.8	15.7	75.0	70.1	6.4			
18 (30-06 May)	32.4	16.2	77.0	73.1	18.4			
19 (7-13 May)	31.4	16.4	81.6	74.1	21.7			

NORTH WESTERN PLAINS ZONE

AGRA	Latitude 27.2 ^o N		Longitude 77.9 ^o E		Height above MSL 163.4 m		
40 (01-07 Oct)	32.9	22.4	89.6	71.6	14.3	2.6	
41 (08-14 Oct)	33.9	21.1	80.7	56.6	-	3.1	
42 (15-21 Oct)	33.0	20.6	83.7	56.7	-	1.8	
43 (22-28 Oct)	37.7	17.8	80.6	50.1	-	2.6	
44 (29-04 Nov)	30.8	18.7	83.8	50.8	-	1.8	
45 (05-11 Nov)	29.3	16.6	89.0	51.4	-	1.7	
46 (12-18 Nov)	28.7	16.7	87.4	50.9	-	1.7	
47 (19-25 Nov)	27.3	13.8	90.0	57.1	-	1.9	
48 (26-02 Dec)	25.2	14.8	95.7	69.7	7.1	1.6	
49 (03-09 Dec)	23.6	9.9	89.7	67.1	-	1.4	
50 (10-16 Dec)	20.4	11.8	92.8	80.6	13.0	1.1	
51 (17-23 Dec)	17.5	8.0	94.3	86.6	-	1.0	
52 (24-31 Dec)	13.3	4.9	94.6	86.3	-	1.0	
1 (01-07 Jan)	20.4	8.1	89.4	84.1	-	1.0	
2 (08-14 Jan)	19.1	8.2	96.3	72.1	-	1.0	
3 (15-21 Jan)	17.3	8.3	92.7	87.1	24.2	1.0	
4 (22-28 Jan)	21.1	8.0	87.0	63.1	-	1.7	
5 (29-04 Feb)	21.0	7.8	87.4	64.6	-	1.4	
6 (05-11 Feb)	22.5	7.9	87.1	64.6	-	1.8	
7 (12-18 Feb)	27.9	10.6	83.0	51.4	-	1.3	
8 (19-25 Feb)	26.5	13.2	86.0	65.4	-	1.8	
9 (26-04 Mar)	28.9	15.2	90.4	63.6	11.0	3.1	
10 (05-11 Mar)	25.1	13.6	91.3	72.7	17.6	3.1	
11 (12-18 Mar)	27.4	14.9	90.1	63.0	2.3	2.3	
12 (19-25 Mar)	31.6	16.4	90.9	50.4	-	3.0	
13 (26-01 Apr)	31.5	17.3	80.1	53.4	60.2	4.1	
14 (02-08 Apr)	35.1	18.4	90.7	38.9	-	5.3	
15 (09-15 Apr)	37.8	20.4	80.4	30.3	-	5.9	
16 (16-22 Apr)	37.7	22.7	88.6	31.0	-	6.3	
17 (23-29 Apr)	36.0	22.4	87.7	30.4	54.3	5.1	

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
18 (30-06 May)	37.9	23.1	84.8	39.9	3.6	5.0		
19 (7-13 May)	39.5	23.2	85.1	37.7	-	4.7		
20 (14-20 May)	40.7	25.5	72.4	39.3	-	7.0		
21 (21-27 May)	44.7	25.9	49.3	26.9	-	7.0		
DELHI	Latitude 28^o 40' N		Longitude 70^o 79' E			Height above MSL 228 m		
40 (01-07 Oct)	30.29	20.86	97.43	66.29	2	-	-	5.84
41 (08-14 Oct)	31.91	18.41	98.14	54.71	0	-	-	6.99
42 (15-21 Oct)	32.03	18.70	99.43	57.00	0	-	-	4.26
43 (22-28 Oct)	30.76	16.43	96.29	51.29	0	-	-	6.93
44 (29-04 Nov)	30.16	16.86	99.71	54.14	0	-	-	3.13
45 (05-11 Nov)	28.40	14.89	92.71	51.57	0	-	-	4.46
46 (12-18 Nov)	27.21	12.80	94.00	49.71	0	-	-	4.59
47 (19-25 Nov)	26.71	11.51	95.43	45.71	0	-	-	6.84
48 (26-02 Dec)	23.89	12.60	93.43	59.57	15	-	-	4.46
49 (03-09 Dec)	22.54	7.09	99.57	51.14	0	-	-	7.00
50 (10-16 Dec)	19.94	9.51	97.00	67.86	24.2	-	-	4.41
51 (17-23 Dec)	14.29	7.80	98.57	84.57	0	-	-	1.56
52 (24-31 Dec)	10.63	5.76	98.71	83.71	0	-	-	0.31
1 (01-07 Jan)	16.41	3.94	99.57	60.43	0	-	-	5.16
2 (08-14 Jan)	15.07	7.97	96.14	78.57	42	-	-	3.16
3 (15-21 Jan)	15.31	7.49	99.29	84.00	10.6	-	-	3.43
4 (22-28 Jan)	15.74	5.87	98.71	70.43	0	-	-	4.26
5 (29-04 Feb)	16.36	6.50	100.00	78.86	21.8	-	-	4.49
6 (05-11 Feb)	18.20	3.94	100.00	59.29	0	-	-	7.34
7 (12-18 Feb)	21.49	7.41	94.00	56.43	0	-	-	8.51
8 (19-25 Feb)	22.97	10.17	96.14	58.00	21.4	-	-	6.83
9 (26-04 Mar)	23.81	11.43	97.63	67.50	1.1	-	-	6.30
10 (05-11 Mar)	23.47	10.94	93.00	69.14	74.2	-	-	6.19
11 (12-18 Mar)	23.49	11.20	96.29	62.57	61.6	-	-	6.91
12 (19-25 Mar)	26.51	12.81	96.43	56.86	0	-	-	7.87
13 (26-01 Apr)	27.69	14.99	94.57	61.00	24.8	-	-	6.60
14 (02-08 Apr)	29.79	13.37	86.71	41.86	0	-	-	8.60
15 (09-15 Apr)	33.97	15.21	80.29	27.71	0	-	-	8.79
16 (16-22 Apr)	36.36	19.50	71.00	31.57	17.2	-	-	8.69
17 (23-29 Apr)	33.03	18.16	76.86	41.43	8.4	-	-	7.79
DURGAPURA	Latitude 26^o 51' N		Longitude 75^o 47' E			Height above MSL 390 m		
40 (01-07 Oct)	32.1	21.6	77	51	0.0	3.9	3.1	8.5
41 (08-14 Oct)	32.6	18.2	70	34	18.0	4.1	2.5	8.9
42 (15-21 Oct)	34.0	20.1	54	30	0.0	5	3.1	8.5
43 (22-28 Oct)	32.0	16.3	60	23	0.0	3.9	1.6	5.9
44 (29-04 Nov.)	32.0	18.3	63	31	0.0	3.7	1.9	3.7
45 (05-11 Nov.)	29.0	15.1	65	33	0.0	3.2	4.8	7.2
46 (12-18 Nov.)	29.3	17.9	56	33	0.0	3.2	5.9	6.7
47 (19-25 Nov.)	27.3	14.0	65	36	0.0	3.2	3.1	5.5
48 (26-02 Dec.)	25.0	15.4	71	50	0.0	2.8	5.0	3.5
49 (03-09 Dec.)	24.1	7.9	74	28	0.0	2.3	2.2	7.6
50 (10-16 Dec.)	21.9	8.3	82	42	3.0	1.7	4.5	5.6
51 (17-23 Dec.)	20.2	5.6	84	37	0.0	1.8	3.0	7.7
52 (24-31 Dec.)	19.8	2.7	88	34	0.0	1.4	3.5	8.3
1 (01-07 Jan)	19.9	8.6	70	44	0.0	2	5.2	6.7
2 (08-14 Jan)	19.8	7.2	71	38	0.0	1.9	5.2	7.2
3 (15-21 Jan)	20.1	9.4	79	45	0.0	1.7	4.1	5.4
4 (22-28 Jan)	22.6	8.0	69	29	0.0	2.5	4.7	8.6
5 (29-04 Feb.)	23.0	8.1	62	28	0.0	2.6	4.9	7.7
6 (05-11 Feb.)	22.4	9.0	68	26	0.0	2.3	4.2	8.3
7 (12-18 Feb.)	27.3	10.0	57	17	0.0	4.1	4.5	8.9
8 (19-25 Feb.)	27.3	13.3	70	35	0.0	3.9	5.3	6.5
9 (26-04 Mar.)	28.7	17.3	64	36	1.0	4.4	5.9	7.8

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
10(05-11 Mar.)	25.2	12.9	66	43	12.6	2.8	7.0	7.4
11(12-18 Mar.)	26.4	12.8	55	38	0.0	4	6.2	8.4
12(19-25 Mar.)	32.0	19.2	58	27	5.4	5.3	5.4	5.7
13(26-01 Apr)	30.9	17.9	67	30	6.2	5.5	6.3	5.5
14(02-08 Apr)	34.2	19.8	37	16	0.0	7.6	6.2	10.2
15(09-15 Apr)	37.3	23.0	34	13	0.0	10.0	5.9	10.0
16(16-22 Apr)	35.9	23.2	36	20	0.0	10.2	6.9	7.3
17(23-29 Apr)	35.6	21.5	58	29	10.4	7.5	6.4	9.3
18(30-06 May)	38.4	24.4	49	26	7.8	7.8	7.0	9.3
Gurdaspur	Latitude 32°3'5.85" N		Longitude 75°25'27.10" E			Height Above MSL 878 m		
40 (01-07 Oct)	29.3	18.6	94	63	6.2	19.7	2.5	4.6
41 (08-14 Oct)	31.5	18.5	87	53	0	27.5	2.2	6.9
42 (15-21 Oct)	29.8	17.8	86	58	0	21.8	2.3	4.2
43 (22-28 Oct)	29.3	14.3	91	54	0	23.3	1.5	7.6
44 (29-04 Nov)	28.3	14.3	94	66	0	17.6	1.6	3.4
45 (05-11 Nov)	27.7	13.7	87	58	27.4	20.2	3.4	5.9
46 (12-18 Nov)	23.4	12.6	92	73	3.7	15.1	1.8	2.6
47 (19-25 Nov)	22.6	12.4	91	69	2.5	12.4	1.8	2.8
48 (26-02 Dec)	21.8	12	91	68	25	10	2.2	2.6
49 (03-09 Dec)	21.9	7.7	92	54	0	12.6	1.3	3.8
50 (10-16 Dec)	15.9	8.6	91	85	89.5	6.2	2.6	0.8
51 (17-23 Dec)	13.6	6.3	94	85	0.5	5.6	2.3	0.1
52 (24-31 Dec)	9.3	5.6	97	89	0	7.6	2.5	0
1 (01-07 Jan)	16	5.5	94	73	1.3	7.7	1	7.6
2 (08-14 Jan)	12.9	5.7	96	85	0.2	8.9	2	48.1
3 (15-21 Jan)	16.3	6.8	92	72	2.4	14.8	0	0.4
4 (22-28 Jan)	17.1	6.6	90	66	4.9	20.8	0	0.3
5 (29-04 Feb)	16.5	7.2	94	71	4	8.9	1	13.6
6 (05-11 Feb)	18.7	4.9	92	58	6.1	2.8	0	0
7 (12-18 Feb)	22.9	8	91	61	7.8	2.8	0	0.4
8 (19-25 Feb)	23.7	9	88	63	5.8	2.6	1	24.5
9 (26-04 Mar)	23.3	10.2	85.3	65.3	3.4	16.6	2	11.5
10 (05-11 Mar)	19.8	10.6	91	74	3.9	18	2	26.7
11 (12-18 Mar)	23.9	11.5	86	63	4.5	19	3	39.3
12 (19-25 Mar)	27.1	14.4	76	54	5.5	37.2	0	1.7
13 (26-01 Apr)	25.8	14.4	86	60	3.8	23.7	1	41.1
14 (02-08 Apr)	26.8	15.2	77	58	7	29.6	1	13.1
15 (09-15 Apr)	31.1	15.9	73	39	5.5	30.9	0	0
16 (16-22 Apr)	31.3	16.7	76	46	5.3	24.8	2	11
17 (23-29 Apr)	31.6	16.9	78	47	6.3	25.8	1	18
18 (30-06 May)	34.9	19.3	65	40	6.6	33.9	1	3.7
19 (7-13 May)	35.6	19	63	32	7	39.5	0	0
HISAR	Latitude 29°10'N		Longitude 75° 46'E			Height above MSL 215.2 m		
40 (01-07 Oct)	31.8	21.0	92	50	2.6	3.7	4.1	5.5
41 (08-14 Oct)	32.7	17.6	90	38	0.0	3.9	2.9	7.5
42 (15-21 Oct)	34.1	18.4	79	34	0.0	4.0	4.5	7.3
43 (22-28 Oct)	31.9	15.0	79	31	0.0	3.1	2.1	6.5
44 (29-04 Nov)	30.7	16.3	90	40	0.0	1.8	1.3	1.8
45 (05-11 Nov)	28.4	12.7	85	36	0.3	2.8	4.1	6.6
46 (12-18 Nov)	26.8	12.7	87	40	0.0	2.0	3.1	3.0
47 (19-25 Nov)	26.7	10.9	87	45	0.0	2.3	2.5	5.0
48 (26-02 Dec)	22.6	12.1	94	63	12.0	1.5	3.5	2.8
49 (03-09 Dec)	23.1	6.0	88	47	0.0	1.3	1.5	6.2
50 (10-16 Dec)	19.2	8.3	95	73	4.5	1.2	3.8	2.2
51 (17-23 Dec)	13.7	6.1	99	81	0.0	0.9	3.2	1.1
52 (24-31 Dec)	11.9	2.6	97	75	0.0	0.8	3.1	1.7
1 (01-07 Jan)	17.3	5.7	96	60	0.0	1.0	3.1	3.5
2 (08-14 Jan)	17.7	5.7	96	64	3.2	1.0	3.3	3.3

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
3 (15-21 Jan)	13.4	4.7	100	82	0.0	0.5	2.8	2.1
4 (22-28 Jan)	19.2	5.0	96	56	7.2	1.4	3.9	5.9
5 (29-04 Feb)	18.8	3.9	98	61	0.0	1.3	3.4	6.3
6 (05-11 Feb)	20.1	2.8	92	46	0.0	1.7	2.6	7.2
7 (12-18 Feb)	24.7	4.8	36	16	0.0	0.0	8.7	2.2
8 (19-25 Feb)	23.8	10.5	61	7	10.9	1.6	6.4	2.6
9 (26-04 Mar)	25.8	12.2	55	7	0.2	0.0	6.5	2.3
10 (05-11 Mar)	23.5	11.2	64	12	61.8	8.8	5.6	2.8
11 (12-18 Mar)	23.5	10.5	56	8	11.6	1.7	6.5	2.6
12 (19-25 Mar)	28.8	13.8	92	50	0.0	3.3	3.7	6.8
13 (26-01 Apr)	27.9	15.2	92	55	21.6	4.0	4.5	5.4
14 (02-08 Apr)	30.6	13.4	84	42	0.5	4.0	3.6	7.4
15 (09-15 Apr)	33.9	16.4	76	26	0.0	4.8	3.5	7.4
16 (16-22 Apr)	36.9	19.6	67	24	0.8	6.3	5.4	7.5
17 (23-29 Apr)	34.3	19.7	75	41	4.0	5.3	5.7	7.8
18 (30-06 May)	37.4	22.1	69	32	18.2	7.0	6.8	8.8
JAMMU	Latitude 32^o44' N		Longitude 74^o54" E		Height Above MSL 356 m			
40 (01-07 Oct)	28.8	18.8	89	65	21.4	20.6	2.6	5.4
41 (08-14 Oct)	30.5	18.6	86	52	0.0	26.9	1.6	8.1
42 (15-21 Oct)	29.2	17.3	87	52	9.2	24.3	2.6	5.9
43 (22-28 Oct)	29.3	14.5	85	44	0.0	27.9	1.3	8.9
44 (29-04 Nov)	28.0	15.8	90	52	0.0	23.3	1.3	5.2
45 (05-11 Nov)	25.4	13.0	83	52	51.8	21.2	3.1	5.6
46 (12-18 Nov)	24.0	13.4	90	62	2.8	17.9	1.6	3.5
47 (19-25 Nov)	22.4	12.4	93	63	0.8	19.0	1.5	4.0
48 (26-02 Dec)	21.9	9.8	93	52	22.0	18.9	1.5	4.9
49 (03-09 Dec)	22.4	6.4	90	46	0.0	22.9	1.0	6.9
50 (10-16 Dec)	16.7	7.8	94	73	82.6	10.8	2.8	2.5
51 (17-23 Dec)	14.2	8.4	94	77	1.2	13.0	2.7	2.3
52 (24-31 Dec)	10.5	6.6	91	78	0.0	10.6	3.0	0.4
1 (01-07 Jan)	15.6	5.9	93	66	7.8	7.5	2.2	3.2
2 (08-14 Jan)	15.7	6.2	93	67	55.6	5.3	4.0	3.0
3 (15-21 Jan)	17.2	7.6	92	62	0.0	7.0	2.5	3.9
4 (22-28 Jan)	18.2	6.0	90	56	0.0	8.4	2.7	5.9
5 (29-04 Feb)	16.6	5.1	92	64	18.2	7.0	2.8	4.4
6 (05-11 Feb)	19.0	4.8	92	50	0.0	10.4	2.0	6.8
7 (12-18 Feb)	24.3	8.5	93	47	0.0	17.0	2.9	7.8
8 (19-25 Feb)	23.3	10.1	87	47	9.2	19.2	4.2	5.7
9 (26-04 Mar)	24.5	11.8	90	52	20.0	26.3	3.3	5.6
10 (05-11 Mar)	20.5	10.7	89	61	35.4	13.7	5.3	3.9
11 (12-18 Mar)	24.2	10.2	81	54	40.8	19.2	5.5	6.9
12 (19-25 Mar)	26.0	13.9	83	51	9.0	30.2	3.1	5.2
13 (26-01 Apr)	25.3	14.0	82	61	50.4	29.0	4.2	5.5
14 (02-08 Apr)	28.0	13.2	77	44	6.8	41.0	4.0	7.8
15 (09-15 Apr)	32.7	17.2	74	39	0.0	45.8	2.4	7.1
16 (16-22 Apr)	30.9	17.2	67	44	15.0	38.8	3.7	8.1
17 (23-29 Apr)	32.4	18.6	69	39	4.0	42.6	3.3	7.7
18 (30-06 May)	34.0	20.1	66	36	11.0	44.6	4.3	8.6
19 (7-13 May)	35.3	19.7	62	32	2.2	48.4	4.1	8.7
20 (14-20 May)	34.7	19.2	60	30	5.8	45.8	4.2	8.2
21 (21-27 May)	41.8	20.9	49	18	0.0	59.8	3.6	9.3
KARNAL	Latitude 29^o43'N		Longitude 76^o58'E		Height above MSL 245 m			
40 (01-07 Oct)	30.29	20.86	97.43	66.29	2	-	-	5.84
41 (08-14 Oct)	31.91	18.41	98.14	54.71	0	-	-	6.99
42 (15-21 Oct)	32.03	18.70	99.43	57.00	0	-	-	4.26
43 (22-28 Oct)	30.76	16.43	96.29	51.29	0	-	-	6.93
44 (29-04 Nov)	30.16	16.86	99.71	54.14	0	-	-	3.13
45 (05-11 Nov)	28.40	14.89	92.71	51.57	0	-	-	4.46

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
46 (12-18 Nov)	27.21	12.80	94.00	49.71	0	-	-	4.59
47 (19-25 Nov)	26.71	11.51	95.43	45.71	0	-	-	6.84
48 (26-02 Dec)	23.89	12.60	93.43	59.57	15	-	-	4.46
49 (03-09 Dec)	22.54	7.09	99.57	51.14	0	-	-	7.00
50 (10-16 Dec)	19.94	9.51	97.00	67.86	24.2	-	-	4.41
51 (17-23 Dec)	14.29	7.80	98.57	84.57	0	-	-	1.56
52 (24-31 Dec)	10.63	5.76	98.71	83.71	0	-	-	0.31
1 (01-07 Jan)	16.41	3.94	99.57	60.43	0	-	-	5.16
2 (08-14 Jan)	15.07	7.97	96.14	78.57	42	-	-	3.16
3 (15-21 Jan)	15.31	7.49	99.29	84.00	10.6	-	-	3.43
4 (22-28 Jan)	15.74	5.87	98.71	70.43	0	-	-	4.26
5 (29-04 Feb)	16.36	6.50	100.00	78.86	21.8	-	-	4.49
6 (05-11 Feb)	18.20	3.94	100.00	59.29	0	-	-	7.34
7 (12-18 Feb)	21.49	7.41	94.00	56.43	0	-	-	8.51
8 (19-25 Feb)	22.97	10.17	96.14	58.00	21.4	-	-	6.83
9 (26-04 Mar)	23.81	11.43	97.63	67.50	1.1	-	-	6.30
10 (05-11 Mar)	23.47	10.94	93.00	69.14	74.2	-	-	6.19
11 (12-18 Mar)	23.49	11.20	96.29	62.57	61.6	-	-	6.91
12 (19-25 Mar)	26.51	12.81	96.43	56.86	0	-	-	7.87
13 (26-01 Apr)	27.69	14.99	94.57	61.00	24.8	-	-	6.60
14 (02-08 Apr)	29.79	13.37	86.71	41.86	0	-	-	8.60
15 (09-15 Apr)	33.97	15.21	80.29	27.71	0	-	-	8.79
16 (16-22 Apr)	36.36	19.50	71.00	31.57	17.2	-	-	8.69
17 (23-29 Apr)	33.03	18.16	76.86	41.43	8.4	-	-	7.79
LUDHIANA	Latitude 30°54' N		Longitude 75°52' E			Height above MSL 247 m		
43 (22-28 Oct)	30.5	15.8	88.0	40.0	0.0	15.0	1.7	6.3
44 (29-04 Nov)	29.0	16.2	94.0	46.0	0.0	12.6	1.4	1.2
45 (05-11 Nov)	27.4	13.6	82.0	38.0	0.0	16.0	4.2	4.9
46 (12-18 Nov)	25.1	13.6	93.0	48.0	0.0	12.6	3.5	4.1
47 (19-25 Nov)	24.8	11.2	92.0	42.0	0.0	11.4	1.8	5.1
48 (26-02 Dec)	22.4	12.0	92.0	58.0	35.2	12.6	2.6	5.0
49 (03-09 Dec)	22.4	7.2	94.0	43.0	0.0	8.6	1.0	6.2
50 (10-16 Dec)	16.2	9.4	95.0	69.0	46.8	7.6	3.2	2.3
51 (17-23 Dec)	13.6	8.1	94.0	74.0	0.0	6.7	3.1	0.9
52 (24-31 Dec)	10.3	5.4	89.0	75.0	46.8	4.8	3.5	0.9
1 (01-07 Jan)	16.3	5.7	93.0	63.0	13.4	3.8	1.8	2.8
2 (08-14 Jan)	15.1	7.1	93.0	69.0	20.0	5.7	3.7	4.1
3 (15-21 Jan)	16.1	7.4	93.0	67.0	0.0	5.0	2.7	3.8
4 (22-28 Jan)	18.3	6.2	93.0	55.0	6.4	8.4	4.1	6.3
5 (29-04 Feb)	17.5	5.7	95.0	59.0	0.0	10.0	2.8	7.2
6 (05-11 Feb)	18.9	4.9	94.0	49.0	71.0	11.0	2.1	7.9
7 (12-18 Feb)	23.0	7.8	93.0	45.0	0.0	14.4	4.1	9.7
8 (19-25 Feb)	23.4	12.0	85.0	51.0	6.0	18.0	5.6	6.9
9 (26-04 Mar)	24.8	13.1	93.0	53.0	0.0	19.6	4.3	6.2
10 (05-11 Mar)	21.1	10.8	88.0	61.0	29.4	18.4	6.3	5.7
11 (12-18 Mar)	23.3	11.8	87.0	55.0	17.8	14.0	3.9	8.6
12 (19-25 Mar)	27.5	14.6	87.0	50.0	3.0	19.4	2.3	6.8
13 (26-01 Apr)	26.2	15.3	90.0	53.0	18.8	20.4	4.4	6.4
14 (02-08 Apr)	29.1	14.4	81.0	37.0	0.0	27.6	3.8	10.1
15 (09-15 Apr)	35.5	18.4	71.0	21.0	0.0	34.5	3.3	9.6
16 (16-22 Apr)	32.9	18.1	70.0	37.0	9.8	32.4	4.0	9.1
17 (23-29 Apr)	35.5	19.7	66.0	37.0	3.4	34.8	4.7	9.3
18 (30-06 May)	35.3	21.8	68.0	35.0	16.2	41.2	5.1	8.5
19 (7-13 May)	35.6	21.7	61.0	33.0	5.4	40.0	5.0	8.9
PANTNAGAR	Latitude 29° N		Longitude 79° 30' E			Height above MSL 243.84 m		
40 (01-07 Oct)	30.9	21.3	92	57	0	2.9	1.9	7.6
41 (08-14 Oct)	31.9	18.8	88	47	0	3.2	2.4	8.6
42 (15-21 Oct)	31.0	18.0	86	50	0	2.7	1.2	6

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
43 (22-28 Oct)	29.6	16.2	92	47	0	2.8	2.2	6.5
44 (29-04 Nov)	29.2	17.1	89	57	0	2	2.4	1.2
45 (05-11 Nov)	29.2	14.0	85	44	0	2.4	2.7	6
46 (12-18 Nov)	29.0	13.3	91	44	0	2.2	3.2	6.6
47 (19-25 Nov)	25.8	11.5	94	47	0	2.1	1.8	4.7
48 (26-02 Dec)	25.6	11.5	92	54	29.2	2.6	3.5	6.3
49 (03-09 Dec)	23.8	8.3	95	47	0	1.9	1.4	7.2
50 (10-16 Dec)	27.5	13.1	91	49	29.2	2.3	2.4	5.5
51 (17-23 Dec)	15.4	9.3	95	78	0	1.3	5.6	2.1
52 (24-31 Dec)	12.5	5.9	96	75	0	1.1	3.4	1.6
1 (01-07 Jan)	20.1	7.5	92	55	8	2	2.1	5
2 (08-14 Jan)	14.5	8.3	95	83	28.2	1.4	2.2	1.2
3 (15-21 Jan)	18.1	9.9	94	76	48.1	1.6	1.2	3.3
4 (22-28 Jan)	17.8	6.8	93	73	0.7	1.7	1.8	4.2
5 (29-04 Feb)	18.0	6.0	95	64	29.8	2.7	2.8	5.3
6 (05-11 Feb)	20.9	4.0	97	45	0	2.4	1.7	8.6
7 (12-18 Feb)	22.9	8.4	94	62	0	2.9	1.8	6.9
8 (19-25 Feb)	24.2	11.9	93	57	23.2	3	3.1	6
9 (26-04 Mar)	24.6	11.6	92	61	0	2.6	1.1	6.1
10 (05-11 Mar)	24.2	11.3	91	58	29.5	3.7	3.8	6.7
11 (12-18 Mar)	25.7	13.7	84	49	15.6	3.4	3.5	7.7
12 (19-25 Mar)	28.5	12.6	86	44	0	3.9	1.4	9.8
13 (26-01 Apr)	29.3	15.1	88	38	1	4.7	4.8	8
14 (02-08 Apr)	32.4	13.1	80	26	0	6.2	2.5	10.2
15 (09-15 Apr)	34.9	15.9	71	25	0	6.6	2.3	9.7
16 (16-22 Apr)	35.4	20.1	58	30	0	6.8	2.6	6
17 (23-29 Apr)	32.0	18.3	64	44	70.8	5.5	3.9	7.2
18 (30-06 May)	31.6	20.9	73	48	4.5	5.6	3.5	8.5
19 (7-13 May)	32.3	19.5	69	47	53.8	6.2	3.4	9.6
SRIGANGANAGAR	Latitude 29^o 66' N				Longitude 75^o 53'E		Height Above MSL 175 m	
40(01-07 Oct)	35.7	21.1	47.1	72.7	7.7			
41(08-14 Oct)	34.3	19.1	43.9	77.4	0.0			
42(15-21 Oct)	34.2	17.5	47.4	77.0	0.0			
43(22-28 Oct)	32.3	18.1	53.0	78.3	0.0			
44(29-04 Nov)	28.5	14.1	60.0	80.4	0.0			
45(05-11 Nov)	24.0	14.5	72.0	89.9	0.0			
46(12-18 Nov)	25.8	12.9	60.0	87.4	0.1			
47(19-25 Nov)	23.7	11.9	58.3	77.6	0.0			
48(26-02 Dec)	23.9	8.1	54.7	86.6	0.0			
49(03-09 Dec)	16.6	9.1	78.9	92.7	0.0			
50(10-16 Dec)	14.8	6.5	88.0	97.4	0.8			
51(17-23 Dec)	9.7	3.5	84.3	94.1	0.0			
52(24-31 Dec)	14.5	5.8	83.3	94.9	0.0			
1(01-07 Jan)	16.1	6.5	70.7	93.4	0.1			
2(08-14 Jan)	17.2	5.4	69.1	95.1	2.1			
3(15-21 Jan)	19.2	8.2	64.9	87.1	0.0			
4(22-28 Jan)	19.4	5.6	62.9	92.9	0.0			
5(29-04 Feb)	20.1	3.1	55.0	92.3	8.5			
6(05-11 Feb)	24.7	5.7	49.9	86.0	1.7			
7(12-18 Feb)	25.9	9.1	54.9	84.7	1.3			
8(19-25 Feb)	28.1	11.7	54.0	92.6	2.6			
9(26-04 Mar)	24.1	11.4	61.7	92.3	6.4			
10(05-11 Mar)	23.4	9.1	55.9	87.6	7.3			
11(12-18 Mar)	29.6	15.8	52.3	83.1	1.9			
12(19-25 Mar)	28.0	16.8	55.0	85.0	0.0			
13(26-01 Apr)	32.3	17.1	39.3	69.3	0.0			
14(02-08 Apr)	36.8	20.2	34.4	62.0	0.0			

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
15(09-15 Apr)	37.8	22.2	34.2	66.6	0.0			
16 (16-22 Apr)	37.2	21.8	36.1	67.8	26.5			
17 (23-29 Apr)	38.6	22.5	33.4	70.2	0.4			

NORTH EASTERN PLAINS ZONE

BURDWAN	Latitude 23^o15' N			Longitude 87^o52'E			Height above MSL 32 m	
40 (01-07 Oct)	32.3	25			30.1			
41 (08-14 Oct)	31.3	22.9			42.2			
42 (15-21 Oct)	32.4	23.2			0			
43 (22-28 Oct)	28.1	20.7			106.8			
44 (29-04 Nov)	30.2	20			0			
45 (05-11 Nov)	29	21.9			42.1			
46 (12-18 Nov)	29.8	17.5			0			
47 (19-25 Nov)	28.7	15.5			0			
48 (26-02 Dec)	29.8	16.1			0			
49 (03-09 Dec)	27.8	14.6			0			
50 (10-16 Dec)	27.3	15.6			0			
51 (17-23 Dec)	22.2	10.9			0			
52 (24-31 Dec)	22.5	10.1			9			
1 (01-07 Jan)	23	11.4			23.6			
2 (08-14 Jan)	21.9	10.9			1			
3 (15-21 Jan)	26.7	12.1			0			
4 (22-28 Jan)	24	9.9			0			
5 (29-04 Feb)	24.1	11.1			6.4			
6 (05-11 Feb)	23.5	12.6			0			
7 (12-18 Feb)	27.8	12.9			0			
8 (19-25 Feb)	28.5	16.3			0			
9 (26-04 Mar)	28	16.4			5			
10 (05-11 Mar)	28.9	17.1			32.8			
11 (12-18 Mar)	30.7	19.4			4.8			
12 (19-25 Mar)	31.6	19			14.6			
COOCHBEHAR	Latitude 26^o19'86" N			Longitude 89^o23'53" E			Height above MSL 43 m	
46 (12-18 Nov)	31.1	18.8	80.0	57.1	0			
47 (19-25 Nov)	28.8	16.4	87.0	57.7	0.2			
48 (26-02 Dec)	28.8	15.8	80.6	55.9	0			
49 (03-09 Dec)	27.0	11.4	69.0	48.4	0			
50 (10-16 Dec)	25.6	11.4	80.0	50.3	0			
51 (17-23 Dec)	23.1	11.6	96.7	58.9	0			
52 (24-31 Dec)	22.9	8.6	94.4	59.4	0			
1 (01-07 Jan)	23.9	10.2	76.9	51.9	0.4			
2 (08-14 Jan)	22.9	10.4	91.6	58.6	0			
3 (15-21 Jan)	25.3	10.4	89.4	54.1	0			
4 (22-28 Jan)	20.1	8.2	95.9	66.6	0.4			
5 (29-04 Feb)	22.9	9.0	94.3	58.0	0			
6 (05-11 Feb)	24.8	7.7	89.3	44.4	0			
7 (12-18 Feb)	26.6	9.7	84.9	43.0	0			
8 (19-25 Feb)	27.0	13.7	84.4	57.7	0			
9 (26-04 Mar)	27.3	13.1	72.3	51.6	11			
10 (05-11 Mar)	27.3	15.1	78.3	56.4	24.8			
11 (12-18 Mar)	28.3	16.9	81.4	55.9	10.4			
12 (19-25 Mar)	28.8	15.2	73.1	45.3	8.2			
13 (26-01 Apr)	30.8	17.8	72.3	52.3	0			
14 (02-08 Apr)	32.8	16.7	57.7	36.7	0			
FAIZABAD	Latitude 26.47^o N		Longitude 82.12^o E			Height above MSL 113 m		
40 (01-07 Oct)	30.9	22.4	94.3	70.9	10.0	4.4	1.7	4.1
41 (08-14 Oct)	32.6	20.9	89.1	59.1	0.0	4.6	1.2	7.8
42 (15-21 Oct)	31.7	21.1	93.7	61.9	0.0	5.0	0.9	6.2

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
43 (22-28 Oct)	29.0	17.4	90.3	61.7	0.0	4.1	2.0	4.9
44 (29-04 Nov)	29.4	16.9	93.4	64.3	0.0	3.4	0.9	2.1
45 (05-11 Nov)	29.9	15.6	93.7	54.4	0.0	3.3	1.9	4.1
46 (12-18 Nov)	29.3	13.1	92.7	70.6	0.0	3.3	1.9	6.9
47 (19-25 Nov)	27.0	12.5	91.9	59.1	0.0	3.1	2.3	6.3
48 (26-02 Dec)	27.0	14.2	93.6	61.6	0.0	3.2	1.7	3.6
49 (03-09 Dec)	24.8	9.7	94.3	47.3	0.0	6.3	1.8	6.3
50 (10-16 Dec)	22.8	11.2	91.7	57.1	22.0	4.1	3.4	4.1
51 (17-23 Dec)	17.1	8.5	91.7	73.9	0.0	2.7	3.9	2.6
52 (24-31 Dec)	10.8	5.2	89.9	80.3	0.0	2.0	3.5	0.6
1 (01-07 Jan)	19.9	9.1	88.7	62.7	7.8	2.2	3.3	3.9
2 (08-14 Jan)	16.4	8.3	93.4	77.4	6.6	2.0	3.6	2.0
3 (15-21 Jan)	18.5	10.3	95.4	76.9	21.0	2.4	3.3	1.6
4 (22-28 Jan)	21.0	6.4	90.3	66.3	0.0	3.0	3.5	6.6
5 (29-04 Feb)	21.9	7.4	91.4	57.1	0.0	3.5	4.4	6.8
6 (05-11 Feb)	22.5	6.2	92.3	48.6	0.0	3.3	6.6	8.2
7 (12-18 Feb)	24.9	9.6	85.6	49.3	0.0	3.7	5.4	8.5
8 (19-25 Feb)	25.6	12.4	91.7	62.3	53.0	3.4	4.4	4.3
9 (26-04 Mar)	26.8	13.9	92.4	53.3	0.0	3.5	2.2	7.6
10 (05-11 Mar)	26.0	13.9	88.9	59.1	68.0	3.7	5.4	6.5
11 (12-18 Mar)	27.1	14.7	87.3	57.4	9.0	3.8	3.4	5.8
12 (19-25 Mar)	29.7	15.7	86.4	50.6	2.0	4.9	2.6	8.1
13 (26-01 Apr)	32.1	16.6	75.9	32.7	0.0	5.3	6.4	8.9
14 (02-08 Apr)	34.8	16.1	69.7	22.4	0.0	6.4	4.9	10.0
15 (09-15 Apr)	36.9	18.7	70.9	30	0.0	6.5	3.3	9.2
16 (16-22 Apr)	36.6	21.5	76.7	35.3	1.0	6.5	4.2	9.4
17 (23-29 Apr)	33.4	22.0	80.9	48.3	0.0	5.5	5.1	8.7
18 (30-06 May)	32.6	21.1	86.3	52.3	0.0	5.4	4.8	9.1
IARI PUSA BIHAR	Latitude 25^o98' N		Longitude 85^o67' E			Height above MSL 52.1 m		
40 (01-07 Oct)	28.8	23.5	94	83	6.6	2.7	0.2	-
41 (08-14 Oct)	30	23.1	91	84	0	2.8	0	-
42 (15-21 Oct)	31.6	21.8	91	83	0	3.4	0.2	-
43 (22-28 Oct)	28.1	20.7	88	79	0	2.2	1.5	-
44 (29-04 Nov)	28.2	20.3	95	80	0	2.4	0.5	-
45 (05-11 Nov)	28.5	19.2	93	64	0	2.4	1.1	6
46 (12-18 Nov)	28.6	16.9	93	66	0	2	1.2	6.4
47 (19-25 Nov)	27.7	13.5	91	65	0	1.3	1	4.3
48 (26-02 Dec)	27.8	13.8	94	71	0	1.3	0.7	3.4
49 (03-09 Dec)	25.7	12	93	73	0	1.3	0.2	5.9
50 (10-16 Dec)	23.9	11.3	92	75	22	0.9	0.2	1.3
51 (17-23 Dec)	18	9.1	91	74	0	0.8	0.1	0.9
52 (24-31 Dec)	15.7	5.9	92	74	0	0.8	0	1.4
1 (01-07 Jan)	19.1	9.3	89.9	77.3	0.0	1.1	-	0.8
2 (08-14 Jan)	17.1	8.7	93.9	82.6	0.3	0.6	-	0.8
3 (15-21 Jan)	19.9	10.9	93.4	75.7	0.6	1.0	-	2.9
4 (22-28 Jan)	20.8	7.6	90.1	61.7	0.0	1.2	-	6.8
5 (29-04 Feb)	22.7	9.5	92.9	67.4	0.0	1.3	-	7.4
6 (05-11 Feb)	23.3	8.8	87.4	55.9	0.0	1.7	-	8.4
7 (12-18 Feb)	25.0	10.9	90.3	63.7	0.0	1.7	-	7.0
8 (19-25 Feb)	26.5	13.5	94.4	70.7	3.4	2.1	-	8.0
9 (26-04 Mar)	23.6	14.1	95.1	65.4	0.0	1.7	-	8.1
10 (05-11 Mar)	25.6	15.7	92.0	67.0	2.0	2.3	-	8.1
11 (12-18 Mar)	26.2	15.3	92.7	57.4	0.6	3.0	-	6.5
12 (19-25 Mar)	27.6	16.9	87.4	59.1	2.4	2.7	-	8.3
13 (26-01 Apr)	34.0	18.2	68.0	40.4	0.0	2.2	-	10.7
14 (02-08 Apr)	34.5	20.4	78.6	52.3	0.0	2.6	-	10.8
15 (09-15 Apr)	36.9	20.6	86.4	60.1	0.0	3.5	-	9.6

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
16 (16-22 Apr)	33.3	19.6	83.9	64.9	6.5	1.6	-	9.2
17 (23-29 Apr)	29.7	18.9	89.9	76.3	12.2	1.1	-	8.2
KALYANI	Latitude 22°57'N		Longitude 88°20'E		Height above MSL 9.75 m			
40 (01-07 Oct)	34.22	25.21	92.54	69.54	0.3	2.33	0.44	8.35
41 (08-14 Oct)	31.1	24.51	95.44	72.54	0	2.01	0.98	7.74
42 (15-21 Oct)	31.87	21	85.21	76.53	0.5	1.77	1.1	7.94
43 (22-28 Oct)	30.18	19.87	89.24	71.54	0.3	1.45	2.58	7.63
44 (29-04 Nov)	30.11	22.74	82.71	59.33	1.57	1.33	0.44	6.87
45 (05-11 Nov)	30.91	20.5	94.86	77.71	0	1.78	3.2	6.74
46 (12-18 Nov)	29.11	19.28	94.86	75.29	0	1.87	0.87	7.87
47 (19-25 Nov)	28.01	17.8	93.34	59.57	0	1.32	1.5	7.46
48 (26-02 Dec)	27.34	16.02	92.14	46.71	0	1.65	1.4	7.73
49 (03-09 Dec)	25.16	13.43	84.71	53.33	3.36	1.14	5.65	6.54
50 (10-16 Dec)	25.04	13.46	88.71	47.86	0.41	1.44	0.54	6.36
51 (17-23 Dec)	22.03	12.11	94.57	51.27	0	1.89	0.33	5.78
52 (24-31 Dec)	20.15	9.55	84.12	41.78	1.4	0.98	0.41	5.49
1 (01-07 Jan)	21.54	8.33	91.14	61.14	0	0.56	0.5	7.87
2 (08-14 Jan)	24.7	9.91	94.86	69.71	0	0.78	0.69	6.56
3 (15-21 Jan)	24.87	9.41	90.64	73.25	0	0.44	1.32	7.86
4 (22-28 Jan)	25.33	12.07	89.28	56.43	3.96	1.55	2.11	6.93
5 (29-04 Feb)	26.93	10.58	90.8	65.14	0	1.44	1.65	8.45
6 (05-11 Feb)	27.18	10.64	90.1	59.71	0	2.11	0.25	8.33
7 (12-18 Feb)	27.92	12.13	89.42	45.43	1.2	1.22	2.36	5.37
8 (19-25 Feb)	29.65	16.53	80.14	39.08	1.9	2.11	3.66	6.94
9 (26-04 Mar)	29.94	18.16	87.43	45.47	0	3.01	1.98	9.98
10 (05-11 Mar)	30.83	19.14	83.44	49.57	18.91	3.11	8.2	6.76
11 (12-18 Mar)	32.54	22.53	90.43	54.33	5.96	2.11	9.32	6.99
12 (19-25 Mar)	34.39	21.07	91.71	67.86	0	3.65	1.54	8.18
13 (26-01 Apr)	34.06	22.46	82.54	45.55	1.45	3.05	1.55	6.74
14 (02-08 Apr)	35.48	24.57	90.21	73.25	0	1.99	0.58	7.86
15 (09-15 Apr)	34.27	24.41	92.28	69.51	0	1.66	0.98	7.44
16 (16-22 Apr)	36.33	25.71	82.21	43.21	1.66	2.51	1.74	6.04
17 (23-29 Apr)	36.44	25.42	89.33	65.23	0.98	1.42	2.36	6.12
18 (30-06 May)	37.41	26.22	86.25	47.41	1.3	0.95	4.22	6.92
19 (7-13 May)	37.23	25.33	90.43	55.32	0.98	0.36	3.65	7.04
KANPUR	Latitude 26°29'N		Longitude 80°18'E		Height above MSL 125.9 m			
41 (08-14 Oct)	33.2	22.2	83.8	41.4	00			
42 (15-21 Oct)	31.6	20.9	51.1	31.6	00			
43 (22-28 Oct)	30.3	17.2	87.2	44.2	00			
44 (29-04 Nov)	31.0	18.0	90.8	45.8	00			
45 (05-11 Nov)	29.8	16.9	85.5	41.4	00			
46 (12-18 Nov)	29.2	13.8	89.5	38.2	00			
47 (19-25 Nov)	26.8	13.2	61.8	38.0	00			
48 (26-02 Dec)	26.2	14.6	87.0	59.1	00			
49 (03-09 Dec)	24.0	10.3	92.1	44.5	00			
50 (10-16 Dec)	21.9	11.8	94.2	67.1	10			
51 (17-23 Dec)	17.5	9.1	86.2	63.8	00			
52 (24-31 Dec)	13.3	5.3	90.7	71.0	00			
1 (01-07 Jan)	15.2	7.1	93.7	70.0	7.6			
2 (08-14 Jan)	18.4	8.8	91.4	64.7	3.0			
3 (15-21 Jan)	17.4	10.8	95.1	78.1	65.5			
4 (22-28 Jan)	17.9	6.7	91.2	52.4	00			
5 (29-04 Feb)	21.9	10.8	86.5	46.7	00			
6 (05-11 Feb)	21.1	6.7	92.0	46.5	00			
7 (12-18 Feb)	23.2	9.5	80.5	42.7	00			
8 (19-25 Feb)	25.3	12.6	81.7	50.2	1.8			
9 (26-04 Mar)	26.1	14.4	89.6	56.0	2.1			
10 (05-11 Mar)	26.5	15.0	86.2	54.2	22.6			

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
11 (12-18 Mar)	25.0	14.1	86.5	59.7	5.0			
12 (19-25 Mar)	29.5	15.6	80.7	40.0	00			
13 (26-01 Apr)	30.8	18.4	75.8	41.4	6.0			
14 (02-08 Apr)	34.1	16.2	62.5	20.0	00			
15 (09-15 Apr)	37.6	18.7	57.8	17.8	00			
16 (16-22 Apr)	38.1	21.6	63.0	27.2	3.4			
17 (23-29 Apr)	35.0	21.9	66.8	37.4	28.4			
RANCHI	Latitude 23^o21' N		Longitude 85^o20' E		Height above MSL 629 m			
40 (01-07 Oct)	28.9	21.7	86	69	0	22.3	2.2	6.9
41 (08-14 Oct)	28.3	21.2	86	68	60	17.9	2.7	5.6
42 (15-21 Oct)	29.1	20.7	86	66	30.6	19	2.2	7.4
43 (22-28 Oct)	26.2	17.8	88	70	170.6	9.8	3.5	3.2
44 (29-04 Nov)	26.3	14.3	87	69	0	16.7	2.6	8.3
45 (05-11 Nov)	27.0	14.5	86	69	0	11.8	2.2	6.2
46 (12-18 Nov)	27.3	12.9	85	64	0	19.9	2.2	8.5
47 (19-25 Nov)	27.3	10.6	87	64	0	22.8	2.5	8.8
48 (26-02 Dec)	26.6	11.3	85	51	0	26.8	2.7	8.0
49 (03-09 Dec)	23.3	6.9	85	58	0	19.6	2.7	9.0
50 (10-16 Dec)	25.9	10.9	85	67	14.4	17.9	3.6	4.3
51 (17-23 Dec)	22.1	6.5	85	69	0	14.6	3.4	7.6
52 (24-31 Dec)	22.1	4.3	87	67	8.4	13.1	3.5	6.4
1 (01-07 Jan)	20.8	5.2	85	69	11.5	11.1	3.2	3.5
2 (08-14 Jan)	19.9	3.8	87	69	4.2	11.3	3.3	7.4
3 (15-21 Jan)	23.3	6.1	86	69	2.2	15.4	3.7	7.3
4 (22-28 Jan)	20.9	3.8	84	69	0	15.6	3.9	8.9
5 (29-04 Feb)	22.1	6.6	84	68	0	14.4	3.6	5.8
6 (05-11 Feb)	21.9	6.5	86	68	0	12.8	3.4	5.8
7 (12-18 Feb)	26.0	9.7	82	69	0	19	4.2	9.5
8 (19-25 Feb)	27.4	14.5	86	68	1	15.2	3.2	6.4
9 (26-04 Mar)	26.7	14.8	86	68	14.4	17.6	2.3	7.4
10 (05-11 Mar)	26.6	13.6	86	69	43.6	11.7	3.7	5.3
11 (12-18 Mar)	26.7	13.9	85	68	28.8	14.7	3.1	2.7
12 (19-25 Mar)	31.9	17.5	86	69	4.2	20.8	2.4	8.5
13 (26-01 Apr)	35.5	20.9	87	69	0	21.1	3.7	8.1
14 (02-08 Apr)	37.0	22.9	87	67	0	23.8	1.9	9.3
15 (09-15 Apr)	36.5	22.2	88	68	2	23.4	2.7	8.4
16 (16-22 Apr)	36.3	22.1	85	69	0.01	24.1	3.7	8.6
17 (23-29 Apr)	32.1	21.4	87	69	34.8	21.2	4.8	8.4
18 (30-06 May)	31.4	20.9	86	69	47.8	19.4	2.8	7.8
RAU PUSA BIHAR	Latitude 25.98^o N		Longitude 85.67^o E		Height above MSL 52.0 m			
40 (01-07 Oct)	28.8	23.5	94	83	6.6	2.7	0.2	-
41 (08-14 Oct)	30	23.1	91	84	0	2.8	0	-
42 (15-21 Oct)	31.6	21.8	91	83	0	3.4	0.2	-
43 (22-28 Oct)	28.1	20.7	88	79	0	2.2	1.5	-
44 (29-04 Nov)	28.2	20.3	95	80	0	2.4	0.5	-
45 (05-11 Nov)	28.5	19.2	93	64	0	2.4	1.1	6
46 (12-18 Nov)	28.6	16.9	93	66	0	2	1.2	6.4
47 (19-25 Nov)	27.7	13.5	91	65	0	1.3	1	4.3
48 (26-02 Dec)	27.8	13.8	94	71	0	1.3	0.7	3.4
49 (03-09 Dec)	25.7	12	93	73	0	1.3	0.2	5.9
50 (10-16 Dec)	23.9	11.3	92	75	22	0.9	0.2	1.3
51 (17-23 Dec)	18	9.1	91	74	0	0.8	0.1	0.9
52 (24-31 Dec)	15.7	5.9	92	74	0	0.8	0	1.4
1 (01-07 Jan)	19.1	9.3	90	77	0	1.1	-	0.8
2 (08-14 Jan)	17.1	8.7	94	83	1.8	0.6	-	0.8
3 (15-21 Jan)	19.9	10.9	93	76	4.4	1	-	2.9
4 (22-28 Jan)	20.8	7.6	90	62	0	1.2	-	6.8
5 (29-04 Feb)	22.7	9.5	93	67	0	1.3	-	7.4

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
6 (05-11 Feb)	23.3	8.8	87	56	0	1.7	-	8.4
7 (12-18 Feb)	25	10.9	90	64	0	1.7	-	7
8 (19-25 Feb)	26.5	13.5	94	71	24	2.1	-	8
9 (26-04 Mar)	26.1	13.7	95	67	0	1.7	-	8.2
10 (05-11 Mar)	27.3	15.9	91	66	8.2	1.5	-	8.3
11 (12-18 Mar)	26.6	15.2	93	59	4.4	2	-	6.1
12 (19-25 Mar)	29.7	16.5	88	58	17	3	-	8.3
13 (26-01 Apr)	32.9	18.1	70	44	0	2.2	-	10.7
14 (02-08 Apr)	35.5	20.2	77	49	0	2.4	-	10.8
15 (09-15 Apr)	37.4	20.9	86	60	0	4	-	10
16 (16-22 Apr)	34.1	19.5	87	63	53.4	1.7	-	17.6
17 (23-29 Apr)	29.1	18.9	88	76	90.4	1	-	8.2

SABOUR	Latitude 25° 23' N		Longitude 87° 07' E			Height above MSL 37.1m		
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40 (01-07 Oct)	31.2	22.6	90.3	80.1	1.0	1.6	3.2	2.0
41 (08-14 Oct)	31.4	21.2	88.6	82.4	0.0	0.8	2.2	4.0
42 (15-21 Oct)	31.2	20.3	89.4	73.9	22.4	1.3	2.5	6.3
43 (22-28 Oct)	29.4	19.2	84.4	74.7	0.0	0.7	3.3	3.2
44 (29-04 Nov)	30.2	18.6	88.3	76.6	0.0	2.2	1.8	6.2
45 (05-11 Nov)	29.8	18.6	88.3	76.6	0.0	1.1	2.8	3.0
46 (12-18 Nov)	29.5	16.0	87.6	75.6	0.0	1.1	2.4	2.4
47 (19-25 Nov)	28.1	13.8	88.3	76.7	0.0	0.5	1.8	1.1
48 (26-02 Dec)	27.3	13.9	86.6	76.4	0.0	1.1	2.2	6.5
49 (03-09 Dec)	25.7	11.5	87.7	76.6	0.0	0.8	3.0	6.4
50 (10-16 Dec)	22.3	11.5	88.4	75.0	2.5	0.5	3.1	2.5
51 (17-23 Dec)	17.3	8.0	93.1	77.1	0.0	0.6	5.1	1.5
52 (24-31 Dec)	18.2	5.5	97.8	74.3	0.0	0.4	4.6	2.6
1 (01-07 Jan)	20.1	8.9	93.6	72.6	1.3	0.6	4.2	3.8
2 (08-14 Jan)	19.4	8.5	93.1	72.6	4.0	0.5	5.8	2.8
3 (15-21 Jan)	23.2	9.5	90.1	70.7	0.0	1.1	4.5	4.5
4 (22-28 Jan)	24.1	8.3	94.3	66.7	0.0	1.7	2.8	5.1
5 (29-04 Feb)	24.0	8.2	96.0	69.7	0.7	1.6	4.1	6.1
6 (05-11 Feb)	24.3	7.6	88.0	68.7	0.0	2.1	3.5	5.6
7 (12-18 Feb)	23.5	9.1	87.3	68.1	0.0	1.2	3.4	5.4
8 (19-25 Feb)	24.6	11.1	84.3	65.0	2.0	1.5	3.6	5.2
9 (26-04 Mar)	25.5	14.2	89.3	58.3	36.4	1.9	2.6	6.5
10 (05-11 Mar)	29.7	15.8	88.9	58.3	0.8	2.6	5.3	6.0
11 (12-18 Mar)	29.7	15.8	84.9	62.3	37.8	2.9	3.8	6.8
12 (19-25 Mar)	31.1	17.4	85.0	59.7	9.4	3.1	3.9	6.6
13 (26-01 Apr)	32.9	19.5	86.5	59.8	0.0	6.1	4.3	8.5
14 (02-08 Apr)	35.2	19.4	86.4	58.6	0.0	8.5	4.7	8.9
15 (09-15 Apr)	36.4	20.0	88.7	55.0	2.0	7.0	5.8	8.0
16 (16-22 Apr)	32.4	20.1	89.1	70.4	66.2	4.0	8.6	5.9
17 (23-29 Apr)	29.5	20.8	91.1	73.9	3.2	2.6	8.3	4.1
18 (30-06 May)	31.3	21.8	84.3	72.4	54.6	3.6	4.8	7.2

SHILLONGANI	Latitude 26° 21' N		Longitude 90°45' E			Height above MSL 50.2 m		
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40 (01-07 Oct)	30.3	21.4	94	85	46.4	2.3	1.4	
41 (08-14 Oct)	30.9	20.5	91	83	77.6	2.5	1.5	
42 (15-21 Oct)	32.5	20.4	92	84	0	2.7	1.2	
43 (22-28 Oct)	27.4	18.7	92	86	59.8	2	1.5	
44 (29-04 Nov)	30.1	18	92	83	0	2.5	1.2	
45 (05-11 Nov)	28.9	18.4	92	87	4	2.5	1.2	
46 (12-18 Nov)	30.4	18.1	91	82	0	2.5	1.3	
47 (19-25 Nov)	28	14.7	92	82	0	2.7	1.1	
48 (26-02 Dec)	27.7	14.4	91	82	0	2.8	1.2	
49 (03-09 Dec)	25.9	9.9	91	77	0	2.8	1.2	
50 (10-16 Dec)	25.1	9.8	92	72	0	2.8	1.1	
51 (17-23 Dec)	21.9	10.5	93	77	1	2.7	1.3	

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
52 (24-31 Dec)	22.4	7.5	93	77	0	2.7	1.3	
1 (01-07 Jan)	21.1	9.7	89.4	80	7.8	17.1	1.8	
2 (08-14 Jan)	23.1	8.2	85.3	77.9	0	19.9	1.1	
3 (15-21 Jan)	25	9.6	91.7	72.4	3	20.2	1.3	
4 (22-28 Jan)	21.6	7.7	89.3	80.7	0	19.3	1.3	
5 (29-04 Feb)	22.3	8.4	90.1	82.1	7.2	17.8	1	
6 (05-11 Feb)	23.8	8.9	91.7	73.4	0	19.6	0.8	
7 (12-18 Feb)	25.4	9.7	87.7	67.7	1	20.6	1	
8 (19-25 Feb)	25.7	11	88.9	77.1	0.5	19.4	1.2	
9 (26-04 Mar)	26.4	12.1	90.1	71.1	37.8	16.7	2.2	
10 (05-11 Mar)	25.9	13.3	90.7	72	0.5	17.4	2.7	
11 (12-18 Mar)	29.4	14.4	88.3	73.1	0	20.2	2.7	
12 (19-25 Mar)	29.6	13.9	89	65.1	0	22.3	2.3	
13 (26-01 Apr)	31.7	17.2	84.1	57.7	3	25.7	2.1	
14 (02-08 Apr)	33	15.4	83	58	0	27.9	1.9	
15 (09-15 Apr)	31.4	15.6	84.9	58.7	2.4	27.8	1.8	
16 (16-22 Apr)	30	16.8	89.1	69.7	42.9	22.1	3.2	
17 (23-29 Apr)	28.1	15.9	90.3	81.6	22.6	15.7	2.7	
VARANASI	Latitude 25^o 20' N		Longitude 83^o 03' E		Height above MSL 128.93 m			
40 (01-07 Oct)	30.0	20.4	94	78	39.0	2.7	NR	NR
41 (08-14 Oct)	32.2	19.2	91	59	0.0	2.6	NR	NR
42 (15-21 Oct)	29.6	19.1	91	68	3.8	2.1	NR	NR
43 (22-28 Oct)	28.5	17.2	84	60	0.0	1.6	NR	NR
44 (29-04 Nov)	30.2	16.6	92	62	0.0	1.8	NR	NR
45 (05-11 Nov)	29.5	14.2	91	56	0.0	1.9	NR	NR
46 (12-18 Nov)	29.0	11.2	90	41	0.0	1.8	NR	NR
47 (19-25 Nov)	27.3	11.3	90	52	0.0	1.7	NR	NR
48 (26-02 Dec)	27.7	14.6	92	56	0.0	1.2	NR	NR
49 (03-09 Dec)	24.7	11.7	91	48	0.0	1.4	NR	NR
50 (10-16 Dec)	21.6	14.0	95	74	36.6	0.8	NR	NR
51 (17-23 Dec)	17.8	8.9	92	68	0.0	0.9	0.4	NR
52 (24-31 Dec)	13.6	7.0	94	79	0.0	0.7	1.6	NR
1 (01-07 Jan)	20.5	11.1	95	65	0.8	1.2	NR	1.5
2 (08-14 Jan)	18.5	9.6	93	73	2.9	1.2	NR	3.8
3 (15-21 Jan)	21.7	10.8	84	55	0.0	1.5	NR	4.4
4 (22-28 Jan)	21.5	9.1	85	51	0.0	2.0	NR	6.9
5 (29-04 Feb)	21.8	10.1	84	49	0.0	2.2	NR	6.6
6 (05-11 Feb)	22.4	8.7	92	44	0.0	2.0	NR	6.8
7 (12-18 Feb)	24.9	11.4	81	41	0.0	2.7	NR	7.5
8 (19-25 Feb)	24.7	15.3	88	68	8.6	1.9	NR	3.7
9 (26-04 Mar)	26.0	14.9	94	61	2.2	2.3	NR	4.5
10 (05-11 Mar)	26.4	15.4	85	58	0.0	3.1	NR	5.6
11 (12-18 Mar)	26.9	16.7	93	69	45.8	2.5	3.4	6.6
12 (19-25 Mar)	30.9	16.9	83	40	0.0	2.5	2.4	8.3
13 (26-01 Apr)	33.5	18.1	73	99	0.0	3.8	5.0	9.6
14 (02-08 Apr)	35.3	17.6	63	21	0.0	5.5	3.6	9.4
15 (09-15 Apr)	38.1	21.3	60	25	0.0	5.4	2.6	8.7
16 (16-22 Apr)	36.9	24.8	70	37	0.0	5.7	4.4	7.8
17 (23-29 Apr)	33.7	22.5	80	45	20.2	5.7	4.9	7.2
18 (30-06 May)	34.7	23.0	66	45	5.8	5.3	5.2	10.5
19 (7-13 May)	35.3	23.8	71	47	8.6	5.5	4.4	9.2
20 (14-20 May)	39.1	25.9	67	32	0.0	6.1	3.0	10.3

CENTRAL ZONE

Bilaspur	Latitude 22^o9' N		Longitude 82^o12'E		Height above MSL 292.3 m		
40 (01-07 Oct)	31.5	21.6	93	73	141	-	7.31
41 (08-14 Oct)	31.5	20.74	93	63	6.3	-	7.79

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
42 (15-21 Oct)	30.6	19.69	93	69	22	-	-	4.74
43 (22-28 Oct)	27.7	20.1	92	75	30.6	-	-	2.9
44 (29-04 Nov)	31.1	18.7	92	56	11.4	-	-	6.44
45 (05-11 Nov)	29.9	16.3	90	50	0	-	-	6.59
46 (12-18 Nov)	29.3	13.5	89	51	0	-	-	8.7
47 (19-25 Nov)	29.6	13.2	87	50	0	-	-	8.2
48 (26-02 Dec)	29.4	14.1	91	59	0	-	-	6.1
49 (03-09 Dec)	27.4	11.4	85	57	0	-	-	8
50 (10-16 Dec)	27.6	13.5	95	64	0	-	-	4.5
51 (17-23 Dec)	26.4	10.8	88	54	0	-	-	7.1
52 (24-31 Dec)	24.3	8.7	91	51	0	-	-	6.2
1 (01-07 Jan)	21.9	10.6	94	68	4	-	-	4.1
2 (08-14 Jan)	23.7	8.6	94	57	19	-	-	6.9
3 (15-21 Jan)	27.2	11.7	92.8	57.4	40.6	-	-	6.3
4 (22-28 Jan)	26.8	9.6	93.5	49.8	0	-	-	8.1
5 (29-04 Feb)	26	10.7	83	55.4	0	-	-	6.7
6 (05-11 Feb)	19	10.2	93.7	65.1	0	-	-	5.1
7 (12-18 Feb)	28.5	9.6	84.7	38.7	42.8	-	-	10.2
8 (19-25 Feb)	29.7	13.2	93.5	57.1	0	-	-	7.1
9 (26-04 Mar)	29	13.2	92.7	54	36	-	-	8.4
10 (05-11 Mar)	28.3	16.1	89.2	66.7	15.6	-	-	6.2
11 (12-18 Mar)	29.5	17.4	92.2	69	35.8	-	-	6.1
12 (19-25 Mar)	31.6	16.8	91.7	54.8	40.4	-	-	8.2
Dhanduka	Latitude 22.5N/S		Longitude 72.5 E/W		Height above MSL 39.78 m			
40 (01-07 Oct)	33.5	21.6	84		38.7	-	-	4.8
41 (08-14 Oct)	34.1	20.4	77.4		0	-	-	5.3
42 (15-21 Oct)	34.5	19.6	76.4		0	-	-	7.1
43 (22-28 Oct)	33.8	21	71.2		0	-	-	7.9
44 (29-04 Nov)	33.5	19.5	87.5		46.5	-	-	8
45 (05-11 Nov)	33.4	18.7	67		0	-	-	8.2
46 (12-18 Nov)	32.4	16.4	56.5		0	-	-	8.5
47 (19-25 Nov)	31.4	15.2	78		0	-	-	8.2
48 (26-02 Dec)	31.1	15.1	79		0	-	-	8
49 (03-09 Dec)	30.5	15.4	76.2		0	-	-	7.9
50 (10-16 Dec)	29.8	9.4	72.7		0	-	-	7.9
51 (17-23 Dec)	29.6	9	64.4		0	-	-	7.8
52 (24-31 Dec)	27.3	7.6	51		0	-	-	7.4
1 (01-07 Jan)	26.2	7.8	70.7		0	-	-	8.2
2 (08-14 Jan)	25.2	7	66.7	-	0	-	-	8.2
3 (15-21 Jan)	24.8	5.3	56.7	-	0	-	-	8.3
4 (22-28 Jan)	27.6	9	64.2	-	0	-	-	8
5 (29-04 Feb)	27.8	7.4	65.8	-	0	-	-	7.8
6 (05-11 Feb)	28.3	7.4	62.1	-	0	-	-	8.1
7 (12-18 Feb)	32.4	11.6	65.4	-	0	-	-	8.7
8 (19-25 Feb)	34.4	10.2	55.4	-	0	-	-	8.6
9 (26-04 Mar)	34.5	11.7	54.2	-	0	-	-	9.1
10 (05-11 Mar)	33.3	12.1	58.1	-	0	-	-	9
11 (12-18 Mar)	32.7	9.5	46.2	-	0	-	-	9.5
12 (19-25 Mar)	36.8	13.6	51.2	-	0	-	-	9.5
13 (26-01 Apr)	39.6	15.6	42.7	-	0	-	-	9.5
14 (02-08 Apr)	37.2	18.5	51.5	-	0	-	-	9.4

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)	42.4	21.2	51.2	-	0	-	-	9.6
16 (16-22 Apr)	42	21.9	47.5	-	0	-	-	9.7
17 (23-29 Apr)	41.8	22	49.4	-	0	-	-	9.8
Gwalior	Latitude 26.13° N		Longitude 78.14° E		Height above MSL 211.52 m			
40 (01-07 Oct)	31.6	21.5	90.8	66.0	31.4	3.4	-	-
41 (08-14 Oct)	32.2	18.0	82.2	40.7	0.0	5.2	-	-
42 (15-21 Oct)	32.6	17.5	90.5	44.4	0.0	5.0	-	-
43 (22-28 Oct)	31.5	14.1	89.4	31.7	0.0	4.0	-	-
44 (29-04 Nov)	32.0	16.4	89.0	42.3	0.0	4.0	-	-
45 (05-11 Nov)	30.8	14.0	88.9	37.3	0.0	2.5	-	-
46 (12-18 Nov)	29.7	14.7	84.4	43.1	0.0	2.6	-	-
47 (19-25 Nov)	28.5	11.9	93.3	41.7	0.0	2.6	-	-
48 (26-02 Dec)	27.1	12.4	92.0	52.0	0.0	1.7	-	-
49 (03-09 Dec)	24.0	6.7	94.7	43.3	0.0	1.7	-	-
50 (10-16 Dec)	21.3	9.5	95.9	62.3	2.1	1.2	-	-
51 (17-23 Dec)	19.2	4.9	94.4	54.7	0.0	1.4	-	-
52 (24-31 Dec)	13.5	2.3	96.6	75.9	0.0	1.2	-	-
1 (01-07 Jan)	21.7	6.6	96.3	59.0	0.0	1.2	-	-
2 (08-14 Jan)	20.4	5.6	91.3	72.6	11.2	2.1	-	-
3 (15-21 Jan)	18.3	7.6	96.1	70.7	40.4	0.5	-	-
4 (22-28 Jan)	22.8	52.2	88.4	45.6	0.0	2.9	-	-
5 (29-04 Feb)	22.2	6.0	94.0	56.9	0.0	2.9	-	-
6 (05-11 Feb)	22.4	4.9	93.7	44.9	0.0	2.7	-	-
7 (12-18 Feb)	26.8	6.4	79.7	36.4	0.0	4.6	-	-
8 (19-25 Feb)	26.5	9.6	93.6	46.9	0.8	3.1	-	-
9 (26-04 Mar)	29.4	13.2	89.1	53.1	2.4	3.9	-	-
10 (05-11 Mar)	26.3	11.1	90.3	53.1	9.2	2.1	-	-
11 (12-18 Mar)	28.9	11.5	80.0	39.4	0.0	4.1	-	-
12 (19-25 Mar)	33.9	14.5	82.0	37.1	3.2	3.6	-	-
13 (26-01 Apr)	32.7	15.3	80.0	54.5	8.7	3.4	-	-
14 (02-08 Apr)	36.1	14.7	60.3	44.6	0.0	6.4	-	-
15 (09-15 Apr)	38.2	17.8	61.4	28.4	0.0	7.4	-	-
16 (16-22 Apr)	38.8	18.7	55.3	29.0	0.8	7.6	-	-
Indore	Latitude 22°37' N		Longitude 75°50' E		Height above MSL 557 m			
40 (01-07 Oct)	29.4	20.4	90.5	68.7	114	-	0.3	-
41 (08-14 Oct)	29.5	20.1	90.2	67.6	41	-	0.1	-
42 (15-21 Oct)	30.3	18.1	87.5	66.4	0	-	0.1	-
43 (22-28 Oct)	27.1	18.7	89.7	76.1	9.1	-	0.1	-
44 (29-04 Nov)	31.1	20.4	85.7	70.5	0	-	0.1	-
45 (05-11 Nov)	31	18.6	83.1	71.1	0	-	0.1	-
46 (12-18 Nov)	31.1	15.7	81.4	66.9	0	-	0.2	-
47 (19-25 Nov)	30.7	15.3	86.6	70.4	0	-	0.1	-
48 (26-02 Dec)	31	14.9	80.3	67.7	0	-	0.1	-
49 (03-09 Dec)	27.6	13.6	80	71.5	0	-	0.1	-
50 (10-16 Dec)	27.6	12.2	77.9	68.7	0	-	0.3	-
51 (17-23 Dec)	26	10.9	78.2	70.7	0	-	0.2	-
52 (24-31 Dec)	25	9.4	75	72	0	-	0.4	-
1 (01-07 Jan)	23.6	9.6	86	81	0	-	0.3	-
2 (08-14 Jan)	26.5	9.8	88	70.1	0	-	0.5	-
3 (15-21 Jan)	25.6	9.4	87.3	79.1	0	-	0.5	-
4 (22-28 Jan)	29.6	10.1	88.4	66.4	0	-	0.5	-
5 (29-04 Feb)	28	9.9	83.8	66.3	0	-	0.5	-
6 (05-11 Feb)	28	9.3	80.4	73.6	0	-	0.6	-

Julian weeks	Temperature°C		RH (%)		Rainfall mm	Pan-E mm	Wind Speed km/hr	Sunshine hrs/day
	Max	Min	Max	Min				
7 (12-18 Feb)	30.4	10.1	85.2	73.9	0	-	0.4	-
8 (19-25 Feb)	30.6	12.9	82.8	80.1	0	-	0.4	-
9 (26-04 Mar)	30.5	13.1	88.1	77.4	0	-	0.8	-
10 (05-11 Mar)	28.6	14.3	82.7	79.2	0	-	1.1	-
11 (12-18 Mar)	29.4	13	83.7	78.6	0	-	0.8	-
12 (19-25 Mar)	34.9	17.6	81.4	76.1	0	-	0.6	-
13 (26-01 Apr)	38.8	18.6	85.1	80	0	-	0.8	-
14 (02-08 Apr)	36.5	19.9	76.2	71.1	0	-	0.8	-
15 (09-15 Apr)	38.4	20.9	81.2	70.6	0	-	0.5	-
Jabalpur	Latitude 23°09'N		Longitude 79°58'E		Height above MSL 411 m			
40 (01-07 Oct)	28.5	23.4	93	83	101.4	2.5	1.9	4.2
41 (08-14 Oct)	31.7	22.7	91	78	53.1	3.5	1.1	4.5
42 (15-21 Oct)	29.5	22.1	93	78	77.6	2.7	1.6	2.5
43 (22-28 Oct)	30.1	21.0	90	66	14.3	3.0	1.1	7.2
44 (29-04 Nov)	30.3	18.0	91	56	0.0	3.3	0.6	8.4
45 (05-11 Nov)	29.2	18.7	93	63	2.2	2.3	0.6	5.6
46 (12-18 Nov)	27.1	19.1	92	60	1.0	1.8	2.0	0.9
47 (19-25 Nov)	30.3	17.7	92	52	0.0	2.3	1.1	5.3
48 (26-02 Dec)	29.6	14.0	92	52	0.0	2.3	1.5	6.5
49 (03-09 Dec)	28.7	10.3	92	41	0.0	2.3	1.4	8.7
50 (10-16 Dec)	28.2	10.5	91	48	0.0	2.0	1.4	6.8
51 (17-23 Dec)	29.1	11.3	94	49	0.0	1.9	1.2	6.4
52 (24-31 Dec)	25.8	8.4	90	46	0.0	2.0	1.6	6.8
1 (01-07 Jan)	24.8	12.1	95	70	12.4	1.4	2.5	3.6
2 (08-14 Jan)	21.0	6.3	89	55	0.0	1.4	2.2	5.3
3 (15-21 Jan)	22.1	6.7	87	50	0.0	1.8	3.0	5.9
4 (22-28 Jan)	23.93	5.3	72	27	6	1.8	3.1	4.9
5 (29-04 Feb)	23.83	7.4	79	40	12	1.6	1.9	4.2
6 (05-11 Feb)	24.36	7.1	79	35	0	1.6	1.5	4.9
7 (12-18 Feb)	26.21	9.9	69	36	0	2.1	1.8	4.6
8 (19-25 Feb)	26.21	10.7	78	47	0	2.5	2.1	5.2
9 (26-04 Mar)	29.93	13.7	77	40	0	2	1.7	5.6
10 (05-11 Mar)	26.93	12.6	78	43	0	2.3	2.6	5.3
11 (12-18 Mar)	28.93	11.7	82	36	0	2.1	2.5	5.8
Junagadh	Latitude 21°31'N		Longitude 70°33'E		Height above MSL 83 m			
40 (01-07 Oct)	32.5	23.9	87	65	36.8	-	-	7.4
41 (08-14 Oct)	34.9	23.4	80	49	0	-	-	8.9
42 (15-21 Oct)	35.2	22.7	77	43	1	-	-	8.9
43 (22-28 Oct)	32.6	24.8	64	52	0	-	-	4.2
44 (29-04 Nov)	34	23.7	80	54	4.4	-	-	5.7
45 (05-11 Nov)	33.3	22	70	46	0	-	-	6.1
46 (12-18 Nov)	32.6	20.3	82	51	11.2	-	-	7.8
47 (19-25 Nov)	32.5	17.9	80	39	0	-	-	5.9
48 (26-02 Dec)	31.3	19.2	70	43	0	-	-	5.9
49 (03-09 Dec)	31.6	19.4	66	44	0	-	-	3.7
50 (10-16 Dec)	29.5	15.7	74	36	0	-	-	6.9
51 (17-23 Dec)	28.7	14.7	74	39	0	-	-	7.5
52 (24-31 Dec)	28.2	12.6	56	32	0	-	-	5.5
1 (01-07 Jan)	26.7	13.2	76	44	0	-	-	3.2
2 (08-14 Jan)	27.9	14.7	69	42	0	-	-	5.5
3 (15-21 Jan)	25.4	9.7	74	30	0	-	-	9.0
4 (22-28 Jan)	29.6	13.2	79	33	0	-	-	8.5
5 (29-04 Feb)	27.2	11.7	73	30	0	-	-	8.9
6 (05-11 Feb)	28.9	12.4	70	30	0	-	-	9.1

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
7 (12-18 Feb)	33.8	17.3	72	30	0	-	-	6.9
8 (19-25 Feb)	33.3	15.0	74	27	0	-	-	9.1
9 (26-04 Mar)	34.3	17.3	77	24	0	-	-	9.1
10 (05-11 Mar)	31.6	16.9	76	29	0	-	-	9.6
11 (12-18 Mar)	33.0	16.9	48	17	0	-	-	10.0
12 (19-25 Mar)	36.5	20.8	72	30	0	-	-	9.4
13 (26-01 Apr)	35.5	21.0	71	27	0	-	-	7.3
Powarkheda	Latitude 22^o44' N		Longitude 77^o42' E		Height above MSL 299 m			
40 (01-07 Oct)	31.50	20.50	0.00	0.00	4.60			
41 (08-14 Oct)	29.50	16.50	0.00	0.00	6.00			
42 (15-21 Oct)	31.50	16.50	0.00	0.00	4.00			
43 (22-28 Oct)	30.00	16.50	0.00	0.00	2.00			
44 (29-04 Nov)	32.50	18.50	0.00	0.00	0.00			
45 (05-11 Nov)	31.50	15.50	0.00	0.00	1.80			
46 (12-18 Nov)	27.50	11.50	0.00	0.00	0.00			
47 (19-25 Nov)	30.50	11.50	0.00	0.00	0.00			
48 (26-02 Dec)	30.50	14.00	0.00	0.00	0.00			
49 (03-09 Dec)	30.00	10.00	0.00	0.00	0.00			
50 (10-16 Dec)	29.50	11.50	0.00	0.00	8.00			
51 (17-23 Dec)	26.00	0.00	0.00	0.00	0.00			
52 (24-31 Dec)	0.00	0.00	0.00	0.00	0.00			
1 (01-07 Jan)	27.00	4.50	87.26	40.02	0.00			
2 (08-14 Jan)	26.00	5.00	90.63	52.79	0.00			
3 (15-21 Jan)	28.00	6.00	77.76	35.92	0.00			
4 (22-28 Jan)	26.00	4.00	93.85	45.70	0.00			
5 (29-04 Feb)	28.50	4.00	71.39	40.73	0.00			
6 (05-11 Feb)	29.00	4.50	80.79	34.87	0.00			
7 (12-18 Feb)	30.00	8.50	83.56	43.93	0.00			
8 (19-25 Feb)	33.00	10.50	82.10	28.82	0.00			
9 (26-04 Mar)	31.50	9.00	82.01	31.59	13.50			
10 (05-11 Mar)	35.00	12.00	64.25	16.79	0.00			
11 (12-18 Mar)	34.00	13.00	69.42	21.59	0.00			
12 (19-25 Mar)	36.50	13.00	65.22	15.00	0.00			
13 (26-01 Apr)	41.50	15.00	41.30	0.00	0.00			
14 (02-08 Apr)	41.50	17.00	0.00	0.00	4.20			
15 (09-15 Apr)	43.00	19.00	0.00	0.00	0.00			
16 (16-22 Apr)	41.00	18.00	0.00	0.00	7.20			
17 (23-29 Apr)	46.00	23.50	0.00	0.00	0.00			
Udaipur	Latitude 24.35' N		Longitude 73^o.42' E		Height above MSL 582 m			
40 (01-07 Oct)	30.16	18.61	89.14	68.00	66.40	4.61	3.23	5.90
41 (08-14 Oct)	31.53	16.30	85.57	62.14	18.40	5.06	2.20	7.56
42 (15-21 Oct)	31.96	16.14	80.14	46.29	0.00	4.46	2.47	8.24
43 (22-28 Oct)	29.06	13.24	80.57	38.14	0.00	3.49	3.14	5.57
44 (29-04 Nov)	29.51	17.16	86.14	52.00	12.40	3.43	2.51	5.11
45 (05-11 Nov)	28.99	16.84	83.29	47.00	0.00	3.56	3.11	5.47
46 (12-18 Nov)	28.53	13.33	84.57	40.71	0.00	3.00	2.59	6.69
47 (19-25 Nov)	27.49	11.81	82.86	48.86	0.00	2.47	1.59	6.13
48 (26-02 Dec)	26.26	13.34	88.86	56.43	0.00	2.71	2.94	3.76
49 (03-09 Dec)	23.96	8.06	86.14	31.43	0.00	2.17	2.41	5.61
50 (10-16 Dec)	24.27	7.51	88.00	37.71	0.00	2.80	3.14	6.53
51 (17-23 Dec)	23.47	6.57	82.43	40.14	0.00	2.10	2.59	7.20
52 (24-31 Dec)	21.50	4.68	82.63	40.13	0.00	2.21	2.39	5.81
1 (01-07 Jan)	21.19	6.81	86.71	49.29	0.00	2.19	2.74	5.14
2 (08-14 Jan)	22.06	5.24	81.71	40.43	0.00	4.54	3.16	7.10
3 (15-21 Jan)	21.03	6.43	86.43	42.00	0.00	2.37	2.30	5.60
4 (22-28 Jan)	24.71	7.94	82.71	31.29	0.00	3.26	2.71	8.57
5 (29-04 Feb)	22.29	4.51	85.00	36.29	0.00	2.67	2.96	8.64

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
6 (05-11 Feb)	23.01	4.44	80.29	34.43	0.00	3.07	2.61	8.59
7 (12-18 Feb)	28.54	7.66	77.43	21.86	0.00	3.79	2.33	8.59
8 (19-25 Feb)	28.09	9.00	76.29	28.86	0.00	4.47	2.94	7.90
9 (26-04 Mar)	30.15	10.91	73.38	26.63	0.00	4.50	2.35	7.55
10 (05-11 Mar)	26.61	10.19	71.86	33.33	3.00	7.13	5.06	9.00
11 (12-18 Mar)	26.86	8.57	62.71	22.57	0.00	5.26	4.31	8.09
12 (19-25 Mar)	33.00	14.51	54.67	29.00	0.00	4.25	2.27	7.77
13 (26-01 Apr)	30.50	13.75	80.00	24.30	7.40	5.90	3.90	7.06
14 (02-08 Apr)	34.71	14.61	54.29	19.00	0.00	6.81	3.03	9.74
15 (09-15 Apr)	37.27	17.61	58.29	14.57	0.00	8.17	3.06	8.41
16 (16-22 Apr)	37.29	19.81	50.29	23.57	0.00	9.86	5.61	8.50
Vijapur	Latitude 23° 15' N		Longitude 72° 55' E			Height above MSL 126 m		
40 (01-07 Oct)	29.1	19.9	87.1	77.0	9.5			10.4
41 (08-14 Oct)	30.6	17.8	100.0	47.3	0.0			10.4
42 (15-21 Oct)	29.8	17.9	100.0	54.7	0.0			10.0
43 (22-28 Oct)	28.2	16.8	95.4	56.9	0.0			9.0
44 (29-04 Nov)	28.2	19.0	100.0	70.0	10.5			9.5
45 (05-11 Nov)	27.7	17.6	100.0	62.6	0.0			8.8
46 (12-18 Nov)	27.5	15.1	98.3	54.9	0.0			9.3
47 (19-25 Nov)	27.2	14.3	100.0	49.9	0.0			9.3
48 (26-02 Dec)	25.9	15.1	97.6	61.7	0.0			8.8
49 (03-09 Dec)	23.9	12.0	90.3	49.0	0.0			8.7
50 (10-16 Dec)	21.8	9.3	98.7	59.4	1.0			9.0
51 (17-23 Dec)	23.4	11.1	97.7	58.6	0.0			9.2
52 (24-31 Dec)	20.6	6.9	96.6	51.0	0.0			9.1
1 (01-07 Jan)	20.9	9.0	100.0	62.0	0.0			8.9
2 (08-14 Jan)	19.9	8.4	94.4	53.0	0.0			9.5
3 (15-21 Jan)	20.0	6.4	99.9	55.0	0.0			9.6
4 (22-28 Jan)	23.3	8.9	97.4	47.9	0.0			9.5
5 (29-04 Feb)	21.8	6.3	94.1	45.0	0.0			10.0
6 (05-11 Feb)	23.0	7.5	77.7	45.7	0.0			10.3
7 (12-18 Feb)	27.6	10.2	92.1	41.9	0.0			10.4
8 (19-25 Feb)	27.2	10.9	87.7	41.0	0.0			10.3
9 (26-04 Mar)	28.5	12.7	94.6	39.1	0.0			10.2
10 (05-11 Mar)	25.6	12.4	94.9	44.1	5.5			10.5
11 (12-18 Mar)	27.8	11.7	61.0	32.4	0.0			10.6
12 (19-25 Mar)	31.4	17.4	66.9	36.7	0.0			10.4
13 (26-01 Apr)	30.4	15.8	85.4	41.7	11.0			10.7
14 (02-08 Apr)	34.5	16.9	59.6	25.6	0.0			11.2
15 (09-15 Apr)	36.6	19.6	52.0	24.6	0.0			11.3
16 (16-22 Apr)	34.7	20.3	56.1	32.0	0.0			11.0
17 (23-29 Apr)	36.5	20.4	59.3	39.6	0.0			11.1

PENINSULAR ZONE

DHARWAD	Latitude 15° 26' N		Longitude 75° 07' E			Height above MSL 678 m		
40 (01-07 Oct)	29.2	20.3	92.0	84.0	59.2			
41 (08-14 Oct)	29.9	20.6	91.0	79.0	72.8			
42 (15-21 Oct)	29.0	20.9	93.0	83.0	159.4			
43 (22-28 Oct)	26.8	19.8	90.0	86.0	31.8			
44 (29-04 Nov)	29.3	19.5	86.0	71.0	3.0			
45 (05-11 Nov)	30.1	18.8	83.0	68.0	18.0			
46 (12-18 Nov)	29.5	18.3	77.0	57.0	0.0			
47 (19-25 Nov)	29.7	16.6	83.0	52.0	0.0			
48 (26-02 Dec)	28.4	18.3	87.0	63.0	7.2			
49 (03-09 Dec)	27.9	16.0	88.0	62.0	0.6			
50 (10-16 Dec)	28.9	15.4	81.0	50.0	0.0			
51 (17-23 Dec)	28.5	15.8	83.0	56.0	0.0			
52 (24-31 Dec)	29.7	17.5	82.0	53.0	0.0			

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)	29.5	15.9	79.0	48.0	0.0			
2 (08-14 Jan)	28.9	15.7	84.0	51.0	0.0			
3 (15-21 Jan)	29.9	15.5	74.0	42.0	0.0			
4 (22-28 Jan)	30.8	15.2	67.0	38.0	0.0			
5 (29-04 Feb)	30.1	15.8	82.0	46.0	5.5			
6 (05-11 Feb)	30.3	16.5	76.0	43.0	0.0			
7 (12-18 Feb)	32.1	16.7	57.0	31.0	0.0			
8 (19-25 Feb)	33.1	16.5	52.0	25.0	0.0			
9 (26-04 Mar)	32.9	19.2	61.0	36.0	0.0			
10 (05-11 Mar)	31.7	17.8	67.0	40.0	0.0			
11 (12-18 Mar)	34.3	19.7	58.0	37.0	0.0			
12 (19-25 Mar)	35.3	19.7	56.0	28.0	10.2			
13 (26-01 Apr)	35.9	20.4	69.0	29.0	3.4			
14 (02-08 Apr)	35.6	21.6	81.0	48.0	6.6			
15 (09-15 Apr)	36.4	20.7	65.0	49.0	3.6			
16 (16-22 Apr)	35.2	21.3	77.0	45.0	22.0			
17 (23-29 Apr)	36.3	21.3	70.0	32.0	0.0			
NIPHAD	Latitude 20.6° N		Longitude 74.6° E			Height above MSL 548.6 m		
40 (01-07 Oct)	22.9	21.5	91	71	65.2	6.1	2.8	5.7
41 (08-14 Oct)	24.1	20.6	90	63	5.2	5.0	2.1	4.7
42 (15-21 Oct)	22.4	18.8	89	62	28.4	1.3	4.2	7.8
43 (22-28 Oct)	26.2	21.4	90	77	92.2	0.7	7.0	7.2
44 (29-04 Nov)	28.7	21.8	87	66	169.8	0.9	3.9	6.7
45 (05-11 Nov)	29.4	21.1	90	59	0.0	5.8	1.8	9.0
46 (12-18 Nov)	28.2	17.9	88	62	0.0	5.3	2.3	8.4
47 (19-25 Nov)	28.7	15.2	88	57	0.0	5.3	1.9	8.7
48 (26-02 Dec)	28.8	15.1	84	54	0.0	5.6	2.2	9.0
49 (03-09 Dec)	26.8	15.1	85	59	0.0	5.1	4.2	8.7
50 (10-16 Dec)	27.7	13.2	87	65	0.0	5.6	2.5	8.7
51 (17-23 Dec)	26.5	11.9	89	81	0.0	5.6	3.0	9.0
52 (24-31 Dec)	26.5	13.5	88	69	0.0	5.5	3.0	8.8
1 (01-07 Jan)	26.0	10.8	85	46	0.0	5.6	2.6	9.0
2 (08-14 Jan)	26.7	11.4	90	51	0.0	5.5	2.9	9.0
3 (15-21 Jan)	23.8	8.5	88	48	0.0	5.6	2.2	9.0
4 (22-28 Jan)	28.8	12.2	92	46	0.0	5.6	2.3	8.7
5 (29-04 Feb)	25.9	9.8	91	47	0.0	5.5	2.4	8.7
6 (05-11 Feb)	25.7	10.4	85	37		5.5	2.2	8.9
7 (12-18 Feb)	26.8	11.7	88	42		5.6	1.6	8.6
8 (19-25 Feb)	30.0	11.3	87	33		5.9	1.3	9.4
9 (26-04 Mar)	29.3	10.3	85	25		5.9	2.8	9.6
10 (05-11 Mar)	29.5	10.8	87	23		4.0	5.0	8.8
PUNE	Latitude 18.04° N		Longitude 74.21° E			Height above MSL 548.6 m		
40 (01-07 Oct)	31.9	21.0	93.6	61.1	58.8			
41 (08-14 Oct)	30.8	21.5	95.2	67.7	49.4			
42 (15-21 Oct)	28.2	20.6	95.9	76.4	188.7			
43 (22-28 Oct)	28.2	20.9	98.2	76.9	48.5			
44 (29-04 Nov)	29.9	20.4	97.0	73.3	50.9			
45 (05-11 Nov)	31.3	18.9	94.7	58.8	9.0			
46 (12-18 Nov)	29.7	18.2	95.3	68.9	0.0			
47 (19-25 Nov)	30.1	16.8	96.8	56.6	0.0			
48 (26-02 Dec)	30.2	16.6	94.2	62.5	0.0			
49 (03-09 Dec)	28.2	18.1	92.4	67.2	0.0			
50 (10-16 Dec)	30.3	16.6	91.7	48.6	0.0			
51 (17-23 Dec)	28.9	16.0	91.9	54.7	0.0			
52 (24-31 Dec)	28.8	17.6	90.6	55.6	0.0			
1 (01-07 Jan)	28.5	12.2	96.8	53.5	0.0			
2 (08-14 Jan)	28.3	14.8	94.7	58.2	0.0			
3 (15-21 Jan)	29.4	12.6	94.2	48.9	0.0			

Julian weeks	Temperature ^o C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
4 (22-28 Jan)	31.4	14.1	94.5	47.8	0.0			
5 (29-04 Feb)	30.4	12.8	94.9	48.7	0.0			
6 (05-11 Feb)	29.2	14.6	91.3	53.6	0.0			
7 (12-18 Feb)	31.6	15.8	88.9	46.1	0.0			
8 (19-25 Feb)	34.2	15.4	87.9	35.4	0.0			
9 (26-04 Mar)	32.3	13.9	86.2	42.8	2.0			
10 (05-11 Mar)	32.6	14.8	85.4	40.6	0.0			
11 (12-18 Mar)	34.4	16.2	71.0	36.6	0.0			
12 (19-25 Mar)	36.2	16.8	73.9	38.5	0.0			
13 (26-01 Apr)	36.2	20.5	85.8	40.1	0.0			
14 (02-08 Apr)	38.1	19.3	81.1	32.9	0.0			
15 (09-15 Apr)	38.3	20.9	76.9	33.9	0.0			
16 (16-22 Apr)	38.4	21.3	78.4	32.1	14.2			
17 (23-29 Apr)	38.5	21.7	66.0	27.4	0.0			

SOIL PHYSICO-CHEMICAL PROPERTIES

Name of Centre	Textural class	Sand %	Silt %	Clay %	Db Mg m ⁻³	FC %	PWP %	OC %	Avail. N kg/ha	Avail. P kg/ha	Avail. K kg/ha	pH	EC dsm ⁻¹
NORTHERN HILLS ZONE													
Almora	Inceptisols	29.00	43.00	28.00	1.35	27.9	17.7	1.03	342	14.9	184	6.4	0.09
Bajaura	Silty Loam	28.20	53.40	18.40	1.58	NA	NA	0.65	368	52	172	6.4	0.64
Khudwani	Alluvial	41.00	37.00	22.00	1.25	-	-	1.12	240	15.2	285	6.92	0.14
Malan	Silty Clay Loam	-	-	-	1.55	33.0	13.5	0.8	434	45.5	248	5.7	0.173
NORTH WESTERN PLAINS ZONE													
Agra	Sandy Loam	59.36	21.85	18.47		18.42	9.85	0.32	182.74	28.23	288.75	8.11	1.8
Delhi		60	16.1	23.9	1.51	24.3	9.8	0.39	257	12.1	298	7.6	0.43
Durgapura	Loamy sand	80.77	10.4	7.82	1.53	10.4	3.15	0.28	123.64	48.4	189.2	8.04	0.14
Gurdaspur	loam							0.42		14.75	127.5	7	0.22
Hisar	Sandy loam	72	18.5	9.5	1.4			0.35	150	17.2	275	7.8	0.22
Jammu	Clay Loam	39	32.2	28.8	1.5	23.1		0.49	198	14.3	138	7.4	0.19
Karnal	Sandy Loam	62.4	27.5	10.1	1.63	18.9	7.3	0.37	179.0	15.6	209.7	8.11	0.22
Ludhiana	Loamy sand	83.5	7.9	8.5	1.48			0.36	-	33	227.2	7.8	0.16
Pantnagar	Loam	36	47	17	1.36	22	8	0.7	232	42	146	7.3	0.4
Sriganganagar	Sandy Loam								Low	Medium	High	7.6	
NORTH EASTERN PLAINS ZONE													
Burdwan	Sandy Loam				-	-	-	0.42	-	134.3	193.3	6.02	0.09
Coochbehar	Sandy Loam	64	23	13	1.39			0.85	198.6	32.6	140.3	5.82	-
IARI Pusa		32.4	58.3	8.8	-	-	-	0.43	-	11.44	143.75	8.72	0.27
Kalyani	Loamy Soil	41.11	32.68	24.21	1.63	33	13	0.51	271.14	22.22	243.03	7.2	0.37
Ranchi	Clay Loam	32.3	31.5	36.2	1.41	25.9	13.6	0.42	208.3	13.6	200.8	6.2	-
CAU Pusa	Clay Loam	24.0	48.9	27.0	1.43	21.9	7.7	0.43	196.1	20.9	124.4	8.40	0.24
Sabour	Loamy Sand	23.75	43.5	32.75	1.52	23.0	12.0	0.57	208.3	25.0	191.3	7.2	0.14
Shillongani	Sandy Clay Loam	51.47	21.93	26.60	1.35	42.43	7.23	1.16	226.72	16.22	263.40	5.49	0.28
Varanasi	Sandy Clay Loam	49.6	25.25	22.15	1.6	20.5	5.8	0.45	180.3	24.6	238.4	7.42	0.16
CENTRAL ZONE													
Bilaspur	Sandy clay loam	42.27	23.18	35.41	1.34	21.23	8.7	0.39	271	12.3	293	7.2	0.17
Dhanduka	Black clay	-	-	-	-	-	-	0.46	220	5.46	475	8.7	0.15
Gwalior	Sandy clay loam	56%	17.2%	20.0%	-	-	-	0.45	180	12.5	200	7.4	-
Indore	Vertisols	16.2	27.3	56.5	1.46	38	16	0.53	256.4	18.3	435	7.8	0.2
Jabalpur	Vertisolos	25.15	18.52	55.67	1.33	39-42	28.3	0.62	285	16.66	302	7.2	0.33
Junagadh	Medium Black	35.83	31.38	32.79	1.35	-	-	0.69	483	61.04	409	8.15	0.25
Powarkheda	-	24.5	47.5	1.53	-	-	0.48	0.24	95	21.72	300.26	7.42	0.16
Udaipur	Clay- loam	38.75	26.78	34.47	1.46			0.55	287.52	23.67	365.15	7.87	0.9
Vijapur	Sandy Loam	80.00	6.00	5.80	1.57	9.76	3.75	0.37	172.00	40.89	287.00	7.49	0.32
	Sandy Loam	81.00	6.00	5.70	1.57	9.71	3.58	0.33	169.00	38.79	280.00	7.67	0.30
PENINSULAR ZONE													
Dharwad	Clay	20	26	50	1.21-1.29	32-35	16-18	0.32-0.46	230-272	29-42.8	378-418	7.2-7.8	0.23-0.28
Niphad	Clay	20.4	34.2	45.4	1.29	-	-	0.56	184.21	20.8	357.4	8.14	0.29
Pune	Clay	5.7-9.6	48.8-63.4	12.8-24.2	-	-	-	0.93-1.05	231-253	24.27-29.97	61.3-570	7.87-8.01	0.34-0.41

SOWING DATES FOR DIFFERENT ZONES UNDER IRRIGATED CONDITIONS

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

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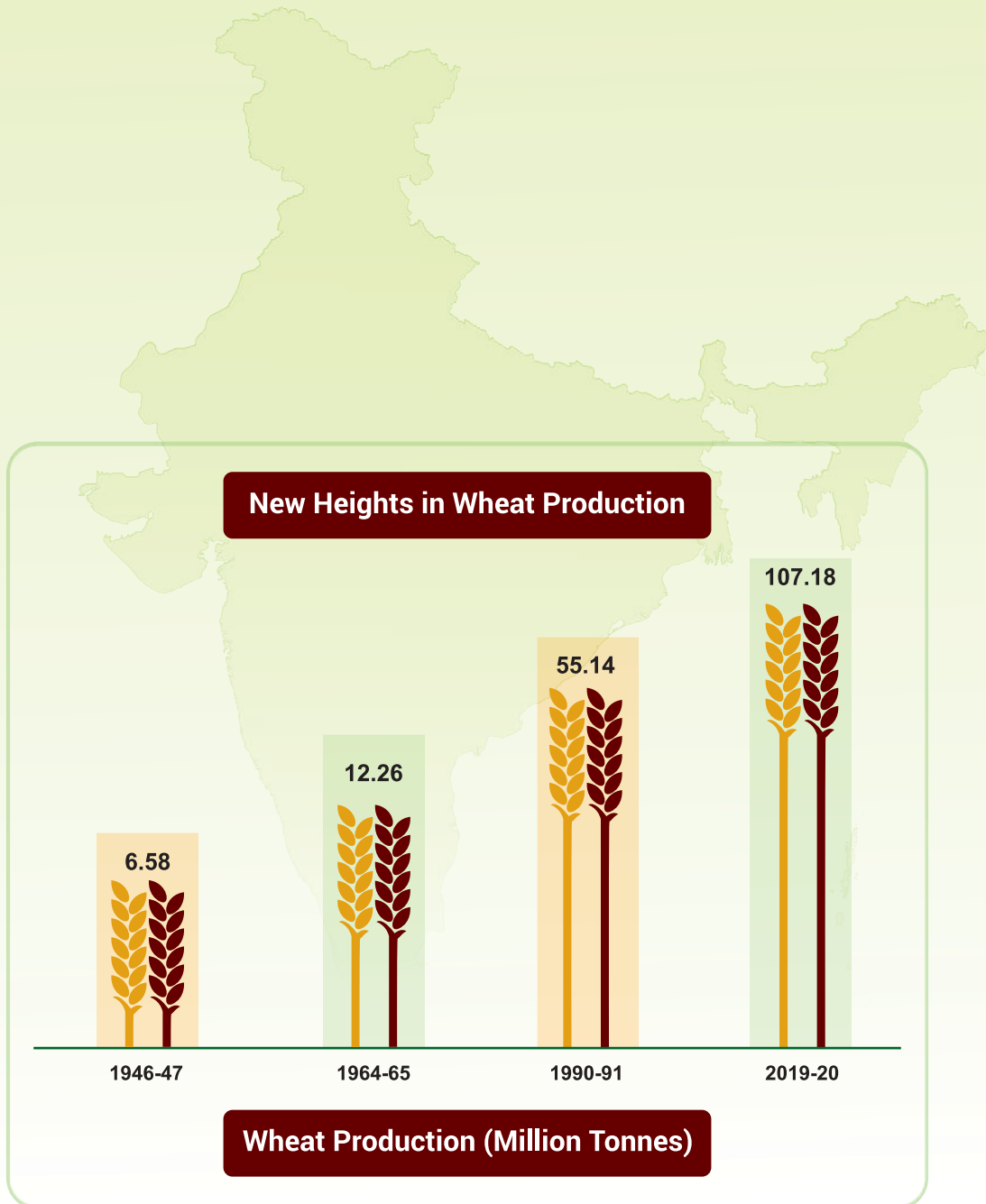
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* Funded Centres



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59^{वीं} अखिल भारतीय गेहूँ एवं जौ अनुसंधान कार्यशाला
में आयोजित गोष्ठी के दौरान जारी किया गया