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All India Coordinated Wheat & Barley Improvement Project

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RESOURCE MANAGEMENT

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(रमेश कुमार शर्मा)
प्रधान वैज्ञानिक एवं प्रमुख अन्वेषक
संसाधन प्रबंधन

CONTENTS

SUMMARY

Despite shrinking land and water resources, climate abrasions and little genetic gain, India harvested more than 90 million tonnes of wheat. This has been made possible by Indian farmers and scientists through efficient management of natural resources and various external inputs like chemical fertilizers and pesticides for achieving the food security in addition to the increased coverage under disease resistant varieties. The imbalanced fertilisation and intensive tillage are still matters of concern leading to the degradation of natural resources. The multiple nutrient deficiencies are being reported from various parts of the Indo-Gangetic plains, the food basket of the country which is a result continuous mining of the soil coupled with imbalanced fertilisation. Nitrogen is generally applied in excess and potash and micronutrients are rarely applied. The situation is further worsened by crop residues burning, which besides causing losses of precious organic source and essential nutrients also leads to environmental pollution causing health hazards. In order to provide food security and reverse the trend in natural resource degradation, technological advancements including developing better varieties suited to different cropping systems and growing conditions in various agro-ecological zones is a must. The higher agricultural productivity has to be achieved along with the improvement or at least without further detrimental effect to the environment and natural resources for long-term sustainability. Research efforts are focussed, in addition to varietal improvement, on the refinement of the technologies, diversification/intensification by including leguminous crops, integrated nutrient and weed management, to make food production cost and energy efficient in order to increase the profit margins to the farmers.

The Resource Management group of the "All India Co-ordinated 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 wheatgrowing zones. The results of the multi-location varietal evaluation and special co-ordinated trials are summarised hereunder.

In five wheat growing zones, eleven 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 proposed 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, 78 trials were proposed of which 75 were conducted. Out of the conducted trials, 02 trialswere rejected due to low yield or incomplete data reporting. The overall conduct of trial was 96.2 percent with a success and rejection rate of 97.3 percent and 2.7 percent, respectively.

In NHZ, out of the 12 proposed trials, 10 were conducted with conduct per cent of 83.3 and there was no rejection. In NWPZ, out of 36 proposed trials, all were successfully conducted. In NEPZ and CZ all the 5 and 14 trials proposed for respective zones were conducted successfully. In PZ, out of 11 proposed 10 were conducted and one was rejected due to low yield levels. The centres where the trials were not conducted or where the trials were rejected have been listed in the Table 1.

The performance of test entries presented in the Table 2 showed that out of 13 test entries in the AVT-II year, only one genotype namely, HS 562for irrigated timely sown condition in NHZ was superior to best checks with a yield gain of 7.37 percent. Two other durum entries *i.e.* HD

4730 for NWPZ and HD 4728 for CZ were numerically better than the respective best checks with yield gain of 0.02 and 2.82 percent, respectively.

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

Trial Series	Locations	Trials conducted	Trials not conducted		Rejected	
			Number	Centres	Number	Centres
Northern Hills Zone						
IR-TS-TAS-DOS	06	05	01	Imphal	-	-
RF-TS-TAS-LON	06	05	01	Imphal	-	-
Total	**12**	**10**	**02**		**-**	
North Western Plains Zone						
IR-TS-TDM-DOS	11	11	-	-	-	-
IR-TS-MABB-DOS	06	06	-	-	01	Dhaulakuan
RIR-TS-TAS	11	11	-	-	-	-
RF-TAS-LON	08	08				
Total	**36**	**36**	**-**	-	-	-
North Eastern Plains Zone						
IR-LS-MABB-DOS	05	05	-	-	-	-
Total	**05**	**05**	**-**		-	
Central Zone						
IR-TS-TAD-DOS	09	09	-	-	-	-
IR-LS-MABB-DOS	05	05	-	-	-	-
Total	**14**	**14**	-	-	-	-
Peninsular Zone						
IR-LS-MABB-DOS	05	05	-	-	-	-
RF-TAS-LON	06	05	01	Ambejogai	01	Washim
Total	**11**	**10**	**01**		**01**	
Total Trials	**78**	**75**	**03**		**02**	

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			
Northern Hills Zone						
IR-TS-TAS-DOS	HS 562	-	HS 562	VL 907	7.37	05
RF-TAS-LON	HS 562	-	-	VL804	-	05
North Western Plains Zone						
IR-TS-TDM-DOS	HD 4730	HD 4730	-	PDW 314	0.02	11
IR-TS-MABB-DOS	PBW 723	-	-	WH 1105	-	05
RIR-TS-TAS	MP 1277	-	-	WH 1142	-	11
RF-TAS-LON	WH 1164	-	-	HD 3043	-	08
North Eastern Plains Zone						
IR-LS-MABB-DOS	MMBL 283	-	-	DBW 14	-	05
Central Zone						
IR-TS-TAD-DOS	HD4728,HD4730	HD4728	-	HI 8737	2.82	09
IR-LS-MABB-DOS	HD 2932+Lr19/Sr25	-	-	HD 2932	-	05
Peninsular Zone						
IR-LS-MABB-DOS	HD 2932+Lr19/Sr25	-	-	HD 2932	-	05
RF-TAD-LON	NIAW 2030,	-	-	NI 5439	-	04
	MACS 3927 (d)	-	-	AKDW 2997-16	-	

The details of the special trials conducted in different zones are presented in Table 3. In all, 30 trials were proposed, out of which 22 were conducted and the conduct percentage was 73.3. The maximum numbers of special trials were conducted in NWPZ followed by NEPZ, and NHZ, PZ, CZ, respectively. Seven centres, Durgapura, Karnal and Ludhiana in NWPZ; IARI Pusa in NEPZ; Kota in CZ; Dharwad and Niphad in PZ did not conduct the proposed special trials.

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: Precision nutrient management	02	02	-	-
SPL-2: Rice seeding methods	01	01	-	-
Total	**03**	**03**		
North Western Plains Zone				
SPL-1: Precision nutrient management	04	04	-	-
SPL-2: Rice seeding methods	03	03	-	-
SPL-5: Micro-Irrigation	02	01	01	Durgapura
SPL-6: Cotton-Wheat relay cropping	03	01	02	Karnal, Ludhiana
SPL-7: Wheat productivity maximization	03	03	-	-
Total	**15**	**12**	**03**	
North Eastern Plains Zone				
SPL-1: Precision nutrient management	05	04	01	IARI Pusa
SPL-2: Rice seeding methods	01	01	-	-
Total	**06**	**05**	**01**	
Central Zone				
SPL-1: Precision nutrient management	01	01	-	-
SPL-5: Micro-Irrigation	01	01	-	-
SPL-6: Cotton-Wheat relay cropping	01	-	01	Kota
Total	**03**	**02**	**01**	
Peninsular Zone				
SPL-3: Nutrient management in maize-wheat system	02	-	02	Dharwad, Niphad
SPL-5: Micro-Irrigation	01	-	01	Niphad
Total	**03**		**03**	
Total Trials	**30**	**22**	**08**	

NORTHERN HILLS ZONE

In this zone, two trials on evaluation of aestivum genotypes under irrigated timely, rainfed sown conditions were conducted and the results are summarised hereunder.

Irrigated timely sown

One test entry *i.e.* HS 562 was evaluated against four checks (HS 507, VL 907, HPW 349 and VL 804) at two dates of sowing (timely and late) under irrigated conditions. The trial was conducted at five locations namely Almora, Bajaura, Khudwani, Malan and Shimla (Figure-1) and was significantly better than all the checks except the best check VL

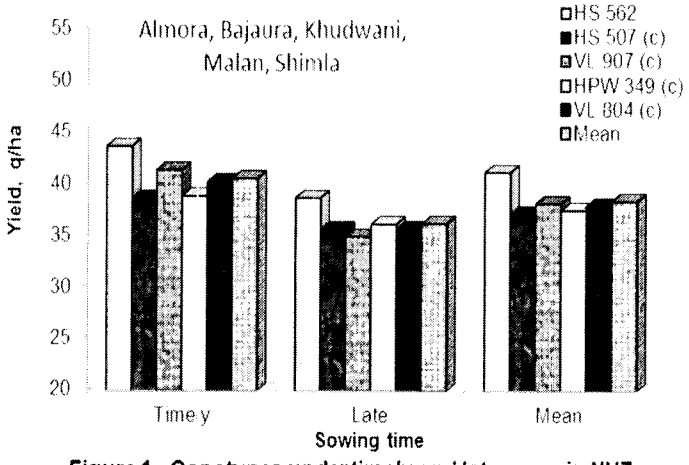

Figure 1. Genotypes under timely and late sown in NHZ

907 with which it was statistically at par but produced 7.37% higher grain yield. Delay in sowing from timely (5th-11thNovember) to late sown (26th Nov. to 2nd December) conditions caused a yield reduction of 4.31 q/ha.

Rainfed conditions

One test entry *i.e.* HS 562 was evaluated against four checks (HS 507, VL 907, HPW 349 VL 804) at three levels of nitrogen (40, 60 and 80 kg/ha). The test genotype was at par with thebest check for yield and yield attributes. Application of nitrogen brought about increase in yield up to 80 kg N/ha and the highest mean yield (33.84 q/ha) was recorded at 80 kg N/ha. The check genotype VL 804 produced highest grain yield (32.08 q/ha) which was statistically at par with test entry HS 562 (31.99 q/ha).

NORTH WESTERN PLAINS ZONE

In North Western Plains, four varietal evaluation trials (irrigated timely sowndurum,irrigated timely sown MABB genotypes,restricted irrigationand rainfed conditions) were conducted to evaluate the performance of new genotypes.

Irrigated timely sown- durum

The performance of durum test entry, HD 4730 against four checks (PDW 233, PDW 291, PDW 314 and WH 1105) was evaluated at eleven centres i.e. Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganganagar under normal and late sown conditions and the results are presented in Figure-2.There was a significant decline in mean yield from 46.47 q/ha to 42.97 q/ha when sowing was delayed from normal to late because of significant reduction in number of earheads/m^2 and 1000 grain weight. The average yield decline due to delayed sowing was 7.5 per cent. Among the genotypes evaluated, the test entry HD 4730 was at par with the best check PDW 314.

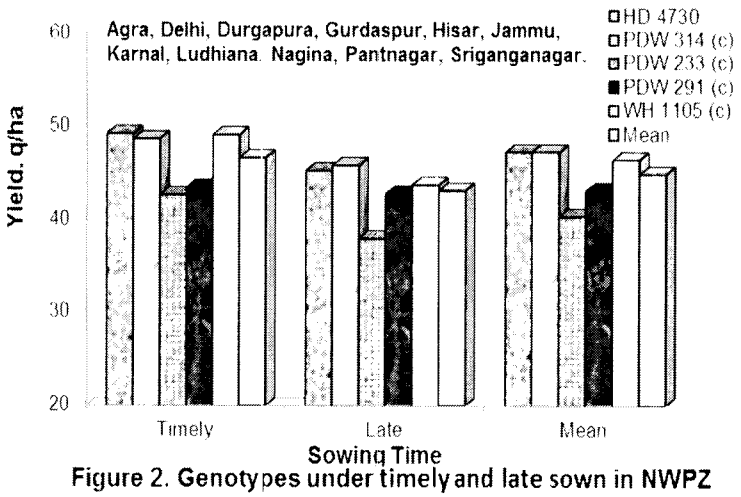

Figure 2. Genotypes under timely and late sown in NWPZ

Irrigated Timely Sown Special Trial- MABB

The performance of marker assisted backcross breeding (MABB)" test entry, PBW 723 was evaluated against four checks (PBW343, HD 2967, DPW621-50 and WH 1105) at six locations *i.e.* Delhi, Dhaulakuan, Jammu, Karnal, Ludhiana and Pantnagar under normal and late sown conditions but for pooled analysis Dhaulakuan location data were not considered due to incomplete set. There was a significant decline in yield from 46.59 q/ha to 42.23 q/ha when sowing was delayed from normal to late because of significant reduction in number of

earheads/m^2 and 1000 grain weight with an average yield decline of 9.4 per cent. The test entry PBW 723 was found significantlyinferior to the best check WH 1105.

Restricted Irrigation

The restricted irrigation trial was conducted with the objective to evaluate the one *aestivum* test entry, MP 1277 against three checks (HD 3043, PBW 644 and WH 1080) and one identified entry (WH 1142) at all the eleven locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganganagar). On an average basis there was significant increase in yield from 34.18 q/ha to 41.63 q/ha when number of irrigation increased from no irrigation to two irrigations because of significant increase in number of earheads/m^2 and 1000 grain weight. The test entry, MP 1277, was not superior in yield when compared to the best check entry WH 1142 identified previous year.

Rainfed Conditions

In this trial only one new test entry, WH 1164 was evaluated against three checks (PBW 644, HD 3043 and WH 1080) and one identified entry (PBW 660) at three levels of nitrogen (40, 60 and 80 kg/ha) in split plot design under rainfed conditions. This trial was conducted at eight locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Ludhiana and Sriganganagar).The test entry WH 1164 gave significantly lower productivity compared to checks HD 3043 and PBW 644.

NORTH EASTERN PLAINS ZONE

In this zone, only one trial was conducted to evaluate the performance of MABB genotype for late sown under irrigated conditions.

Irrigated Late Sown- MABB

In this trial, one test entry (MMBL 283) and four checks (HD 2985, HUW 234, HI 1563and DBW 14) were evaluated at late and very late sown conditions. The productivity for late sown was significantly higher (32.37 q/ha) than very late sown (23.86 q/ha) condition. The test entry MMBL 283 ranked last (5^{th}) with an average productivity of 25.96 q/ha which was significantly lower than the checks, except HUW 234.

CENTRAL ZONE

Two coordinated trials for evaluation of new genotypes for various growing conditions (irrigated timely sown and irrigated late sownconditions) were conducted in this zone.

Irrigated Timely Sown-durum

In this trial, two durum test entries {HD 4728 (d) and HD 4730 (d)} were evaluated against three checks {HI 8737 (dl), MPO 1215 (dc), HI 8498 (dc)} at two dates of sowing (timely and late) under irrigated conditions. The trial was conducted at nine centres (Bilaspur, Gwalior, Indore, Junagarh, Kota, Powarkheda, Sagar, Udaipur and Vijapur). It was observed that delayed sowing from timely (48.85 q/ha) to late (40.79 q /ha) significantly reduced the grain yield and the reduction was 16.49 per cent (Figure-3). On an average basis the test entry HD 4728 (d) produced the maximum and significantly higher grain yield (48.93 q/ha) in comparison to all the entries and checks except recently identified check HI 8737. It ranked

on first position under timely as well as in late sown conditions.Second test entry HD 4730 (d) ranked 3rd on mean basis and yielded significantly higher than checks but significantly lesser than latest identified check *i.e.* HI 8737 (dl). Top yielder test entry HD 4728 (d) ranked first in thousand grain weight and earhead/m^2 whereas second test entry HD 4730 (d) ranked first in grains/earhead on mean basis.

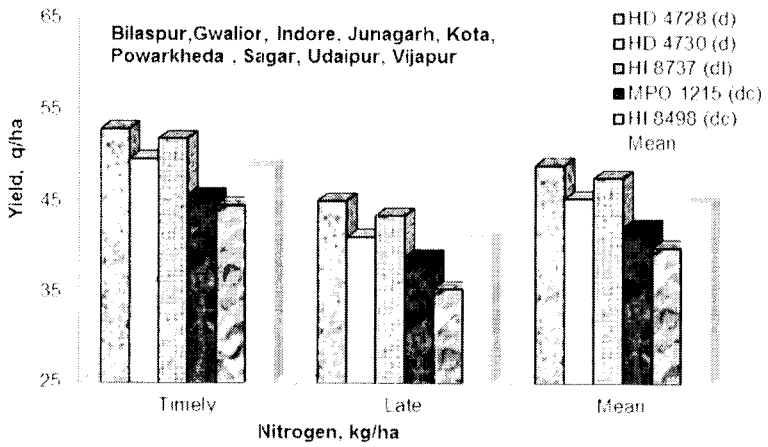

Figure 3. Genotypes under timely and late sown in CZ

Irrigated Late Sown-MABB

One test entry, HD 2932 carrying *Lr19/ Sr25* genes, was evaluated against four checks {MP 3336 (c), HD 2864 (c), Raj 4083 (c) and HD 2932 (c)} for its performance under irrigated late sown conditions. This trial was conducted at five locations (Bilaspur, Indore, Jabalpur, Powarkheda and Vijapur) with two sowing times (late and very late). The delay in sowing from late (38.98 q/ha) to very late (33.13 q/ha) reduced the grain yield significantly (15.0%). The check HD 2932 produced the maximum and significantly higher grain yield (38.2 q/ha) than the test entry and other checks. Incorporation of *Lr19/Sr25* genes in HD 2932 resulted in decline in grain yield and this test entry ranked fourth with a productivity of 35.4 q/ha.

PENINSULAR ZONE

In this zone, two coordinated trials for evaluation of new genotypes for various growing conditions (irrigated late sown and rainfed conditions) were conducted.

Irrigated Late Sown-MABB

One test "marker assisted backcross breeding (MABB)" genotype, HD 2932 + *Lr19/Sr25* was evaluated at two dates of sowing *i.e.* late (26th Nov. to 2nd December) and very late (17th Dec. to 23rd December) against four checks *viz.* MP 3336 (c), HD 2864 (c), Raj 4083 and HD2932 at five (Akola, Dharwad, Niphad, Pune and Ugar) locations. The delay in sowing from late (41.77 q/ha) to very late (36.19 q/ha) reduced the grain yield by 4.58 q/ha (13.4 per cent). The yield decline was due to significant reduction in grain number and weight under very late sown conditions as compared to late sown conditions. The check variety HD 2932 was top yielder with a mean yield of 40.76 q/ha and was at par with by test entry HD 2932+ *Lr19/Sr25* with yield of 40.54 q/ha.

Rainfed Conditions

In this trial two test entries NIAW 2030 and MACS 3927 (d) were evaluated against four checks {NI 5439, AKDW 2997-16(dc), UAS 347 (I) and UAS 446 (dl)} at three nitrogen levels (40, 60 and 80 kg/ha) and at five locations (Annigeri, Bagalkot, Dharwad, Vijapur, Washim). The check variety NI 5439 produced the highest (16.92 q/ha) yield which was significantly superior to the test entry and rest of the check varieties.

PRODUCTION TECHNOLOGIES

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

SPL-1: Precision nutrient management in wheat

This experiment was conducted in four wheat growing zones namely NHZ, NWPZ, NEPZ and CZ to optimize nutrient usage and maximize wheat yield. The experiment was conducted with two tillage options i.e. conventional tillage (CT) and zero tillage (ZT) and five nutrient management options. The five nutrient management treatments were (i) Recommended NPK, where 1/3 N and full P&K was applied as basal and the remaining N top dressed in two equal splits after first and second irrigation; (ii) Recommended NPK, where 1/3 N and full P&K was applied as basal and the remaining N top dressed in two equal splits just before first and second irrigation; (iii) SSNM based on Wheat Nutrient Expert; (iv) SSNM based on Wheat Nutrient Expert (Full PK + micronutrient, if any and 70%N) + remaining N as guided by GreenSeeker and (v) Nitrogen rich where 150% N was applied along with 100% of recommended P&K.

In NHZ, the trial was conducted at two centres namely Bajaura and Malan. The highest productivity was recorded in N-rich treatment which was significantly better than all other treatments (Figure-4). Gain in yield was due to higher number of earheads per square meter and grains/earhead in N-Rich plot. Among other treatments, top dressing after irrigation gave higher yield (36.87 q/ha) as compared to other nutrient management treatments but was at par with others except nutrient expert SSNM treatment.

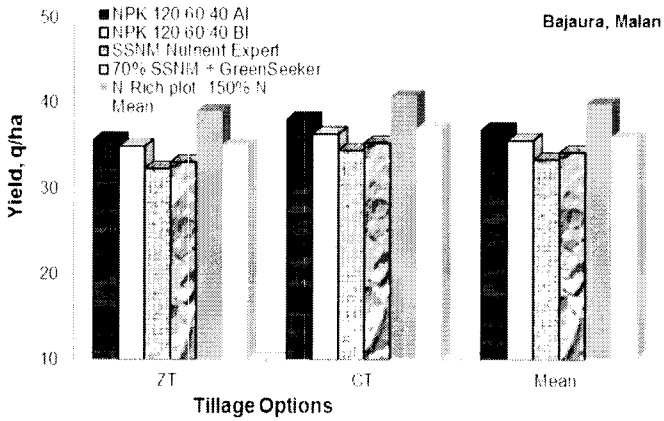

Figure 4. Precision nutrient management in wheat- NHZ

In NWPZ, the trial was conducted at four locations namely Durgapura, Karnal, Ludhiana and Pantnagar. The effect of tillage and nutrient management options as well as interaction was not significant (Figure-5). The effect of nutrient management was significant for earhead density only. The highest yield was obtained with application of NPK @150:60:40

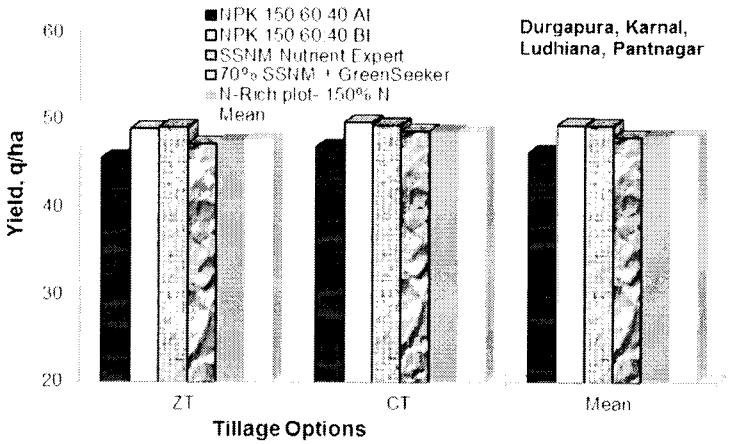

Figure 5. Precision nutrient management in wheat- NWPZ

kg/ha, where N top dressed just before first and second irrigation which was numerically superior to other nutrient management options.

In Northern Eastern Plains Zone also this trial was conducted at four locations namely Coochbehar, Sabour, Ranchi, and Varanasi. On mean basis, the highest yield was obtained in SSNM+ Green Seeker (40.20 q/ha) which was statistically at par with SSNM Nutrient Expert (39.63 q/ha) and significantly higher than rest of the treatments (Figure-6). Gain in yield was due to higher number of earhead per square meterand significantly higher thousand grain weight in SSNM Nutrient Expert. On average basis conventional tillage produced significantly higher grain yield (38.35 q/ha) than zero tillage (36.86 q/ha).

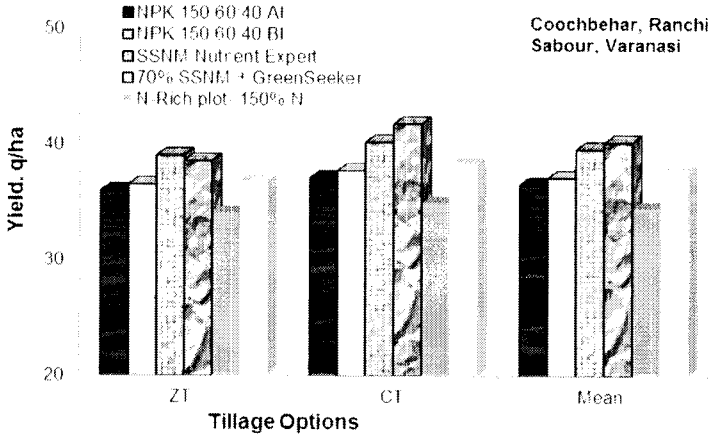

Figure 6. Precision nutrient management in wheat- NEPZ

In Central Zone, this experiment was conducted at only one location *i.e.* Udaipur. The effect of nutrient management was significant but that of tillage was non-significant on wheat productivity (Figure-7). Among nutrient management options, SSNM based on Nutrient Expert (Full PK + micronutrient, if any and 70% N) + remaining nitrogen as guided by GreenSeeker recorded the highest productivity (56.67 q/ha) which was significantly higher than other treatments except SSNM Nutrient Expert treatment. The GreenSeeker based nitrogen application also recorded the higher grain number and earhead density.

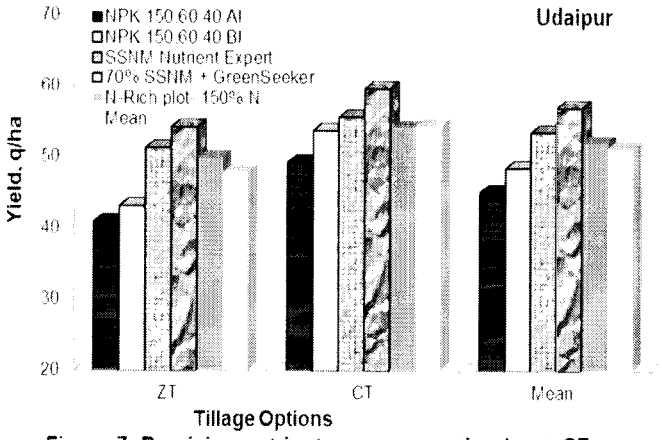

Figure 7. Precision nutrient management in wheat- CZ

Based on the nitrogen applied in various nutrient management options and the grain yield obtained, the agronomic nitrogen use efficiency was worked out for various locations. It was observed that the nitrogen use efficiency was higher in the treatment in which 70% of nitrogen and full P and K as well as micronutrient, if any, as recommended by Nutrient Expert for wheat was applied and the rest, if required, was applied using GreenSeeker technology. Since the nitrogen applied using GreenSeeker was the lowest with comparable yields at most of the locations, the agronomic nitrogen use efficiency was highest in this treatment. In general, across all the four wheat growing zones, the trend was similar except few exceptions. The results indicate that Nutrient Expert for Wheat and GreenSeeker combination may be best option for higher productivity at lower costs leading to more profitability.

SPL-2: Effect of different rice seeding methods on wheat productivity under ZT at different nitrogen levels.

To evaluate the effect of different rice seeding methods on wheat productivity at different nitrogen levels (PTR), ZT transplanted (ZTTR) and Dry direct seeded after conventional tillage (DDSR) and four nitrogen treatments in wheat (No nitrogen, 75 kg N/ha, 150 kg N/ha and LCC based nitrogen application) was conducted across three zones (NHZ, NWPZ and NEPZ).

In Northern Hills Zone, this trial was conducted at only one location (Malan).The rice establishment options had non-significant effect on wheat productivity and only the nitrogen effect was significant with highest yield (33.47 q/ha) recorded when N was applied @ 150 kg/ha (Figure-8) followed by using leaf colour chart guided nitrogen application (32.56 q/ha), which were statistically at par as the mean yield difference was only 0.91 q/ha and the CD was 2.71. Although rice establishment options had non-significant effect on wheat yield but wheat followed by zero tillage transplanted rice gave 1.59 and 1.70 q/ha higher grain yield as compared to wheat followed puddled transplanted and dry direct seeded rice, respectively. The effect of rice establishment options on wheat yield attributes was also not significant but nitrogen treatments significantly influenced the wheat yield attributes except thousand grain weight.

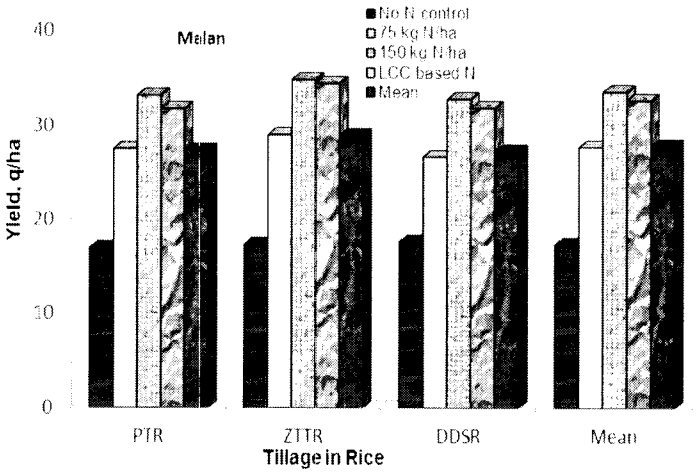

Figure 8. Tillage in rice and nitrogen on wheat productivity in NHZ

In Northern Western Plains Zone, this trial was conducted at three locations (Gurdaspur, Karnal and Pantnagar). The highest productivity was recorded under puddle transplanted method followed by ZT transplanted method and the lowest productivity was with dry direct seeded method (Figure-9) which was found significantly at par with both ZT transplanted method and puddle transplanted method. Among nitrogen treatments 150 kg N/ha gave the highest productivity (46.15 q/ha) which was found significantly superior than other treatments except LCC based N application treatment which was found at par.

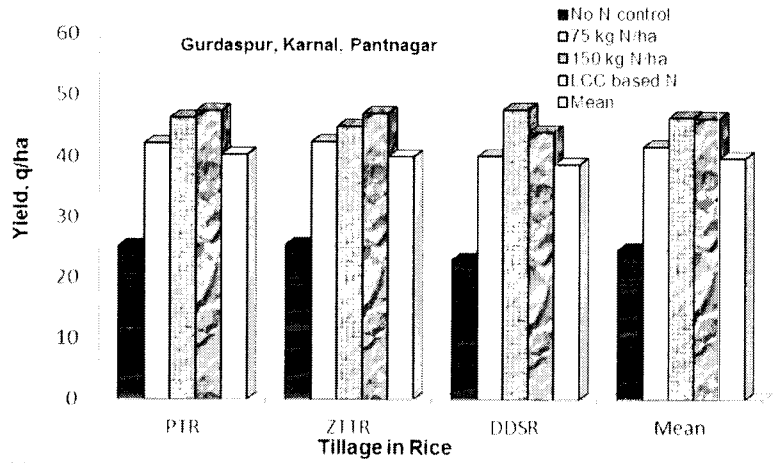

Figure 9. Tillage in rice and nitrogen on wheat productivity in NWPZ

In Northern Eastern Plains Zone, this trial was conducted at Kalyani centre. The rice establishment options had significant effect on wheat productivity. Puddled transplant of rice followed by wheat gave significantly higher grain yield (27.10 q/ha) as compared to zero tillage transplanted rice (24.85 q/ha) and statistically at par with dry direct seeded rice (25.75 q/ha). Nitrogen effect was significant with highest yield (35.92 q/ha) recorded when N was applied @ 150 kg/ha followed by using leaf colour chart guided nitrogen application (32.38 q/ha). Gain in yield was recorded due to significantly higher number of earhead per sq. m., boldest seed and higher number of grains per earhead which influenced positively by nitrogen management.

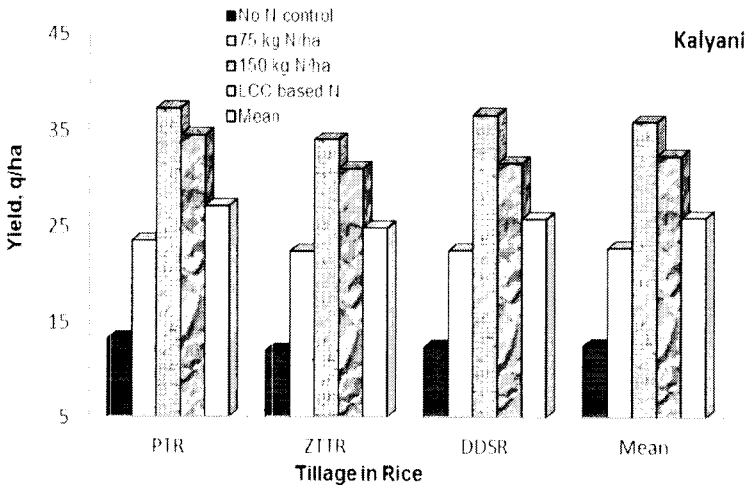

Figure 10. Tillage in rice and nitrogen on wheat productivity in NEPZ

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

Water management is the key issue for economising the irrigation water use efficiency of the wheat crop. To optimize the water requirement for yield maximisation in wheat a special coordinated trial was conducted at two locations *i.e.* Karnal in NWPZ, and Vijapur in CZ. The treatments consisted of three irrigation systems namely conventional flood irrigation; drip irrigation and sprinkler irrigation and four irrigation schedules *viz.* IW/CPE of 1.20, 1.00, 0.80 and 0.60.

In North Western Plains Zone, this trial was conducted only at one location (Karnal) and the results are presented in Figure-11. Both irrigation methods and irrigation schedules have significant effect on yield. The highest yield was recorded in drip irrigation (44.79 q/ha) which was significantly higher than other methods of irrigation. Among irrigation schedules the highest yield (43.59 q/ha) was found in IW/CPE-0.60 treatment followed by IW/CPE-1.20 treatment (43.20 q/ha) which were at par among themselves and significantly superior to IW/CPE-1.00 and IW/CPE-0.80 treatments.

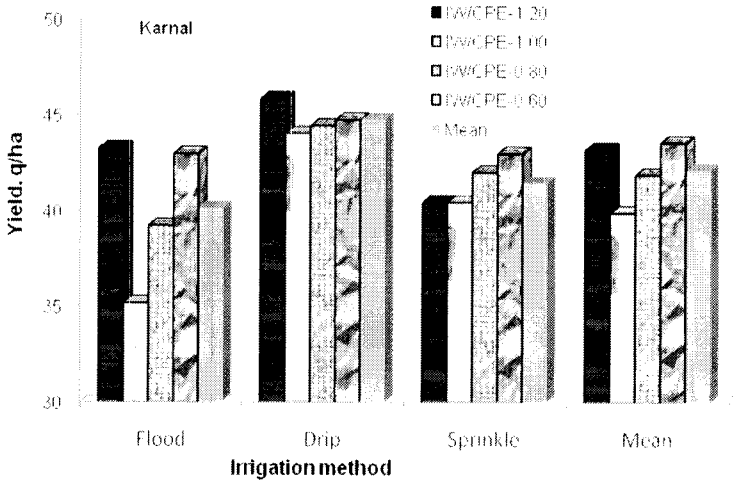

Figure 11. Irrigation scheduling in wheat-NWPZ

In Central Zone, this trial was conducted at Vijapur (Figure-12). Maximum and significantly higher grain yield was recorded with sprinkler irrigation (36.99 q/ha) as compared to other methods of irrigation. The IW/CPE ratio 1.2 gave maximum grain yield (36.33 q/ha) which was significantly higher than 0.6 and 0.8 IW/CPE and at par with. The IW/CPE ratio of 1.0. Interaction between irrigation method and irrigation regime for grain yield was non-significant.

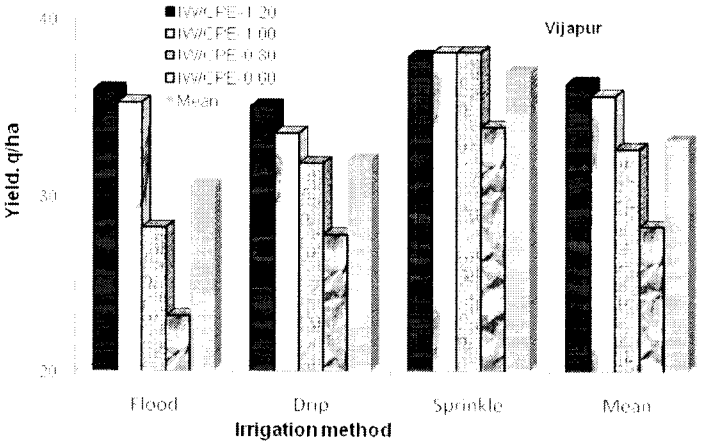

Figure 12. Irrigation scheduling in wheat-CZ

SPL-6: Improving productivity of cotton-wheat system through relay cropping

This trial was conducted only at one location at Hisar to explore the possibility of relay seeding of wheat with cotton for increased productivity of wheat leading to improved productivity and profitability of Cotton-Wheat system The trial was conducted with nine seeding options as shown in Table-4. The wheat crop was sown on 26th November, 2014, after the harvest of short duration cotton towards the fag end of the timely sown duration. The seeding in all the treatments except late sown was also done on the same day. In the late sown treatment, the wheat was drill sown on 27th December, 2014 after the harvest of long duration cotton. The effect of various seeding options was statistically significant. The highest mean yield (48.09 q/ha), as expected, was recorded in drill sown wheat after harvest of short duration cotton on 26thNovember, 2014. As compared to late sown condition (27th December, 2014), the yield levels in relay cropped wheat were either statistically similar or higher. However, there was a yield gain of 30.99% with wheat broadcast sowing after defoliation fb irrigation and 30.24%t in wheat broadcasting before defoliation fb irrigation, respectively, compared to drill sown wheat after harvest of long duration cotton (27th December, 2014).

Table. 4. North Western Plains Zone Hisar 2014-15

Cotton-wheat relay methods	Yield, q/ha
Wheat drill sowing after cotton harvest (26th November Sowing)	48.09
Wheat drill sowing after cotton harvest (27th December sowing)	35.94
Wheat power till-drilling in standing cotton	45.95
Wheat broadcast sowing in cotton (standing water)	44.21
Wheat power till-drilling before defoliation*	44.86
Wheat power till-drilling after defoliation	46.01
Wheat broadcasting in cotton after defoliation fb power till mixing	42.52
Wheat broadcast sowing after defoliation fb irrigation	47.08
Wheat broadcasting before defoliation fb irrigation	46.81
CD (0.05)	3.63

SPL-7: Wheat yield maximization under different tillage options

To identify the effect of different tillage options and row spacing on wheat productivity under different nutrients levels, an experiment involving chiselling followed by two tillage options (Conventional tillage for both rice and wheat and Rotary tillage for both rice and wheat), two row spacing (20 cm and 15 cm), and three nutrients levels in wheat (Recommended NPK, Recommended NPK + FYM @ 15 t/ha and 125% Recommended NPK + FYM @ 15 t/ha) was conducted in NWPZ at three centres (Karnal, Ludhiana and Pantnagar). Recommended dose of fertilizers applied was 150 kg N/ha, 60 kg P_2O_5/ha, and 40 kg K_2O/ha.

The effect of tillage options and row spacing was significant and the highest yield (49.92 q/ha) was recorded in conventional tillage with 15cm row spacing which was at par with conventional tillage with 20cm row spacing (49.10 q/ha) and significantly better than rotary tillage with 20 as well as 15 cm row spacing (Figure-13). The effect of the nutrients levels was also significant. Application of 125% Recommended NPK + FYM @ 15 t/ha produced significantly higher yield (50.76 q/ha) than recommended NPK treatments and at par with Recommended NPK + FYM @ 15 t/ha.

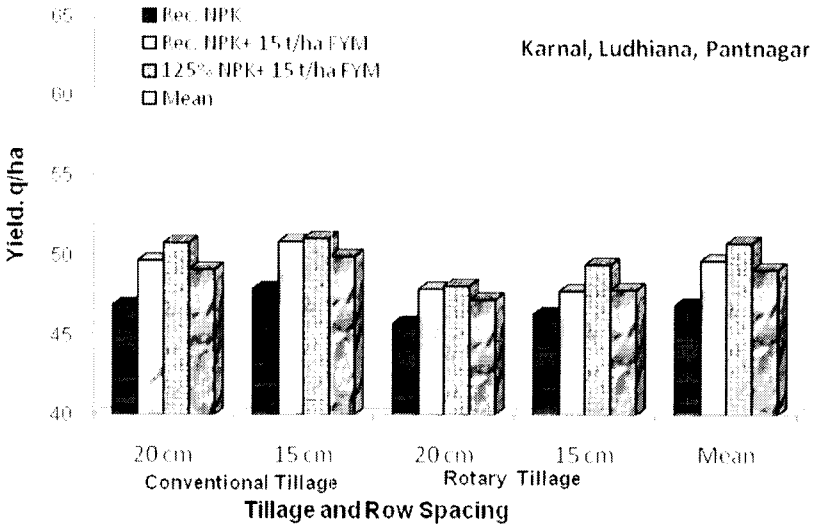

Figure 13. Tillage and Spacing for wheat yield maximisation in NWPZ

In rice crop, the effect of tillage and row spacing was not significant on yield. However, the effect of nutrient management in wheat had significant influence on rice yield and the highest rice yield (76.58 q/ha) was recorded with 125% recommended NPK + 15 t/ha FYM applied in wheat, which was significantly better than recommended NPK alone and at par with recommended NPK+ 15t/ha FYM indicating positive effect of FYM applied in wheat crop (Figure-14). The similar trend was observed in yield attributes also except grains per panicle.

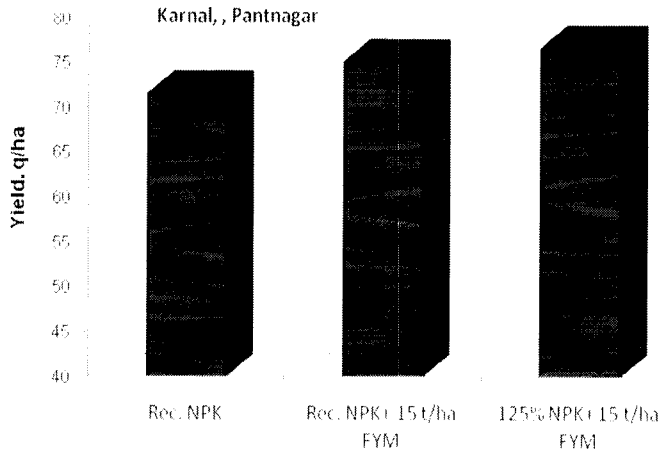

Figure 14. Effect of nutrient mangement on rice yield maximisation in NWPZ

Coordinated Trials

Northern Hills Zone

The Northern Hills Zone represents Himachal Pradesh, parts of Jammu & Kashmir, Uttrakhand and North Eastern Hills. The six centres namely Almora, Bajaura, Imphal (Manipur), Khudwani (Anantnag), Malan (Palampur) and Shimla are actively engaged in wheat research under All India Coordinated Wheat and Barley Improvement Project. The soil data received from three centres (Almora), Bajaura, Malan) are presented in Annexure II. The texture at all the four centres varied from silty clay loam to silty clay and inceptisols. Khudwani and Shimla centres did not report soil data for their centre. The organic carbon content range of Almora, Bajaura and Malan centres was 0.57-1.08, 0.51-0.60 and 0.60-0.63 per cent, respectively, with low to high in nitrogen and medium to high in phosphorus and potash contents. The data on meteorological parameters received from various centres has been reported in Annexure III. The rainfall was well distributed at all the locations for which data were received and the highest rainfall of 974.1 mm was recorded at Malan during the crop growing period followed by 568.9 mm + 250 mm snowfall at Bajaura, 568 mm at Shimla and 332 mm at Khudwani (Anantnag) from October, 2014 to May, 2015 . The minimum and maximum temperatures were -1.1 and 34.7°C at Almora, -0.9 and 32.3°C at Bajaura, 3.9 and 30.1°C at Malan, 2.1 and 22.9°C at Shimla, respectively. Two coordinated trials were conducted in this zone to evaluate the performance of wheat genotypes under different growing conditions *i.e.* time of sowing under irrigated timely sown condition and nitrogen levels under rainfed conditions.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

In this zone, the performance of genotypes was evaluated for sowing time under irrigated conditions and nitrogen levels under rainfed conditions at different locations.

Irrigated Timely Sown – *aestivum*

One test entry *i.e.* HS 562 was evaluated against four checks (HS 507, VL 907, HPW 349 and VL 804) at two dates of sowing (timely and late) under irrigated conditions in split plot design with date of sowing in main plots and genotypes in sub plots, replicated thrice. The trial was conducted at five locations namely Almora, Bajaura, Khudwani, Malan and Shimla. The sowing was done using normalized seed rate used was 100 kg/ha (considering the 1000 grain weight of 38 g) and sowing was done at a row spacing of 20 cm. Nitrogen (120 kg/ha) was applied in three splits (1/3rd at sowing as basal dose, 1/3rd at first irrigation *i.e.* 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. Weed control measures and irrigation scheduling were followed as per the recommended practice.

Table 1.1 Northern Hill Zone IR-TS-TAS-DOS Pooled 2014-15

Variety	Sowing Time: Timely	Rk	Late	Rk	Mean	Rk
			Yield, q/ha			
HS 562	43.58	1	38.65	1	41.11	1
HS 507 (c)	38.62	5	35.63	4	37.13	5
VL 907 (c)	41.32	2	34.94	5	38.13	2
HPW 349 (c)	38.84	4	36.12	2	37.48	4
VL 804 (c)	40.19	3	35.67	3	37.93	3
Mean	40.51		36.20		38.36	
	Sowing (A)	Variety (B)	B within A		A within B	
CD(0.05)	0.97	1.94	N.S.		N.S.	
			Earhead/sq.m.			
HS 562	350.50	1	339.00	1	344.75	1
HS 507 (c)	318.01	5	321.11	3	319.56	4
VL 907 (c)	325.84	4	307.72	5	316.78	5
HPW 349 (c)	332.51	3	315.04	4	323.78	3
VL 804 (c)	337.13	2	322.96	2	330.04	2
Mean	332.80		321.17		326.98	
	Sowing (A)	Variety (B)	B within A		A within B	
CD(0.05)	8.05	16.84	N.S.		N.S.	
			Grains/Earhead			
HS 562	29.61	3	28.09	5	28.85	5
HS 507 (c)	29.18	5	28.70	4	28.94	4
VL 907 (c)	30.82	1	28.88	2	29.85	2
HPW 349 (c)	29.48	4	28.85	3	29.16	3
VL 804 (c)	30.59	2	29.51	1	30.05	1
Mean	29.94		28.81		29.37	
	Sowing (A)	Variety (B)	B within A		A within B	
CD(0.05)	1.01	N.S.	N.S.		N.S.	
			1000 Grains Weight, g			
HS 562	41.74	1	39.31	1	40.53	1
HS 507 (c)	40.87	3	36.92	4	38.89	4
VL 907 (c)	40.96	2	38.31	3	39.63	2
HPW 349 (c)	39.61	4	38.34	2	38.97	3
VL 804 (c)	39.01	5	36.69	5	37.85	5
Mean	40.43		37.91		39.17	
	Sowing (A)	Variety (B)	B within A		A within B	
CD(0.05)	0.55	1.21	N.S.		N.S.	

Centres: Alomra, Bajaura, Khudwani, Malan, Shimla

The pooled analysis presented in Table 1.1 revealed significant differences in yield among dates of sowing and genotypes, whereas the interaction effects were not significant. Test entry HS 562 produced significantly higher grain yield (41.11 q/ha) as compared to all check varieties (HS 507, VL 907, HPW 349 and VL 804). The better yield in new test entry was due to bold grains having a test weight of 40.53 g/1000 grains and significantly higher number of earheads per square meter (345). Delay in sowing from timely (5^{th}-11^{th} November) to late sown (26^{th} Nov. to 2^{nd} December) conditions caused a yield reduction of 4.31 q/ha. The centre wise data are given in annexure-I as Tables 1.1.1 to 1.1.5.

Rainfed timely sown

One test entry *i.e.* HS 562 was evaluated against four checks (HS 507, VL 907, HPW 349 and VL 804) at three levels of nitrogen (40, 60 and 80 kg/ha) in split plot design with N levels in main plots and genotypes in sub plots, replicated thrice under rainfed conditions. The trial was conducted at five locations namely Almora, Bajaura, Khudwani, Malan and Shimla. The sowing was done using normalized seed rate of 125 kg/ha (considering the 1000 grain weight of 38 g) and sowing was done at a row spacing of 20 cm. The pooled data is presented in Table 1.2. Full nitrogen (as per treatment), phosphorus (30 kg P_2O_5/ha) and potash (20 kg K_2O) were applied at the time of sowing as basal. Weed control measures were followed as per the recommended practice.

The pooled analysis presented in Table 1.2 revealed significant differences in yield and attributes among nitrogen levels and genotypes whereas the interaction effects were found non-significant for grain yield and yield attributing characters. The test genotype was at par with the best check for yield and yield attributes. Application of nitrogen brought about increase in yield up to 80 kg N/ha and the highest mean yield (33.84 q/ha) was recorded at 80 kg N/ha. The check genotype VL 804 produced the highest grain yield (32.08 q/ha) which was statistically at par with test entry HS 562 (31.99 q/ha). The check genotype VL 804 had the highest number of earhead/sq.m., grains/earhead whereas check genotype VL 907 had the boldest grains (41.58 g/1000 grains) followed by test entry HS 562 (40.25 g/1000 grains). The performance of genotypes at individual centres is presented in Table 1.2.1 to 1.2.5 in Annexure-I.

Table 1.2	Northern Hill Zone		RF-TAS-LON	Pooled		2014-15	
	N Levels						
Variety	N 40	Rk	N 60	Rk	N 80	Rk	Mean	Rk
			Yield, q/ha					
HS 562	27.44	2	33.10	1	35.44	2	31.99	2
HS 507 (c)	26.42	3	30.92	4	33.63	4	30.32	4
VL 907 (c)	26.03	4	31.65	3	33.63	3	30.44	3
HPW 349 (c)	24.86	5	28.84	5	31.00	5	28.23	5
VL 804 (c)	28.23	1	32.50	2	35.50	1	32.08	1
Mean	26.60		31.40		33.84		30.61	
	N Levels (A)		Variety (B)		B within A		A within B	
CD(0.05)	1.00		1.42		NS		NS	
			Earhead/sq.m.					
HS 562	262	1	290	1	300	3	284	2
HS 507 (c)	253	3	276	4	285	5	271	4
VL 907 (c)	250	4	278	3	303	2	277	3
HPW 349 (c)	248	5	255	5	288	4	264	5
VL 804 (c)	256	2	287	2	318	1	287	1
Mean	254		277		299		277	
	N Levels (A)		Variety (B)		B within A		A within B	
CD(0.05)	9.72		15.01		NS		NS	
			Grains/Earhead					
HS 562	27.40	2	28.93	3	29.94	3	28.75	3
HS 507 (c)	27.03	3	29.17	2	30.24	1	28.81	2
VL 907 (c)	25.75	4	27.72	5	27.52	4	26.99	5
HPW 349 (c)	25.74	5	28.08	4	27.26	5	27.02	4
VL 804 (c)	29.57	1	29.88	1	30.06	2	29.84	1
Mean	27.10		28.76		29.00		28.29	
	N Levels (A)		Variety (B)		B within A		A within B	
CD(0.05)	1.00		1.56		NS		NS	
			1000 Grains Weight, g					
HS 562	39.45	3	40.63	2	40.67	2	40.25	2
HS 507 (c)	39.56	2	39.59	4	40.03	4	39.73	4
VL 907 (c)	41.11	1	41.50	1	42.14	1	41.58	1
HPW 349 (c)	39.25	4	40.43	3	40.19	3	39.96	3
VL 804 (c)	38.32	5	38.69	5	38.99	5	38.67	5
Mean	39.54		40.17		40.40		40.04	
	N Levels (A)		Variety (B)		B within A		A within B	
CD(0.05)	0.70		0.82		NS		NS	

Centres: Alomra, Bajaura, Khudwani, Malan, Shimla

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, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganganagar 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 0.21% at Durgapura to 0.80% at Gurdaspur. 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 (644.4 mm),followed by Delhi (316.6 mm), Karnal (312.5 mm), Gurdaspur (307.6 mm), Hisar (264.1 mm), Ludhiana (229.1 mm), Agra (223.8 mm), Pantnagar (194.8 mm), Nagina (174.8 mm), Sriganganagar (136.9 mm) and the lowest amount of rain (118.4 mm) during the wheat crop season 2014-15 was received at Durgapura. The maximum and minimum temperatures at different locations were39.7°Cand 5.3°C at Agra,44.2°C and 3.8°C at Delhi, 35.3°C and 5.3°C at Durgapura, 36.5°C and 5.4°C at Gurdaspur, 37.0°C and 3.9°C at Hisar, 35.1 °C and 3.3 °C Jammu, 37.2°C and 5.0°C at Karnal, 36.6°C and 5.2°C at Ludhiana, 39.0°C and 3.9°C at Nagina, and 37.7°C and 5.5°C at Pantnagar,38.4°C and 4.5°C at Sriganganagar, respectively. In this zone four coordinated trials were conducted to evaluate second year genotypes for different growing conditions at various locations.

EVALUATION UNDER DIFFERENT GROWINGCONDITIONS

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

Irrigated Timely Sown-*durum*

The performance of *durum* test entry, HD 4730 against four checks (PDW 233, PDW 291, PDW 314 and WH 1105) was evaluated at eleven centres *i.e.* Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganganagar under normal and late sown conditions. For pooled analysis all the eleven centres data were considered for there was no rejection. The normal sowing time was from 29th October to 4th November and the late sowing was from 26th November to 2nd 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. Nitrogen was applied in three splits (1/3 at sowing and remaining 2/3 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-TS-TDM-DOS Pooled 2014-15

Varieties	Time of sowing: Timely	Rk	Late	Rk	Mean	Rk
			Yield, q/ha			
HD 4730	49.07	1	45.10	2	47.09	1
PDW 314 (c)	48.50	3	45.66	1	47.08	2
PDW 233 (c)	42.55	5	37.89	5	40.22	5
PDW 291 (c)	43.28	4	42.61	4	42.95	4
WH 1105 (c)	48.94	2	43.57	3	46.25	3
Mean	46.47		42.97		44.72	
CD (0.05)	Sowing (A) 2.19	Varieties (B) 3.49	B within A 4.94	A within B 4.57		
			Earhead/sq.m.			
HD 4730	411	3	373	4	392	4
PDW 314 (c)	428	2	383	2	405	2
PDW 233 (c)	411	4	375	3	393	3
PDW 291 (c)	430	1	391	1	411	1
WH 1105 (c)	382	5	371	5	377	5
Mean	412		379		396	
CD (0.05)	Sowing (A) 5.59	Varieties (B) 18.15	B within A NS	A within B NS		
			Grains/Earhead			
HD 4730	29.49	2	31.87	3	30.68	3
PDW 314 (c)	29.47	3	33.11	2	31.29	2
PDW 233 (c)	28.48	4	28.61	5	28.55	4
PDW 291 (c)	24.64	5	29.15	4	26.89	5
WH 1105 (c)	35.61	1	34.69	1	35.15	1
Mean	29.54		31.49		30.51	
CD (0.05)	Sowing (A) 0.59	Varieties (B) 1.48	B within A 2.10	A within B 1.96		
			1000 Grains Weight, g			
HD 4730	41.87	2	39.38	1	40.62	2
PDW 314 (c)	39.76	3	37.70	3	38.73	3
PDW 233 (c)	37.42	4	36.67	4	37.05	4
PDW 291 (c)	42.35	1	38.92	2	40.63	1
WH 1105 (c)	37.39	5	35.24	5	36.31	5
Mean	39.76		37.58		38.67	
CD (0.05)	Sowing (A) 0.30	Varieties (B) 1.09	B within A NS	A within B NS		

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

The perusal of pooled data in Table 2.1 indicates that there was a significant decline in yield from 46.47 q/ha to 42.97 q/ha when sowing was delayed from normal to late sown conditions because of significant reduction in number of earheads/m^2 and 1000 grain weight. The average yield decline due to delayed sowing was 7.5 per cent. On average basis, test entry

HD 4730 was numerically better than the best check PDW 314. The check entry WH 1105 and PDW 314 ranked the second and third under timely and third and first, respectively under late sown conditions. These were followed by check entry PDW 291 under both timely and late sown conditions with an average yield of 42.95 q/ha. The centre wise data are presented in Tables 2.1.1 to 2.1.11 in Annexure-I.

Irrigated Timely Sown Special Trial-*MABB*

The performance of marker assisted backcross breeding (MABB)" test entry, PBW 723was evaluated against four checks (PBW 343, HD 2967, DPW 621-50 and WH 1105) at six locations *i.e.* Delhi, Dhaulakuan, Jammu, Karnal, Ludhiana and Pantnagar under normal and late sown conditions. For pooled analysis only five centres data were considered for there was incomplete data from Dhaulakuan centre. The normal sowing time was from 5th to 11th November and the late sowing was from 26th November to 2nd 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. Nitrogen was applied in three splits (1/3 at sowing and remaining 2/3 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.

The perusal of pooled data in Table 2.2 indicates that there was a significant decline in yield from 46.59 q/ha to 42.23 q/ha when sowing was delayed from normal to late sown conditions because of significant reduction in number of earheads/m^{2}and 1000 grain weight. The average yield decline due to delayed sowing was 9.4 per cent. On average basis, the test entry PBW 723 was found significantly inferior to the best check entry WH 1105. The check entry WH 1105 ranked first both under timely and late sown conditions. The centre wise data are presented in Tables 2.2.1 to 2.2.6 in Annexure-I.

Restricted Irrigation

The restricted irrigation trial was conducted with the objective to evaluate the one *aestivum* test entry, MP 1277against three checks (HD 3043, PBW 644 and WH 1080) and one identified entry (WH 1142) at all the eleven locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar and Sriganganagar).For pooled analysis all the eleven centres data were considered for there was no rejection. The trial was laid out in a split plot design with number of irrigations in main and genotypes in sub plots with three replications. 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. Nitrogen, phosphorus and potash (90:60:40 kg N, P_2O_5 and K_2O) were applied as full basal was applied in I_1 treatment *i.e.* no irrigation, whereas 1/3 N and full phosphorus and potash

was applied as basal at sowing and remaining 2/3 nitrogen at first irrigation *i.e.* at 20-25 days after sowing in I_2 and I_3 treatments. The pooled analysis is presented in Table 2.3 and the centre wise data are in Annexure-I in Tables 2.3.1 to 2.3.11.

Table 2.2. North Western Plains Zone IR-TS-MABB-DOS Pooled 2014-15

Varieties	Time of sowing					
	Timely	Rk	Late	Rk	Mean	Rk
			Yield, q/ha			
PBW 723	48.05	2	43.57	2	45.81	2
PBW 343 (c)	45.07	4	38.92	5	42.00	5
HD 2967 (c)	44.04	5	41.49	4	42.77	4
DPW 621-50 (c)	45.81	3	42.38	3	44.09	3
WH 1105 (c)	50.00	1	44.78	1	47.39	1
Mean	46.59		42.23		44.41	
CD (0.05)	Sowing (A)	Varieties (B)	B within A	A within B		
	0.83	1.76	NS	NS		
			Earhead/sq.m.			
PBW 723	429	2	375	3	402	2
PBW 343 (c)	434	1	377	1	405	1
HD 2967 (c)	420	4	377	2	398	3
DPW 621-50 (c)	426	3	365	4	395	4
WH 1105 (c)	403	5	345	5	374	5
Mean	422		368		395	
CD (0.05)	Sowing (A)	Varieties (B)	B within A	A within B		
	16.25	NS	NS	NS		
			Grains/Earhead			
PBW 723	28.43	3	30.46	4	29.44	3
PBW 343 (c)	27.64	4	29.62	5	28.63	5
HD 2967 (c)	27.16	5	30.65	3	28.91	4
DPW 621-50 (c)	29.01	2	32.00	2	30.50	2
WH 1105 (c)	35.08	1	36.44	1	35.76	1
Mean	29.46		31.83		30.65	
CD (0.05)	Sowing (A)	Varieties (B)	B within A	A within B		
	1.02	2.59	NS	NS		
			1000 Grains Weight, g			
PBW 723	40.07	1	38.85	1	39.46	1
PBW 343 (c)	38.44	3	36.02	5	37.23	3
HD 2967 (c)	39.53	2	37.18	2	38.36	2
DPW 621-50 (c)	37.51	4	36.88	3	37.19	4
WH 1105 (c)	36.36	5	36.09	4	36.23	5
Mean	38.38		37.01		37.69	
CD (0.05)	Sowing (A)	Varieties (B)	B within A	A within B		
	0.52	1.31	NS	NS		

Centres: Delhi, Jammu, Karnal, Ludhiana, Pantnagar.

The perusal of data in Table 2.3 indicates that the test entry was not superior in yield when compared to the best check entry WH 1142 identified previous year. On an average basis there was significant increase in yield from 34.18 q/ha to 41.63 q/ha when number of irrigation increased from no irrigation to two irrigations because of significant increase in number of earheads/m^2 and 1000 grain weight.

Table 2.3. North Western Plains Zone RIR-TS-TAS Pooled 2014-15

Varieties	Irrigation levels: No	Rk	One CRI	Rk	Two CRI&LT	Rk	Mean	Rk
			Yield, q/ha					
MP 1277	34.72	2	41.01	2	42.98	1	39.57	2
HD 3043 (c)	32.44	5	37.68	5	40.14	5	36.76	5
WH 1080 (c)	34.59	3	38.70	4	40.81	4	38.03	4
PBW 644 (c)	33.16	4	40.51	3	42.09	3	38.59	3
WH 1142 (l)	36.01	1	41.06	1	42.14	2	39.73	1
Mean	34.18		39.79		41.63		38.54	
CD (0.05)	Irrigation (A)		Varieties (B)		B within A		A within B	
	0.59		1.05		NS		NS	
			Earhead/sq.m.					
MP 1277	327	4	384	1	400	1	370	3
HD 3043 (c)	336	2	379	3	397	3	371	2
WH 1080 (c)	339	1	379	2	398	2	372	1
PBW 644 (c)	311	5	362	5	375	5	349	5
WH 1142 (l)	327	3	371	4	385	4	361	4
Mean	328		375		391		365	
CD (0.05)	Irrigation (A)		Varieties (B)		B within A		A within B	
	4.89		8.08		NS		NS	
			Grains/Earhead					
MP 1277	28.93	3	28.67	4	28.43	4	28.67	4
HD 3043 (c)	27.76	5	29.39	3	29.65	2	28.93	3
WH 1080 (c)	27.82	4	28.06	5	27.99	5	27.96	5
PBW 644 (c)	29.26	2	29.49	2	29.21	3	29.32	2
WH 1142 (l)	31.38	1	32.25	1	30.56	1	31.40	1
Mean	29.03		29.57		29.17		29.26	
CD (0.05)	Irrigation (A)		Varieties (B)		B within A		A within B	
	0.60		1.11		NS		NS	
			1000 Grains Weight, g					
MP 1277	39.94	1	39.81	1	40.33	2	40.02	1
HD 3043 (c)	37.39	4	36.30	4	36.63	5	36.78	5
WH 1080 (c)	39.38	2	38.79	3	38.84	3	39.00	3
PBW 644 (c)	39.20	3	39.68	2	40.36	1	39.75	2
WH 1142 (l)	36.72	5	36.22	5	37.68	4	36.88	4
Mean	38.53		38.16		38.77		38.49	
CD (0.05)	Irrigation (A)		Varieties (B)		B within A		A within B	
	0.40		0.88		NS		NS	

Centres: Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Nagina, Pantnagar, Sriganganagar.

Rainfed Conditions

In this trial only one new test entry, WH1164 was evaluated against three checks (PBW 644,HD 3043 and WH 1080) and one identified entry (PBW 660) at three levels of nitrogen (40, 60 and 80 kg/ha) in split plot design under rainfed conditions. This trial was conducted at eight locations (Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Ludhiana and Sriganganagar). Full nitrogen as per treatment, phosphorus (30 kg P_2O_5/ha) and potash (20 kg K_2O/ha) were applied at the time of sowing. Irrigation and weed control measures were followed as per the recommended practice.

All the eight centres who conducted this trial were considered for pooled analysis. The pooled analysis is presented in Table 2.4 and the centre wise data are in Annexure-I in Tables 2.4.1 to 2.4.8. The pooled analysis of all the eight locations (Table 2.4) revealed that on average basis the check entry HD 3043 produced the highest (37.84 q/ha) and significantly higher yield than all other entries except PBW 644 which was at par. This may be because of its better tillering and grains/ earhead compared to other entries The test entry WH 1164 was not found superior to the above mentioned two check entries. Application of nitrogen, on average basis, brought about significant increase in yield up to 80 kg N/ha and the highest yield (39.28 q/ha) was recorded at 80 kg N/ha. The interaction between nitrogen levels and varieties was not significant with respect to yield and yield attributes.

Table 2.4. North Western Plains Zone RF-TAS-LON Pooled 2014-15

Varieties	Nitrogen levels 40	Rk	60	Rk	80	Rk	Mean	Rk
			Yield, q/ha					
WH 1164	32.70	3	36.60	4	38.77	3	36.02	3
PBW 644 (c)	34.62	1	38.08	2	40.37	2	37.69	2
HD 3043 (c)	33.45	2	38.91	1	41.16	1	37.84	1
WH 1080 (c)	29.71	5	36.34	5	38.35	4	34.80	5
PBW 660 (l)	32.60	4	36.89	3	37.76	5	35.75	4
Mean	32.61		37.36		39.28		36.42	
CD (0.05)	Nitrogen (A) 0.48		Varieties (B) 1.13		B within A NS		A within B NS	
			Earhead/sq.m.					
WH 1164	301	5	318	5	338	5	319	5
PBW 644 (c)	307	4	327	4	339	4	324	4
HD 3043 (c)	317	2	337	1	359	1	338	1
WH 1080 (c)	315	3	336	3	351	2	334	3
PBW 660 (l)	319	1	336	2	349	3	335	2
Mean	312		331		347		330	
CD (0.05)	Nitrogen (A) 4.32		Varieties (B) 7.62		B within A NS		A within B NS	
			Grains/Earhead					
WH 1164	29.09	3	29.67	4	29.42	4	29.39	3
PBW 644 (c)	31.90	1	32.56	2	32.30	2	32.26	2
HD 3043 (c)	30.62	2	34.03	1	32.32	1	32.33	1
WH 1080 (c)	25.88	5	30.02	3	29.73	3	28.54	4
PBW 660 (l)	26.65	4	28.57	5	27.90	5	27.71	5
Mean	28.83		30.97		30.33		30.04	
CD (0.05)	Nitrogen (A) 0.70		Varieties (B) 1.30		B within A NS		A within B NS	
			1000 Grains Weight, g					
WH 1164	41.71	1	42.76	1	42.33	1	42.27	1
PBW 644 (c)	39.14	4	39.55	4	39.97	4	39.55	4
HD 3043 (c)	37.56	5	37.52	5	38.19	5	37.76	5
WH 1080 (c)	40.00	3	40.15	3	40.06	3	40.07	3
PBW 660 (l)	41.40	2	41.78	2	41.62	2	41.60	2
Mean	39.96		40.35		40.43		40.25	
CD (0.05)	Nitrogen (A) 0.39		Varieties (B) 1.14		B within A NS		A within B NS	

Centres: Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Ludhiana, Sriganganagar.

North Eastern Plains Zone

The North Eastern Plains Zone (NEPZ) is the second most important wheat growing zone of the country consisting of Assam, Bihar, Jharkhand, Orissa, Eastern parts of UP and West Bengal. In all eleven centres namely Burdwan, Coochbehar, Faizabad, IARI Pusa, Kalyani, Kanpur, Ranchi, RAU Pusa, 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 0.37 per cent at Varanasi to 0.78 per cent at Coochbehar. The soils of this zone are low to medium in available nitrogen, medium to high in available phosphorus and low to high in available 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 during the varied from 6.9 mm at PUSA Samastipur to 310.5 mm at Kanpur during the wheat season of 2014-15. The rainfall was the highest at Kanpur (310.5 mm) followed by Faizabad (222.2 mm), Varanasi (188.0 mm), Ranchi (143.5 mm), Sabour (115.9 mm), Kalyani (85.7 mm), Coochbehar (40.62 mm), and IARI, Pusa (6.9 mm). The maximum and minimum temperatures at different locations were 32.52°C and 8.29°C at Coochbehar, 33.7°C and 6.4°C at Faizabad, 34.01°C and 7.1°C at IARI Pusa, 37.3°C and 9.6°C at Kalyani, 42.2°C and 5.7°C at Kanpur, 35.9°C and 2.4°C at Ranchi and 39.0°C and 6.2°C at Varanasi.

EVALUATION UNDER DIFFERENT GROWINGCONDITIONS

In this zone, the performance of marker assisted back crossing (MABB) genotypes were evaluated for sowing time under irrigated conditions and the results are summarized here under;

Irrigated Late Sown conditions-MABB

In this trial, one test entry (MMBL 283) and four checks (HD 2985, HUW 234, HI 1563and DBW 14) were evaluated at late and very late sown conditions in split plot design and replicated thrice. Main plots comprised the dates of sowing treatment and the genotypes were in the sub plots. The trial was conducted at five locations (Coochbehar, Faizabad, IARI Pusa, Kanpur and Varanasi). NPK fertilizers were applied @ 120:60:40 kg N, P_2O_5 and K_2O/ha with 1/3 N and full P and K as basal application and the remaining 2/3 nitrogen was applied in two equal splits (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). The normalized seed rate used was 125 kg/ha (considering the 1000 grain weight of 38 g) and sowing was done at a row spacing of

20 cm. Irrigation and weed control measures were followed as per recommended package of practices for the zone. Centre wise data are given in Annexure I as Tables 3.1.1 to 3.1.5.

The pooled analysis of data from five locations (Table 3.1) revealed significant effect of sowing time and variety on yield and yield attributes. On average basis, late sowing produced significantly higher grain yield (32.37 q/ha) than very late sowing (23.86 q/ha). Check variety DBW 14 gave significantly higher grain yield (30.73 q/ha) followed by HD 2985 (30.02 q/ha) which was also a check variety. Test entry MMBL 283 ranked last (5th)position and produced grain yield (25.96 q/ha).

Table 3.1 North Eastern Plains Zone IR-LS-MABB-DOS Pooled 2014-15

Variety	Sowing time					
	Late	Rk	Very Late	Rk	Mean	Rk
			Yield,q/ha			
MMBL 283	29.52	5	22.39	5	25.96	5
HD 2985 (c)	34.91	2	25.12	2	30.02	2
HUW 234 (c)	29.58	4	23.18	3	26.38	4
HI 1563 (c)	32.26	3	22.69	4	27.48	3
DBW 14 (c)	35.55	1	25.90	1	30.73	1
Mean	32.37		23.86		28.11	
CD(0.05)	Sowing (A)	Variety (B)	B within A		A within B	
	0.79	1.82	NS		NS	
			Earhead/sq.m.			
MMBL 283	325	3	297	5	311	5
HD 2985 (c)	318	5	327	3	323	3
HUW 234 (c)	322	4	332	1	327	2
HI 1563 (c)	334	2	309	4	321	4
DBW 14 (c)	342	1	332	2	337	1
Mean	328		319		324	
CD(0.05)	Sowing (A)	Variety (B)	B within A		A within B	
	3.77	NS	NS		NS	
			Grains/Earhead			
MMBL 283	24.81	5	27.71	1	26.26	3
HD 2985 (c)	31.83	1	26.12	2	28.97	1
HUW 234 (c)	26.17	4	24.97	4	25.57	4
HI 1563 (c)	27.29	2	25.64	3	26.46	2
DBW 14 (c)	26.41	3	22.34	5	24.37	5
Mean	27.30		25.36		26.33	
CD(0.05)	Sowing (A)	Variety (B)	B within A		A within B	
	NS	1.91	3.54		3.69	
			1000 Grains Weight, g			
MMBL 283	37.69	2	28.80	4	33.25	3
HD 2985 (c)	37.11	4	29.78	3	33.44	2
HUW 234 (c)	37.67	3	27.77	5	32.72	5
HI 1563 (c)	36.48	5	29.78	2	33.13	4
DBW 14 (c)	41.94	1	35.61	1	38.78	1
Mean	38.18		30.35		34.26	
CD(0.05)	Sowing (A)	Variety (B)	B within A		A within B	
	0.59	1.82	NS		NS	

Centres: Coochbehar, Faizabad, IARI Pusa, Kanpur, Varanasi

CENTRAL ZONE

In this zone the agronomic evaluation of the second year advanced varietal trial of genotypes was done at ten locations namely Bilaspur, Gwalior, Indore, Junagarh, Jabalpur, Kota, Powarkheda, Sagar, Udaipur and Vijapur under various growing conditions. The data on soil and climatic parameters at various locations are given in Annexure II and Annexure III, respectively. The soils at most of the centres are sandy clay loam to clay, neutral to slightly alkaline in reaction (pH: 7.4 to 8.1) except Vijapur where the soils are sandy loam. All the centres were low to medium in organic carbon (0.3-0.79 per cent) status. The available nitrogen status was low to medium (198-322 kg/ha), phosphorus medium to high (14.2-50.7 kg/ha) and potassium was in high (240-550 kg/ha) at most of the locations. The maximum rainfall in this zone during the wheat growing season 2014-15 was recorded at Powarkheda (287 mm), followed by Sagar (281.9 mm), Kota (230mm), Bilaspur (205 mm) , Indore (197.2 mm), Gwalior (196 mm), Jabalpur (159.5 mm), Udaipur (65.8 mm), Junagarh (58.6 mm) and Vijapur (21.5 mm). The average maximum and minimum temperatures were 30.9°C and 16.9°C at Bilaspur, 27.5°C and 12.2°C at Gwalior, 28.5°C and 12.9°C at Indore, 28.7 °C and 13.3 °C at Jabalpur, 32.9°C and 14.9°C at Junagarh, 28.3°C and 13.7°C at Kota, 31.7°C and 10.4°C at Powarkheda, 29.7°C and 16.4°C at Sagar, 29.5°C and 13.5°C at Udaipur and 31.3°C and 15.9°C at Vijapur, respectively.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

Two coordinated trials for evaluation of new genotypes for various growing conditions (irrigated timely sown and irrigated late sown) were conducted in this zone.

Irrigated Timely Sown- *durum*

In this trial, two durum test entries {HD 4728(d) and HD 4730(d)} were evaluated against three checks {HI 8737 (dl), MPO 1215 (dc),HI 8498 (dc)} at two dates of sowing (timely and late) under irrigated conditions. The trial was conducted at nine centres (Bilaspur, Gwalior, Indore, Junagarh, Kota, Powarkheda, Sagar, Udaipur and Vijapur) in split plot design with date of sowing in main plots and varieties in sub plots. The sowing was done using the normalized seed rate of 100 kg/ha at a row-to-row spacing of 20 cm. Nitrogen (120 kg/ha) was applied in three splits (1/3 at sowing and remaining 2/3 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 (60 kg P_2O_5/ha) and potash (40 kg K_2O/ha) were applied as basal.

Table 4.1	**Central Zone**	**IR-TS-TAD-DOS**		**Pooled**	**2014-15**	
	Sowing time					
Variety	Timely	Rk	Late	Rk	Mean	Rk
			Yield, q/ha			
HD 4728 (d)	52.79	1	45.06	1	48.93	1
HD 4730 (d)	49.57	3	41.12	3	45.34	3
MPO 1215 (dc)	45.61	4	38.89	4	42.25	4
HI 8498 (dc)	44.58	5	35.43	5	40.01	5
HI 8737 (dl)	51.72	2	43.46	2	47.59	2
Mean	48.85		40.79		44.82	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	1.37	1.67	NS	NS		
			Earhead/sq.m.			
HD 4728 (d)	372	2	346	2	359	1
HD 4730 (d)	384	1	334	3	359	2
MPO 1215 (dc)	336	4	316	5	326	4
HI 8498 (dc)	324	5	320	4	322	5
HI 8737 (dl)	366	3	347	1	357	3
Mean	356		332		344	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	2.78	7.66	10.83	10.03		
			Grains/ Earhead			
HD 4728 (d)	28.70	5	29.89	3	29.30	4
HD 4730 (d)	29.34	4	31.19	1	30.26	1
MPO 1215 (dc)	29.76	3	29.37	4	29.56	3
HI 8498 (dc)	29.87	1	25.96	5	27.91	5
HI 8737 (dl)	29.80	2	30.05	2	29.93	2
Mean	29.49		29.29		29.39	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	NS	1.48	2.10	2.02		
			1000 Grains Weight, g			
HD 4728 (d)	51.32	1	45.23	1	48.28	1
HD 4730 (d)	46.82	5	41.43	5	44.12	5
MPO 1215 (dc)	48.32	4	43.16	4	45.74	4
HI 8498 (dc)	48.61	3	44.49	2	46.55	2
HI 8737 (dl)	49.43	2	43.66	3	46.55	3
Mean	48.90		43.60		46.25	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	0.72	1.50	NS	NS		

Centres: Bilaspur, Gwalior, Indore, Junagarh, Kota, Powarkheda , Sagar, Udaipur, Vijapur

The pooled analysis of all the nine centres (Bilaspur, Gwalior, Indore, Junagarh, Kota, Powarkheda, Sagar, Udaipur and Vijapur), is presented in Table 4.1. The centre wise data

are in Annexure-I in Tables 4.1.1 to 4.1.9. The pooled data presented in Table 4.1 revealed that delayed sowing from timely (48.85 q/ha) to late (40.79 q/ha) sown brought about reduction in the grain yield significantly (16.49 per cent).The varietal differences were significant at all the locations. On an average basis the test entry HD 4728 (d) produced the maximum and significantly higher grain yield (48.93 q/ha) in comparison to all the entries and checks except recently identified check HI 8737. It ranked on first position under timely as well as in late sown conditions. Second test entry HD 4730 (d) ranked 3rd on mean basis and yielded significantly higher than checks but significantly lesser than latest identified check *i.e.* HI 8737 (dI). Top yielder test entry HD 4728 (d) ranked first in thousand grain weight and earhead/m^2 whereas second test entry HD 4730 (d) ranked first in grains/earhead on mean basis. The sowing time and genotype interaction was non-significant for yield. The performance of genotypes at different centres is given in Tables 4.1.1 to 4.1.9of Annexure I.

Irrigated Late Sown-*MABB*

One test entry, HD 2932 carrying *Lr19/ Sr25* genes, was evaluated against four checks {MP 3336 (c), HD 2864 (c), Raj 4083 (c) and HD 2932 (c)} for its performance under irrigated late sown conditions. This trial was conducted at five locations (Bilaspur, Indore, Jabalpur, Powarkheda and Vijapur) with two sowing times (late and very late) in main plots and genotypes in sub plots in split plot design with three replications. The sowing was done using the normalized seed rate of 125 kg/ha at a row-to-row spacing of 20 cm. Nitrogen (90 kg/ha) was applied in three splits (1/3 at sowing and remaining 2/3 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 (60 kg P_2O_5/ha) and potash (40 kg K_2O/ha) were applied as basal.

The pooled analysis of data from all the five centres is presented in Table 4.2 and the centre wise data are reported in Annexure-I as Tables 4.2.1 to 4.2.5. The delay in sowing from late (38.98 q/ha) to very late (33.13 q/ha) reduced the grain yield (15.00 per cent) significantly. On average basis, the check entry HD 2932 produced the maximum and significantly higher grain yield (38.20 q/ha) than the test entry and other checks. Incorporation of *Lr19/Sr25* genes in HD 2932 resulted in decline in grain yield and this test entry ranked fourth (35.43 q/ha). Thehighestearhead/m^2, grains/earhead and 1000 grain weight was observed in HD

2864 (c), HD 2932 carrying *Lr19/Sr25* genes and HD 2932 (c), respectively. Interaction between genotype and sowing time was significant for grain yield only.

Table 4.2 Central Zone **IR-LS-MABB-DOS** **Pooled** **2014-15**

Variety	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk
			Yield, q/ha			
HD 2932+*Lr19/Sr25*	38.79	3	32.08	4	35.43	4
MP 3336 (c)	39.34	2	32.42	3	35.88	2
HD 2864 (c)	36.35	5	35.19	1	35.77	3
Raj 4083 (c)	38.20	4	31.79	5	34.99	5
HD 2932 (c)	42.21	1	34.20	2	38.20	1
Mean	38.98		33.13		36.06	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	1.60	2.09	2.95	3.00		
			Earhead/sq.m.			
HD 2932+*Lr19/Sr25*	411	2	378	5	395	4
MP 3336 (c)	408	3	413	1	411	2
HD 2864 (c)	430	1	395	3	413	1
Raj 4083 (c)	384	5	379	4	381	5
HD 2932 (c)	400	4	410	2	405	3
Mean	407		395		401	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	NS	NS	NS	NS		
			Grains/ Earhead			
HD 2932+*Lr19/Sr25*	27.96	3	24.66	2	26.31	1
MP 3336 (c)	26.25	4	22.95	5	24.60	5
HD 2864 (c)	25.00	5	25.75	1	25.38	4
Raj 4083 (c)	28.64	2	23.35	3	25.99	2
HD 2932 (c)	28.81	1	23.03	4	25.92	3
Mean	27.33		23.95		25.64	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	0.92	NS	NS	NS		
			1000 Grains Weight, g			
HD 2932+*Lr19/Sr25*	36.74	3	35.13	5	35.93	5
MP 3336 (c)	38.32	2	35.40	4	36.86	2
HD 2864 (c)	36.23	4	35.75	3	35.99	4
Raj 4083 (c)	36.17	5	36.46	2	36.31	3
HD 2932 (c)	38.58	1	37.06	1	37.82	1
Mean	37.21		35.96		36.58	
	Sowing (A)	Variety (B)	B within A	A within B		
CD (0.05)	1.04	NS	NS	NS		

Centres: Bilaspur, Indore, Jabalpur, Powarkheda ,Vijapur

Peninsular Zone

In Peninsular zone five centres (Akola, Dharwad, Niphad, Pune and Washim), are actively engaged in research activities of coordinated wheat agronomy programme. The data of soil and climatic parameters are reported in Annexure II and Annexure III, respectively. The soils of this zone are clayey with organic carbon ranging from 0.26 to 0.68 per cent. The available soil nitrogen varied from low to medium (148 to 300 kg N/ha), phosphorus from medium to high (20.63 to 56.0 kg P/ha) whereas the potash content in soil was very high (376 to 568 kg K/ha). The water is a limiting factor in this zone and productivity is mainly dependent on rainfall and also the temperature during the crop growing cycle (November to April). Majority of rainfall received was in the months of September-November, and some rainfall was received during later stages in the crop season. The maximum rainfall received was 283.6 mm at Dharwad followed by 167.5 mm at Akola, 125.0 mm at Pune and 119.1 mm at Niphad. The average weekly maximum and minimum temperatures were 41.5°C and 7.0°Cat Akola, 36.6 °C and 17.2 °C at Annigeri, 35.2 °C and 12.8 °C at Dharwad, 37.5°C and 16.2°C at Ugar Khurd, 38.9 °C and 8.6 °C at Vijapur, 39.0°C and 6.1°C at Niphad, 37.4 °C and 6.9°C at Pune, and 37.9 °C and 17.6 °C at Washim, respectively.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

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

Irrigated Late Sown-MABB

One test "marker assisted backcross breeding (MABB)" genotype, HD 2932 + *Lr19/Sr25* was evaluated at two dates of sowing *i.e.* late (26th Nov. to 2nd December) and very late (17th Dec. to 23rd December) against four checks *viz.* MP 3336 (c), HD 2864 (c), Raj 4083 and HD 2932 at five locations (Akola, Dharwad, Niphad, Pune and Ugar) in split plot design with three replications. The sowing was done using the normalized (adjusted considering 1000 grains weight of 38 g) seed rate of 125 kg/ha at a row-to-row spacing of 18 cm. NPK fertilizers were applied @ 90:60:40 kg N, P_2O_5 and K_2O/ha Nitrogen was applied in three splits (1/3 at sowing and remaining 2/3 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 were applied as basal.

Table 5.1. Peninsular Zone	IR-LS-MABB-DOS		Pooled		2014-15	
	Time of sowing					
Variety	Late	Rk	Very Late	Rk	Mean	Rk
			Yield, q/ha			
HD 2932 + *Lr19/Sr25*	43.33	2	37.75	1	40.54	2
MP 3336 (c)	38.27	5	34.39	5	36.33	5
HD 2864 (c)	41.52	3	37.23	2	39.38	3
RAJ 4083 (c)	40.60	4	35.21	4	37.90	4
HD 2932 (c)	45.16	1	36.36	3	40.76	1
Mean	41.77		36.19		38.98	
CD (0.05)	Sowing (A)		Variety (B)	B within A	A within B	
	1.09		1.96	NS	NS	
			Earhead/sq.m.			
HD 2932 + *Lr19/Sr25*	403	4	384	5	394	5
MP 3336 (c)	440	2	417	2	428	2
HD 2864 (c)	439	3	409	3	424	3
RAJ 4083 (c)	391	5	400	4	395	4
HD 2932 (c)	451	1	439	1	445	1
Mean	425		410		417	
CD (0.05)	Sowing (A)		Variety (B)	B within A	A within B	
	NS		31.39	NS	NS	
			Grains/Earhead			
HD 2932 + *Lr19/Sr25*	26.52	1	26.18	1	26.35	1
MP 3336 (c)	21.15	5	22.38	4	21.76	5
HD 2864 (c)	24.66	3	25.00	2	24.83	2
RAJ 4083 (c)	25.04	2	23.34	3	24.19	3
HD 2932 (c)	24.34	4	21.48	5	22.91	4
Mean	24.34		23.68		24.01	
CD (0.05)	Sowing (A)		Variety (B)	B within A	A within B	
	0.64		2.17	NS	NS	
			1000 Grains weight, g			
HD 2932 + *Lr19/Sr25*	40.45	4	37.36	4	38.90	4
MP 3336 (c)	42.51	3	38.14	3	40.33	3
HD 2864 (c)	39.12	5	37.05	5	38.09	5
RAJ 4083 (c)	43.66	1	39.15	2	41.41	1
HD 2932 (c)	42.54	2	39.31	1	40.92	2
Mean	41.66		38.20		39.93	
CD (0.05)	Sowing (A)		Variety (B)	B within A	A within B	
	0.76		1.01	NS	NS	

Centres: Akola, Dharwad, Niphad, Pune, Ugar

The pooled analysis of five centres (Akola, Dharwad, Niphad, Pune and Ugar) is presented in Table 5.1 and the centre wise data are in Annexure-I as Tables 5.1.1 to 5.1.5. The effect

of sowing time was significant for yield and yield attributes except earhead density and for genotypes the effects were significant for yield and yield attributes. The interaction effects were non-significant for yield and yield attributes. The delay in sowing from late (41.77 q/ha) to very late (36.19 q/ha) reduced the grain yield by 4.58 q/ha (13.4 per cent). The yield decline was due to significant reduction in grain number and weight under very late sown conditions as compared to late sown conditions. Under late sown conditions the check entry HD 2932 produced the highest yield (45.16 q/ha) and under very late sown conditions the test entry HD 2932+*Lr19/Sr25* ranked first with a yield of 37.75 q/ha. On mean basis the check variety HD 2932 was top yielder with a mean yield of 40.76 q/ha followed by test entry HD 2932+*Lr19/Sr25* having yield of 40.54 q/ha. The test entry HD 2932+*Lr19/Sr25* produced the highest grains/earhead. The highest earhead density was observed in check variety HD 2932 (445 earheads/sq.m.) followed by MP 3336. The check variety Raj 4083 had the boldest grains with 1000 grain weight of 41.41 g.

Rainfed Conditions

In this trial two test entries NIAW 2030 and MACS 3927 (d), against four checks {NI 5439, AKDW 2997-16(dc), UAS 347 (l) and UAS 446 (dl)} at five locations (Annigeri, Bagalkot, Dharwad, Vijapur, Washim) were evaluated at three levels of nitrogen (40, 60 and 80 kg/ha) in split plot design under rainfed conditions. The data of Washim centre was not considered for pooled analysis due to low mean yield. Full nitrogen as per treatment, phosphorus (30 kg P_2O_5/ha) and potash (20 kg K_2O/ha) were applied at the time of sowing. Weed control measures were followed as per the recommended practice.

The pooled analysis is presented in Table 5.2 and the centre wise data are in Annexure-I in Tables 5.2.1 to 5.2.5. The pooled analysis of four locations (Table 5.2) revealed that on average basis, the check variety NI 5439 produced the highest (16.92 q/ha) yield which was significantly superior to the test entry and rest of the check varieties. The better yield was mainly due to better effective tillering. The boldest (52.91 g/1000 grains) and thinnest (34.64 g/1000 grains) grains were in test entry MACS 3927 and variety NI 5439, respectively.

Application of nitrogen, on average basis, brought about significant increase in yield up to 80 kg N/ha. The interaction between nitrogen levels and varieties was found non-significant with respect yield and yield attributes except 1000 grains weight.

Table 5.2. Peninsular Zone	RF-TAD-LON		Pooled		2014-15			
	Nitrogen level, kg/ha							
Variety	40	Rk	60	Rk	80	Rk	Mean	Rk
				Yield, q/ha				
NIAW 2030	14.54	5	15.57	5	16.27	5	15.46	5
MACS 3927 (d)	13.76	6	14.59	6	15.09	6	14.48	6
AKDW 2997-16 (dc)	14.89	4	16.10	3	17.23	2	16.07	3
UAS 446 (dl)	14.90	3	15.68	4	16.48	4	15.69	4
NI 5439 (c)	16.04	1	17.07	1	17.67	1	16.92	1
UAS 347 (l)	15.71	2	16.60	2	16.78	3	16.36	2
Mean	14.97		15.93		16.59		15.83	
CD (0.05)	Nitrogen (A)		Variety (B)		B within A		A within B	
	0.36		0.40		NS		NS	
				Earhead/sq.m.				
NIAW 2030	205	5	206	5	210	5	207	5
MACS 3927 (d)	205	5	205	6	206	6	205	6
AKDW 2997-16 (dc)	213	3	214	3	212	4	213	4
UAS 446 (dl)	213	3	214	4	217	2	215	3
NI 5439 (c)	217	1	220	1	221	1	219	1
UAS 347 (l)	215	2	215	2	214	3	215	2
Mean	211		212		213		212	
CD (0.05)	Nitrogen (A)		Variety (B)		B within A		A within B	
	NS		2.67		NS		NS	
				Grains/Earhead				
NIAW 2030	15.97	5	17.52	5	17.76	5	17.08	5
MACS 3927 (d)	12.69	6	13.38	6	13.74	6	13.27	6
AKDW 2997-16 (dc)	18.11	4	19.39	3	21.53	2	19.68	3
UAS 446 (dl)	21.49	2	18.28	4	18.43	4	19.40	4
NI 5439 (c)	21.73	1	22.28	1	22.77	1	22.26	1
UAS 347 (l)	19.61	3	21.05	2	21.10	3	20.59	2
Mean	18.27		18.65		19.22		18.71	
CD (0.05)	Nitrogen (A)		Variety (B)		B within A		A within B	
	NS		1.57		NS		NS	
				1000 Grains weight, g				
NIAW 2030	44.48	2	43.24	2	43.58	2	43.77	2
MACS 3927 (d)	52.76	1	52.88	1	53.10	1	52.91	1
AKDW 2997-16 (dc)	38.35	3	38.59	4	37.81	4	38.25	4
UAS 446 (dl)	36.87	4	39.71	3	40.86	3	39.15	3
NI 5439 (c)	34.01	6	34.78	6	35.12	6	34.64	6
UAS 347 (l)	36.70	5	36.39	5	36.53	5	36.54	5
Mean	40.53		40.93		41.17		40.88	
CD (0.05)	Nitrogen (A)		Variety (B)		B within A		A within B	
	NS		1.02		1.76		1.75	

Centres: Annigeri, Bagalkot, Dharwad, Vijapur

Production Technologies

PRODUCTION TECHNOLOGIES

Special coordinated trials on site specific nutrient management, tillage and nitrogen management, irrigation methods, relay cropping and tillage, spacing and nutrient management for maximising productivity were conducted to address various issues in different wheat growing zones. The results of various experiments on updating the package of practices are summarised in this section.

SPL-1: Precision nutrient management in wheat

Precision nutrient management is the key issue for enhancing fertiliser use efficiency of the wheat crop. To optimise nutrient usage and maximise wheat yield with the help of site specific nutrient management based on nutrient expert, trials were conducted at eleven centres across the wheat growing zones (Bajaura, Malan, Durgapura, Karnal, Ludhiana, Pantnagar, Coochbehar, Ranchi, Sabour, Varanasi and Udaipur). The experiment was conducted in split plot design with two methods of tillage practices (conventional and zero tillage) in main plot and five practices of nutrient management *viz.* i.) Recommended NPK @ 150:60:40 kg/ha, full P & K with 1/3rd N at sowing as basal and remaining 2/3rd N in two equal splits at first and second irrigations after irrigation; ii) Recommended NPK @ 150:60:40 kg/ha, full P & K with 1/3rd N at sowing as basal and remaining 2/3rd N in two equal splits at first and second irrigations just before irrigation, iii) SSNM, iv) SSNM+ Green Seeker and v) Nitrogen rich- 225 kg N/ha and recommended P & Kin sub plots, replicated thrice. The sowing was done using the normalized seed rate @ 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.

In Northern Hills Zone, this trial was conducted at Bajaura and Malan centres and the pooled data is presented in Table 7.1 and centre wise in Annexure-I as table 7.1.1 and 7.1.2.The effect of tillage was non-significant for yield obtained. On mean basis, the highest yield was obtained in N-Rich plot *i.e.* 150% N and 100% of recommended P&K for the location which was applied as full P and K using NPK mixture/DAP+MOP as basal and remaining N as two splits just before first and second irrigation (39.91 q/ha) which was significantly higher than all other treatments followed by Recommended NPK kg/ha. Apply full P&K using NPK mixture/DAP+MOP and the remaining N as two splits at first and second irrigation. The highest productivity was recorded in N-rich treatment which was significantly better than all other treatments. Gain in yield was due to higher number of earheads per square meter and

grains/earhead in N-Rich plot. Among other treatments, top dressing after irrigation gave higher yield (36.87 q/ha) as compared to other nutrient management treatments but was at par with others except nutrient expert SSNM treatment. However, higher 1000 grains weight was recorded in recommended NPK kg/ha when top dressing was done after irrigation.

Table 7.1. Northern Hill Zone			**SPL 1**	**Pooled**	**2014-15**	
	Tillage Options					
Variety	ZT	Rk	CT	Rk	Mean	Rk
		Yield, q/ha				
NPK 120:60:40 Al	35.68	2	38.07	2	36.87	2
NPK 120:60:40 Bl	34.90	3	36.39	3	35.64	3
SSNM Nutrient Expert	32.31	5	34.46	5	33.39	5
70% SSNM+ GreenSeeker	33.10	4	35.34	4	34.22	4
N-Rich plot- 150% N	39.04	1	40.77	1	39.91	1
Mean	35.01		37.01		36.01	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	NS	2.67	NS		NS	
		Earhead/sq.m.				
NPK 120:60:40 Al	325	2	353	2	339	2
NPK 120:60:40 Bl	314	3	340	3	327	3
SSNM Nutrient Expert	309	4	323	5	316	5
70% SSNM+ GreenSeeker	307	5	330	4	318	4
N-Rich plot- 150% N	342	1	366	1	354	1
Mean	319		342		331	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	NS	NS	NS		NS	
		Grains/Earhead				
NPK 120:60:40 Al	27.89	4	26.35	5	27.12	5
NPK 120:60:40 Bl	28.62	2	26.71	4	27.67	3
SSNM Nutrient Expert	27.61	5	27.65	2	27.63	4
70% SSNM+ GreenSeeker	28.23	3	27.12	3	27.67	2
N-Rich plot- 150% N	29.13	1	28.03	1	28.58	1
Mean	28.30		27.17		27.74	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	0.75	NS	NS		NS	
		1000 Grains Weight, g				
NPK 120:60:40 Al	39.64	2	41.33	1	40.48	1
NPK 120:60:40 Bl	39.26	3	40.71	2	39.98	2
SSNM Nutrient Expert	38.75	5	39.26	5	39.00	5
70% SSNM+ GreenSeeker	38.97	4	40.09	4	39.53	4
N-Rich plot- 150% N	39.78	1	40.17	3	39.98	3
Mean	39.28		40.31		39.79	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	0.94	NS	NS		NS	
Centres : Bajaura, Malan						

In Northern Western Plains Zone, this trial was conducted at four centres (Durgapura, Karnal, Ludhiana and Pantnagar) and pooled analysis data are presented in Table 7.2. The effect of tillage options basis was non-significant on productivity of wheat. The effect of various nutrient management options was also found statistically at par. However, the

number of earhead was the highest in Nitrogen rich- 225 kg N/ha treatment, grains per earhead highest in SSNM and 1000 grains weight highest in SSNM + Green Seeker treatment. The interaction effect of tillage and nutrient management was also non-significant. The centre wise data are presented in Tables 7.2.1 to 7.2.4 in Annexure-I.

Table 7.2. North Western Plains Zone **SPL-1** **Pooled** **2014-15**

Nutrient Management	Tillage ZT	Rk	CT	Rk	Mean	Rk
		Yield, q/ha				
NPK 150:60:40 Al	45.55	5	46.80	5	46.18	5
NPK 150:60:40 Bl	48.90	2	49.61	1	49.25	1
SSNM Nutrient Expert	49.05	1	49.26	2	49.16	2
70% SSNM+ GreenSeeker	47.16	4	48.59	4	47.88	4
N-Rich plot- 150% N	47.49	3	48.63	3	48.06	3
Mean	47.63		48.58		48.11	
CD (0.05)	Tillage (A) NS	Nutrient (B) NS	B within A NS	A within B NS		
		Earhead/sq.m.				
NPK 150:60:40 Al	379	4	404	3	392	3
NPK 150:60:40 Bl	400	2	407	2	404	2
SSNM Nutrient Expert	381	3	401	4	391	4
70% SSNM+ GreenSeeker	372	5	386	5	379	5
N-Rich plot- 150% N	424	1	416	1	420	1
Mean	392		403		397	
CD (0.05)	Tillage (A) 7.61	Nutrient (B) 14.36	B within A NS	A within B NS		
		Grains/Earhead				
NPK 150:60:40 Al	29.95	4	28.73	5	29.34	4
NPK 150:60:40 Bl	31.23	3	29.65	2	30.44	3
SSNM Nutrient Expert	32.12	1	29.26	3	30.69	1
70% SSNM+ GreenSeeker	31.23	2	29.94	1	30.58	2
N-Rich plot- 150% N	29.28	5	28.98	4	29.13	5
Mean	30.76		29.31		30.04	
CD (0.05)	Tillage (A) NS	Nutrient (B) NS	B within A NS	A within B NS		
		1000 Grains Weight, g				
NPK 150:60:40 Al	40.15	2	40.64	4	40.40	3
NPK 150:60:40 Bl	39.42	4	41.36	3	40.39	4
SSNM Nutrient Expert	40.06	3	42.08	2	41.07	2
70% SSNM+ GreenSeeker	40.51	1	42.20	1	41.36	1
N-Rich plot- 150% N	38.43	5	40.30	5	39.36	5
Mean	39.71		41.32		40.52	
CD (0.05)	Tillage (A) 0.87	Nutrient (B) NS	B within A NS	A within B NS		

Centres: Durgapura, Karnal, Ludhiana, Pantnagar.

In North Eastern Plains Zone, this trial was conducted at Coochbehar, Sabour, Ranchi and Varanasi centres and data is presented in Table 7.3. On mean basis, the highest yield was obtained in SSNM + Green Seeker (40.20 q/ha) which was statistically at par with SSNM Nutrient Expert (39.63 q/ha) and significantly higher than rest of the treatments. Gain in yield

was due to higher number of earhead per square meter and significantly higher thousand grain weight in SSNM Nutrient Expert. On average basis conventional tillage produced significantly higher grain yield (38.35 q/ha) than zero tillage (36.86 q/ha).

Table 7.3. North Eastern Plains Zone SPL 1 Pooled 2014-15

Variety	Tillage Options ZT	Rk	CT	Rk	Mean	Rk
			Yield, q/ha			
NPK 150:60:40 Al	35.99	4	37.09	4	36.54	4
NPK 150:60:40 Bl	36.56	3	37.74	3	37.15	3
SSNM Nutrient Expert	39.07	1	40.20	2	39.63	2
70% SSNM+ GreenSeeker	38.61	2	41.79	1	40.20	1
N-Rich plot- 150% N	34.08	5	34.95	5	34.51	5
Mean	36.86		38.35		37.61	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	0.70	1.53	NS		NS	
			Earhead/sq.m.			
NPK 150:60:40 Al	267	4	291	2	279	3
NPK 150:60:40 Bl	270	3	274	5	272	5
SSNM Nutrient Expert	277	1	291	3	284	2
70% SSNM+ GreenSeeker	276	2	293	1	285	1
N-Rich plot- 150% N	267	5	286	4	277	4
Mean	271		287		279	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	6.08	NS	NS		NS	
			Grains/Earhead			
NPK 150:60:40 Al	35.90	2	33.31	4	34.61	4
NPK 150:60:40 Bl	35.14	5	36.58	1	35.86	2
SSNM Nutrient Expert	37.23	1	35.65	2	36.44	1
70% SSNM+ GreenSeeker	35.18	4	35.29	3	35.23	3
N-Rich plot- 150% N	35.45	3	32.73	5	34.09	5
Mean	35.78		34.71		35.25	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	NS	1.62	NS		NS	
			1000 Grains Weight, g			
NPK 150:60:40 Al	38.85	4	38.97	3	38.91	4
NPK 150:60:40 Bl	39.89	2	38.84	5	39.36	3
SSNM Nutrient Expert	39.78	3	39.66	2	39.72	2
70% SSNM+ GreenSeeker	41.06	1	41.37	1	41.21	1
N-Rich plot- 150% N	38.53	5	38.89	4	38.71	5
Mean	39.62		39.54		39.58	
	Tillage (A)	Nutrient (B)	B within A		A within B	
CD(0.05)	0.34	0.97	NS		NS	

Centres: Coochbehar, Ranchi, Sabour, Varanasi

In Central Zone, this trial was conducted at Udaipur. The yield data showed that conventional tillage (54.4 q/ha) gave higher grain yield than zero tillage (47.84 q/ha). 70 % nutrient application through nutrient expert and rest with green seeker technology gave the maximum grain yield (56.87 q/ha), which was significantly higher than all other treatments except nutrient expert. The interaction effect between tillage options and nutrient

management was not significant for yield. Green seeker technology also produced maximum earhead/m^2 and grains/ earhead whereas thousand grain was maximum in N rich plots.

7.4. Central Zone	**SPL-1**		**Udaipur**		**2014-15**	
	Tillage options					
Management options	ZT	Rk	CT	Rk	Mean	Rk
			Yield, q/ha			
NPK 150:60:40 Al	40.82	5	49.15	5	44.98	5
NPK 150:60:40 Bl	43.08	4	53.67	4	48.37	4
SSNM-Nutrient Expert	51.24	2	55.57	2	53.41	2
70% SSNM + Green Seeker	54.19	1	59.55	1	56.87	1
N rich 150% N, full P K	49.87	3	54.08	3	51.98	3
Mean	47.84		54.40		51.12	
	Tillage (A)	Nutrient (B)	B within A	A within B		
CD (0.05)	NS	4.18	NS	NS		
			Earhead/sq.m.			
NPK 150:60:40 Al	450	5	465	5	458	5
NPK 150:60:40 Bl	458	4	472	4	465	4
SSNM-Nutrient Expert	472	3	487	2	479	3
70% SSNM + Green Seeker	488	1	492	1	490	1
N rich 150% N, full P K	476	2	485	3	481	2
Mean	469		480		474	
	Tillage (A)	Nutrient (B)	B within A	A within B		
CD (0.05)	NS	NS	NS	NS		
			Grains/ Earhead			
NPK 150:60:40 Al	19.52	5	21.87	4	20.69	5
NPK 150:60:40 Bl	20.05	4	23.52	2	21.78	3
SSNM-Nutrient Expert	22.42	2	22.78	3	22.60	2
70% SSNM+ Green Seeker	22.67	1	23.72	1	23.20	1
N rich 150% N, full P K	21.29	3	21.73	5	21.51	4
Mean	21.19		22.72		21.96	
	Tillage (A)	Nutrient (B)	B within A	A within B		
CD (0.05)	NS	NS	NS	NS		
			1000 Grains Weight, g			
NPK 150:60:40 Al	46.47	5	48.37	5	47.42	5
NPK 150:60:40 Bl	47.30	4	48.42	4	47.86	4
SSNM-Nutrient Expert	48.47	3	50.24	3	49.35	3
70% SSNM + Green Seeker	49.02	2	51.07	2	50.05	2
N rich 150% N, full P K	49.20	1	51.30	1	50.25	1
Mean	48.09		49.88		48.99	
	Tillage (A)	Nutrient (B)	B within A	A within B		
CD (0.05)	1.15	1.33	NS	NS		

Based on the nitrogen applied in various nutrient management options and the grain yield obtained, the agronomic nitrogen use efficiency was worked out for various locations. It was observed that the nitrogen use efficiency was higher in the treatment in which 70% of nitrogen and full P and K as well as micronutrient, if any, as recommended by Nutrient Expert for wheat was applied and the rest, as per requirement, was applied using GreenSeeker technology. Since the nitrogen applied using GreenSeeker was the lowest with

comparable yields at most of the locations, the agronomic nitrogen use efficiency was highest in this treatment. In general, across all the four wheat growing zones, the trend was similar except few exceptions. The results indicate that Nutrient Expert for Wheat and GreenSeeker combination may be best option for higher productivity at lower costs leading to more profitability.

Table 7.5. Nitrogen use efficiency in NHZ and NWPZ **SPL-1 2014-15**

		Agronomic NUE kg wheat/ kg N applied					
Tillage options	Nutrient Management	Bajaura	Malan	Durgapura	Karnal	Ludhiana	Pantnagar
Zero Tillage	Recommended NPK (AI)	29.10	30.36	35.98	27.70	26.95	30.92
	Recommended NPK (BI)	28.94	29.22	37.48	31.81	29.84	31.35
	SSNM-Nutrient Expert	25.43	26.26	39.02	30.12	30.14	44.86
	70% SSNM + GS	32.87	33.34	49.56	35.02	36.57	43.88
	N-Rich 150% of Rec.	21.94	21.44	27.39	14.08	26.49	21.76
Conventional Tillage	Recommended NPK (AI)	31.22	32.23	36.17	28.01	28.40	32.31
	Recommended NPK (BI)	30.43	30.22	38.84	30.85	30.04	32.66
	SSNM-Nutrient Expert	28.08	27.06	40.00	27.97	30.43	46.79
	70% SSNM + GS	34.71	36.78	50.18	36.28	37.90	45.79
	N-Rich 150% of Rec.	23.55	21.76	27.87	14.34	27.35	22.37

Table 7.6. Nitrogen use efficiency in NEPZ and CZ **SPL-1 2014-15**

		Agronomic NUE kg wheat/ kg N applied				
Tillage options	Nutrient Management	Coochbehar	Ranchi	Sabour	Varanasi	Udaipur
Zero Tillage	Recommended NPK (AI)	23.07	22.53	29.48	20.88	34.01
	Recommended NPK (BI)	21.96	23.18	29.25	23.12	35.90
	SSNM-Nutrient Expert	28.00	25.80	35.92	26.78	38.24
	70% SSNM + GS	39.42	27.24	43.68	19.79	49.95
	N-Rich 150% of Rec.	13.39	13.42	17.99	15.79	27.70
Conventional Tillage	Recommended NPK (AI)	21.51	23.24	30.16	23.98	40.96
	Recommended NPK (BI)	20.82	26.16	29.71	23.96	44.72
	SSNM-Nutrient Expert	26.14	29.24	36.19	28.08	41.47
	70% SSNM + GS	35.20	29.91	46.25	26.78	54.78
	N-Rich 150% of Rec.	12.98	14.41	18.14	16.59	30.05

SPL-2: Effect of different rice seeding methods on wheat productivity under ZT at different nitrogen levels

To evaluate the effect of different rice seeding methods on wheat productivity at different nitrogen levels (PTR), ZT transplanted (ZTTR) and Dry direct seeded after conventional tillage (DDSR) and four nitrogen treatments in wheat (No nitrogen, 75 kg N/ha, 150 kg N/ha and LCC based nitrogen application) was conducted across three zones (NHZ, NWPZ and NEPZ). The experiment was conducted in strip plot design with rice establishment methods in main plots and nitrogen treatments in wheat in sub plots and each treatment was replicated thrice. The trial was conducted at six centres across the wheat growing zones (Jammu, Malan, Gurdaspur, Karnal, Pantnagar and Kalyani). The sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Nitrogen was applied as per the treatments and 60 kg P_2O_5/ha and 40 K_2O/ha were applied as basal in all the treatments. Irrigation and weed control measures were followed as per recommended package of practices for the zone.

In Northern Hill Zone, the trial was conducted at Malan centre and the wheat data is presented in Table 7.7. A perusal of data showed that the rice establishment options had non-significant effect on wheat productivity and only the nitrogen effect was significant with highest yield (33.47 q/ha) recorded when N was applied @ 150 kg/ha followed by using leaf colour chart guided nitrogen application (32.56 q/ha), which were statistically at par as the mean yield difference was only 0.91 q/ha and the CD was 2.71. Although rice establishment options had non-significant effect on wheat yield but wheat followed by zero tillage transplanted rice gave 1.59 and 1.70 q/ha higher grain yield as compared to wheat followed puddled transplanted and dry direct seeded rice, respectively. The effect of rice establishment options on wheat yield attributes was also not significant but nitrogen treatments significantly influenced the wheat yield attributes except thousand grain weight.

Table 7.7 Northern Hill Zone SPL 2 Malan 2014-15

	Rice Establishment Methods							
Variety	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
			Yield, q/ha					
No N Control	16.83	4	17.24	4	17.48	4	17.18	4
75 kg N/ha	27.37	3	28.87	3	26.54	3	27.60	3
150 kg N/ha	33.02	1	34.74	1	32.67	1	33.47	1
LCC based N	31.61	2	34.34	2	31.73	2	32.56	2
Mean	27.21		28.80		27.10		27.70	
CD(0.05)		Methods (A) NS	Nitrogen (B) 2.71	B within A NS			A within B NS	
			Earheads/sq.m.					
No N Control	195	4	211	4	203	4	203	4
75 kg N/ha	254	3	267	3	253	3	258	3
150 kg N/ha	282	1	297	1	279	1	286	1
LCC based N	270	2	287	2	273	2	276	2
Mean	250		265		252		256	
CD(0.05)		Methods (A) N.S.	Nitrogen (B) 17.63	B within A NS			A within B NS	
			Grains/earhead					
No N Control	21.75	4	19.89	4	21.16	4	20.93	4
75 kg N/ha	25.94	3	25.90	3	25.48	3	25.78	3
150 kg N/ha	28.77	1	28.84	2	28.97	1	28.86	1
LCC based N	28.27	2	29.17	1	28.72	2	28.72	2
Mean	26.18		25.95		26.08		26.07	
CD(0.05)		Methods (A) N.S.	Nitrogen (B) 1.17	B within A NS			A within B NS	
			1000 Grains weight, g					
No N Control	39.79	4	41.14	2	40.86	2	40.60	3
75 kg N/ha	41.46	1	41.71	1	41.17	1	41.45	1
150 kg N/ha	40.69	3	40.58	4	40.38	4	40.55	4
LCC based N	41.44	2	41.06	3	40.50	3	41.00	2
Mean	40.85		41.12		40.73		40.90	
CD(0.05)		Methods (A) NS	Nitrogen (B) NS	B within A NS			A within B NS	

In case of rice, for which the data are presented in Table 7.8, only the rice establishment options had significant effect on rice yield and yield attributes except thousand grains weight

but the N applied in wheat had no residual effect on rice yield. The yield obtained in puddle transplanted rice was significantly superior to other two crop establishment methods (ZTTR and DDSR). The DDSR system had the lowest rice yield (32.62 q/ha) and was significantly inferior to puddle transplanted rice.

Table 7.8. Northern Hills Zone SPL-2. Rice Malan 2014-15

N Treatments in Wheat	Rice Establishment Methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
			Yield, q/ha					
No N control	38.80	4	36.03	2	31.73	4	35.52	4
75 kg N/ha	38.88	3	37.50	1	33.56	1	36.65	1
150 kg N/ha	40.12	2	35.95	3	32.60	3	36.22	3
LCC based N	40.64	1	35.74	4	32.60	2	36.33	2
Mean	39.61		36.31		32.62		36.18	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	5.18		NS		NS		NS	
			Panicles/sq.m.					
No N control	243	4	210	3	290	3	248	4
75 kg N/ha	248	2	218	1	301	1	255	1
150 kg N/ha	253	1	206	4	286	4	248	3
LCC based N	245	3	217	2	297	2	253	2
Mean	247		213		293		251	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	44.53		NS		NS		NS	
			Grains/ Panicle					
No N control	70.86	3	75.65	2	48.10	3	64.87	2
75 kg N/ha	67.63	4	75.40	3	50.09	2	64.37	3
150 kg N/ha	72.17	2	80.52	1	50.92	1	67.87	1
LCC based N	72.51	1	73.54	4	46.50	4	64.18	4
Mean	70.79		76.28		48.90		65.32	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	5.93		NS		NS		NS	
			1000 Grains Weight, g					
No N control	22.46	3	22.69	2	22.76	2	22.64	3
75 kg N/ha	23.24	1	23.02	1	22.27	4	22.84	2
150 kg N/ha	22.06	4	21.83	4	22.43	3	22.11	4
LCC based N	22.93	2	22.54	3	23.65	1	23.04	1
Mean	22.67		22.52		22.78		22.66	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		NS		NS		NS	

In Northern Western Plains Zone, this trial was conducted at three locations (Gurdaspur, Karnal and Pantnagar) and pooled analysis data are presented in Table 7.9. On pooled

basis the highest productivity was recorded under puddle transplanted method followed by ZT transplanted method and the lowest productivity was with dry direct seeded method (Table 7.9) which was found significantly at par with both ZT transplanted method and puddle transplanted method. Among nitrogen treatments 150 kg N/ha gave the highest productivity (46.15 q/ha) which was found significantly superior than other treatments except LCC based N application treatment which was found at par. Earhead density and grains per earhead also followed the same trend. Interaction of rice establishment methods and nitrogen treatments in wheat was found non-significant for yield and yield attributes.

Table 7.9. North Western Plains Zone SPL-2 Pooled 2014-15

N Management in wheat	Rice transplanting methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
			Yield, q/ha					
No N control	25.09	4	25.30	4	22.81	4	24.40	4
75 kg N/ha	42.05	3	42.23	3	39.88	3	41.39	3
150 kg N/ha	46.22	2	44.77	2	47.47	1	46.15	1
LCC based N	47.34	1	46.90	1	43.78	2	46.01	2
Mean	40.18		39.80		38.49		39.49	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		1.57		NS		NS	
			Earhead/sq.m.					
No N control	290	4	264	4	270	4	274	4
75 kg N/ha	309	3	313	3	309	3	310	3
150 kg N/ha	372	1	372	1	341	2	362	1
LCC based N	357	2	354	2	342	1	351	2
Mean	332		326		316		324	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		16.30		NS		NS	
			Grains/Earhead					
No N control	25.81	4	29.34	4	26.25	4	27.13	4
75 kg N/ha	44.52	1	39.68	3	36.49	3	40.23	2
150 kg N/ha	40.93	2	39.74	2	40.43	1	40.36	1
LCC based N	40.56	3	40.50	1	38.50	2	39.85	3
Mean	37.96		37.31		35.42		36.90	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		3.65		NS		NS	
			1000 Grains Weight, g					
No N control	37.92	1	36.87	1	37.14	2	37.31	1
75 kg N/ha	37.53	2	36.47	2	37.93	1	37.31	2
150 kg N/ha	34.92	4	33.64	4	36.81	4	35.12	4
LCC based N	35.88	3	35.39	3	37.13	3	36.13	3
Mean	36.56		35.59		37.25		36.47	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	0.90		1.02		NS		NS	

Centres: Gurdaspur, Karnal, Pantnagar.

In rice crop on pooled basis the highest productivity was recorded in puddle transplanted rice (66.11 q/ha) followed by ZT transplanted (62.11 q/ha) and dry direct seeded (50.03),

respectively (Table 7.10). In nitrogen treatments LCC based N application gave the highest productivity (60.90 q/ha) followed by 150 kg N/ha (60.45 q/ha). Interaction of rice establishment methods and nitrogen treatments in rice also was found non-significant for yield and yield attributes.

Table 7.10 North Western Plains Zone SPL-2: Rice Pooled 2014-15

N Management in wheat	Rice transplanting methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
Yield, q/ha								
No N control	63.29	4	59.20	4	46.98	4	56.49	4
75 kg N/ha	66.39	3	62.88	2	50.17	3	59.81	3
150 kg N/ha	67.06	2	63.78	1	50.52	2	60.45	2
LCC based N	67.69	1	62.56	3	52.43	1	60.90	1
Mean	66.11		62.11		50.03		59.41	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	1.80		2.56		NS		NS	
Panicles/sq.m.								
No N control	363	3	326	3	329	4	339	4
75 kg N/ha	360	4	321	4	338	3	340	3
150 kg N/ha	376	2	332	2	341	2	350	2
LCC based N	379	1	340	1	355	1	358	1
Mean	370		330		341		347	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	13.81		NS		NS		NS	
Grains/ Panicle								
No N control	70.32	2	73.57	3	59.24	4	67.71	3
75 kg N/ha	73.10	1	77.87	1	62.52	1	71.17	1
150 kg N/ha	69.96	4	77.14	2	62.17	2	69.76	2
LCC based N	70.06	3	72.26	4	60.61	3	67.64	4
Mean	70.86		75.21		61.14		69.07	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	3.83		NS		NS		NS	
1000 Grains Weight, g								
No N control	24.92	4	24.93	4	23.67	2	24.51	4
75 kg N/ha	25.54	3	25.27	2	23.49	4	24.77	3
150 kg N/ha	25.70	2	25.06	3	23.58	3	24.78	2
LCC based N	25.80	1	25.52	1	23.96	1	25.09	1
Mean	25.49		25.19		23.68		24.79	
CD (0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	0.41		NS		NS		NS	

Centres: Gurdaspur, Karnal, Pantnagar.

In North Eastern Plains Zone, this trial was conducted at Kalyani centre and data is presented in Table7.11.A perusal of data showed that the rice establishment options had significant effect on wheat productivity. Puddled transplant of rice followed by wheat gave significantly higher grain yield (27.10 q/ha) as compared to zero tillage transplanted rice (24.85 q/ha) and statistically at par with dry direct seeded rice (25.75 q/ha). Nitrogen effect was significant with highest yield (35.92 q/ha) recorded when N was applied @ 150 kg/ha

followed by using leaf colour chart guided nitrogen application (32.38 q/ha). Gain in yield was recorded due to significantly higher number of earhead per sq.m., boldest seed and higher number of grains per earhead which influenced positively by nitrogen management.

Table 7.11 North Eastern Plains Zone SPL 2 Kalyani 2014-15

Variety	Rice Establishment Methods						Mean	Rk
	PTR	Rk	ZTTR	Rk	DDSR	Rk		
			Yield, q/ha					
No N Control	13.23	4	11.97	4	12.37	4	12.52	4
75 kg N/ha	23.50	3	22.37	3	22.47	3	22.78	3
150 kg N/ha	37.17	1	34.03	1	36.57	1	35.92	1
LCC based N	34.50	2	31.03	2	31.60	2	32.38	2
Mean	27.10		24.85		25.75		25.90	
CD(0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	1.62		2.93		NS		NS	
			Earheads/sq.m.					
No N Control	141	4	139	4	140	4	140	4
75 kg N/ha	216	3	209	3	210	3	212	3
150 kg N/ha	253	1	250	1	253	1	252	1
LCC based N	247	2	245	2	245	2	246	2
Mean	214		211		212		212	
CD(0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		11.28		NS		NS	
			Grains/earhead					
No N Control	27.08	4	25.40	4	25.83	4	26.10	4
75 kg N/ha	30.21	3	29.40	3	29.85	3	29.82	3
150 kg N/ha	36.71	1	35.38	1	36.94	1	36.34	1
LCC based N	35.32	2	33.16	2	33.20	2	33.90	2
Mean	32.33		30.83		31.46		31.54	
CD(0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		4.52		NS		NS	
			1000 Grains weight, g					
No N Control	35.00	4	34.00	4	34.33	4	34.44	4
75 kg N/ha	36.33	3	36.33	3	36.00	3	36.22	3
150 kg N/ha	40.00	1	38.67	1	39.33	1	39.33	1
LCC based N	39.67	2	38.33	2	39.00	2	39.00	2
Mean	37.75		36.83		37.17		37.25	
CD(0.05)	Methods (A)		Nitrogen (B)		B within A		A within B	
	NS		1.63		NS		NS	

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

Water management is the key issue for economising the irrigation water use efficiency of the wheat crop. To optimize the water requirement for yield maximisation in wheat a special coordinated trial was planned and conducted under irrigated timely sown conditions. The experiment was conducted in split plot design with three irrigation method *i.e* conventional, drip and sprinkler method of irrigation in main plot and four irrigation regimes in sub plot. The sowing was done using a normalized seed rate of 100 kg/ha (adjusted considering 1000

grains weight as 38 g). Fertiliser and weed control measures were followed as per recommended package of practices for the respective zones.

In North Western Plains Zone, this trial was conducted only at one location (Karnal) and the results are presented in Table 7.12. Both irrigation methods and irrigation schedules have significant effect on yield and number of grains per earhead. The highest yield was recorded in drip irrigation (44.79 q/ha) which was significantly higher than other methods of irrigation. Among irrigation schedules the highest yield (43.59 q/ha) was found in IW/CPE-0.60 treatment followed by IW/CPE-1.20 treatment (43.20 q/ha) which were at par among themselves and significantly superior to IW/CPE-1.00 and IW/CPE-0.80 treatments.

Table 7.12. North Western Plain Zone SPL-5 Karnal 2014-15

Irrigation Schedules	Irrigation Method							
	Flood	Rk	Drip	Rk	Sprinkle	Rk	Mean	Rk
			Yield, q/ha					
IW/CPE-1.20	43.28	1	45.86	1	40.45	4	43.20	2
IW/CPE-1.00	35.21	4	44.07	4	40.45	3	39.91	4
IW/CPE-0.80	39.24	3	44.46	3	42.03	2	41.91	3
IW/CPE-0.60	43.01	2	44.76	2	43.00	1	43.59	1
Mean	40.19		44.79		41.48		42.15	
CD (0.05)	Method (A)		Schedule (B)		B within A		A within B	
	1.39		0.77		1.34		1.57	
			Earhead/sq.m.					
IW/CPE-1.20	518	4	404	4	413	4	445	4
IW/CPE-1.00	596	3	417	3	428	3	480	3
IW/CPE-0.80	622	1	465	2	432	2	506	1
IW/CPE-0.60	596	2	481	1	440	1	506	2
Mean	583		442		428		484	
CD (0.05)	Method (A)		Schedule (B)		B within A		A within B	
	30.85		25.45		NS		NS	
			Grains/earhead					
IW/CPE-1.20	22.55	1	29.67	1	25.02	1	25.75	1
IW/CPE-1.00	15.71	4	27.12	2	24.02	4	22.28	2
IW/CPE-0.80	16.54	3	24.43	3	24.72	3	21.90	4
IW/CPE-0.60	18.26	2	23.58	4	24.83	2	22.23	3
Mean	18.27		26.20		24.65		23.04	
CD (0.05)	Method (A)		Schedule (B)		B within A		A within B	
	1.86		1.44		2.49		2.58	
			1000 Grains weight, g					
IW/CPE-1.20	37.08	4	38.39	4	39.18	4	38.22	4
IW/CPE-1.00	37.64	3	39.20	2	39.42	2	38.75	3
IW/CPE-0.80	38.19	2	39.14	3	39.52	1	38.95	2
IW/CPE-0.60	39.65	1	39.58	1	39.36	3	39.53	1
Mean	38.14		39.08		39.37		38.86	
CD (0.05)	Method (A)		Schedule (B)		B within A		A within B	
	0.33		0.25		0.43		0.45	

In Central Zone, this trial was conducted at Vijapur (Table 7.13). Maximum and significantly higher grain yield was recorded with sprinkler irrigation (36.99 q/ha) as compared to other

methods of irrigation. IW/CPE ratio 1.2 gave maximum grain yield (36.33 q/ha) which was significantly higher than 0.6 and 0.8 IP/CPE. IP/CPE ratio of 1.0 also exhibited at par grain yield with 1.2.Interaction between irrigation method and irrigation regime for grain yield was non-significant.

Table 7.13. Central Zone SPL-5 Vijapur 2014-15

	Irrigation Method							
IW/CPE	Flood	Rk	Drip	Rk	Sprinkler	Rk	Mean	Rk
			Yield, q/ha					
1.2	36.00	1	35.13	1	37.85	3	36.33	1
1.0	35.33	2	33.59	2	38.08	2	35.67	2
0.8	28.23	3	31.90	3	38.10	1	32.74	3
0.6	23.19	4	27.83	4	33.92	4	28.31	4
Mean	30.69		32.11		36.99		33.26	
	Method (A)		Schedule (B)		B within A		A within B	
CD (0.05)	2.72		2.72		NS		NS	
			Earhead/sq.m.					
1.2	326	2	323	2	314	3	321	2
1.0	400	1	387	1	322	1	369	1
0.8	317	3	308	3	317	2	314	3
0.6	288	4	291	4	302	4	294	4
Mean	333		327		314		325	
	Method (A)		Schedule (B)		B within A		A within B	
CD (0.05)	NS		23.78		NS		NS	
			Grains/ Earhead					
1.2	32.13	1	25.77	1	27.80	2	28.57	1
1.0	22.45	3	21.54	4	30.61	1	24.87	3
0.8	22.45	4	23.63	2	25.90	4	23.99	4
0.6	25.61	2	23.50	3	27.69	3	25.60	2
Mean	25.66		23.61		28.00		25.76	
	Method (A)		Schedule (B)		B within A		A within B	
CD (0.05)	3.24		2.96		NS		NS	
			1000 Grains Weight, g					
1.2	35.17	3	42.27	2	43.37	2	40.27	2
1.0	40.13	1	40.47	4	38.90	4	39.83	3
0.8	39.77	2	44.07	1	46.60	1	43.48	1
0.6	31.47	4	40.90	3	40.63	3	37.67	4
Mean	36.63		41.93		42.38		40.31	
	Method (A)		Schedule (B)		B within A		A within B	
CD (0.05)	NS		2.16		3.74		5.64	

SPL-6: Improving productivity of cotton-wheat system through relay cropping

This trial was conducted only at one location at Hisar to explore the possibility of relay seeding of wheat with cotton for increased productivity of wheat leading to improved productivity and profitability of Cotton-Wheat system. The data for Hisar are presented in Table 7.14. At Hisar, the trial was conducted with nine seeding options viz., (i) Wheat drill sowing after cotton harvest (26th November Sowing) (ii) Wheat drill sowing after cotton

harvest (27thDecember sowing), (iii) Wheat power till-drilling in standing cotton, (iv) Wheat broadcast sowing in cotton (standing water), (v) Wheat power till-drilling before defoliation*, (vi) Wheat power till-drilling after defoliation, (vii) Wheat broadcasting in cotton after defoliation fb power till mixing, (viii) Wheat broadcast sowing after defoliation fb irrigation and (ix) Wheat broadcasting before defoliation fb irrigation

The wheat crop was sown on 26th November, 2014, after the harvest of short duration cotton towards the fag end of the timely sown duration. The seeding in all the treatments except late sown was also done on the same day. In the late sown treatment, the wheat was drill sown on 27th December, 2014 after the harvest of long duration cotton. The effect of various seeding options was statistically significant. The highest mean yield (48.09 q/ha), as expected, was recorded in drill sown wheat after harvest of short duration cotton on 26th November, 2014 (Figure 7.14). As compared to late sown condition (27th December, 2014), the yield levels in relay cropped wheat were either statistically similar or higher. However, there was a yield gain of 30.99% with wheat broadcast sowing after defoliation fb irrigation and 30.24 percent in wheat broadcasting before defoliation fb irrigation, respectively, compared to drill sown wheat after harvest of long duration cotton (27th December, 2014).

Table 7.14. North Western Plains Zone	SPL-6	Hisar		2014-15
Cotton-wheat relay methods	**Earheads/s q.m.**	**TGW, g**	**Grains/earhead**	**Yield, q/ha**
Wheat drill sowing after cotton harvest (26th November Sowing)	437	40.80	27.06	48.09
Wheat drill sowing after cotton harvest (27th December sowing)	371	35.70	27.18	35.94
Wheat power till-drilling in standing cotton	416	40.34	27.46	45.95
Wheat broadcast sowing in cotton (standing water)	423	40.27	26.03	44.21
Wheat power till-drilling before defoliation*	421	39.52	27.06	44.86
Wheat power till-drilling after defoliation	424	39.64	27.44	46.01
Wheat broadcasting in cotton after defoliation fb power till mixing	411	40.01	25.97	42.52
Wheat broadcast sowing after defoliation fb irrigation	422	40.49	27.80	47.08
Wheat broadcasting before defoliation fb irrigation	436	40.32	26.65	46.81
Mean	418	39.68	26.96	44.61
S.E.(M)	10.85	0.67	1.03	1.24
C.D.	31.68	1.95	3.02	3.63
C.V.	5.19	3.37	7.67	5.57

SPL-7: Wheat yield maximization under different tillage options

To identify the effect of different tillage options and row spacing on wheat productivity under different nutrients levels, an experiment involving chiselling followed by two tillage options (Conventional tillage for both rice and wheat and Rotary tillage for both rice and wheat), two row spacing (20 cm and 15 cm), and three nutrients levels in wheat (Recommended NPK, Recommended NPK + FYM @ 15 t/ha and 125% Recommended NPK + FYM @ 15 t/ha) was conducted in NWPZ. The experiment was conducted in strip plot design with tillage options and row spacing in main plots and nutrients levels in wheat in sub-plots and each treatment was replicated thrice. Recommended dose of fertilizers applied was 150 kg N/ha,

60 kg P_2O_5/ha, and 40 kg K_2O/ha. 1/3rd N and full dose of P_2O_5, and K_2O were applied as basal dose as per the treatment plan. The sowing was done using the normalized seed rate @ 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Irrigation measures were followed as per recommended package of practices for the zone.

In Northern Western Plains Zone, this trial was conducted at three centres (Karnal, Ludhiana and Pantnagar) and pooled analysis data are presented in Table 7.15. The effect of tillage options and row spacing was significant and the highest yield (49.92 q/ha) was recorded in conventional tillage with 15cm row spacing which was at par with conventional tillage with 20cm row spacing (49.10 q/ha) and significantly better than rotary tillage with 20 as well as 15 cm row spacing. The effect of the nutrients levels was also significant. Application of 125% Recommended NPK + FYM @ 15 t/ha produced significantly higher yield (50.76 q/ha) than recommended NPK treatments and at par with Recommended NPK + FYM @ 15 t/ha. Interaction effects were non-significant for yield and yield attributes.

Table 7.15. North Western Plains Zone SPL-7-Wheat Pooled 2014-15

Nutrient in Wheat	Tillage and Row Spacing									
	CT 20cm	Rk	CT 15cm	Rk	RT 20cm	Rk	RT 15cm	Rk	Mean	Rk
Yield, q/ha										
Rec. NPK	46.86	3	47.88	3	45.72	3	46.30	3	46.69	3
Rec. NPK+ 15 t/ha FYM	49.67	2	50.84	2	47.87	2	47.76	2	49.04	2
125% NPK+ 15 t/ha FYM	50.76	1	51.05	1	48.06	1	49.42	1	49.82	1
Mean	49.10		49.92		47.22		47.83		48.52	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	1.78				1.42		NS		NS	
Earhead/sq.m.										
Rec. NPK	377	3	410	3	369	3	390	3	387	3
Rec. NPK+ 15 t/ha FYM	401	2	419	1	380	2	404	2	401	2
125% NPK+ 15 t/ha FYM	412	1	419	2	424	1	405	1	415	1
Mean	397		416		391		400		401	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	13.89				15.03		NS		NS	
Grains/Earhead										
Rec. NPK	34.60	2	33.21	2	34.37	1	33.01	2	33.80	1
Rec. NPK+ 15 t/ha FYM	34.17	3	33.58	1	34.33	2	32.99	3	33.77	2
125% NPK+ 15 t/ha FYM	35.29	1	32.82	3	32.54	3	34.38	1	33.76	3
Mean	34.69		33.20		33.75		33.46		33.77	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	NS				1.62		NS		NS	
1000 Grains Weight, g										
Rec. NPK	37.46	3	36.94	3	37.77	2	37.10	3	37.32	3
Rec. NPK+ 15 t/ha FYM	38.94	1	38.46	2	38.15	1	37.57	1	38.28	1
125% NPK+ 15 t/ha FYM	37.64	2	38.90	1	37.34	3	37.34	2	37.80	2
Mean	38.01		38.10		37.75		37.34		37.80	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	NS				0.75		NS		NS	

Centres: Karnal, Ludhiana , Pantnagar

In rice crop the effect of tillage and row spacing was not significant on yield and yield attributes except 1000 grain weight. However, the effect of nutrient management in wheat had significant influence on rice yield and the highest rice yield (76.58 q/ha) was recorded with 125% recommended NPK + 15 t/ha FYM applied in wheat, which was significantly better than recommended NPK alone and at par with recommended NPK+ 15t/ha FYM indicating positive effect of FYM applied in wheat crop. The similar trend was observed in yield attributes also except grains per panicle.

Table 7.16. North Western Plains Zone SPL-7-Rice Pooled 2014-15

Nutrient in Wheat	Tillage and Row Spacing									
	CT 20cm	Rk	CT 15cm	Rk	RT 20cm	Rk	RT 15cm	Rk	Mean	Rk
Yield, q/ha										
Rec. NPK	71.69	3	66.83	3	74.98	3	72.45	3	71.49	3
Rec. NPK+ 15 t/ha FYM	73.33	2	74.68	1	77.06	2	75.11	2	75.04	2
125% NPK+ 15 t/ha FYM	78.34	1	74.01	2	78.04	1	75.91	1	76.58	1
Mean	74.45		71.84		76.69		74.49		74.37	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	NS				2.79		NS		NS	
Panicles/sq.m.										
Rec. NPK	324	3	304	3	349	2	332	3	327	3
Rec. NPK+ 15 t/ha FYM	327	2	353	1	347	3	355	2	345	2
125% NPK+ 15 t/ha FYM	367	1	341	2	361	1	360	1	357	1
Mean	339		333		352		349		343	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	NS				11.35		22.69		26.07	
Grains/Panicle										
Rec. NPK	90.23	2	86.33	1	85.20	2	86.76	1	87.13	1
Rec. NPK+ 15 t/ha FYM	91.22	1	81.46	3	86.94	1	82.84	2	85.61	2
125% NPK+ 15 t/ha FYM	82.97	3	84.77	2	83.83	3	81.19	3	83.19	3
Mean	88.14		84.19		85.32		83.60		85.31	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	NS				3.78		NS		NS	
1000 Grains Weight, g										
Rec. NPK	23.90	3	25.37	3	24.90	3	25.25	3	24.85	3
Rec. NPK+ 15 t/ha FYM	24.43	2	25.87	2	25.53	2	25.57	2	25.35	2
125% NPK+ 15 t/ha FYM	25.60	1	26.02	1	25.98	1	26.47	1	26.02	1
Mean	24.64		25.75		25.47		25.76		25.41	
CD (0.05)	Tillage & Spacing (A)				Nutrition (B)		B within A		A within B	
	0.73				0.53		NS		NS	

Centres: Karnal, Pantnagar

Annexures

ANNEXURE-I

CENTRE-WISE DATA

Table 1.1.1. Northern Hills Zone — **IR-TS-TAS-DOS** — **Almora 2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HS 562	60.20	2	61.90	1	61.05	1	472	1	445	3	458	1
HS 507 (c)	55.47	4	58.00	4	56.73	4	442	3	458	1	450	3
VL 907 (c)	59.90	3	56.87	5	58.38	3	425	5	400	5	413	5
HPW 349 (c)	52.63	5	58.03	3	55.33	5	437	4	443	4	440	4
VL 804 (c)	61.60	1	58.17	2	59.88	2	452	2	458	1	455	2
Mean	57.96		58.59		58.28		445		441		443	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		N.S.	1.16	7.06	7.70			N.S.	10.47	63.74	9.15	
Genotype (B)		*	1.30	3.91	5.48			**	5.95	17.85	3.29	
B within A		N.S.	1.84	5.53				N.S.	8.42	25.25		
A within B			2.02	6.04					12.90	38.68		
	Grains/earhead						**1000 Grains weight, g**					
HS 562	25.87	5	31.16	2	28.52	3	49.38	1	44.98	1	47.18	1
HS 507 (c)	26.79	4	29.28	5	28.03	5	46.89	3	43.34	4	45.12	3
VL 907 (c)	28.73	2	31.77	1	30.25	2	49.11	2	44.75	2	46.93	2
HPW 349 (c)	26.84	3	29.71	4	28.28	4	45.18	4	44.08	3	44.63	4
VL 804 (c)	31.43	1	31.05	3	31.24	1	43.44	5	40.95	5	42.20	5
Mean	27.93		30.60		29.26		46.80		43.62		45.21	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		N.S.	1.20	7.32	15.92			*	0.32	1.94	2.73	
Genotype (B)		*	0.78	2.35	6.57			**	0.39	1.18	2.14	
B within A		N.S.	1.11	3.33				*	0.56	1.67		
A within B			1.56	4.67					0.59	1.77		

Date of Sowing: 07.11.2014 26.11.2014 — Date of Harvesting: 11.05.2015 16.05.2015

Table 1.1.2. Northern Hills Zone — **IR-TS-TAS-DOS** — **Bajaura 2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						Earhead/sq.m.					
HS 562	51.92	1	49.73	1	50.83	1	373	2	363	4	368	2
HS 507 (c)	47.40	4	46.96	3	47.18	3	360	5	363	4	362	5
VL 907 (c)	49.66	3	44.02	5	46.84	4	367	3	365	3	366	4
HPW 349 (c)	51.47	2	47.71	2	49.59	2	377	1	375	1	376	1
VL 804 (c)	45.46	5	44.82	4	45.14	5	367	3	367	2	367	3
Mean	49.18		46.65		47.91		369		367		368	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		N.S.	0.75	4.59	6.10			N.S.	5.72	34.78	6.02	
Genotype (B)		*	1.19	3.57	6.09			N.S.	13.86	41.55	9.23	
B within A		N.S.	1.68	5.05				N.S.	19.60	58.76		
A within B			1.68	5.05					18.44	55.28		
	Grains/earhead						**1000 Grains weight, g**					
HS 562	33.53	3	33.27	1	33.40	2	41.56	2	41.11	1	41.33	1
HS 507 (c)	31.48	5	32.09	3	31.78	3	42.03	1	40.40	3	41.22	2
VL 907 (c)	33.67	2	29.64	5	31.65	4	40.59	3	40.66	2	40.63	3
HPW 349 (c)	35.39	1	32.36	2	33.88	1	39.07	5	39.32	4	39.19	4
VL 804 (c)	31.72	4	31.42	4	31.57	5	39.19	4	39.00	5	39.09	5
Mean	33.16		31.75		32.46		40.49		40.10		40.29	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		N.S.	0.30	1.81	3.56			N.S.	0.35	2.11	3.33	
Genotype (B)		N.S.	1.05	3.15	7.93			N.S.	0.70	2.11	4.28	
B within A		N.S.	1.49	4.45				N.S.	1.00	2.99		
A within B			1.36	4.08					0.96	2.87		

Date of Sowing: 11.11.2014 01.12.2014 — Date of Harvesting: 29.05.2015 04.06.2015

Table 1.1.3. Northern Hills Zone **IR-TS-TAS-DOS** **Khudwani 2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						Earhead/sq.m.					
HS 562	32.41	1	28.04	1	30.22	1	284	1	276	1	280	1
HS 507 (c)	21.99	5	19.06	5	20.52	5	232	5	219	5	225	5
VL 907 (c)	31.33	2	25.98	3	28.66	2	269	2	255	2	262	2
HPW 349 (c)	24.86	4	22.19	4	23.52	4	245	4	228	4	237	4
VL 804 (c)	29.05	3	26.98	2	28.01	3	260	3	252	3	256	3
Mean	27.93		24.45		26.19		258		246		252	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		*	0.56	3.43	8.34			*	1.05	6.40	1.62	
Genotype (B)		**	0.58	1.74	5.44			**	5.57	16.70	5.42	
B within A		N.S.	0.82	2.46				N.S.	7.88	23.62		
A within B			0.93	2.78					7.13	21.36		
	Grains/earhead						**1000 Grains weight, g**					
HS 562	32.82	3	30.45	4	31.64	3	34.78	1	33.41	1	34.09	1
HS 507 (c)	28.99	5	27.77	5	28.38	5	32.71	5	31.37	5	32.04	5
VL 907 (c)	33.94	1	31.05	2	32.50	2	34.24	2	32.87	2	33.55	2
HPW 349 (c)	30.93	4	30.68	3	30.81	4	33.03	4	31.69	4	32.36	4
VL 804 (c)	33.17	2	33.04	1	33.10	1	33.79	3	32.45	3	33.12	3
Mean	31.97		30.60		31.28		33.71		32.36		33.03	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		N.S.	0.95	5.77	11.74			N.S.	0.27	1.64	3.15	
Genotype (B)		*	0.90	2.69	7.03			**	0.16	0.47	1.15	
B within A		N.S.	1.27	3.81				N.S.	0.22	0.66		
A within B			1.48	4.44					0.33	1.00		
Date of Sowing:	05.11.2014		26.11.2014			Date of Harvesting:	21.06.2015		27.06.2015			

Table 1.1.4. Northern Hills Zone **IR-TS-TAS-DOS** **Malan 2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						Earhead/sq.m.					
HS 562	49.42	1	32.96	2	41.19	1	306	1	301	1	303	1
HS 507 (c)	46.25	2	33.52	1	39.89	2	267	4	285	2	276	2
VL 907 (c)	45.46	4	29.11	5	37.29	5	251	5	220	5	235	5
HPW 349 (c)	44.24	5	32.43	3	38.33	3	277	2	261	3	269	3
VL 804 (c)	45.48	3	29.49	4	37.49	4	268	3	235	4	251	4
Mean	46.17		31.50		38.84		274		260		267	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)		**	0.39	2.35	3.85			*	1.36	8.27	1.97	
Genotype (B)		N.S.	0.96	2.89	6.08			**	8.60	25.77	7.89	
B within A		N.S.	1.36	4.08				N.S.	12.16	36.45		
A within B			1.28	3.83					10.96	32.85		
	Grains/earhead						**1000 Grains weight, g**					
HS 562	35.94	5	26.17	5	31.06	5	44.99	3	42.06	1	43.52	1
HS 507 (c)	38.31	3	30.84	3	34.57	3	45.37	2	38.14	4	41.75	4
VL 907 (c)	39.31	2	32.69	2	36.00	2	46.18	1	40.61	3	43.40	2
HPW 349 (c)	36.94	4	29.68	4	33.31	4	43.42	4	41.92	2	42.67	3
VL 804 (c)	41.26	1	33.27	1	37.27	1	41.28	5	37.71	5	39.49	5
Mean	38.35		30.53		34.44		44.25		40.09		42.17	
	F. Test	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)	
Sowing (A)	**	**	0.26	1.61	2.98			**	0.20	1.21	1.82	
Genotype (B)	**	**	0.64	1.93	4.59			**	0.40	1.20	2.33	
B within A	N.S.	N.S.	0.91	2.73				**	0.57	1.70		
A within B			0.86	2.57					0.54	1.63		
Date of Sowing:	10.11.2014		01.12.2014			Date of Harvesting:	20.5.2015		26.5.2015			

Table 1.1.5. Northern Hills Zone **IR-TS-TAS-DOS** **Shimla 2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HS 562	23.93	1	20.61	2	22.27	1	318	3	310	1	314	2
HS 507 (c)	21.98	2	20.62	1	21.30	2	290	5	280	4	285	5
VL 907 (c)	20.27	4	18.71	5	19.49	4	317	4	298	3	308	3
HPW 349 (c)	21.00	3	20.25	3	20.62	3	328	2	268	5	298	4
VL 804 (c)	19.34	5	18.90	4	19.12	5	340	1	303	2	321	1
Mean	21.30		19.82		20.56		319		292		305	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.11	0.70	2.15		*		4.25	25.85	5.39	
Genotype (B)	*		0.63	1.87	7.45		**		5.12	15.35	4.11	
B within A	N.S.		0.88	2.65			*		7.24	21.71		
A within B			0.80	2.40					7.75	23.22		
	Grains/earhead						**1000 Grains weight, g**					
HS 562	19.88	2	19.38	3	19.63	2	38.00	1	35.00	1	36.50	1
HS 507 (c)	20.34	1	23.53	1	21.93	1	37.33	2	31.33	5	34.33	4
VL 907 (c)	18.44	3	19.26	4	18.85	4	34.67	5	32.67	4	33.67	5
HPW 349 (c)	17.30	4	21.81	2	19.55	3	37.33	2	34.67	2	36.00	2
VL 804 (c)	15.38	5	18.77	5	17.07	5	37.33	2	33.33	3	35.33	3
Mean	18.27		20.55		19.41		36.93		33.40		35.17	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.25	1.51	4.95		N.S.		0.66	4.05	7.32	
Genotype (B)	*		0.87	2.60	10.96		N.S.		1.01	3.02	7.01	
B within A	N.S.		1.23	3.68			N.S.		1.42	4.27		
A within B			1.13	3.38					1.44	4.31		

Date of Sowing: 10.11.2014 01.12.2014 Date of Harvesting: 22.05.2015 24.05.2015

Table 1.2.1. Northern Hills Zone **RF-TS-TAS-LON** **Almora 2014-15**

Genotype	Nitrogen levels,kg/ha: 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha: 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
HS 562	24.00	4	30.19	4	32.26	1	28.82	3	285	3	322	3	343	3	317	2
HS 507 (c)	27.74	2	31.79	2	28.75	3	29.43	2	287	2	337	1	315	5	313	3
VL 907 (c)	22.33	5	30.63	3	26.62	5	26.53	4	240	5	307	4	367	2	304	4
HPW 349 (c)	24.42	3	26.62	5	28.13	4	26.39	5	265	4	263	5	318	4	282	5
VL 804 (c)	28.72	1	31.88	1	30.70	2	30.43	1	303	1	327	2	393	1	341	1
Mean	25.44		30.22		29.29		28.32		276		311		347		311	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	*		0.95		3.75		13.05		*		11.57		45.43		14.39	
Genotype (B)	*		0.99		2.90		10.51		*		11.76		34.32		11.33	
B within A	N.S.		1.72		5.02				N.S.		20.36		59.44			
A within B			1.81		5.28						21.58		62.99			
	Grains/earhead								**1000 Grains weight, g**							
HS 562	20.21	4	21.41	5	22.34	1	21.32	4	42.75	2	44.04	2	42.37	4	43.06	2
HS 507 (c)	23.32	2	23.33	3	22.00	2	22.88	1	41.88	4	41.33	4	42.35	5	41.85	4
VL 907 (c)	20.19	5	21.96	4	16.07	5	19.41	5	46.17	1	45.63	1	46.12	1	45.97	1
HPW 349 (c)	23.41	1	23.92	2	20.47	3	22.60	2	40.46	5	42.49	3	42.98	2	41.98	3
VL 804 (c)	23.00	3	24.28	1	18.35	4	21.88	3	42.39	3	40.21	5	42.90	3	41.84	5
Mean	22.03		22.98		19.85		21.62		42.73		42.74		43.35		42.94	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		1.28		5.01		22.87		N.S.		0.54		2.13		4.89	
Genotype (B)	N.S.		1.15		3.37		16.01		**		0.74		2.15		5.15	
B within A	N.S.		2.00		5.83				N.S.		1.28		3.73			
A within B			2.20		6.41						1.26		3.69			

Date of Sowing: 22.10.2014 Date of Harvesting: 09.05.2015

Table 1.2.2. Northern Hills Zone **RF-TS-TAS-LON** **Bajaura 2014-15**

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
HS 562	36.95	2	46.15	2	50.32	2	44.47	2	331	1	362	1	367	4	353	1
HS 507 (c)	32.75	4	39.61	5	47.20	4	39.86	5	298	3	329	4	346	5	324	5
VL 907 (c)	38.72	1	46.99	1	50.64	1	45.45	1	328	2	341	3	367	3	345	3
HPW 349 (c)	35.92	3	42.01	4	46.81	5	41.58	3	297	4	312	5	379	2	329	4
VL 804 (c)	32.41	5	42.80	3	48.50	3	41.24	4	292	5	348	2	410	1	350	2
Mean	35.35		43.51		48.69		42.52		309		338		373		340	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		1.17		4.58		10.63		*		10.12		39.73		11.52	
Genotype (B)	*		1.20		3.51		8.48		N.S.		14.30		41.74		12.61	
B within A	N.S.		2.08		6.08				N.S.		24.77		72.29			
A within B			2.20		6.42						24.36		71.09			
	Grains/earhead								**1000 Grains weight, g**							
HS 562	27.72	5	31.65	4	33.66	2	31.01	2	40.49	3	41.15	3	40.93	3	40.85	3
HS 507 (c)	28.00	4	31.07	5	35.64	1	31.57	1	39.21	4	39.52	4	38.97	4	39.24	4
VL 907 (c)	28.14	3	32.06	1	32.52	3	30.91	3	42.40	1	43.20	1	42.26	1	42.62	1
HPW 349 (c)	29.22	2	31.82	2	30.29	5	30.44	5	41.44	2	43.04	2	41.52	2	42.00	2
VL 804 (c)	29.80	1	31.69	3	31.05	4	30.85	4	37.98	5	39.05	5	38.17	5	38.40	5
Mean	28.58		31.66		32.63		30.96		40.30		41.19		40.37		40.62	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		0.90		3.52		11.21		N.S.		0.43		1.70		4.13	
Genotype (B)	N.S.		1.47		4.28		14.21		**		0.49		1.42		3.59	
B within A	N.S.		2.54		7.41				N.S.		0.84		2.46			
A within B			2.44		7.13						0.87		2.54			

Date of Sowing: 30.10.2014 Date of Harvesting: 04.06.2015

Table 1.2.3. Northern Hills Zone **RF-TS-TAS-LON** **Khudwani 2014-15**

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
HS 562	21.64	3	25.66	3	29.36	3	25.56	3	189	5	199	5	205	5	198	5
HS 507 (c)	24.65	1	29.15	2	32.19	2	28.66	2	206	2	217	2	227	1	216	2
VL 907 (c)	20.75	4	23.54	4	26.73	4	23.67	4	193	3	204	3	211	3	203	3
HPW 349 (c)	18.22	5	22.21	5	25.14	5	21.86	5	190	4	200	4	207	4	199	4
VL 804 (c)	24.47	2	29.35	1	32.57	1	28.80	1	209	1	218	1	223	2	217	1
Mean	21.95		25.98		29.20		25.71		197		208		215		207	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.30		1.16		4.47		**		1.59		6.23		2.97	
Genotype (B)	**		0.36		1.06		4.22		**		1.53		4.46		2.22	
B within A	N.S.		0.63		1.83				N.S.		2.65		7.72			
A within B			0.63		1.85						2.85		8.31			
	Grains/earhead								**1000 Grains weight, g**							
HS 562	35.55	3	38.80	3	41.70	1	38.68	2	32.23	3	33.22	3	34.28	3	33.24	3
HS 507 (c)	36.20	1	39.02	2	40.12	3	38.45	3	33.08	1	34.40	1	35.42	1	34.30	1
VL 907 (c)	33.76	4	35.24	4	37.71	4	35.57	4	31.87	4	32.74	5	33.70	5	32.77	5
HPW 349 (c)	30.23	5	33.70	5	35.87	5	33.27	5	31.76	5	32.89	4	33.79	4	32.81	4
VL 804 (c)	35.74	2	39.49	1	41.39	2	38.87	1	32.84	2	34.08	2	35.34	2	34.09	2
Mean	34.30		37.25		39.36		36.97		32.36		33.47		34.51		33.44	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.42		1.65		4.42		**		0.20		0.79		2.32	
Genotype (B)	**		0.53		1.56		4.33		**		0.27		0.78		2.39	
B within A	N.S.		0.92		2.69				N.S.		0.46		1.35			
A within B			0.93		2.71						0.46		1.34			

Date of Sowing: 28.10.2014 Date of Harvesting: 25.06.2015

Table 1.2.4. Northern Hills Zone **RF-TS-TAS-LON** **Malan 2014-15**

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
HS 562	29.70	2	34.32	1	33.46	2	32.49	2	278	1	310	1	303	1	297	1
HS 507 (c)	24.80	5	27.82	5	30.58	4	27.73	4	239	5	260	4	279	4	259	4
VL 907 (c)	26.80	3	30.29	3	33.29	3	30.13	3	249	3	269	3	293	3	270	3
HPW 349 (c)	26.06	4	27.83	4	28.72	5	27.53	5	243	4	257	5	264	5	255	5
VL 804 (c)	31.33	1	34.19	2	37.36	1	34.30	1	264	2	282	2	300	2	282	2
Mean	27.74		30.89		32.68		30.44		255		276		288		273	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	*		0.61		2.39		7.75		*		4.67		18.35		6.64	
Genotype (B)	**		0.95		2.77		9.34		**		7.28		21.24		8.01	
B within A	N.S.		1.64		4.79				N.S.		12.60		36.79			
A within B			1.59		4.64						12.20		35.62			
	Grains/earhead								**1000 Grains weight, g**							
HS 562	25.64	4	25.67	4	26.39	4	25.90	4	41.79	2	43.08	2	41.78	2	42.22	2
HS 507 (c)	25.73	3	26.28	3	26.89	3	26.30	3	40.30	3	40.71	3	40.72	3	40.58	3
VL 907 (c)	24.99	5	25.63	5	25.49	5	25.37	5	43.10	1	43.92	1	44.62	1	43.88	1
HPW 349 (c)	26.84	2	26.80	2	27.11	2	26.92	2	39.91	4	40.40	4	39.98	4	40.10	4
VL 804 (c)	30.34	1	30.80	1	32.07	1	31.07	1	39.06	5	39.46	5	38.85	5	39.12	5
Mean	26.71		27.04		27.59		27.11		40.83		41.51		41.19		41.18	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		0.31		1.20		4.36		N.S.		0.30		1.19		2.86	
Genotype (B)	**		0.28		0.81		3.07		**		0.28		0.81		2.03	
B within A	N.S.		0.48		1.40				N.S.		0.48		1.41			
A within B			0.53		1.54						0.53		1.54			

Date of Sowing: 22.10.2.14 Date of Harvesting: 10.05.2015

Table 1.2.5. Northern Hills Zone **RF-TS-TAS-LON** **Shimla 2014-15**

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
HS 562	24.90	1	29.18	1	31.80	1	28.63	1	225	4	259	3	282	1	256	2
HS 507 (c)	22.14	3	26.20	3	29.44	3	25.93	3	233	3	239	5	260	5	244	5
VL 907 (c)	21.55	4	26.80	2	30.89	2	26.41	2	238	2	270	1	278	2	262	1
HPW 349 (c)	19.70	5	25.50	4	26.17	5	23.79	5	243	1	244	4	273	3	253	3
VL 804 (c)	24.21	2	24.30	5	28.39	4	25.63	4	213	5	260	2	265	4	246	4
Mean	22.50		26.40		29.34		26.08		230		254		272		252	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.37		1.44		5.45		**		3.31		13.01		5.09	
Genotype (B)	**		0.62		1.80		7.11		N.S.		5.70		16.64		6.78	
B within A	N.S.		1.07		3.13				N.S.		9.87		28.82			
A within B			1.03		2.99						9.43		27.53			
	Grains/earhead								**1000 Grains weight, g**							
HS 562	27.87	2	27.10	1	25.59	4	26.85	1	40.00	4	41.67	4	44.00	1	41.89	4
HS 507 (c)	21.91	3	26.15	2	26.56	2	24.87	3	43.33	1	42.00	2	42.67	3	42.67	2
VL 907 (c)	21.66	4	23.69	4	25.80	3	23.72	4	42.00	3	42.00	2	44.00	1	42.67	2
HPW 349 (c)	18.97	5	24.17	3	22.55	5	21.90	5	42.67	2	43.33	1	42.67	3	42.89	1
VL 804 (c)	28.98	1	23.15	5	27.47	1	26.53	2	39.33	5	40.67	5	39.67	5	39.89	5
Mean	23.88		24.85		25.59		24.77		41.47		41.93		42.60		42.00	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		0.39		1.55		6.16		N.S.		0.88		3.46		8.12	
Genotype (B)	**		0.90		2.63		10.93		**		0.60		1.76		4.31	
B within A	*		1.56		4.56				N.S.		1.04		3.05			
A within B			1.45		4.24						1.28		3.75			

Date of Sowing: 28.10.2014 Date of Harvesting: 22.05.2015

Table 2.1.1. North Western Plains Zone IR-TS-TDM-DOS Agra 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	38.29	3	35.21	3	36.75	3	437	3	432	3	434	3
PDW 233 (c)	37.62	4	34.16	4	35.89	4	432	4	427	4	430	4
HD 4730	42.28	2	39.55	2	40.92	2	441	2	436	2	439	2
PDW 291 (c)	37.03	5	32.53	5	34.78	5	431	5	426	5	428	5
WH 1105 (c)	45.02	1	41.98	1	43.50	1	443	1	438	1	440	1
Mean	40.05		36.69		38.37		437		432		434	
	F. Test		S.E.m	C.D.	C.V (%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.12	0.71	1.18		**		0.10	0.62	0.09	
Genotype (B)	**		0.23	0.68	1.45		**		0.89	2.68	0.50	
B within A	N.S.		0.32	0.96			N.S.		1.26	3.78		
A within B			0.31	0.93					1.13	3.40		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	22.26	4	20.77	3	21.51	3	39.42	3	39.25	3	39.33	3
PDW 233 (c)	22.40	3	20.51	4	21.46	4	38.87	5	38.97	4	38.92	4
HD 4730	23.39	2	22.46	2	22.92	2	40.97	2	40.37	2	40.67	2
PDW 291 (c)	21.94	5	20.12	5	21.03	5	39.19	4	37.97	5	38.58	5
WH 1105 (c)	24.75	1	23.57	1	24.16	1	41.03	1	40.70	1	40.87	1
Mean	22.95		21.49		22.22		39.90		39.45		39.67	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.01	0.07	0.21		N.S.		0.09	0.57	0.92	
Genotype (B)	**		0.16	0.48	1.75		**		0.17	0.50	1.03	
B within A	N.S.		0.22	0.67			N.S.		0.23	0.70		
A within B			0.20	0.60					0.23	0.69		
Date of sowing:		31.10.2014		30.11.2014			Date of harvesting:		25.03.2015		10.04.2015	

Table 2.1.2. North Western Plains Zone IR-TS-TDM-DOS Delhi 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	43.97	5	39.10	5	41.53	5	543	1	466	3	505	1
PDW 233 (c)	45.40	4	39.93	3	42.67	4	447	5	465	4	456	4
HD 4730	48.10	2	40.80	2	44.45	2	474	2	411	5	442	5
PDW 291 (c)	47.03	3	39.17	4	43.10	3	454	3	470	2	462	3
WH 1105 (c)	54.13	1	45.87	1	50.00	1	453	4	483	1	468	2
Mean	47.73		40.97		44.35		474		459		467	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.44	2.66	3.81		N.S.		17.42	106.00	14.46	
Genotype (B)	**		0.17	0.52	0.96		N.S.		35.78	107.27	18.78	
B within A	**		0.25	0.74			N.S.		50.60	151.70		
A within B			0.49	1.47					48.49	145.39		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	20.56	5	22.68	4	21.62	5	40.85	1	38.31	1	39.58	1
PDW 233 (c)	25.81	4	23.35	3	24.58	3	39.79	3	37.41	3	38.60	3
HD 4730	26.33	3	26.78	1	26.56	2	38.59	4	37.19	4	37.89	4
PDW 291 (c)	26.44	2	22.45	5	24.44	4	39.94	2	37.96	2	38.95	2
WH 1105 (c)	32.33	1	26.46	2	29.40	1	38.12	5	36.81	5	37.46	5
Mean	26.29		24.34		25.32		39.46		37.54		38.50	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.72	4.37	10.99		N.S.		0.44	2.66	4.40	
Genotype (B)	N.S.		1.78	5.35	17.27		**		0.15	0.44	0.94	
B within A	N.S.		2.52	7.57			*		0.21	0.63		
A within B			2.37	7.10					0.48	1.43		
Date of sowing:		04.11.2014		01.12.2014			Date of harvesting:		22.04.2015		25.04.2015	

Table 2.1.3. **North Western Plains Zone** **IR-TS-TDM-DOS** **Durgapura** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	58.55	1	57.11	1	57.83	1	405	1	399	1	402	1
PDW 233 (c)	53.92	4	46.53	5	50.23	5	379	4	366	5	373	5
HD 4730	55.30	3	52.60	3	53.95	3	383	3	377	3	380	3
PDW 291 (c)	55.80	2	54.53	2	55.17	2	388	2	386	2	387	2
WH 1105 (c)	53.58	5	52.38	4	52.98	4	377	5	375	4	376	4
Mean	55.43		52.63		54.03		386		381		383	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.67	4.09	4.81		N.S.		2.37	14.42	2.39	
Genotype (B)	*		1.49	4.47	6.75		*		5.62	16.85	3.59	
B within A	N.S.		2.11	6.32			N.S.		7.95	23.83		
A within B			2.00	6.00					7.49	22.46		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	37.53	2	37.96	1	37.75	1	38.57	4	37.73	4	38.15	4
PDW 233 (c)	38.46	1	34.99	5	36.72	2	36.93	5	36.43	5	36.68	5
HD 4730	35.12	5	35.46	4	35.29	5	41.10	1	39.40	1	40.25	1
PDW 291 (c)	36.96	3	35.88	3	36.42	3	39.07	3	39.40	1	39.23	2
WH 1105 (c)	35.82	4	36.66	2	36.24	4	39.83	2	38.13	3	38.98	3
Mean	36.78		36.19		36.48		39.10		38.22		38.66	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.54	3.29	5.73		N.S.		0.25	1.55	2.54	
Genotype (B)	N.S.		0.95	2.86	6.40		N.S.		0.93	2.79	5.90	
B within A	N.S.		1.35	4.04			N.S.		1.32	3.95		
A within B			1.32	3.96					1.21	3.62		

Date of sowing: 03.11.2014 29.11.2014 Date of harvesting: 08.04.2015 15.04.2015

Table 2.1.4. **North Western Plains Zone** **IR-TS-TDM-DOS** **Gurdaspur** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	46.58	1	48.41	1	47.50	1	369	2	357	3	363	2
PDW 233 (c)	26.41	5	32.13	5	29.27	5	327	3	358	2	343	3
HD 4730	39.77	3	40.43	2	40.10	3	314	4	346	4	330	4
PDW 291 (c)	28.38	4	34.88	4	31.63	4	378	1	360	1	369	1
WH 1105 (c)	42.36	2	39.14	3	40.75	2	262	5	338	5	300	5
Mean	36.70		39.00		37.85		330		352		341	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		1.36	8.30	13.95		*		2.22	13.51	2.52	
Genotype (B)	**		0.97	2.90	6.27		**		4.35	13.04	3.12	
B within A	*		1.37	4.11			**		6.15	18.44		
A within B			1.83	5.50					5.93	17.79		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	37.16	2	41.51	1	39.33	2	33.99	3	32.72	4	33.35	4
PDW 233 (c)	25.86	4	25.19	5	25.53	4	31.30	5	35.83	3	33.56	3
HD 4730	35.41	3	31.83	3	33.62	3	35.91	1	36.66	1	36.28	1
PDW 291 (c)	21.61	5	27.01	4	24.31	5	34.79	2	35.99	2	35.39	2
WH 1105 (c)	50.12	1	36.97	2	43.55	1	32.41	4	31.24	5	31.82	5
Mean	34.03		32.50		33.27		33.68		34.49		34.08	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		1.00	6.08	11.64		N.S.		0.14	0.85	1.59	
Genotype (B)	**		1.14	3.42	8.40		**		0.70	2.09	5.01	
B within A	**		1.61	4.84			N.S.		0.99	2.96		
A within B			1.76	5.26					0.89	2.68		

Date of sowing: 29.10.2014 26.11.2014 Date of harvesting: 28.04.2015 07.05.2015

Table 2.1.5. North Western Plains Zone IR-TS-TDM-DOS Hisar 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	41.26	2	49.59	1	45.43	1	379	5	341	4	360	5
PDW 233 (c)	35.75	5	41.33	5	38.54	5	424	2	387	1	405	2
HD 4730	39.80	3	48.33	2	44.06	3	385	3	363	3	374	3
PDW 291 (c)	39.32	4	45.10	3	42.21	4	447	1	380	2	413	1
WH 1105 (c)	45.24	1	44.08	4	44.66	2	385	3	340	5	363	4
Mean	40.27		45.69		42.98		404		362		383	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.49	2.97	4.40		**		2.64	16.06	2.67	
Genotype (B)	**		0.74	2.23	4.23		**		7.33	21.97	4.69	
B within A	**		1.05	3.15			N.S.		10.36	31.07		
A within B			1.06	3.17					9.64	28.89		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	25.29	2	33.27	2	29.28	2	43.11	3	43.69	2	43.40	3
PDW 233 (c)	21.03	4	25.96	5	23.50	5	40.25	4	41.36	4	40.81	4
HD 4730	22.33	3	29.84	3	26.08	3	46.26	1	44.86	1	45.56	1
PDW 291 (c)	19.76	5	27.25	4	23.50	4	44.61	2	43.63	3	44.12	2
WH 1105 (c)	31.54	1	35.16	1	33.35	1	37.36	5	36.98	5	37.17	5
Mean	23.99		30.29		27.14		42.32		42.10		42.21	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.06	0.39	0.92		N.S.		0.23	1.40	2.11	
Genotype (B)	**		0.92	2.77	8.33		**		0.56	1.68	3.26	
B within A	N.S.		1.30	3.91			N.S.		0.79	2.38		
A within B			1.17	3.50					0.75	2.24		
Date of sowing:		02.11.2014		02.12.2014		Date of harvesting:		17.04.2015		24.04.2015		

Table 2.1.6. North Western Plains Zone IR-TS-TDM-DOS Jammu 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	45.53	3	44.50	1	45.02	1	433	1	392	1	413	1
PDW 233 (c)	44.58	4	40.41	5	42.50	4	425	4	371	4	398	4
HD 4730	46.65	1	42.76	2	44.70	2	430	2	375	3	403	3
PDW 291 (c)	42.88	5	40.80	4	41.84	5	385	5	352	5	368	5
WH 1105 (c)	45.72	2	41.46	3	43.59	3	428	3	377	2	403	2
Mean	45.07		41.99		43.53		420		373		397	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.28	1.71	2.50		*		6.55	39.89	6.40	
Genotype (B)	*		0.68	2.04	3.83		*		9.37	28.10	5.79	
B within A	N.S.		0.96	2.89			N.S.		13.25	39.74		
A within B			0.91	2.72					13.55	40.62		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	26.96	5	30.77	2	28.86	4	39.08	1	36.95	4	38.02	1
PDW 233 (c)	28.17	4	28.22	5	28.19	5	37.27	4	38.72	1	37.99	2
HD 4730	28.45	3	30.75	3	29.60	3	38.15	2	37.63	3	37.89	3
PDW 291 (c)	29.89	1	30.85	1	30.37	1	37.28	3	38.00	2	37.64	4
WH 1105 (c)	28.94	2	30.46	4	29.70	2	36.93	5	36.23	5	36.58	5
Mean	28.48		30.21		29.35		37.74		37.51		37.63	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.69	4.22	9.14		N.S.		0.73	4.43	7.50	
Genotype (B)	N.S.		1.05	3.16	8.78		N.S.		0.61	1.82	3.94	
B within A	N.S.		1.49	4.46			N.S.		0.86	2.57		
A within B			1.50	4.50					1.06	3.17		
Date of sowing:		04.11.2014		26.11.2014		Date of harvesting:		04.05.2015		09.05.2015		

Table 2.1.7. **North Western Plains Zone** **IR-TS-TDM-DOS** **Karnal** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	61.69	1	51.78	2	56.73	2	558	2	548	1	553	1
PDW 233 (c)	49.22	5	36.65	5	42.94	5	553	3	456	5	505	4
HD 4730	59.05	2	56.40	1	57.73	1	544	4	500	3	522	3
PDW 291 (c)	49.57	4	47.09	4	48.33	4	577	1	528	2	552	2
WH 1105 (c)	54.13	3	51.27	3	52.70	3	448	5	463	4	455	5
Mean	54.73		48.64		51.69		536		499		518	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.81	4.95	6.10		**		1.95	11.85	1.46	
Genotype (B)	**		0.50	1.48	2.35		**		4.74	14.21	2.24	
B within A	**		0.70	2.10			**		6.70	20.10		
A within B			1.03	3.08					6.30	18.90		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	27.05	2	27.03	3	27.04	3	40.87	3	34.98	3	37.93	3
PDW 233 (c)	25.37	4	25.51	4	25.44	4	35.15	4	31.56	5	33.36	5
HD 4730	25.91	3	30.30	2	28.10	2	41.90	2	37.27	2	39.58	2
PDW 291 (c)	18.25	5	22.01	5	20.13	5	47.10	1	40.57	1	43.83	1
WH 1105 (c)	35.76	1	31.94	1	33.85	1	33.87	5	34.66	4	34.27	4
Mean	26.47		27.36		26.91		39.78		35.81		37.79	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.60	3.68	8.69		*		0.33	1.99	3.35	
Genotype (B)	**		0.47	1.40	4.24		**		0.39	1.17	2.52	
B within A	**		0.66	1.98			**		0.55	1.65		
A within B			0.84	2.53					0.59	1.77		
Date of sowing:		29.10.2014		26.11.2014		Date of harvesting:		18.04.2015			22.04.2015	

Table 2.1.8. **North Western Plains Zone** **IR-TS-TDM-DOS** **Ludhiana** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	51.56	2	48.49	2	50 03	2	325	4	307	1	316	3
PDW 233 (c)	51.56	2	39.27	5	45 42	4	333	3	306	3	320	2
HD 4730	68.44	1	51.46	1	59 95	1	334	2	295	5	315	4
PDW 291 (c)	42.19	5	47.19	4	44 69	5	343	1	307	1	325	1
WH 1105 (c)	47.81	4	47.71	3	47.76	3	314	5	296	4	305	5
Mean	52.31		46.82		49 57		330		302		316	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.56	3.41	4.38		**		1.93	11.75	2.37	
Genotype (B)	**		1.06	3.18	5.25		N.S.		5.35	16.05	4.15	
B within A	**		1.50	4.50			N.S.		7.57	22.69		
A within B			1.46	4.36					7.04	21.11		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	40.70	4	46.97	3	43.84	3	39.03	3	33.67	3	36.35	3
PDW 233 (c)	46.43	2	38.46	5	42.44	4	33.33	5	33.40	4	33.37	5
HD 4730	47.75	1	49.55	2	48.65	1	43.00	2	35.53	2	39.27	2
PDW 291 (c)	26.85	5	42.75	4	34.80	5	45.93	1	36.33	1	41.13	1
WH 1105 (c)	43.17	3	51.08	1	47.12	2	35.27	4	31.67	5	33.47	4
Mean	40.98		45.76		43.37		39.31		34.12		36.72	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.15	0.92	1.35		*		0.37	2.25	3.91	
Genotype (B)	**		1.75	5.25	9.89		**		0.70	2.10	4.66	
B within A	**		2.48	7.43			**		0.99	2.96		
A within B			2.22	6.66					0.96	2.87		
Date of sowing:		29.10.2014		26.11.2014		Date of harvesting:		24.04.2015			28.04.2015	

Table 2.1.9. North Western Plains Zone IR-TS-TDM-DOS Nagina 2014-15

Genotype	Sowing time: Tmely	Rk	Late	Rk	Mean	Rk	Sowing time: Tmely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	46.49	1	39.07	1	42.78	1	371	1	265	1	318	1
PDW 233 (c)	41.08	5	32.86	5	36.97	5	342	4	242	5	292	5
HD 4730	44.72	2	38.57	2	41.65	2	367	2	265	1	316	2
PDW 291 (c)	41.63	4	35.00	4	38.32	4	342	5	257	4	299	4
WH 1105 (c)	43.88	3	36.12	3	40.00	3	351	3	258	3	305	3
Mean	43.56		36.32		39.94		355		257		306	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.76	4.62	7.36		**		5.98	36.39	7.57	
Genotype (B)	**		0.78	2.34	4.79		*		6.07	18.21	4.86	
B within A	N.S.		1.10	3.31			N.S.		8.59	25.75		
A within B			1.25	3.74					9.74	29.19		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	31.71	1	39.72	1	35.71	1	39.59	1	37.26	1	38.42	1
PDW 233 (c)	30.56	5	37.46	4	34.01	5	39.53	4	36.45	5	37.99	5
HD 4730	30.78	4	39.51	2	35.15	2	39.56	2	36.95	2	38.26	2
PDW 291 (c)	30.88	3	37.46	5	34.17	4	39.53	4	36.66	3	38.10	3
WH 1105 (c)	31.61	2	38.35	3	34.98	3	39.55	3	36.47	4	38.01	4
Mean	31.11		38.50		34.80		39.55		36.76		38.16	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		1.41	8.57	15.67		**		0.13	0.77	1.28	
Genotype (B)	N.S.		0.96	2.87	6.74		N.S.		0.15	0.45	0.97	
B within A	N.S.		1.35	4.06			N.S.		0.21	0.64		
A within B			1.86	5.57					0.23	0.69		

Date of sowing: 04.11.2014 02.12.2014 Date of harvesting:

Table 2.1.10. North Western Plains Zone IR-TS-TDM-DOS Pantnagar 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	45.80	2	41.97	3	43.88	2	421	3	334	4	378	5
PDW 233 (c)	38.63	5	36.37	5	37.50	5	408	5	360	2	384	3
HD 4730	40.57	4	41.13	4	40.85	4	427	2	329	5	378	4
PDW 291 (c)	40.97	3	43.67	2	42.32	3	450	1	364	1	407	1
WH 1105 (c)	46.83	1	44.63	1	45.73	1	413	4	358	3	386	2
Mean	42.56		41.55		42.06		424		349		386	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.45	2.76	4.17		*		5.52	33.57	5.53	
Genotype (B)	**		1.11	3.34	6.49		N.S.		11.17	33.50	7.08	
B within A	N.S.		1.58	4.73			N.S.		15.80	47.38		
A within B			1.48	4.44					15.17	45.49		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	24.53	2	29.85	2	27.19	2	44.47	3	42.40	3	43.43	3
PDW 233 (c)	22.19	3	24.59	5	23.39	3	42.70	4	41.37	4	42.03	4
HD 4730	18.19	4	26.86	3	22.52	4	52.33	2	46.70	1	49.52	2
PDW 291 (c)	16.67	5	26.45	4	21.56	5	54.73	1	45.43	2	50.08	1
WH 1105 (c)	27.98	1	30.63	1	29.31	1	40.63	5	40.60	5	40.62	5
Mean	21.91		27.68		24.79		46.97		43.30		45.14	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.45	2.74	7.03		*		0.33	2.02	2.85	
Genotype (B)	**		0.72	2.16	7.12		**		0.83	2.50	4.52	
B within A	**		1.02	3.06			**		1.18	3.53		
A within B			1.02	3.05					1.10	3.31		

Date of sowing: 30.10.2014 29.11.2014 Date of harvesting: 18.04.2015 24.04.2015

Table 2.1.11. North Western Plains Zone IR-TS-TDM-DOS Sriganganagar 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PDW 314 (c)	53.77	3	47.05	2	50.41	1	463	2	373	4	418	2
PDW 233 (c)	43.87	5	37.14	4	40.51	5	447	3	384	3	416	3
HD 4730	55.10	2	44.08	3	49.59	3	422	4	402	2	412	4
PDW 291 (c)	51.32	4	48.78	1	50.05	2	541	1	478	1	510	1
WH 1105 (c)	59.59	1	34.59	5	47.09	4	332	5	357	5	345	5
Mean	52.73		42.33		47.53		441		399		420	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.19	1.15	1.54		**		1.27	7.71	1.17	
Genotype (B)	N.S.		2.91	8.72	15.00		**		19.74	59.18	11.52	
B within A	N.S.		4.11	12.34			N.S.		27.92	83.70		
A within B			3.69	11.05					25.00	74.96		
	Grains/earhead						**1000 Grains weight, g**					
PDW 314 (c)	30.45	3	33.70	2	32.08	2	38.35	3	37.70	2	38.03	3
PDW 233 (c)	27.04	4	30.52	3	28.78	4	36.46	4	31.92	4	34.19	4
HD 4730	30.66	2	27.20	5	28.93	3	42.81	2	40.58	1	41.70	1
PDW 291 (c)	21.77	5	28.39	4	25.08	5	43.68	1	36.14	3	39.91	2
WH 1105 (c)	49.67	1	40.31	1	44.99	1	36.24	5	24.18	5	30.21	5
Mean	31.92		32.03		31.97		39.51		34.10		36.81	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.14	0.83	1.65		**		0.04	0.27	0.47	
Genotype (B)	**		1.33	3.98	10.18		**		2.02	6.06	13.46	
B within A	**		1.88	5.63			N.S.		2.86	8.57		
A within B			1.69	5.05					2.56	7.67		
Date of sowing:		08.11.2014		04.12.2014		Date of harvesting:		15.04.2015		28.04.2015		

Table 2.2.1. North Western Plains Zone IR-TS-MABB-DOS Delhi 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PBW 343 (c)	46.87	5	36.27	5	41.57	5	489	2	449	1	469	2
HD 2967 (c)	47.77	4	37.03	4	42.40	4	520	1	441	2	481	1
PBW 723	50.40	2	40.27	2	45.33	2	464	3	414	4	439	3
DPW 621-50 (c)	49.40	3	39.00	3	44.20	3	445	5	417	3	431	4
WH 1105 (c)	52.77	1	45.10	1	48.93	1	461	4	349	5	405	5
Mean	49.44		39.53		44.49		476		414		445	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.28	1.69	2.42		N.S.		21.79	132.59	18.97	
Genotype (B)	**		0.17	0.50	0.92		N.S.		23.08	69.21	12.71	
B within A	**		0.24	0.71			N.S.		32.64	97.87		
A within B			0.35	1.05					36.43	109.23		
	Grains/earhead						**1000 Grains weight, g**					
PBW 343 (c)	24.72	4	22.73	4	23.72	4	39.23	3	35.88	2	37.56	2
HD 2967 (c)	22.77	5	22.61	5	22.69	5	40.69	1	37.87	1	39.28	1
PBW 723	27.68	3	28.94	2	28.31	2	39.52	2	34.00	5	36.76	3
DPW 621-50 (c)	29.77	2	26.48	3	28.12	3	37.28	4	35.36	3	36.32	4
WH 1105 (c)	33.17	1	37.85	1	35.51	1	36.15	5	34.42	4	35.28	5
Mean	27.62		27.72		27.67		38.57		35.51		37.04	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		1.32	8.05	18.53		**		0.14	0.84	1.45	
Genotype (B)	**		1.61	4.84	14.29		**		0.65	1.96	4.31	
B within A	N.S.		2.28	6.85			N.S.		0.92	2.77		
A within B			2.43	7.30					0.84	2.51		
Date of sowing:		09.11.2014		02.12.2014		Date of harvesting:		16.04.2015		20.04.2015		

Table 2.2.2. **North Western Plains Zone** **IR-TS-MABB-DOS** **Dhaulakuan** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PBW 343 (c)	56.17	5	42.78	5	49.48	5						
HD 2967 (c)	59.85	4	56.33	3	58.09	3						
PBW 723	68.83	3	65.00	1	66.92	2						
DPW 621-50 (c)	69.42	2	43.77	4	56.59	4						
WH 1105 (c)	72.23	1	63.50	2	67.87	1						
Mean	65.30		54.28		59.79							
	F. Test		S.E.m	C.D.	C.V.(%)							
Sowing (A)	**		0.49	2.96	3.15							
Genotype (B)	**		1.34	4.03	5.50							
B within A	**		1.90	5.70								
A within B			1.77	5.30								
	Grains/earhead						**1000 Grains weight, g**					

Date of sowing:	13.11.2014	04.12.2014	Date of harvesting:

Table 2.2.3. **North Western Plains Zone** **IR-TS-MABB-DOS** **Jammu** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PBW 343 (c)	41.04	5	37.56	5	39.30	5	377	5	361	5	369	5
HD 2967 (c)	43.45	4	40.30	3	41.87	4	389	4	371	4	380	4
PBW 723	46.20	2	41.90	2	44.05	2	427	1	380	2	404	1
DPW 621-50 (c)	44.59	3	40.24	4	42.42	3	410	3	375	3	393	3
WH 1105 (c)	46.42	1	42.22	1	44.32	1	421	2	384	1	403	2
Mean	44.34		40.44		42.39		405		374		390	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.56	3.42	5.13		*		4.27	25.98	4.25	
Genotype (B)	**		0.61	1.83	3.52		*		7.42	22.24	4.67	
B within A	N.S.		0.86	2.58			N.S.		10.49	31.46		
A within B			0.95	2.86					10.31	30.91		
	Grains/earhead						**1000 Grains weight, g**					
PBW 343 (c)	29.14	2	28.50	5	28.82	4	37.35	5	36.60	5	36.98	5
HD 2967 (c)	29.86	1	28.74	4	29.30	2	37.50	4	37.82	1	37.66	3
PBW 723	28.91	3	30.09	1	29.50	1	37.55	3	36.84	4	37.20	4
DPW 621-50 (c)	27.47	5	28.93	3	28.20	5	39.62	1	37.14	3	38.38	1
WH 1105 (c)	28.82	4	29.22	2	29.02	3	38.27	2	37.64	2	37.95	2
Mean	28.84		29.10		28.97		38.06		37.21		37.63	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.25	1.54	3.39		N.S.		0.32	1.92	3.25	
Genotype (B)	N.S.		0.66	1.99	5.61		N.S.		0.64	1.92	4.17	
B within A	N.S.		0.94	2.81			N.S.		0.91	2.71		
A within B			0.88	2.63					0.87	2.61		

Date of sowing:	11.11.2014	28.11.2014	Date of harvesting:	08.05.2015	14.05.2015

Table 2.2.4. North Western Plains Zone IR-TS-MABB-DOS Karnal 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PBW 343 (c)	48.83	2	42.73	5	45.78	5	503	2	440	1	472	1
HD 2967 (c)	47.48	5	49.13	1	48.31	2	465	4	384	3	425	3
PBW 723	48.68	3	47.47	3	48.08	3	483	3	367	4	425	3
DPW 621-50 (c)	47.49	4	47.04	4	47.27	4	510	1	386	2	448	2
WH 1105 (c)	57.69	1	47.48	2	52.59	1	384	5	338	5	361	5
Mean	50.03		46.77		48.40		469		383		426	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.94	5.69	7.49		*		6.84	41.61	6.22	
Genotype (B)	**		0.97	2.91	4.91		**		12.95	38.81	7.44	
B within A	**		1.37	4.11			N.S.		18.31	54.89		
A within B			1.54	4.63					17.75	53.20		
	Grains/earhead						**1000 Grains weight, g**					
PBW 343 (c)	26.98	5	25.64	5	26.31	5	36.13	1	38.02	3	37.08	2
HD 2967 (c)	29.00	2	34.16	2	31.58	2	35.38	3	37.52	4	36.45	3
PBW 723	28.16	4	31.05	4	29.60	4	35.86	2	42.32	1	39.09	1
DPW 621-50 (c)	28.21	3	31.65	3	29.93	3	33.11	4	38.85	2	35.98	4
WH 1105 (c)	45.84	1	38.57	1	42.20	1	32.81	5	36.52	5	34.66	5
Mean	31.64		32.21		31.92		34.66		38.65		36.65	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.78	4.77	9.50		**		0.24	1.47	2.56	
Genotype (B)	**		1.17	3.51	8.99		**		0.44	1.32	2.93	
B within A	*		1.66	4.97			**		0.62	1.86		
A within B			1.68	5.02					0.61	1.82		
Date of sowing:		05.11.2014		02.12.2014			Date of harvesting:		15.04.2015		24.04.2015	

Table 2.2.5. North Western Plains Zone IR-TS-MABB-DOS Ludhiana 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PBW 343 (c)	44.79	3	35.30	5	40.05	5	365	1	303	5	334	4
HD 2967 (c)	40.74	5	42.94	4	41.84	4	347	4	313	3	330	5
PBW 723	47.57	1	43.75	2	45.66	1	357	3	337	1	347	1
DPW 621-50 (c)	44.44	4	43.06	3	43.75	3	363	2	313	3	338	2
WH 1105 (c)	45.14	2	43.98	1	44.56	2	347	4	326	2	337	3
Mean	44.54		41.81		43.17		356		318		337	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.11	0.65	0.96		*		3.95	24.05	4.54	
Genotype (B)	**		0.97	2.92	5.52		N.S.		8.84	26.51	6.42	
B within A	**		1.38	4.13			N.S.		12.51	37.50		
A within B			1.24	3.70					11.86	35.57		
	Grains/earhead						**1000 Grains weight, g**					
PBW 343 (c)	33.70	2	35.13	5	34.41	4	36.40	4	33.27	4	34.83	5
HD 2967 (c)	30.62	5	42.16	1	36.39	2	38.57	2	32.67	5	35.62	3
PBW 723	32.93	3	35.29	4	34.11	5	40.47	1	36.80	1	38.63	1
DPW 621-50 (c)	32.50	4	40.05	2	36.27	3	37.67	3	34.33	3	36.00	2
WH 1105 (c)	36.24	1	39.27	3	37.75	1	35.97	5	35.07	2	35.52	4
Mean	33.20		38.38		35.79		37.81		34.43		36.12	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.45	2.71	4.82		*		0.51	3.12	5.50	
Genotype (B)	N.S.		1.41	4.24	9.68		**		0.57	1.72	3.89	
B within A	N.S.		2.00	6.00			N.S.		0.81	2.43		
A within B			1.84	5.53					0.89	2.67		
Date of sowing:		07.11.2014		29.11.2014			Date of harvesting:		23.04.2015		26.04.2015	

Table 2.2.6. North Western Plains Zone IR-TS-MABE-DOS Pantnagar 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
PBW 343 (c)	43.83	3	42.73	3	43.28	3	435	1	331	4	383	2
HD 2967 (c)	40.77	5	38.07	5	39.42	5	380	5	373	2	377	3
PBW 723	47.40	2	44.47	2	45.93	2	414	2	375	1	395	1
DPW 621-50 (c)	43.10	4	42.57	4	42.83	4	400	3	335	3	368	4
WH 1105 (c)	47.97	1	45.10	1	46.53	1	399	4	329	5	364	5
Mean	44.61		42.59		43.60		406		349		377	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.68	4.12	6.02		N.S.		11.85	72.10	12.16	
Genotype (B)	**		1.28	3.83	7.17		N.S.		9.03	27.07	5.86	
B within A	N.S.		1.81	5.41			*		12.77	38.29		
A within B			1.75	5.25					16.46	49.34		
	Grains/earhead						**1000 Grains weight, g**					
PBW 343 (c)	23.64	4	36.09	2	29.87	3	43.07	3	36.33	5	39.70	3
HD 2967 (c)	23.56	5	25.60	5	24.58	5	45.53	2	40.03	2	42.78	2
PBW 723	24.46	3	26.91	4	25.69	4	46.97	1	44.30	1	45.63	1
DPW 621-50 (c)	27.09	2	32.88	3	29.98	2	39.87	4	38.70	3	39.28	4
WH 1105 (c)	31.35	1	37.30	1	34.33	1	38.63	5	36.83	4	37.73	5
Mean	26.02		31.75		28.89		42.81		39.24		41.03	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.13	0.76	1.68		*		0.49	2.99	4.65	
Genotype (B)	**		1.44	4.31	12.19		**		0.90	2.71	5.40	
B within A	N.S.		2.03	6.09			N.S.		1.28	3.84		
A within B			1.82	5.46					1.25	3.74		

Date of sowing: 05.11.2014 29.11.2014 Date of harvesting: 21.04.2015 25.04.2015

Table 2.3.1. North Western Plains Zone RIR-TS-TAS Agra 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	30.57	3	37.70	3	42.42	3	36.89	3	335	3	377	3	418	3	377	3
HD 3043 (c)	26.12	5	35.62	5	40.15	5	33.96	5	326	5	367	5	406	5	367	5
WH 1080 (c)	34.62	1	40.97	1	45.95	1	40.51	1	340	1	380	1	423	1	381	1
WH 1142 (I)	28.85	4	36.67	4	41.60	4	35.71	4	330	4	371	4	411	4	370	4
PBW 644 (c)	32.55	2	38.47	2	43.77	2	38.26	2	337	2	378	2	419	2	378	2
Mean	30.54		37.88		42.78		37.07		334		374		415		375	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.06		0.24		0.63		**		0.65		2.54		0.67	
Genotype (B)	**		0.05		0.15		0.43		**		1.85		5.39		1.48	
B within A	**		0.09		0.27				N.S.		3.20		9.33			
A within B			0.10		0.30						2.93		8.56			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277.	26.16	3	26.53	4	24.87	5	25.85	4	34.87	3	37.73	3	40.80	3	37.80	3
HD 3043 (c)	23.17	5	26.67	3	25.06	3	24.97	5	34.55	5	36.37	5	39.43	5	36.78	5
WH 1080 (c)	28.24	1	27.96	1	25.48	1	27.23	1	36.03	2	38.57	1	42.60	1	39.07	1
WH 1142 (I)	25.14	4	27.02	2	25.45	2	25.87	3	34.83	4	36.63	4	39.83	4	37.10	4
PBW 644 (c)	26.75	2	26.52	5	24.90	4	26.06	2	36.15	1	38.38	2	41.95	2	38.83	2
Mean	25.89		26.94		25.15		25.99		35.29		37.54		40.92		37.92	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.11		0.42		1.59		**		0.11		0.42		1.08	
Genotype (B)	**		0.18		0.51		2.03		**		0.17		0.51		1.38	
B within A	**		0.30		0.89				N.S.		0.30		0.88			
A within B			0.29		0.85						0.29		0.85			

Date of sowing: 15.11.204 Date of harvesting: 10, 14, 17.04.2015

Table 2.3.2. North Western Plains Zone RIR-TS-TAS Delhi 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	29.50	3	31.23	3	32.97	3	31.23	3	597	2	612	2	623	2	611	2
HD 3043 (c)	31.43	1	33.63	1	35.63	1	33.57	1	641	1	653	1	657	1	650	1
WH 1080 (c)	29.03	4	30.40	4	31.77	4	30.40	4	549	3	573	3	576	3	566	3
WH 1142 (l)	30.53	2	32.00	2	33.17	2	31.90	2	503	4	520	4	527	4	517	4
PBW 644 (c)	28.27	5	30.27	5	31.73	5	30.09	5	496	5	510	5	517	5	508	5
Mean	29.75		31.51		33.05		31.44		557		573		580		570	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.20		0.79		2.47		*		3.65		14.34		2.48	
Genotype (B)	**		0.19		0.57		1.85		**		1.86		5.42		0.98	
B within A	N.S.		0.34		0.98				N.S.		3.21		9.38			
A within B			0.36		1.05						4.65		13.57			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	13.30	5	13.26	5	13.17	5	13.24	5	37.19	3	38.59	3	40.24	3	38.67	3
HD 3043 (c)	13.59	4	13.80	3	14.04	3	13.81	3	36.05	5	37.41	5	38.68	5	37.38	5
WH 1080 (c)	13.90	3	13.47	4	13.59	4	13.65	4	38.15	2	39.49	1	40.62	1	39.42	1
WH 1142 (l)	16.82	1	16.41	1	16.15	1	16.46	1	36.14	4	37.53	4	39.03	4	37.57	4
PBW 644 (c)	14.94	2	15.15	2	15.16	2	15.08	2	38.24	1	39.20	2	40.55	2	39.33	2
Mean	14.51		14.42		14.42		14.45		37.16		38.45		39.82		38.47	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.13		0.52		3.53		**		0.22		0.84		2.17	
Genotype (B)	**		0.13		0.39		2.74		**		0.12		0.35		0.95	
B within A	N.S.		0.23		0.67				N.S.		0.21		0.61			
A within B			0.24		0.71						0.29		0.83			

Date of sowing: 08.11.2014 Date of harvesting: 16.04.2015

Table 2.3.3. North Western Plains Zone RIR-TS-TAS Durgapura 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	17.99	5	29.15	1	31.89	4	26.34	4	235	5	320	1	347	4	301	3
HD 3043 (c)	22.92	1	26.36	4	34.65	3	27.98	2	255	3	298	3	367	2	307	2
WH 1080 (c)	22.50	2	27.08	2	41.04	1	30.21	1	256	2	298	2	375	1	310	1
WH 1142 (l)	22.24	3	24.83	5	30.44	5	25.84	5	259	1	283	5	340	5	294	5
PBW 644 (c)	19.32	4	26.78	3	35.00	2	27.03	3	238	4	298	3	354	3	297	4
Mean	20.99		26.84		34.60		27.48		249		299		356		302	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.45		1.77		6.35		**		3.94		15.47		5.06	
Genotype (B)	*		1.03		3.01		11.25		N.S.		5.28		15.41		5.25	
B within A	N.S.		1.79		5.21				N.S.		9.14		26.69			
A within B			1.66		4.84						9.08		26.50			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	25.52	5	28.12	3	28.03	4	27.23	5	30.17	2	32.37	2	32.77	4	31.77	3
HD 3043 (c)	28.63	3	27.78	4	28.78	3	28.40	2	31.53	1	31.90	3	32.97	3	32.13	2
WH 1080 (c)	29.30	1	27.62	5	32.04	1	29.65	1	29.97	3	33.63	1	34.17	1	32.59	1
WH 1142 (l)	29.11	2	28.30	2	27.75	5	28.39	4	29.60	5	31.03	5	32.30	5	30.98	5
PBW 644 (c)	27.19	4	28.79	1	29.20	2	28.40	3	29.93	4	31.30	4	33.87	2	31.70	4
Mean	27.95		28.12		29.16		28.41		30.24		32.05		33.21		31.83	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.30		1.17		4.06		*		0.44		1.73		5.38	
Genotype (B)	N.S.		0.86		2.52		9.10		N.S.		0.99		2.88		9.31	
B within A	N.S.		1.49		4.36				N.S.		1.71		5.00			
A within B			1.37		3.99						1.59		4.65			

Date of sowing: 02.11.2014 Date of harvesting: 20.03.2015 05.04.2015

Table 2.3.4. North Western Plains Zone RIR-TS-TAS Gurdaspur 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	32.52	4	35.28	4	35.99	4	34.59	4	280	3	304	2	280	3	288	2
HD 3043 (c)	35.07	3	35.91	2	36.47	3	35.82	3	286	2	278	4	264	5	276	4
WH 1080 (c)	29.92	5	31.17	5	34.64	5	31.91	5	322	1	323	1	291	2	312	1
WH 1142 (l)	35.29	2	35.33	3	37.20	1	35.94	2	265	4	288	3	300	1	285	3
PBW 644 (c)	36.67	1	37.04	1	37.09	2	36.93	1	256	5	269	5	279	4	268	5
Mean	33.90		34.95		36.27		35.04		282		292		283		286	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.65		2.57		7.24		N.S.		5.50		21.59		7.45	
Genotype (B)	**		0.70		2.05		6.02		**		7.74		22.59		8.13	
B within A	N.S.		1.22		3.56				N.S.		13.41		39.13			
A within B			1.27		3.71						13.19		38.51			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	34.97	4	33.89	4	36.63	2	35.17	4	33.27	2	34.32	2	35.36	3	34.32	2
HD 3043 (c)	37.27	2	40.46	2	43.32	1	40.35	1	32.86	3	32.04	4	32.34	5	32.41	5
WH 1080 (c)	28.96	5	30.40	5	34.88	3	31.41	5	32.16	4	32.57	3	34.19	4	32.97	3
WH 1142 (l)	43.28	1	41.94	1	33.36	5	39.53	2	30.80	5	29.25	5	37.54	2	32.53	4
PBW 644 (c)	37.08	3	36.32	3	33.60	4	35.67	3	38.69	1	37.91	1	39.72	1	38.77	1
Mean	36.31		36.60		36.36		36.42		33.56		33.22		35.83		34.20	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.73		2.87		7.78		N.S.		0.61		2.40		6.93	
Genotype (B)	**		1.06		3.09		8.73		**		0.83		2.43		7.29	
B within A	**		1.84		5.36				N.S.		1.44		4.20			
A within B			1.80		5.25						1.43		4.16			

Date of sowing: 30.10.2014 Date of harvesting: 25.04.2015

Table 2.3.5. North Western Plains Zone RIR-TS-TAS Hisar 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	44.12	2	46.26	3	48.23	2	46.20	2	360	4	427	3	430	3	406	3
HD 3043 (c)	39.73	4	41.84	4	42.65	4	41.41	4	397	2	452	1	473	1	441	1
WH 1080 (c)	43.95	3	39.63	5	39.66	5	41.08	5	385	3	407	4	420	4	404	4
WH 1142 (l)	44.73	1	48.57	1	50.85	1	48.05	1	402	1	437	2	450	2	429	2
PBW 644 (c)	37.28	5	47.21	2	47.69	3	44.06	3	333	5	387	5	400	5	373	5
Mean	41.96		44.70		45.82		44.16		375		422		435		411	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	*		0.59		2.31		5.17		**		7.31		28.70		6.90	
Genotype (B)	**		0.56		1.64		3.81		**		10.52		30.70		7.68	
B within A	**		0.97		2.84				N.S.		18.22		53.17			
A within B			1.05		3.07						17.86		52.12			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	24.93	4	23.25	4	23.47	4	23.88	4	49.66	1	46.88	1	48.11	1	48.22	1
HD 3043 (c)	24.94	3	25.26	3	24.50	3	24.90	3	40.52	5	36.75	5	36.91	5	38.06	5
WH 1080 (c)	23.88	5	21.22	5	21.71	5	22.27	5	47.83	2	46.15	2	43.59	2	45.85	2
WH 1142 (l)	26.57	2	28.33	2	27.85	2	27.58	2	42.07	3	39.39	4	40.68	4	40.71	4
PBW 644 (c)	26.72	1	31.13	1	28.54	1	28.80	1	41.94	4	39.44	3	41.79	3	41.06	3
Mean	25.41		25.84		25.21		25.49		44.41		41.72		42.22		42.78	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.67		2.64		10.21		**		0.32		1.25		2.89	
Genotype (B)	**		0.71		2.07		8.34		**		0.42		1.23		2.94	
B within A	N.S.		1.23		3.58				N.S.		0.73		2.12			
A within B			1.29		3.76						0.72		2.12			

Date of sowing: 31.10.2014 Date of harvesting: 10.04.2015

Table 2.3.6. North Western Plains Zone RIR-TS-TAS Jammu 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	42.02	2	43.93	2	44.22	2	43.39	1	398	1	430	1	432	1	420	1
HD 3043 (c)	38.88	5	39.90	5	40.35	5	39.71	5	363	5	388	5	396	4	382	5
WH 1080 (c)	41.29	3	43.94	1	44.25	1	43.16	2	397	2	412	2	418	2	409	2
WH 1142 (I)	39.25	4	42.03	4	42.17	4	41.15	4	373	4	411	3	394	5	393	4
PBW 644 (c)	42.37	1	43.17	3	43.30	3	42.95	3	393	3	405	4	415	3	404	3
Mean	40.76		42.59		42.86		42.07		385		409		411		402	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		1.15		4.50		10.55		N.S.		7.25		28.47		6.99	
Genotype (B)	*		0.89		2.59		6.32		*		7.50		21.88		5.60	
B within A	N.S.		1.54		4.48				N.S.		12.99		37.90			
A within B			1.79		5.22						13.69		39.97			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	26.21	5	25.58	5	26.24	4	26.01	5	40.38	2	40.00	1	39.53	3	39.97	2
HD 3043 (c)	27.63	3	27.50	3	27.55	2	27.56	3	38.78	3	37.57	3	37.33	4	37.89	4
WH 1080 (c)	28.19	2	29.00	1	26.74	3	27.98	2	37.15	4	37.02	5	39.57	2	37.91	3
WH 1142 (I)	28.81	1	27.55	2	29.11	1	28.49	1	36.52	5	37.30	4	37.20	5	37.01	5
PBW 644 (c)	26.54	4	27.00	4	25.69	5	26.41	4	40.58	1	39.57	2	40.67	1	40.27	1
Mean	27.48		27.32		27.07		27.29		38.68		38.29		38.86		38.61	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		1.11		4.35		15.73		N.S.		0.80		3.13		8.01	
Genotype (B)	N.S.		0.86		2.51		9.45		**		0.65		1.89		5.02	
B within A	N.S.		1.49		4.35				N.S.		1.12		3.27			
A within B			1.73		5.06						1.28		3.74			

Date of sowing: 31.10.2014 Date of harvesting: 28.04.2015

Table 2.3.7. North Western Plains Zone RIR-TS-TAS Karnal 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	29.31	3	45.64	2	48.12	1	41.02	2	252	5	416	2	422	2	363	2
HD 3043 (c)	21.19	5	39.48	4	40.61	3	33.76	4	272	2	421	1	389	4	360	3
WH 1080 (c)	30.82	2	36.38	5	36.04	4	34.41	3	313	1	406	3	442	1	387	1
WH 1142 (I)	34.97	1	45.94	1	45.36	2	42.09	1	270	3	395	4	395	3	353	4
PBW 644 (c)	24.64	4	40.16	3	35.15	5	33.32	5	261	4	394	5	363	5	339	5
Mean	28.19		41.52		41.06		36.92		273		406		402		361	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.37		1.47		3.93		**		6.62		25.99		7.11	
Genotype (B)	**		0.46		1.33		3.71		**		7.96		23.23		6.62	
B within A	**		0.79		2.31				N.S.		13.79		40.24			
A within B			0.80		2.34						14.00		40.85			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	22.67	2	25.44	3	27.62	2	25.24	2	51.35	1	43.25	2	41.73	3	45.44	1
HD 3043 (c)	18.80	5	26.33	2	28.76	1	24.63	3	41.62	5	35.68	5	36.37	5	37.89	5
WH 1080 (c)	20.02	4	22.42	5	22.09	4	21.51	5	49.37	2	40.06	3	37.07	4	42.17	3
WH 1142 (I)	30.50	1	29.45	1	27.46	3	29.14	1	42.53	4	39.52	4	41.94	2	41.33	4
PBW 644 (c)	21.27	3	22.44	4	21.49	5	21.73	4	44.53	3	45.43	1	45.29	1	45.08	2
Mean	22.65		25.22		25.48		24.45		45.88		40.79		40.48		42.38	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.35		1.39		5.61		**		0.15		0.59		1.38	
Genotype (B)	**		0.57		1.68		7.05		**		0.39		1.15		2.79	
B within A	**		1.00		2.91				**		0.68		1.99			
A within B			0.96		2.80						0.63		1.83			

Date of sowing: 28.10.2014 Date of harvesting: 10.04.2015

Table 2.3.8. North Western Plains Zone RIR-TS-TAS Ludhiana 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	45.14	2	36.69	4	37.73	2	39.85	4	320	3	343	3	360	3	341	3
HD 3043 (c)	41.44	4	35.30	5	31.71	5	36.15	5	320	2	296	5	357	4	324	5
WH 1080 (c)	42.94	3	41.90	3	35.42	4	40.08	3	318	4	372	1	372	1	354	1
WH 1142 (I)	46.76	1	45.60	1	37.50	3	43.29	1	326	1	353	2	363	2	347	2
PBW 644 (c)	39.24	5	43.17	2	37.96	1	40.12	2	302	5	342	4	340	5	328	4
Mean	43.10		40.53		36.06		39.90		317		341		359		339	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.51		2.01		4.97		*		6.97		27.34		7.96	
Genotype (B)	**		0.76		2.22		5.71		*		7.13		20.81		6.31	
B within A	**		1.31		3.84				N.S.		12.35		36.05			
A within B			1.28		3.74						13.06		38.12			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	39.65	2	31.13	4	31.70	2	34.16	3	36.03	2	34.33	2	33.13	3	34.50	3
HD 3043 (c)	39.35	3	39.60	2	31.13	3	36.69	2	33.00	5	30.47	4	28.67	5	30.71	5
WH 1080 (c)	38.96	4	33.04	3	27.74	5	33.25	4	35.07	3	34.27	3	34.30	2	34.54	2
WH 1142 (I)	43.00	1	43.17	1	34.98	1	40.38	1	33.33	4	30.07	5	29.60	4	31.00	4
PBW 644 (c)	35.13	5	30.40	5	30.50	4	32.01	5	37.77	1	41.57	1	36.60	1	38.64	1
Mean	39.22		35.47		31.21		35.30		35.04		34.14		32.46		33.88	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.89		3.50		9.78		*		0.36		1.42		4.13	
Genotype (B)	**		1.00		2.93		8.52		**		0.34		1.00		3.03	
B within A	N.S.		1.74		5.07				**		0.59		1.73			
A within B			1.79		5.23						0.64		1.87			

Date of sowing: 28.10.2014 Date of harvesting: 20.04.2015

Table 2.3.9. North Western Plains Zone RIR-TS-TAS Nagina 2014-15

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	33.60	2	40.48	2	42.45	1	38.84	1	286	2	363	1	374	1	341	1
HD 3043 (c)	32.35	4	38.90	5	41.03	4	37.43	4	258	5	339	4	328	5	308	5
WH 1080 (c)	33.20	3	39.07	3	41.45	3	37.91	3	275	3	340	3	354	3	323	3
WH 1142 (I)	31.83	5	38.96	4	40.59	5	37.13	5	263	4	331	5	335	4	310	4
PBW 644 (c)	33.62	1	40.67	1	41.90	2	38.73	2	293	1	353	2	368	2	338	2
Mean	32.92		39.62		41.48		38.01		275		345		352		324	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	*		1.09		4.27		11.08		**		3.72		14.59		4.44	
Genotype (B)	N.S.		0.62		1.81		4.89		**		4.50		13.12		4.16	
B within A	N.S.		1.07		3.13				N.S.		7.79		22.73			
A within B			1.45		4.23						7.89		23.04			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	32.73	4	30.01	5	30.04	5	30.93	5	35.88	1	37.18	1	37.81	2	36.96	1
HD 3043 (c)	35.07	1	31.12	2	33.21	1	33.13	1	35.78	5	36.89	5	37.66	4	36.78	5
WH 1080 (c)	33.91	2	30.95	4	31.13	3	32.00	3	35.82	3	37.17	3	37.67	3	36.89	3
WH 1142 (I)	33.84	3	31.68	1	32.51	2	32.68	2	35.80	4	37.17	4	37.64	5	36.87	4
PBW 644 (c)	31.94	5	31.00	3	30.13	4	31.02	4	35.86	2	37.17	2	37.81	1	36.95	2
Mean	33.50		30.95		31.40		31.95		35.83		37.12		37.72		36.89	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.78		3.05		9.41		**		0.05		0.18		0.47	
Genotype (B)	N.S.		0.73		2.13		6.85		N.S.		0.04		0.13		0.36	
B within A	N.S.		1.26		3.69				N.S.		0.08		0.22			
A within B			1.37		4.00						0.08		0.24			

Date of sowing: 22.11.2014 Date of harvesting:

Table 2.3.10. North Western Plains Zone **RIR-TS-TAS** **Pantnagar** **2014-15**

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	39.33	3	43.50	3	45.17	3	42.67	3	338	5	365	4	429	2	377	4
HD 3043 (c)	39.40	2	44.90	1	46.57	1	43.62	1	373	1	399	3	435	1	403	1
WH 1080 (c)	35.87	5	39.60	5	40.57	5	38.68	5	358	3	403	2	408	4	390	3
WH 1142 (I)	40.90	1	41.87	4	42.50	4	41.76	4	362	2	406	1	417	3	395	2
PBW 644 (c)	38.10	4	44.40	2	45.90	2	42.80	2	349	4	362	5	378	5	363	5
Mean	38.72		42.85		44.14		41.90		356		387		413		386	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		1.10		4.31		10.14		*		9.14		35.87		9.18	
Genotype (B)	**		0.86		2.52		6.17		*		9.10		26.57		7.08	
B within A	N.S.		1.49		4.36				N.S.		15.77		46.02			
A within B			1.73		5.05						16.80		49.04			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	23.24	4	24.01	4	21.62	5	22.96	4	50.30	1	50.03	1	48.73	1	49.69	1
HD 3043 (c)	24.35	2	26.40	2	25.88	2	25.55	2	43.53	4	43.43	4	41.83	5	42.93	4
WH 1080 (c)	21.11	5	21.64	5	22.40	4	21.72	5	47.50	2	45.43	3	44.33	3	45.76	3
WH 1142 (I)	26.39	1	24.65	3	24.25	3	25.10	3	42.83	5	42.47	5	42.27	4	42.52	5
PBW 644 (c)	23.59	3	26.67	1	26.60	1	25.62	1	46.27	3	46.07	2	45.83	2	46.06	2
Mean	23.74		24.67		24.15		24.19		46.09		45.49		44.60		45.39	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	N.S.		0.79		3.11		12.69		N.S.		0.48		1.87		4.07	
Genotype (B)	*		0.90		2.62		11.15		**		0.64		1.88		4.25	
B within A	N.S.		1.56		4.54				N.S.		1.11		3.25			
A within B			1.60		4.68						1.10		3.22			

Date of sowing: 29.10.2014 Date of harvesting: 20.04.2015

Table 2.3.11. North Western Plains Zone **RIR-TS-TAS** **Sriganganagar** **2014-15**

Genotype	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk	Number of irrigations: No	Rk	One	Rk	Two	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MP 1277	37.78	2	61.22	1	63.57	1	54.19	2	195	4	265	4	287	5	249	4
HD 3043 (c)	28.36	5	42.65	5	51.73	5	40.91	5	205	3	276	3	293	3	258	2
WH 1080 (c)	36.33	3	55.61	3	58.16	4	50.03	4	211	2	261	5	299	2	257	3
WH 1142 (I)	40.71	1	59.89	2	62.14	3	54.24	1	249	1	284	1	302	1	278	1
PBW 644 (c)	32.76	4	54.29	4	63.47	2	50.17	3	159	5	279	2	290	4	243	5
Mean	35.19		54.73		59.81		49.91		204		273		294		257	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.20		0.79		1.56		**		1.05		4.11		1.58	
Genotype (B)	**		2.41		7.03		14.48		N.S.		11.76		34.33		13.73	
B within A	N.S.		4.17		12.18				N.S.		20.37		59.46			
A within B			3.74		10.91						18.25		53.27			
	Grains/earhead								**1000 Grains weight, g**							
MP 1277	48.86	2	54.12	2	49.28	4	50.75	3	40.18	4	43.19	1	45.43	1	42.93	1
HD 3043 (c)	32.52	5	38.34	5	43.91	5	38.26	5	43.10	2	40.85	3	40.77	2	41.57	3
WH 1080 (c)	39.57	4	50.93	3	50.13	3	46.88	4	44.10	1	42.36	2	39.12	4	41.86	2
WH 1142 (I)	41.78	3	56.28	1	57.24	1	51.77	1	39.51	5	38.08	5	36.46	5	38.02	5
PBW 644 (c)	50.70	1	48.95	4	55.48	2	51.71	2	41.22	3	40.45	4	39.87	3	40.51	4
Mean	42.68		49.72		51.21		47.87		41.62		40.99		40.33		40.98	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.94		3.67		7.56		N.S.		0.78		3.07		7.39	
Genotype (B)	**		2.40		7.00		15.02		N.S.		2.09		6.11		15.32	
B within A	N.S.		4.15		12.12				N.S.		3.62		10.58			
A within B			3.83		11.18						3.33		9.73			

Date of sowing: 05.11.2014 Date of harvesting: 10.04.2015

Table 2.4.1. North Western Plains Zone RF-TAS-LON Agra 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	31.59	2	33.66	2	35.50	2	33.58	2	393	2	407	2	410	4	403	2
WH 1164	28.58	3	30.19	3	31.86	3	30.21	3	388	3	404	3	417	2	403	3
PBW 660 (I)	25.41	5	26.64	5	28.77	5	26.94	5	376	5	382	5	392	5	384	5
HD 3043 (c)	35.32	1	39.08	1	42.45	1	38.95	1	410	1	414	1	420	1	415	1
WH 1080 (c)	26.54	4	28.47	4	30.46	4	28.49	4	387	4	402	4	416	3	402	4
Mean	29.49		31.61		33.81		31.63		391		402		411		401	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.11		0.45		1.39		**		0.69		2.71		0.67	
Genotype (B)	**		0.08		0.25		0.81		**		0.70		2.04		0.52	
B within A	**		0.15		0.43				**		1.21		3.54			
A within B			0.17		0.51						1.29		3.75			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	19.94	2	21.48	2	22.67	2	21.36	2	40.35	2	38.53	4	38.23	4	39.04	4
WH 1164	18.11	3	18.51	3	19.94	3	18.86	3	40.67	1	40.40	1	38.28	3	39.78	1
PBW 660 (I)	16.95	5	18.14	4	19.38	4	18.16	4	39.83	5	38.44	5	37.85	5	38.71	5
HD 3043 (c)	21.37	1	24.32	1	26.28	1	23.99	1	40.30	4	38.81	3	38.45	2	39.19	3
WH 1080 (c)	17.02	4	17.54	5	18.92	5	17.83	5	40.33	3	40.35	2	38.67	1	39.78	2
Mean	18.68		20.00		21.44		20.04		40.30		39.30		38.30		39.30	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.06		0.24		1.19		**		0.03		0.12		0.29	
Genotype (B)	**		0.08		0.24		1.22		**		0.11		0.32		0.84	
B within A	**		0.14		0.41				**		0.19		0.56			
A within B			0.14		0.41						0.17		0.51			
Date of Sowing:			30.10.2014						Date of Harvesting:				22.03.2015			

Table 2.4.2. North Western Plains Zone RF-TAS-LON Delhi 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	33.93	2	35.10	2	35.97	2	35.00	2	510	4	520	4	523	4	518	4
WH 1164	32.73	4	33.83	4	34.97	4	33.84	4	515	3	525	3	528	3	523	3
PBW 660 (I)	32.17	5	33.47	5	34.57	5	33.40	5	521	2	529	2	532	2	527	2
HD 3043 (c)	33.27	3	34.43	3	35.53	3	34.41	3	510	5	516	5	520	5	515	5
WH 1080 (c)	35.33	1	36.23	1	37.40	1	36.32	1	532	1	536	1	540	1	536	1
Mean	33.49		34.61		35.69		34.60		518		525		529		524	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.09		0.35		1.00		**		1.23		4.84		0.91	
Genotype (B)	**		0.14		0.41		1.21		**		0.98		2.87		0.56	
B within A	N.S.		0.24		0.70				N.S.		1.70		4.97			
A within B			0.23		0.68						1.96		5.72			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	17.49	1	17.27	1	17.12	1	17.29	1	38.02	3	39.08	3	40.18	3	39.09	3
WH 1164	17.10	3	16.88	4	16.75	4	16.91	3	37.15	5	38.20	5	39.52	5	38.29	5
PBW 660 (I)	15.69	5	15.83	5	16.05	5	15.86	5	39.32	2	39.98	2	40.48	2	39.92	2
HD 3043 (c)	17.26	2	17.16	2	17.10	2	17.17	2	37.80	4	38.89	4	39.97	4	38.89	4
WH 1080 (c)	16.69	4	16.88	3	16.90	3	16.82	4	39.83	1	40.07	1	40.98	1	40.29	1
Mean	16.85		16.80		16.78		16.81		38.42		39.24		40.23		39.30	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		0.03		0.13		0.76		**		0.10		0.40		1.00	
Genotype (B)	**		0.10		0.29		1.77		**		0.10		0.30		0.79	
B within A	N.S.		0.17		0.50				*		0.18		0.52			
A within B			0.16		0.46						0.19		0.55			
Date of Sowing:			09.11.2014						Date of Harvesting:				16.04.2015			

Table 2.4.3. North Western Plains Zone RF-TAS-LON Durgapura 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	34.30	1	36.39	1	37.72	1	36.14	1	267	1	287	3	316	1	290	1
WH 1164	31.40	3	34.83	4	35.67	4	33.97	4	248	3	285	4	296	5	276	4
PBW 660 (l)	30.36	4	35.42	2	36.56	2	34.11	3	251	2	289	2	309	2	283	2
HD 3043 (c)	31.95	2	35.32	3	35.96	3	34.41	2	243	5	296	1	306	3	282	3
WH 1080 (c)	28.26	5	33.77	5	34.99	5	32.34	5	246	4	278	5	304	4	276	5
Mean	31.26		35.15		36.18		34.19		251		287		306		281	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.27		1.06		3.05		**		5.79		22.73		7.97	
Genotype (B)	N.S.		1.40		4.08		12.25		N.S.		10.44		30.46		11.13	
B within A	N.S.		2.42		7.06				N.S.		18.08		52.76			
A within B			2.18		6.36						17.17		50.13			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	35.49	1	34.20	1	31.75	1	33.81	1	36.33	4	37.33	4	37.73	4	37.13	4
WH 1164	33.55	2	32.39	3	30.54	3	32.16	3	37.83	3	38.83	3	39.47	3	38.71	3
PBW 660 (l)	30.81	5	30.05	4	29.18	5	30.01	5	39.33	2	40.80	1	40.50	1	40.21	1
HD 3043 (c)	33.13	3	29.44	5	29.37	4	30.65	4	39.83	1	40.50	2	39.97	2	40.10	2
WH 1080 (c)	32.46	4	33.25	2	31.26	2	32.32	2	35.43	5	36.60	5	36.77	5	36.27	5
Mean	33.09		31.87		30.42		31.79		37.75		38.81		38.89		38.48	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		1.06		4.16		12.91		N.S.		0.35		1.36		3.49	
Genotype (B)	*		0.90		2.62		8.47		**		0.64		1.88		5.02	
B within A	N.S.		1.55		4.54				N.S.		1.11		3.25			
A within B			1.75		5.10						1.06		3.08			
Date of Sowing:			03.11.2014						Date of Harvesting:				26.03.2015			

Table 2.4.4. North Western Plains Zone RF-TAS-LON Gurdaspur 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	34.16	1	34.97	2	37.44	2	35.52	2	264	4	274	3	274	4	271	4
WH 1164	29.01	4	31.04	4	32.63	4	30.90	4	251	5	219	5	260	5	243	5
PBW 660 (l)	31.01	3	33.21	3	33.74	3	32.65	3	290	2	282	2	284	2	285	2
HD 3043 (c)	33.68	2	36.39	1	39.22	1	36.43	1	288	3	249	4	288	1	275	3
WH 1080 (c)	25.68	5	29.67	5	31.09	5	28.81	5	297	1	294	1	280	3	290	1
Mean	30.71		33.05		34.82		32.86		278		263		277		273	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.44		1.73		5.19		*		1.98		7.75		2.80	
Genotype (B)	**		0.47		1.37		4.29		**		3.21		9.36		3.53	
B within A	N.S.		0.81		2.38				**		5.56		16.22			
A within B			0.85		2.48						5.35		15.61			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	30.90	2	32.40	3	36.43	2	33.24	2	41.93	1	39.43	2	37.58	2	39.65	1
WH 1164	29.92	3	34.77	2	34.10	3	32.93	3	38.72	3	40.89	1	36.93	3	38.85	3
PBW 660 (l)	27.54	4	30.81	4	30.15	5	29.50	4	38.86	2	38.40	3	39.62	1	38.96	2
HD 3043 (c)	32.43	1	45.46	1	39.34	1	39.08	1	36.26	4	32.45	5	34.80	4	34.50	4
WH 1080 (c)	24.78	5	29.55	5	32.52	4	28.95	5	34.84	5	34.27	4	34.09	5	34.40	5
Mean	29.11		34.60		34.51		32.74		38.12		37.08		36.61		37.27	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.72		2.83		8.53		N.S.		0.83		3.27		8.66	
Genotype (B)	**		0.92		2.67		8.39		**		0.55		1.60		4.41	
B within A	*		1.59		4.63				*		0.95		2.77			
A within B			1.59		4.65						1.19		3.47			
Date of Sowing:			03.11.2014						Date of Harvesting:				23.04.2015			

Table 2.4.5. North Western Plains Zone RF-TAS-LON Hisar 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	37.07	4	41.56	5	46.09	3	41.58	4	305	5	327	4	333	5	322	4
WH 1164	37.41	3	43.95	3	45.03	4	42.13	3	308	4	310	5	335	4	318	5
PBW 660 (l)	44.56	1	45.51	2	46.90	2	45.66	1	360	1	395	1	400	1	385	1
HD 3043 (c)	37.76	2	45.92	1	47.62	1	43.76	2	323	3	373	2	382	2	359	3
WH 1080 (c)	36.53	5	43.27	4	44.73	5	41.51	5	337	2	370	3	378	3	362	2
Mean	38.67		44.04		46.07		42.93		327		355		366		349	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.63		2.49		5.72		*		5.58		21.91		6.19	
Genotype (B)	**		0.55		1.61		3.86		**		5.01		14.63		4.31	
B within A	**		0.96		2.79				N.S.		8.68		25.34			
A within B			1.06		3.11						9.56		27.91			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	29.31	1	29.20	1	31.08	1	29.86	1	41.61	4	43.76	4	44.50	4	43.29	4
WH 1164	25.44	4	28.45	3	26.87	3	26.92	3	47.83	2	50.02	1	50.10	1	49.32	1
PBW 660 (l)	25.72	3	23.38	5	23.61	5	24.23	4	48.19	1	49.44	2	49.72	2	49.11	2
HD 3043 (c)	28.44	2	29.17	2	29.31	2	28.97	2	41.11	5	42.24	5	42.61	5	41.98	5
WH 1080 (c)	22.77	5	23.82	4	24.13	4	23.57	5	47.82	3	49.22	3	49.04	3	48.69	3
Mean	26.34		26.80		27.00		26.71		45.31		46.94		47.19		46.48	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		0.76		3.00		11.06		*		0.39		1.51		3.21	
Genotype (B)	**		0.58		1.69		6.51		**		0.29		0.84		1.85	
B within A	N.S.		1.00		2.93				N.S.		0.50		1.45			
A within B			1.18		3.44						0.59		1.72			

Date of Sowing: 31.10.2014 Date of Harvesting: 10.04.2015

Table 2.4.6. North Western Plains Zone RF-TAS-LON Jammu 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	33.15	1	42.88	1	44.57	3	40.20	1	311	2	375	2	391	3	359	3
WH 1164	32.04	2	42.72	2	44.60	2	39.79	2	318	1	369	3	393	2	360	2
PBW 660 (l)	27.32	5	41.33	4	43.66	4	37.43	4	290	5	357	4	389	4	346	4
HD 3043 (c)	30.28	3	42.56	3	45.78	1	39.54	3	308	3	383	1	428	1	373	1
WH 1080 (c)	27.62	4	40.58	5	40.96	5	36.39	5	299	4	348	5	374	5	341	5
Mean	30.08		42.01		43.91		38.67		305		367		395		356	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.89		3.49		8.91		**		7.91		31.04		8.61	
Genotype (B)	**		0.69		2.01		5.36		*		7.48		21.84		6.31	
B within A	N.S.		1.20		3.49				N.S.		12.96		37.82			
A within B			1.39		4.06						14.03		40.95			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	28.50	1	28.20	4	27.87	4	28.19	2	37.53	3	40.50	2	40.97	2	39.67	2
WH 1164	24.22	5	27.86	5	26.61	5	26.23	5	41.70	1	41.57	1	42.68	1	41.98	1
PBW 660 (l)	24.73	4	29.01	3	29.08	1	27.61	4	38.05	2	39.87	3	38.63	3	38.85	3
HD 3043 (c)	27.20	2	30.49	2	28.14	3	28.61	1	36.47	5	36.62	5	38.12	4	37.07	5
WH 1080 (c)	24.74	3	30.73	1	28.87	2	28.11	3	37.42	4	38.52	4	37.90	5	37.94	4
Mean	25.88		29.26		28.11		27.75		38.23		39.41		39.66		39.10	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	N.S.		0.69		2.71		9.64		*		0.26		1.01		2.54	
Genotype (B)	N.S.		0.82		2.40		8.89		**		0.47		1.36		3.58	
B within A	N.S.		1.43		4.16				N.S.		0.81		2.36			
A within B			1.45		4.23						0.77		2.24			

Date of Sowing: 29.10.2014 Date of Harvesting: 02.05.2015

Table 2.4.7. North Western Plains Zone RF-TAS-LON Ludhiana 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	44.44	2	48.84	3	52.78	2	48.69	2	250	4	259	5	280	5	263	5
WH 1164	45.25	1	48.84	3	56.25	1	50.12	1	248	5	288	4	313	2	283	4
PBW 660 (l)	43.75	3	51.74	1	48.03	5	47.84	3	299	1	291	2	297	4	296	3
HD 3043 (c)	42.01	4	50.12	2	48.61	4	46.91	4	294	2	290	3	310	3	298	1
WH 1080 (c)	33.80	5	47.45	5	52.43	3	44.56	5	275	3	299	1	319	1	298	2
Mean	41.85		49.40		51.62		47.62		273		285		304		287	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.55		2.14		4.44		**		3.29		12.92		4.44	
Genotype (B)	*		1.20		3.49		7.53		**		3.60		10.51		3.76	
B within A	*		2.07		6.05				**		6.24		18.21			
A within B			1.93		5.64						6.48		18.91			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	48.19	1	50.55	2	49.61	1	49.45	2	37.13	4	37.37	3	38.13	2	37.54	3
WH 1164	44.82	3	39.63	5	43.79	5	42.74	3	40.97	1	42.90	1	41.07	1	41.64	1
PBW 660 (l)	37.86	4	46.50	3	43.86	4	42.74	4	38.63	2	38.23	2	36.93	3	37.93	2
HD 3043 (c)	47.15	2	55.88	1	48.57	2	50.53	1	30.37	5	30.93	5	32.20	5	31.17	5
WH 1080 (c)	33.16	5	46.21	4	47.66	3	42.34	5	37.17	3	34.47	4	34.53	4	35.39	4
Mean	42.23		47.75		46.70		45.56		36.85		36.78		36.57		36.74	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	*		1.02		4.02		8.71		N.S.		0.35		1.38		3.71	
Genotype (B)	**		1.29		3.77		8.49		**		0.63		1.84		5.15	
B within A	**		2.23		6.52				N.S.		1.09		3.19			
A within B			2.25		6.56						1.04		3.03			

Date of Sowing: 01.11.2014 Date of Harvesting: 20.04.2015

Table 2.4.8. North Western Plains Zone RF-TAS-LON Sriganganagar 2014-15

Genotype	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK	Nitrogen levels,kg/ha 40	RK	60	RK	80	RK	Mean	RK
	Yield, q/ha								**Earhead/sq.m.**							
PBW 644 (c)	28.28	1	31.20	2	32.89	3	30.79	1	157	3	166	2	187	4	170	3
WH 1164	25.13	3	27.39	5	29.11	5	27.21	5	132	5	145	5	159	5	145	5
PBW 660 (l)	26.20	2	27.81	3	29.86	4	27.96	4	160	2	165	3	192	3	172	2
HD 3043 (c)	23.35	5	27.45	4	34.14	2	28.31	3	163	1	174	1	217	1	185	1
WH 1080 (c)	23.88	4	31.28	1	34.76	1	29.97	2	145	4	158	4	193	2	165	4
Mean	25.37		29.03		32.15		28.85		151		162		190		168	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.05		0.20		0.69		**		0.20		0.80		0.47	
Genotype (B)	N.S.		1.43		4.16		14.82		N.S.		8.67		25.31		15.53	
B within A	N.S.		2.47		7.21				N.S.		15.02		43.84			
A within B			2.21		6.45						13.43		39.22			
	Grains/earhead								**1000 Grains weight, g**							
PBW 644 (c)	45.40	1	47.19	1	41.88	1	44.82	1	40.23	4	40.42	4	42.43	4	41.03	4
WH 1164	39.57	2	38.86	4	36.72	4	38.39	3	48.84	2	49.26	1	50.58	1	49.56	1
PBW 660 (l)	33.89	5	34.81	5	31.91	5	33.53	5	48.96	1	49.07	2	49.19	2	49.07	2
HD 3043 (c)	38.01	3	40.35	3	40.48	2	39.61	2	38.31	5	39.74	5	39.41	5	39.15	5
WH 1080 (c)	35.41	4	42.14	2	37.59	3	38.38	4	47.17	3	47.73	3	48.47	3	47.79	3
Mean	38.46		40.67		37.71		38.95		44.70		45.24		46.02		45.32	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
N Levels (A)	**		0.06		0.24		0.62		**		0.01		0.04		0.08	
Genotype (B)	*		2.03		5.93		15.65		**		2.25		6.55		14.86	
B within A	N.S.		3.52		10.28				N.S.		3.89		11.35			
A within B			3.15		9.19						3.48		10.15			

Date of Sowing: 05.11.2014 Date of Harvesting: 09.04.2015

Table 3.1.1 North Eastern Plains Zone IR-LS-MABB-DOS Coochbehar 2014-15

Genotype	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2985 (c)	29.86	2	26.46	2	28.16	2	194	5	298	2	246	4
HUW 234 (c)	28.34	5	23.43	4	25.89	4	215	4	309	1	262	1
HI 1563 (c)	29.10	3	23.43	3	26.27	3	247	2	234	4	240	5
DBW 14 (c)	35.53	1	28.34	1	31.93	1	219	3	278	3	248	3
MMBL 283	28.72	4	21.54	5	25.13	5	275	1	233	5	254	2
Mean	30.31		24.64		27.48		230		271		250	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		*	0.88	5.37	12.45			*	4.95	30.14	7.67	
Genotype (B)		*	1.35	4.05	12.03			N.S.	14.30	42.86	13.99	
B within A		N.S.	1.91	5.72				**	20.22	60.62		
A within B			1.92	5.76					18.75	56.21		
	Grains/earhead						**1000 Grains weight, g**					
HD 2985 (c)	33.18	2	26.52	3	29.85	3	47.12	2	33.79	3	40.45	3
HUW 234 (c)	35.11	1	27.70	2	31.40	1	38.52	5	27.47	4	33.00	5
HI 1563 (c)	26.77	3	25.21	4	25.99	4	44.32	3	39.88	2	42.10	2
DBW 14 (c)	26.40	4	22.63	5	24.52	5	62.51	1	45.53	1	54.02	1
MMBL 283	25.49	5	34.98	1	30.23	2	40.74	4	27.40	5	34.07	4
Mean	29.39		27.41		28.40		46.64		34.81		40.73	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		N.S.	1.93	11.77	26.37			**	0.82	4.97	7.76	
Genotype (B)		N.S.	1.91	5.72	16.47			**	1.31	3.94	7.91	
B within A		*	2.70	8.09				*	1.86	5.57		
A within B			3.09	9.27					1.85	5.55		

Date of Sowing: 11.12.2014 02.01.2015 Date of Harvesting: 03.04.2015 09.04.2015

Table 3.1.2 North Eastern Plains Zone IR-LS-MABB-DOS Faizabad 2014-15

Genotype	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2985 (c)	36.85	2	27.30	2	32.08	2	438	2	431	1	434	2
HUW 234 (c)	34.30	4	25.60	3	29.95	3	421	3	414	3	418	3
HI 1563 (c)	32.88	5	22.68	5	27.78	5	416	4	403	4	410	4
DBW 14 (c)	38.27	1	28.06	1	33.16	1	444	1	425	2	435	1
MMBL 283	35.14	3	24.75	4	29.95	4	412	5	393	5	402	5
Mean	35.49		25.68		30.58		426		413		420	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		**	0.07	0.43	0.89			**	0.90	5.50	0.83	
Genotype (B)		**	0.58	1.73	4.61			**	2.97	8.91	1.73	
B within A		N.S.	0.81	2.44				N.S.	4.20	12.60		
A within B			0.73	2.19					3.86	11.59		
	Grains/earhead						**1000 Grains weight, g**					
HD 2985 (c)	26.81	1	21.86	5	24.34	3	31.53	4	29.20	2	30.37	3
HUW 234 (c)	25.03	3	24.75	1	24.89	2	32.60	3	25.03	4	28.82	4
HI 1563 (c)	26.11	2	24.66	2	25.38	1	30.33	5	22.83	5	26.58	5
DBW 14 (c)	23.46	4	21.89	4	22.68	5	36.73	2	30.23	1	33.48	1
MMBL 283	22.42	5	23.20	3	22.81	4	38.13	1	27.17	3	32.65	2
Mean	24.77		23.27		24.02		33.87		26.89		30.38	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		*	0.17	1.03	2.73			**	0.27	1.62	3.40	
Genotype (B)		*	0.66	1.97	6.70			**	0.84	2.52	6.77	
B within A		N.S.	0.93	2.79				*	1.19	3.56		
A within B			0.85	2.54					1.10	3.28		

Date of Sowing: 15.12.2014 07.01.2015 Date of Harvesting: 05.05.2015 10.05.2015

Table 3.1.3 North Eastern Plains Zone IR-LS-MABB-DOS IARI Pusa 2014-15

Genotype	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2985 (c)	33.82	1	18.78	1	26.30	1	298	4	290	4	294	4
HUW 234 (c)	18.38	5	16.52	3	17.45	5	324	2	311	1	318	2
HI 1563 (c)	27.56	3	14.98	5	21.27	3	307	3	296	3	301	3
DBW 14 (c)	31.17	2	18.52	2	24.85	2	342	1	301	2	322	1
MMBL 283	20.29	4	15.25	4	17.77	4	281	5	282	5	282	5
Mean	26.25		16.81		21.53		311		296		303	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		*	0.84	5.09	15.03			*	1.95	11.87	2.49	
Genotype (B)		**	1.21	3.63	13.78			N.S.	11.54	34.60	9.32	
B within A		**	1.71	5.13				N.S.	16.32	48.94		
A within B			1.74	5.23					14.73	44.16		
	Grains/earhead						**1000 Grains weight, g**					
HD 2985 (c)	29.20	1	26.61	1	27.91	1	39.01	2	24.62	3	31.82	4
HUW 234 (c)	13.81	5	22.50	2	18.16	5	41.08	1	23.67	5	32.38	2
HI 1563 (c)	25.86	2	21.93	3	23.89	2	34.92	5	23.91	4	29.41	5
DBW 14 (c)	25.15	3	19.36	5	22.25	3	36.28	4	32.50	1	34.39	1
MMBL 283	19.52	4	20.79	4	20.16	4	37.43	3	26.36	2	31.89	3
Mean	22.71		22.24		22.47		37.74		26.21		31.98	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		N.S.	0.94	5.74	16.26			**	0.22	1.35	2.70	
Genotype (B)		*	1.78	5.33	19.37			N.S.	1.25	3.74	9.57	
B within A		N.S.	2.51	7.54				*	1.77	5.29		
A within B			2.44	7.31					1.60	4.78		
Date of Sowing:	12.11.2014		01.05.2015				Date of Harvesting:		04.06.2015		14.04.2015	

Table 3.1.4 North Eastern Plains Zone IR-LS-MABB-DOS Kanpur 2014-15

Genotype	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2985 (c)	41.39	1	33.69	1	37.54	1	412	3	374	1	393	2
HUW 234 (c)	37.85	4	32.98	2	35.41	2	411	4	367	4	389	4
HI 1563 (c)	38.78	2	30.31	4	34.54	4	416	1	373	2	394	1
DBW 14 (c)	38.55	3	31.35	3	34.95	3	414	2	370	3	392	3
MMBL 283	32.86	5	28.25	5	30.56	5	396	5	367	5	381	5
Mean	37.89		31.32		34.60		410		370		390	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		**	0.22	1.37	2.51			**	0.70	4.25	0.69	
Genotype (B)		**	0.72	2.15	5.08			**	2.34	7.02	1.47	
B within A		N.S.	1.02	3.05				N.S.	3.31	9.93		
A within B			0.94	2.81					3.04	9.13		
	Grains/earhead						**1000 Grains weight, g**					
HD 2985 (c)	27.42	1	27.02	2	27.22	1	36.67	5	33.37	3	35.02	4
HUW 234 (c)	23.62	4	27.32	1	25.47	2	39.00	2	32.90	4	35.95	3
HI 1563 (c)	25.21	2	24.90	3	25.06	3	37.00	4	32.70	5	34.85	5
DBW 14 (c)	25.11	3	23.66	4	24.38	4	37.17	3	35.80	1	36.48	1
MMBL 283	21.19	5	22.86	5	22.03	5	39.17	1	33.70	2	36.43	2
Mean	24.51		25.15		24.83		37.80		33.69		35.75	
		F. Test	S.E.m.	C.D.	C.V.%			F. Test	S.E.m.	C.D.	C.V.%	
Sowing (A)		N.S.	0.23	1.38	3.55			**	0.18	1.07	1.90	
Genotype (B)		**	0.69	2.07	6.81			**	0.34	1.01	2.32	
B within A		N.S.	0.98	2.93				**	0.48	1.43		
A within B			0.90	2.71					0.46	1.39		
Date of Sowing:	13.12.2014		04.01.2015				Date of Harvesting:		19.04.2015		23.04.2015	

Table 3.1.5 North Eastern Plains Zone IR-LS-MABB-DOS Varanasi 2014-15

Genotype	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk	Sowing Time: Late	Rk	V.Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2985 (c)	32.63	3	19.39	4	26.01	4	246	4	244	3	245	4
HUW 234 (c)	29.03	5	17.39	5	23.21	5	239	5	259	2	249	3
HI 1563 (c)	33.00	2	22.04	3	27.52	2	284	2	238	4	261	2
DBW 14 (c)	34.26	1	23.25	1	28.75	1	290	1	285	1	288	1
MMBL 283	30.58	4	22.17	2	26.37	3	262	3	208	5	235	5
Mean	31.90		20.85		26.37		264		247		256	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Sowing (A)	**		0.14	0.86	2.08		*		2.48	15.11	3.76	
Genotype (B)	**		0.19	0.58	1.79		**		8.53	25.59	8.18	
B within A	**		0.27	0.82			*		12.07	36.18		
A within B			0.28	0.84					11.08	33.21		
	Grains/earhead						**1000 Grains weight, g**					
HD 2985 (c)	42.55	1	28.58	3	35.56	2	31.23	5	27.91	5	29.57	5
HUW 234 (c)	33.29	3	22.59	5	27.94	5	37.15	1	29.77	2	33.46	2
HI 1563 (c)	32.48	4	31.51	2	31.99	3	35.83	3	29.58	3	32.70	3
DBW 14 (c)	31.93	5	24.14	4	28.04	4	37.01	2	34.01	1	35.51	1
MMBL 283	35.45	2	36.72	1	36.09	1	32.99	4	29.37	4	31.18	4
Mean	35.14		28.71		31.92		34.84		30.13		32.49	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Sowing (A)	*		0.61	3.72	7.42		**		0.26	1.56	3.05	
Genotype (B)	**		1.25	3.75	9.61		**		0.32	0.96	2.40	
B within A	**		1.77	5.31			**		0.45	1.35		
A within B			1.70	5.09					0.48	1.43		

Date of Sowing: 12.10.2014 01.07.2015 Date of Harvesting: 20.04.2015 25.04.2015

Table 4.1.1. Central Zone IR-TS-TAD-DOS Bilaspur 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	45.15	4	38.59	3	41.87	3	291	4	253	4	272	4
HI 8737 (dl)	45.74	3	37.74	4	41.74	4	298	3	263	3	281	3
MPO 1215 (dc)	48.80	2	41.93	2	45.37	2	310	2	290	2	300	2
HD 4728 (d)	49.12	1	43.27	1	46.19	1	348	1	302	1	325	1
HI 8498 (dc)	39.84	5	35.53	5	37.69	5	275	5	239	5	257	5
Mean	45.73		39.41		42.57		304		269		287	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.83	5.05	7.54		**		0.49	2.97	0.66	
Genotype (B)	**		0.76	2.27	4.36		**		1.65	4.95	1.41	
B within A	N.S.		1.07	3.22			**		2.33	6.99		
A within B			1.27	3.80					2.14	6.42		
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	39.51	1	42.97	1	41.24	1	39.38	5	35.59	5	37.49	5
HI 8737 (dl)	35.32	3	37.26	3	36.29	3	43.51	2	38.61	3	41.06	4
MPO 1215 (dc)	37.92	2	35.74	4	36.83	2	41.69	4	40.53	2	41.11	3
HD 4728 (d)	30.35	5	38.09	2	34.22	5	46.54	1	37.78	4	42.16	2
HI 8498 (dc)	34.28	4	34.18	5	34.23	4	42.33	3	43.46	1	42.89	1
Mean	35.48		37.65		36.56		42.69		39.19		40.94	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.91	5.53	9.63		N.S.		0.61	3.68	5.73	
Genotype (B)	**		1.09	3.26	7.28		**		0.95	2.84	5.67	
B within A	N.S.		1.54	4.61			*		1.34	4.02		
A within B			1.65	4.94					1.34	4.03		

Date of sowing 08.11.2014 03.12.2014 Date of harvesting: 12.03.2015 05.04.2015

Table 4.1.2. Central Zone IR-TS-TAD-DOS Gwalior 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	57.70	3	48.47	2	53.09	2	438	3	365	2	402	2
HI 8737 (dl)	58.67	2	46.11	3	52.39	3	441	2	354	3	397	3
MPO 1215 (dc)	41.44	4	28.43	4	34.94	4	361	5	350	4	356	5
HD 4728 (d)	59.95	1	53.75	1	56.85	1	463	1	373	1	418	1
HI 8498 (dc)	38.76	5	27.51	5	33.14	5	378	4	338	5	358	4
Mean	51.30		40.85		46.08		416		356		386	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.51	3.08	4.25		**		3.13	19.04	3.14	
Genotype (B)	**		0.63	1.88	3.34		**		5.69	17.07	3.61	
B within A	**		0.89	2.67			**		8.05	24.14		
A within B			0.94	2.83					7.85	23.54		
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	36.01	2	42.96	1	39.48	1	36.73	3	31.00	3	33.87	3
HI 8737 (dl)	34.38	3	38.43	2	36.40	2	38.80	2	34.13	2	36.47	2
MPO 1215 (dc)	36.03	1	28.41	4	32.22	4	32.03	4	28.73	5	30.38	5
HD 4728 (d)	31.69	5	37.46	3	34.58	3	40.90	1	38.47	1	39.68	1
HI 8498 (dc)	32.49	4	26.81	5	29.65	5	31.70	5	30.37	4	31.03	4
Mean	34.12		34.81		34.47		36.03		32.54		34.29	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		1.00	6.08	11.22		N.S.		0.66	4.03	7.48	
Genotype (B)	**		1.14	3.41	8.09		**		0.76	2.28	5.43	
B within A	**		1.61	4.82			N.S.		1.08	3.22		
A within B			1.75	5.25					1.17	3.50		
Date of sowing	11.11.2014		06.12.2014		Date of harvesting:		07.04.2015		11.04.2015			

Table 4.1.3. Central Zone IR-TS-TAD-DOS Indore 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	58.07	1	55.13	3	56.60	3	429	1	419	1	424	1
HI 8737 (dl)	57.77	2	57.53	2	57.65	1	423	2	385	2	404	2
MPO 1215 (dc)	53.87	5	51.63	4	52.75	4	343	5	317	5	330	5
HD 4728 (d)	55.20	3	58.67	1	56.93	2	346	4	358	4	352	4
HI 8498 (dc)	53.87	4	51.03	5	52.45	5	386	3	370	3	378	3
Mean	55.75		54.80		55.28		385		370		378	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.22	1.31	1.51		N.S.		3.09	18.80	3.17	
Genotype (B)	**		0.74	2.21	3.27		**		9.04	27.09	5.86	
B within A	*		1.04	3.13			N.S.		12.78	38.31		
A within B			0.96	2.87					11.84	35.50		
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	31.44	3	30.61	4	31.03	3	43.10	5	43.00	5	43.05	5
HI 8737 (dl)	27.46	4	32.23	3	29.84	4	49.83	3	46.47	3	48.15	3
MPO 1215 (dc)	32.41	1	35.37	1	33.89	1	48.87	4	46.17	4	47.52	4
HD 4728 (d)	31.59	2	34.22	2	32.90	2	50.70	2	47.90	2	49.30	2
HI 8498 (dc)	27.23	5	28.13	5	27.68	5	51.53	1	49.03	1	50.28	1
Mean	30.03		32.11		31.07		48.81		46.51		47.66	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.09	0.56	1.15		**		0.13	0.77	1.03	
Genotype (B)	**		1.04	3.12	8.20		**		0.29	0.88	1.50	
B within A	N.S.		1.47	4.41			*		0.41	1.24		
A within B			1.32	3.95					0.39	1.17		
Date of sowing	10.11.2014		03.12.2014		Date of harvesting:		06.04.2015		13.04.2015			

Table 4.1.4. Central Zone IR-TS-TAD-DOS Junagarh 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	34.08	3	28.73	2	31.41	3	296	1	310	1	303	1
HI 8737 (dI)	35.40	1	27.44	3	31.42	2	285	2	288	3	287	2
MPO 1215 (dc)	34.45	2	32.14	1	33.29	1	274	4	267	5	270	4
HD 4728 (d)	33.67	4	24.31	5	28.99	5	274	3	290	2	282	3
HI 8498 (dc)	33.26	5	25.10	4	29.18	4	249	5	279	4	264	5
Mean	34.17		27.54		30.86		276		287		281	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	**	0.42	2.54	5.23			*	1.04	6.34	1.44		
Genotype (B)	N.S.	1.09	3.26	8.62			**	2.93	8.77	2.55		
B within A	N.S.	1.54	4.61				**	4.14	12.41			
A within B		1.44	4.31					3.85	11.53			
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	23.71	2	21.84	2	22.77	2	48.57	5	42.43	4	45.50	5
HI 8737 (dI)	22.80	3	20.62	4	21.71	4	54.50	4	46.40	1	50.45	2
MPO 1215 (dc)	20.61	5	27.26	1	23.93	1	63.40	1	44.27	2	53.83	1
HD 4728 (d)	22.26	4	20.32	5	21.29	5	55.13	2	41.30	5	48.22	4
HI 8498 (dc)	24.21	1	20.68	3	22.44	3	55.07	3	43.43	3	49.25	3
Mean	22.72		22.14		22.43		55.33		43.57		49.45	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.35	2.13	6.04			*	1.65	10.06	12.94		
Genotype (B)	N.S.	1.10	3.29	11.98			N.S.	2.31	6.94	11.46		
B within A	*	1.55	4.65				N.S.	3.27	9.81			
A within B		1.43	4.29					3.36	10.08			
Date of sowing	11.11.2014		08.12.2014		Date of harvesting:		04.03.2015		21.03.2015			

Table 4.1.5. Central Zone IR-TS-TAD-DOS Kota 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	49.30	4	37.70	3	43.50	4	347	1	279	2	313	1
HI 8737 (dI)	52.40	3	44.20	1	48.30	1	312	3	296	1	304	2
MPO 1215 (dc)	45.13	5	36.80	4	40.97	5	310	4	269	4	290	4
HD 4728 (d)	55.63	2	39.67	2	47.65	2	325	2	255	5	290	3
HI 8498 (dc)	56.53	1	35.00	5	45.77	3	277	5	278	3	278	5
Mean	51.80		38.67		45.24		314		276		295	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	*	0.99	6.05	8.52			**	2.02	12.27	2.65		
Genotype (B)	N.S.	2.00	5.99	10.81			**	1.48	4.45	1.23		
B within A	N.S.	2.82	8.47				**	2.10	6.29			
A within B		2.71	8.14					2.75	8.25			
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	28.71	5	28.75	4	28.73	5	49.40	2	46.93	3	48.17	2
HI 8737 (dI)	34.65	3	34.18	1	34.42	1	48.60	5	43.73	5	46.17	5
MPO 1215 (dc)	29.69	4	30.71	3	30.20	4	49.07	3	44.47	4	46.77	4
HD 4728 (d)	35.17	2	32.73	2	33.95	2	48.67	4	47.53	1	48.10	3
HI 8498 (dc)	38.95	1	26.69	5	32.82	3	52.47	1	47.33	2	49.90	1
Mean	33.44		30.61		32.02		49.64		46.00		47.82	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.91	5.52	10.96			**	0.07	0.46	0.61		
Genotype (B)	N.S.	1.45	4.35	11.10			**	0.48	1.45	2.48		
B within A	*	2.05	6.15				*	0.68	2.05			
A within B		2.05	6.14					0.62	1.85			
Date of sowing	10.11.2014		06.12.2014		Date of harvesting:		10.04.2015		16.04.2015			

Table 4.1.6. **Central Zone** **IR-TS-TAD-DOS** **Powarkheda** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	45.92	3	30.95	2	38.43	3	550	1	353	5	452	3
HI 8737 (dI)	49.83	1	29.70	3	39.76	2	458	3	488	1	473	2
MPO 1215 (dc)	35.36	4	18.30	5	26.83	4	383	4	403	3	393	4
HD 4728 (d)	46.76	2	47.03	1	46.90	1	500	2	475	2	487	1
HI 8498 (dc)	31.81	5	18.54	4	25.17	5	350	5	393	4	372	5
Mean	41.94		28.90		35.42		448		422		435	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.37	2.26	4.07		**		0.46	2.83	0.41	
Genotype (B)	**		0.20	0.60	1.38		**		1.57	4.72	0.89	
B within A	**		0.28	0.85			**		2.23	6.68		
A within B			0.45	1.35					2.05	6.13		
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	21.22	5	29.98	1	25.60	1	39.33	3	29.33	2	34.33	2
HI 8737 (dI)	26.95	2	22.40	3	24.68	3	40.33	2	27.17	3	33.75	3
MPO 1215 (dc)	24.40	3	17.36	5	20.88	5	37.83	4	26.17	4	32.00	4
HD 4728 (d)	22.11	4	28.44	2	25.27	2	42.33	1	34.83	1	38.58	1
HI 8498 (dc)	28.15	1	18.87	4	23.51	4	32.33	5	25.00	5	28.67	5
Mean	24.57		23.41		23.99		38.43		28.50		33.47	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	*		0.15	0.92	2.44		**		0.05	0.29	0.55	
Genotype (B)	**		0.31	0.92	3.13		**		0.17	0.52	1.26	
B within A	**		0.43	1.30			**		0.24	0.73		
A within B			0.42	1.25					0.22	0.67		
Date of sowing	07.11.2014		05.12.2014		Date of harvesting:		07.03.2015		10.03.2015			

Table 4.1.7. **Central Zone** **IR-TS-TAD-DOS** **Sagar** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	xc	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha							**Earhead/sq.m.**					
HD 4730 (d)	57.46	2	47.60	2	52.53	2		256	2	231	2	243	2
HI 8737 (dI)	54.06	3	46.24	3	50.15	3		245	3	228	3	236	3
MPO 1215 (dc)	46.92	5	42.84	5	44.88	5		210	5	198	5	204	5
HD 4728 (d)	60.52	1	48.96	1	54.74	1		266	1	253	1	259	1
HI 8498 (dc)	50.32	4	44.88	4	47.60	4		223	4	216	4	220	4
Mean	53.86		46.10		49.98			240		225		233	
	F. Test		S.E.m	C.D.	C.V.(%)			F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	**		0.26	1.61	2.35			**		0.37	2.25	0.62	
Genotype (B)	**		0.64	1.88	3.06			**		1.32	3.96	1.39	
B within A	*		0.91	2.66				**		1.87	5.60		
A within B			0.88	2.58						1.71	5.13		
	Grains/earhead							**1000 Grains weight, g**					
HD 4730 (d)	39.33	3	37.30	3	38.31	3		57.15	2	55.30	2	56.23	2
HI 8737 (dI)	39.10	4	36.91	4	38.01	4		56.51	3	54.93	3	55.72	3
MPO 1215 (dc)	40.52	1	39.77	1	40.15	1		55.06	5	54.35	5	54.70	5
HD 4728 (d)	37.31	5	34.85	5	36.08	5		61.07	1	55.65	1	58.36	1
HI 8498 (dc)	40.20	2	38.15	2	39.17	2		56.09	4	54.37	4	55.23	4
Mean	39.29		37.39		38.34			57.18		54.92		56.05	
	F. Test		S.E.m	C.D.	C.V.(%)			F. Test		S.E.m	C.D.	C.V.(%)	
Sowing (A)	N.S.		0.54	3.30	5.47			*		0.22	1.32	1.50	
Genotype (B)	**		0.68	2.03	4.33			**		0.53	1.58	2.30	
B within A	N.S.		0.96	2.88				*		0.74	2.23		
A within B			1.01	3.04						0.70	2.10		
Date of sowing	11.11.2014		03.12.2014		Date of harvesting:			15.04.2015		22.04.2015			

Table 4.1.8. **Central Zone** **IR-TS-TAD-DOS** **Udaipur** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	48.38	5	47.36	4	47.87	5	478	3	410	5	444	4
HI 8737 (dl)	63.31	2	62.56	1	62.93	2	487	2	443	2	465	2
MPO 1215 (dc)	66.50	1	60.25	2	63.38	1	490	1	413	4	452	3
HD 4728 (d)	63.17	3	53.40	3	58.28	3	477	4	455	1	466	1
HI 8498 (dc)	52.02	4	44.30	5	48.16	4	437	5	433	3	435	5
Mean	58.68		53.57		56.13		474		431		452	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.86	5.24	5.94			*	6.25	38.03	5.35		
Genotype (B)	**	0.81	2.44	3.55			**	5.67	16.99	3.07		
B within A	**	1.15	3.45				**	8.01	24.03			
A within B		1.34	4.02					9.51	28.51			
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	19.22	5	24.27	3	21.74	4	52.65	5	47.59	5	50.12	5
HI 8737 (dl)	23.57	2	26.75	1	25.16	2	55.26	3	52.77	3	54.02	4
MPO 1215 (dc)	25.47	1	26.61	2	26.04	1	53.31	4	54.86	2	54.08	3
HD 4728 (d)	22.06	3	23.86	4	22.96	3	60.22	1	49.29	4	54.75	2
HI 8498 (dc)	21.27	4	18.24	5	19.75	5	56.08	2	56.12	1	56.10	1
Mean	22.32		23.94		23.13		55.50		52.12		53.81	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.36	2.21	6.08			**	0.21	1.28	1.51		
Genotype (B)	**	0.50	1.50	5.30			**	0.32	0.97	1.48		
B within A	**	0.71	2.12				**	0.46	1.37			
A within B		0.73	2.19					0.46	1.38			
Date of sowing	11.11.2014		05.12.2014		Date of harvesting:		04.04.2015		11.04.2015			

Table 4.1.9. **Central Zone** **IR-TS-TAD-DOS** **Vijapur** **2014-15**

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 4730 (d)	50.05	2	35.52	5	42.79	3	367	1	386	1	376	1
HI 8737 (dl)	48.31	3	39.57	1	43.94	1	349	3	375	2	362	2
MPO 1215 (dc)	38.05	5	37.69	2	37.87	5	343	4	335	4	339	4
HD 4728 (d)	51.07	1	36.52	4	43.80	2	353	2	354	3	354	3
HI 8498 (dc)	44.81	4	37.02	3	40.92	4	341	5	330	5	335	5
Mean	46.46		37.27		41.86		351		356		353	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	3.71	22.59	34.34			N.S.	2.62	15.91	2.87		
Genotype (B)	N.S.	1.86	5.57	10.87			*	8.84	26.51	6.13		
B within A	N.S.	2.63	7.88				N.S.	12.51	37.49			
A within B		4.39	13.17					11.49	34.44			
	Grains/earhead						**1000 Grains weight, g**					
HD 4730 (d)	24.89	2	22.04	2	23.46	1	55.03	4	41.67	5	48.35	5
HI 8737 (dl)	23.97	3	21.71	4	22.84	2	57.53	2	48.77	4	53.15	3
MPO 1215 (dc)	20.74	5	23.09	1	21.92	5	53.67	5	48.93	3	51.30	4
HD 4728 (d)	25.79	1	19.02	5	22.41	3	56.30	3	54.37	1	55.33	2
HI 8498 (dc)	22.02	4	21.88	3	21.95	4	59.90	1	51.27	2	55.58	1
Mean	23.48		21.55		22.51		56.49		49.00		52.74	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	1.60	9.76	27.60			*	1.08	6.58	7.94		
Genotype (B)	N.S.	1.20	3.59	13.03			**	1.33	3.99	6.18		
B within A	N.S.	1.69	5.08				N.S.	1.88	5.65			
A within B		2.21	6.62					2.00	6.00			
Date of sowing	15.11.2014		5.12.2014		Date of harvesting:		10.3.2015		20.3.2015			

Table 4.2.1. Central Zone IR-LS-MABB-DOS Bilaspur 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	36.32	5	30.42	5	33.37	5	261	5	240	5	251	5
MP 3336 (c)	41.06	2	33.52	3	37.29	3	283	4	279	4	281	4
HD 2864 (c)	40.12	4	37.76	2	38.94	2	310	2	304	2	307	2
Raj 4083 (c)	40.91	3	31.14	4	36.03	4	310	3	296	3	303	3
HD 2932 (c)	43.05	1	39.78	1	41.41	1	339	1	323	1	331	1
Mean	40.29		34.52		37.41		301		288		294	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	**	0.24	1.46	2.49			**	0.62	3.78	0.82		
Genotype (B)	**	0.89	2.67	5.84			**	3.08	9.23	2.56		
B within A	N.S.	1.26	3.78				N.S.	4.35	13.05			
A within B		1.15	3.46					3.94	11.82			
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	32.08	2	31.92	1	32.00	1	43.41	4	39.71	5	41.56	4
MP 3336 (c)	30.86	3	29.15	2	30.01	2	47.27	2	41.32	3	44.30	3
HD 2864 (c)	28.33	4	27.86	3	28.09	4	45.75	3	44.70	2	45.23	2
Raj 4083 (c)	32.92	1	25.98	5	29.45	3	40.30	5	40.53	4	40.42	5
HD 2932 (c)	25.39	5	26.26	4	25.83	5	50.10	1	47.01	1	48.56	1
Mean	29.92		28.23		29.07		45.37		42.65		44.01	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	**	0.07	0.45	0.98			*	0.39	2.38	3.45		
Genotype (B)	**	0.92	2.75	7.73			**	0.87	2.62	4.86		
B within A	N.S.	1.30	3.89				N.S.	1.24	3.70			
A within B		1.16	3.49					1.17	3.51			

Date of sowing: 03.12.2014 24.12.2014 Date of harvesting: 05.04.2015 10.04.2014

Table 4.2.2. Central Zone IR-LS-MABB-DOS Indore 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	46.43	3	47.83	1	47.13	2	425	4	423	4	424	3
MP 3336 (c)	44.93	5	47.50	2	46.22	3	450	2	481	1	465	1
HD 2864 (c)	47.30	2	45.07	5	46.18	4	453	1	442	3	448	2
Raj 4083 (c)	44.97	4	45.20	4	45.08	5	378	5	453	2	415	4
HD 2932 (c)	50.10	1	46.27	3	48.18	1	432	3	390	5	411	5
Mean	46.75		46.37		46.56		428		438		433	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.28	1.71	2.34			N.S.	11.67	71.01	10.45		
Genotype (B)	*	0.61	1.82	3.19			*	11.62	34.84	6.58		
B within A	*	0.86	2.57				*	16.44	49.28			
A within B		0.82	2.45					18.77	56.27			
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	30.22	2	30.50	2	30.36	2	36.30	5	37.17	2	36.73	5
MP 3336 (c)	24.89	5	27.17	5	26.03	5	40.13	1	36.47	5	38.30	1
HD 2864 (c)	26.70	4	28.04	3	27.37	4	39.30	3	36.60	3	37.95	3
Raj 4083 (c)	30.10	3	27.38	4	28.74	3	39.50	2	36.53	4	38.02	2
HD 2932 (c)	30.89	1	31.20	1	31.05	1	37.67	4	38.20	1	37.93	4
Mean	28.56		28.86		28.71		38.58		36.99		37.79	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.53	3.25	7.20			*	0.18	1.08	1.82		
Genotype (B)	**	0.94	2.83	8.04			**	0.21	0.63	1.36		
B within A	N.S.	1.33	4.00				**	0.30	0.89			
A within B		1.31	3.92					0.32	0.96			

Date of sowing: 04.12.2014 28.12.2014 Date of harvesting: 13.04.2015 23.04.2015

Table 4.2.3. Central Zone IR-LS-MABB-DOS Jabalpur 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	43.83	3	37.88	4	40.85	5	681	1	500	4	590	1
MP 3336 (c)	44.64	2	37.62	5	41.13	3	583	3	533	2	558	4
HD 2864 (c)	35.89	5	46.29	1	41.09	4	646	2	520	3	583	2
Raj 4083 (c)	42.58	4	43.00	2	42.79	2	505	5	480	5	492	5
HD 2932 (c)	49.80	1	41.12	3	45.46	1	574	4	592	1	583	3
Mean	43.35		41.18		42.27		598		525		561	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	0.65	3.93	5.91			N.S.	23.84	145.10	16.45		
Genotype (B)	N.S.	1.31	3.92	7.59			*	19.56	58.65	8.53		
B within A	**	1.85	5.55				*	27.66	82.94			
A within B		1.78	5.33					34.36	103.03			
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	15.38	4	19.62	3	17.50	4	42.00	1	40.00	3	41.00	3
MP 3336 (c)	18.91	3	17.96	4	18.43	3	40.67	4	39.33	5	40.00	4
HD 2864 (c)	13.43	5	21.28	1	17.35	5	41.33	2	42.33	1	41.83	1
Raj 4083 (c)	20.64	2	21.19	2	20.91	1	41.00	3	42.33	1	41.67	2
HD 2932 (c)	21.59	1	17.74	5	19.67	2	40.33	5	39.67	4	40.00	4
Mean	17.99		19.56		18.77		41.07		40.73		40.90	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	N.S.	1.16	7.07	23.98			N.S.	0.12	0.76	1.18		
Genotype (B)	N.S.	0.96	2.87	12.50			*	0.43	1.30	2.59		
B within A	**	1.36	4.06				N.S.	0.61	1.84			
A within B		1.68	5.03					0.56	1.68			
Date of sowing	09.12.2014		25.12.2014		Date of harvesting:		22.04.2015		25.04.2015			

Table 4.2.4. Central Zone IR-LS-MABB-DOS Pawarkheda 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	24.74	2	15.11	5	19.92	3	318	4	368	2	343	2
MP 3336 (c)	22.07	4	17.75	4	19.91	4	320	3	348	3	334	4
HD 2864 (c)	19.07	5	18.88	2	18.98	5	377	1	332	4	354	1
Raj 4083 (c)	22.64	3	18.69	3	20.67	2	333	2	328	5	330	5
HD 2932 (c)	28.75	1	18.96	1	23.86	1	297	5	388	1	342	3
Mean	23.45		17.88		20.67		329		353		341	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	**	0.26	1.57	4.84			**	0.54	3.31	0.62		
Genotype (B)	**	0.85	2.56	10.12			**	1.84	5.53	1.33		
B within A	**	1.21	3.62				**	2.61	7.82			
A within B		1.11	3.33					2.40	7.18			
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	30.78	3	18.49	5	24.64	5	25.33	2	22.22	2	23.78	2
MP 3336 (c)	29.82	4	25.27	3	27.54	4	23.12	3	20.33	4	21.73	3
HD 2864 (c)	26.09	5	31.25	1	28.67	3	19.38	5	18.33	5	18.86	5
Raj 4083 (c)	33.77	2	27.09	2	30.43	1	20.18	4	21.12	3	20.65	4
HD 2932 (c)	37.27	1	21.22	4	29.25	2	26.12	1	23.12	1	24.62	1
Mean	31.55		24.66		28.11		22.83		21.02		21.93	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	**	0.27	1.67	3.78			*	0.17	1.03	2.99		
Genotype (B)	N.S.	1.48	4.43	12.87			**	0.25	0.76	2.82		
B within A	**	2.09	6.26				**	0.36	1.07			
A within B		1.89	5.66					0.36	1.08			
Date of sowing	16.12.2014		06.01.2015		Date of harvesting:		12.04.2015		25.04.2015			

Table 4.2.5. Central Zone IR-LS-MABB-DOS Vijapur 2014-15

Genotype	Sowing time: Timely	Rk	Late	Rk	Mean	Rk	Sowing time: Timely	Rk	Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	42.61	2	29.14	1	35.87	1	372	3	357	4	364	4
MP 3336 (c)	44.01	1	25.70	3	34.85	2	407	1	427	1	417	1
HD 2864 (c)	39.36	4	27.97	2	33.66	3	366	4	377	2	372	2
Raj 4083 (c)	39.91	3	20.90	5	30.40	5	392	2	337	5	364	3
HD 2932 (c)	39.32	5	24.87	4	32.09	4	360	5	358	3	359	5
Mean	41.04		25.71		33.38		379		371		375	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	*	2.42	14.71	28.04			N.S.	14.49	88.20	14.96		
Genotype (B)	N.S.	1.38	4.12	10.09			*	13.55	40.62	8.85		
B within A	N.S.	1.94	5.83				N.S.	19.16	57.44			
A within B		2.98	8.93					22.44	67.29			
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	31.33	1	22.76	1	27.05	1	36.67	4	36.53	5	36.60	4
MP 3336 (c)	26.77	4	15.19	4	20.98	4	40.40	1	39.57	2	39.98	2
HD 2864 (c)	30.45	2	20.32	2	25.38	2	35.40	5	36.77	4	36.08	5
Raj 4083 (c)	25.74	5	15.13	5	20.44	5	39.87	2	41.77	1	40.82	1
HD 2932 (c)	28.92	3	18.73	3	23.83	3	38.70	3	37.30	3	38.00	3
Mean	28.64		18.43		23.54		38.21		38.39		38.30	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V.(%)		
Sowing (A)	**	0.66	4.00	10.82			N.S.	1.58	9.63	16.00		
Genotype (B)	*	1.41	4.22	14.66			N.S.	1.23	3.68	7.85		
B within A	N.S.	1.99	5.97				N.S.	1.73	5.20			
A within B		1.90	5.69					2.22	6.64			
Date of sowing	05.12.2014		25.12.2014		Date of harvesting:		20.03.2015		30.03.2015			

Table 5.1.1. Peninsular Zone IR-LS-MABB-DOS Akola 2014-15

Genotype	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	33.74	4	31.22	3	32.48	4	354	3	349	4	352	3
MP 3336 (c)	31.86	5	30.73	4	31.29	5	343	5	334	5	338	5
HD 2864 (c)	34.85	3	31.58	1	33.21	3	351	4	350	3	351	4
RAJ 4083 (c)	41.61	1	31.44	2	36.53	1	365	1	359	1	362	1
HD 2932 (c)	40.74	2	30.25	5	35.50	2	360	2	356	2	358	2
Mean	36.56		31.04		33.80		355		350		352	
	F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V. (%)		
Sowing (A)	*	0.72	4.37	8.23			N.S.	3.60	21.89	3.96		
Genotype (B)	*	1.21	3.63	8.78			N.S.	9.26	27.77	6.44		
B within A	*	1.71	5.13				N.S.	13.10	39.27			
A within B		1.69	5.07					12.26	36.74			
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	24.86	4	23.40	3	24.13	5	38.34	5	38.42	4	38.38	4
MP 3336 (c)	24.16	5	24.13	1	24.15	4	38.46	4	38.24	5	38.35	5
HD 2864 (c)	24.93	3	23.45	2	24.19	3	39.80	3	38.49	3	39.14	3
RAJ 4083 (c)	27.96	2	21.91	4	24.94	1	40.77	1	40.50	1	40.64	1
HD 2932 (c)	28.11	1	21.63	5	24.87	2	40.46	2	39.69	2	40.08	2
Mean	26.01		22.90		24.45		39.57		39.07		39.32	
	F. Test	S.E.m	C.D.	C.V. (%)			F. Test	S.E.m	C.D.	C.V. (%)		
Sowing (A)	*	0.48	2.91	7.56			*	0.07	0.45	0.73		
Genotype (B)	N.S.	1.24	3.71	12.41			**	0.23	0.69	1.43		
B within A	N.S.	1.75	5.25				N.S.	0.32	0.97			
A within B		1.64	4.91					0.30	0.90			
Date of sowing:	26.11.2014		18.12.2014		Date of harvesing:		11.03.2015		24.03.2015			

Table 5.1.2. Peninsular Zone IR-LS-MABB-DOS Dharwad, 2014-15

Genotype	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	35.74	3	32.63	2	34.19	3	344	3	333	2	339	3
MP 3336 (c)	33.70	5	30.86	4	32.28	4	338	4	313	4	326	4
HD 2864 (c)	36.77	2	33.96	1	35.36	1	382	2	326	3	354	2
RAJ 4083 (c)	34.20	4	30.34	5	32.27	5	288	5	275	5	282	5
HD 2932 (c)	38.37	1	31.37	3	34.87	2	395	1	380	1	388	1
Mean	35.76		31.83		33.79		349		325		337	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V. (%)	
Sowing (A)	*		0.42	2.58	4.87		**		0.41	2.48	0.47	
Genotype (B)	**		0.42	1.25	3.02		**		1.37	4.10	0.99	
B within A	*		0.59	1.77			**		1.93	5.80		
A within B			0.68	2.03					1.78	5.33		
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	24.80	2	27.93	4	26.37	3	41.89	4	35.16	4	38.53	4
MP 3336 (c)	22.08	5	28.24	3	25.16	4	45.19	2	34.92	5	40.06	3
HD 2864 (c)	24.30	3	28.95	2	26.62	2	39.65	5	36.02	2	37.84	5
RAJ 4083 (c)	25.60	1	30.86	1	28.23	1	46.38	1	35.73	3	41.05	2
HD 2932 (c)	22.14	4	21.11	5	21.62	5	43.97	3	39.14	1	41.56	1
Mean	23.78		27.42		25.60		43.42		36.19		39.80	
	F. Test		S.E.m	C.D.	C.V. (%)		F. Test		S.E.m	C.D.	C.V. (%)	
Sowing (A)	*		0.53	3.23	8.03		**		0.36	2.20	3.52	
Genotype (B)	**		0.41	1.23	3.92		**		0.61	1.83	3.75	
B within A	**		0.58	1.74			**		0.86	2.58		
A within B			0.74	2.22					0.85	2.55		
Date of sowing:	26.11.2014		17.12.2014		Date of harvesing:		28.03.2015				05.04.2015	

Table 5.1.3. Peninsular Zone IR-LS-MABB-DOS Niphad, 2014-15

Genotype	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	42.38	2	32.90	4	37.64	3	404	5	397	5	401	5
MP 3336 (c)	37.11	5	30.92	5	34.02	5	409	3	408	2	409	2
HD 2864 (c)	39.27	4	34.95	3	37.11	4	409	1	404	3	407	3
RAJ 4083 (c)	39.86	3	35.67	2	37.76	2	409	3	409	1	409	1
HD 2932 (c)	44.18	1	36.51	1	40.34	1	409	1	401	4	405	4
Mean	40.56		34.19		37.37		408		404		406	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V. (%)	
Sowing (A)	*		0.75	4.58	7.79		N.S.		1.45	8.84	1.39	
Genotype (B)	N.S.		1.36	4.06	8.88		N.S.		2.91	8.72	1.76	
B within A	N.S.		1.92	5.75			N.S.		4.11	12.34		
A within B			1.87	5.61					3.96	11.86		
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	25.57	3	22.60	3	24.08	3	41.12	4	36.61	4	38.87	4
MP 3336 (c)	21.45	5	18.68	5	20.06	5	42.46	2	40.62	2	41.54	2
HD 2864 (c)	28.17	1	25.84	1	27.01	1	34.05	5	33.40	5	33.73	5
RAJ 4083 (c)	22.66	4	20.39	4	21.53	4	43.08	1	42.78	1	42.93	1
HD 2932 (c)	26.23	2	24.27	2	25.25	2	41.17	3	37.57	3	39.37	3
Mean	24.82		22.36		23.59		40.38		38.20		39.29	
	F. Test		S.E.m	C.D.	C.V. (%)		F. Test		S.E.m	C.D.	C.V. (%)	
Sowing (A)	*		0.22	1.36	3.67		*		0.34	2.08	3.37	
Genotype (B)	**		0.83	2.48	8.60		**		0.66	1.98	4.12	
B within A	N.S.		1.17	3.51			N.S.		0.93	2.80		
A within B			1.07	3.21					0.90	2.71		
Date of sowing:	26.11.2014		17.12.2015		Date of harvesing:		30.03.2015				20.04.2015	

Table 5.1.4. Peninsular Zone IR-LS-MABB-DOS Pune, 2014-15

Genotype	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	60.28	1	52.13	1	56.21	1	476	4	449	5	463	4
MP 3336 (c)	49.62	5	42.71	5	46.17	5	599	2	567	2	583	2
HD 2864 (c)	55.52	3	48.07	3	51.80	3	619	1	571	1	595	1
RAJ 4083 (c)	49.70	4	47.23	4	48.47	4	371	5	458	4	415	5
HD 2932 (c)	59.30	2	51.28	2	55.29	2	534	3	513	3	524	3
Mean	54.89		48.28		51.59		520		512		516	
		F. Test	S.E.m	C.D.	C.V.(%)			F. Test	S.E.m	C.D.	C.V. (%)	
Sowing (A)		N.S.	1.26	7.70	9.49			N.S.	46.20	281.14	34.70	
Genotype (B)		**	1.09	3.26	5.16			**	33.88	101.58	16.09	
B within A		N.S.	1.54	4.61				N.S.	47.91	143.65		
A within B			1.87	5.60					63.02	188.93		
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	33.46	2	30.14	1	31.80	1	38.33	4	38.67	5	38.50	4
MP 3336 (c)	21.48	5	19.32	5	20.40	5	40.33	2	40.00	1	40.17	1
HD 2864 (c)	24.55	4	21.53	4	23.04	4	37.67	5	39.33	3	38.50	4
RAJ 4083 (c)	33.76	1	26.82	2	30.29	2	40.67	1	39.00	4	39.83	2
HD 2932 (c)	28.97	3	25.53	3	27.25	3	39.33	3	40.00	1	39.67	3
Mean	28.45		24.67		26.56		39.27		39.40		39.33	
		F. Test	S.E.m	C.D.	C.V. (%)			F. Test	S.E.m	C.D.	C.V. (%)	
Sowing (A)		N.S.	0.67	4.10	9.83			N.S.	1.09	6.62	10.71	
Genotype (B)		**	1.87	5.62	17.29			N.S.	0.56	1.67	3.47	
B within A		N.S.	2.65	7.95				N.S.	0.79	2.36		
A within B			2.47	7.39					1.30	3.88		
Date of sowing:		2.12.2014		23.12.2015			Date of harvesing:		3.04.2015		15.04.2015	

Table 5.1.5. Peninsular Zone IR-LS-MABB-DOS Ugar 2014-15

Genotype	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk	Sowing time: Late	Rk	Very Late	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
HD 2932+Lr19/Sr25	44.49	1	39.89	1	42.19	1	438	4	392	4	415	4
MP 3336 (c)	39.03	4	36.74	3	37.89	3	511	3	462	3	487	3
HD 2864 (c)	41.20	3	37.60	2	39.40	2	434	5	392	4	413	5
RAJ 4083 (c)	37.60	5	31.37	5	34.49	5	522	2	498	2	510	2
HD 2932 (c)	43.20	2	32.40	4	37.80	4	557	1	543	1	550	1
Mean	41.10		35.60		38.35		492		457		475	
		F. Test	S.E.m	C.D.	C.V. (%)			F. Test	S.E.m	C.D.	C.V. (%)	
Sowing (A)		**	0.34	2.05	3.40			**	1.63	9.90	1.33	
Genotype (B)		**	0.47	1.40	2.98			**	1.43	4.30	0.74	
B within A		**	0.66	1.98				**	2.03	6.08		
A within B			0.68	2.04					2.44	7.30		
	Grains/earhead						**1000 Grains weight, g**					
HD 2932+Lr19/Sr25	23.88	1	26.82	1	25.35	1	42.55	5	37.95	3	40.25	5
MP 3336 (c)	16.57	3	21.55	3	19.06	3	46.12	3	36.92	5	41.52	3
HD 2864 (c)	21.36	2	25.24	2	23.30	2	44.44	4	38.02	2	41.23	4
RAJ 4083 (c)	15.20	5	16.70	4	15.95	4	47.40	2	37.74	4	42.57	2
HD 2932 (c)	16.25	4	14.86	5	15.56	5	47.74	1	40.14	1	43.94	1
Mean	18.65		21.03		19.84		45.65		38.15		41.90	
		F. Test	S.E.m	C.D.	C.V. (%)			F. Test	S.E.m	C.D.	C.V. (%)	
Sowing (A)		N.S.	1.68	10.20	34.29			**	0.03	0.20	0.30	
Genotype (B)		N.S.	1.62	4.72	17.67			**	0.34	1.02	1.99	
B within A		*	2.28	6.67				**	0.48	1.44		
A within B			2.70	7.88					0.43	1.29		
Date of sowing:		26.11.2014		17.12.2014			Date of harvesting:		30.03.2015		08.04.2015	

Table 5.2.1. **Peninsular Zone** **RF-TAS-I_ON** **Annigeri** **2014-15**

Genotype	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MACS 3927 (d)	11.25	5	11.61	5	11.92	5	11.59	5	184	2	184	2	185	3	184	3
UAS 446 (dl)	11.59	4	11.94	4	12.02	4	11.85	4	186	1	187	1	187	2	187	1
NIAW 2030	14.56	1	15.82	1	16.61	1	15.66	1	182	3	184	2	191	1	186	2
NI 5439 (c)	13.16	2	13.84	2	14.42	2	13.81	2	180	4	181	4	182	4	181	4
AKDW 2997-16 (dc)	10.14	6	11.02	6	13.03	3	11.40	6	178	5	180	5	181	5	180	5
UAS 347 (l)	12.15	3	12.96	3	11.45	6	12.19	3	175	6	173	6	174	6	174	6
Mean	12.14		12.87		13.24		12.75		181		182		183		182	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	*		0.15		0.59		5.01		N.S.		2.17		8.53		5.07	
Genotype (B)	**		0.21		0.61		4.99		*		2.63		7.60		4.34	
B within A	**		0.37		1.06				N.S.		4.56		13.16			
A within B			0.37		1.06						4.69		13.55			
	Grains/earhead								**1000 Grains weight, g**							
MACS 3927 (d)	11.64	6	12.25	6	12.34	6	12.08	6	52.50	1	51.50	1	52.27	1	52.09	1
UAS 446 (dl)	16.28	4	16.14	4	15.55	5	15.99	5	38.37	3	39.60	3	41.30	3	39.76	3
NIAW 2030	17.29	3	20.16	3	19.49	2	18.98	3	46.37	2	42.75	2	44.75	2	44.62	2
NI 5439 (c)	22.77	1	22.24	1	22.85	1	22.62	1	32.10	6	34.37	6	34.97	6	33.81	6
AKDW 2997-16 (dc)	14.90	5	16.12	5	19.24	3	16.75	4	38.27	4	38.03	4	37.47	4	37.92	4
UAS 347 (l)	19.02	2	21.15	2	18.25	4	19.48	2	36.52	5	35.83	5	36.12	5	36.16	5
Mean	16.99		18.01		17.95		17.65		40.69		40.35		41.15		40.73	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	*		0.33		1.30		7.94		N.S.		0.25		0.98		2.59	
Genotype (B)	**		0.47		1.36		8.03		**		0.34		0.99		2.52	
B within A	*		0.82		2.36				**		0.59		1.71			
A within B			0.82		2.36						0.60		1.72			

Date of sowing: 18.10.2014 Date of harvesting: 09.02.2015

Table 5.2.2. **Peninsular Zone** **RF-TAS-I_ON** **Bagalkot** **2014-15**

Genotype	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MACS 3927 (d)	16.15	4	17.05	4	17.84	4	17.01	4	220	4	220	4	222	4	221	4
UAS 446 (dl)	13.12	6	14.05	6	14.74	6	13.97	6	210	6	212	6	218	6	213	6
NIAW 2030	18.16	2	19.34	2	19.96	2	19.15	2	238	2	241	2	245	2	241	2
NI 5439 (c)	19.36	1	20.32	1	20.94	1	20.21	1	242	1	248	1	247	1	246	1
AKDW 2997-16 (dc)	17.13	3	18.14	3	18.96	3	18.08	3	235	3	240	3	236	3	237	3
UAS 347 (l)	15.05	5	15.34	5	16.32	5	15.57	5	218	5	217	5	220	5	218	5
Mean	16.50		17.37		18.13		17.33		227		230		231		229	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	*		0.39		1.55		9.64		*		0.73		2.87		1.35	
Genotype (B)	**		0.32		0.91		5.45		**		1.40		4.04		1.83	
B within A	N.S.		0.55		1.58				N.S.		2.42		7.00			
A within B			0.64		1.83						2.33		6.73			
	Grains/earhead								**1000 Grains weight, g**							
MACS 3927 (d)	14.05	6	14.58	6	15.44	6	14.69	6	52.32	1	53.13	1	52.11	1	52.52	1
UAS 446 (dl)	15.76	5	17.31	5	16.54	5	16.54	5	39.63	3	38.34	3	40.92	3	39.63	3
NIAW 2030	16.83	4	18.87	4	18.63	4	18.11	4	45.32	2	42.55	2	43.73	2	43.87	2
NI 5439 (c)	24.16	1	24.48	1	24.35	1	24.33	1	33.15	6	33.47	6	34.92	6	33.85	6
AKDW 2997-16 (dc)	19.34	2	19.84	3	22.22	2	20.47	2	37.67	4	38.18	4	36.23	4	37.36	4
UAS 347 (l)	19.22	3	19.88	2	20.75	3	19.95	3	35.92	5	35.52	5	35.90	5	35.78	5
Mean	18.23		19.16		19.66		19.01		40.67		40.20		40.64		40.50	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	N.S.		0.46		1.81		10.29		N.S.		0.21		0.81		2.16	
Genotype (B)	**		0.44		1.26		6.91		**		0.37		1.06		2.71	
B within A	N.S.		0.76		2.19				*		0.63		1.83			
A within B			0.83		2.40						0.61		1.77			

Date of sowing: 31.10.2014 Date of harvesting: 20.02.2015

Table 5.2.3. **Peninsular Zone** **RF-TAS-I.ON** **Dharwad** **2014-15**

Genotype	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MACS 3927 (d)	15.31	5	16.12	5	16.73	5	16.05	5	212	5	214	5	216	5	214	5
UAS 446 (dl)	19.36	2	20.46	2	21.16	2	20.33	2	240	2	242	2	246	2	243	2
NIAW 2030	14.93	6	15.36	6	15.86	6	15.38	6	200	6	202	6	205	6	202	6
NI 5439 (c)	17.36	3	18.26	3	18.96	3	18.19	3	236	3	240	3	242	3	239	3
AKDW 2997-16 (dc)	16.01	4	17.31	4	17.96	4	17.09	4	220	4	222	4	218	4	220	4
UAS 347 (l)	22.21	1	23.26	1	23.91	1	23.13	1	262	1	264	1	261	1	262	1
Mean	17.53		18.46		19.10		18.36		228		231		231		230	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Irrigation (A)	**		0.06		0.22		1.30		N.S.		2.20		8.62		4.05	
Genotype (B)	**		0.23		0.65		3.68		**		2.11		6.09		2.75	
B within A	N.S.		0.39		1.13				N.S.		3.65		10.54			
A within B			0.36		1.04						3.99		11.53			
	Grains/earhead								**1000 Grains weight, g**							
MACS 3927 (d)	13.29	6	13.81	6	14.12	6	13.74	6	54.32	1	54.56	1	54.92	1	54.60	1
UAS 446 (dl)	35.03	1	20.16	3	20.44	3	25.21	1	31.32	6	41.96	3	42.09	3	38.46	5
NIAW 2030	17.76	5	17.40	5	17.94	5	17.70	5	42.12	2	43.69	2	43.16	2	42.99	2
NI 5439 (c)	19.94	3	20.52	2	21.63	2	20.70	3	36.92	5	37.12	6	36.24	6	36.76	6
AKDW 2997-16 (dc)	17.92	4	18.92	4	20.12	4	18.99	4	40.61	3	41.23	4	40.96	4	40.93	3
UAS 347 (l)	21.97	2	22.38	1	22.98	1	22.44	2	38.61	4	39.40	5	39.92	5	39.31	4
Mean	20.99		18.86		19.54		19.80		40.65		42.99		42.88		42.18	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	N.S.		1.33		5.24		28.61		N.S.		0.90		3.52		9.02	
Genotype (B)	*		2.10		6.07		31.84		**		1.35		3.89		9.58	
B within A	N.S.		3.64		10.51				N.S.		2.33		6.74			
A within B			3.58		10.34						2.31		6.67			

Date of sowing: 20.10.2014 Date of harvesting: 09.02.2015

Table 5.2.4. **Peninsular Zone** **RF-TAS-I.ON** **Vijapur** **2014-15**

Genotype	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MACS 3927 (d)	12.33	5	13.58	5	13.87	5	13.26	5	202	5	202	5	200	5	201	5
UAS 446 (dl)	15.52	2	16.26	2	18.01	2	16.60	2	215	2	214	1	217	1	215	1
NIAW 2030	10.49	6	11.76	6	12.65	6	11.63	6	198	6	196	6	198	6	197	6
NI 5439 (c)	14.26	3	15.84	3	16.36	3	15.49	3	210	3	212	3	214	2	212	3
AKDW 2997-16 (dc)	16.27	1	17.93	1	18.96	1	17.72	1	218	1	214	1	211	3	214	2
UAS 347 (l)	13.41	4	14.82	4	15.42	4	14.55	4	206	4	205	4	201	4	204	4
Mean	13.71		15.03		15.88		14.87		208		207		207		207	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	**		0.23		0.88		6.42		N.S.		0.70		2.76		1.44	
Genotype (B)	**		0.37		1.06		7.41		**		1.10		3.17		1.59	
B within A	N.S.		0.64		1.84				N.S.		1.90		5.50			
A within B			0.62		1.80						1.87		5.41			
	Grains/earhead								**1000 Grains weight, g**							
MACS 3927 (d)	11.76	6	12.88	6	13.07	6	12.57	6	51.90	1	52.31	1	53.10	1	52.44	1
UAS 446 (dl)	18.90	3	19.50	4	21.20	4	19.87	4	38.16	3	38.93	3	39.13	3	38.74	3
NIAW 2030	12.01	5	13.64	5	14.96	5	13.54	5	44.13	2	43.97	2	42.68	2	43.59	2
NI 5439 (c)	20.07	2	21.88	2	22.25	3	21.40	2	33.87	6	34.17	6	34.37	5	34.14	6
AKDW 2997-16 (dc)	20.27	1	22.69	1	24.54	1	22.50	1	36.83	4	36.93	4	36.57	4	36.78	4
UAS 347 (l)	18.23	4	20.77	3	22.43	2	20.48	3	35.74	5	34.82	5	34.18	6	34.91	5
Mean	16.87		18.56		19.74		18.39		40.11		40.19		40.01		40.10	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	**		0.28		1.10		6.45		N.S.		0.26		1.02		2.75	
Genotype (B)	**		0.44		1.28		7.24		**		0.21		0.62		1.60	
B within A	N.S.		0.77		2.22				*		0.37		1.07			
A within B			0.76		2.18						0.43		1.23			

Date of sowing: 30.10.2014 Date of harvesting: 10.02.2015

Table 5.2.5. **Peninsular Zone** **RF-TAS-LON** **Washim** **2014-15**

Genotype	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk	Nitrogen levels, kg/ha 40	Rk	60	Rk	80	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
MACS 3927 (d)	3.87	6	4.21	5	6.46	5	4.85	5	132	6	142	6	143	6	139	6
UAS 446 (dl)	4.08	5	3.44	6	4.72	6	4.08	6	150	5	146	5	149	5	148	5
NIAW 2030	10.20	2	11.56	2	13.97	2	11.91	2	179	1	172	1	164	1	172	1
NI 5439 (c)	4.43	3	7.41	3	8.02	4	6.62	3	154	2	159	4	151	4	153	4
AKDW 2997-16 (dc)	11.22	1	15.23	1	15.74	1	14.07	1	154	3	154	2	156	2	154	2
UAS 347 (l)	4.15	4	5.82	4	9.42	3	6.46	4	153	4	154	2	152	3	153	3
Mean	6.33		7.95		9.72		8.00		154		154		152		153	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	**		0.25		1.00		13.45		N.S.		0.77		3.03		2.14	
Genotype (B)	**		0.39		1.13		14.70		**		2.44		7.04		4.77	
B within A	*		0.68		1.96				N.S.		4.22		12.19			
A within B			0.67		1.93						3.93		11.35			
	Grains/earhead								**1000 Grains weight, g**							
MACS 3927 (d)	5.90	6	5.94	5	8.88	5	6.91	5	49.87	1	50.23	1	51.00	1	50.37	1
UAS 446 (dl)	6.39	5	5.48	6	7.30	6	6.39	6	42.50	3	43.10	3	43.50	3	43.03	3
NIAW 2030	12.99	2	15.25	2	19.17	2	15.80	2	43.87	2	44.07	2	44.53	2	44.16	2
NI 5439 (c)	8.31	3	13.86	3	15.33	4	12.50	3	34.53	6	34.93	6	34.50	6	34.66	6
AKDW 2997-16 (dc)	17.78	1	23.35	1	23.91	1	21.68	1	41.43	4	42.47	4	42.53	4	42.14	4
UAS 347 (l)	6.84	4	9.44	4	15.40	3	10.56	4	39.73	5	40.00	5	40.27	5	40.00	5
Mean	9.70		12.22		15.00		12.31		41.99		42.47		42.72		42.39	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Nitrogen (A)	**		0.43		1.68		14.77		*		0.11		0.43		1.09	
Genotype (B)	**		0.69		1.99		16.81		**		0.16		0.47		1.15	
B within A	*		1.19		3.45				N.S.		0.28		0.81			
A within B			1.17		3.38						0.28		0.81			

Date of sowing: 18.10.2014 Date of harvesting: -

Table 7.1.1. Northern Hills Zone **SPL-1** **Bajaura** **2014-15**

Nutrient Management	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 Al	34.92	2	37.46	2	36.19	2	349	4	383	2	366	2
NPK 150:60:40 Bl	34.73	3	36.51	3	35.62	3	347	5	381	3	364	3
SSNM Nutrient Expert	31.79	5	35.10	5	33.45	5	354	2	373	4	363	4
SSNM + GreenSeeker	33.53	4	36.10	4	34.82	4	353	3	369	5	361	5
N-Rich plot- 150% N	39.50	1	42.39	1	40.94	1	379	1	411	1	395	1
Mean	34.89		37.51		36.20		357		383		370	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.65	3.96	6.96		N.S.		9.23	56.16	9.66	
Nutrient (B)	**		0.79	2.36	5.33		*		7.26	21.78	4.81	
B within A	N.S.		1.11	3.34			N.S.		10.27	30.80		
A within B			1.19	3.57					13.02	39.05		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 Al	26.89	2	23.85	4	25.37	2	37.24	5	41.07	1	39.16	3
NPK 150:60:40 Bl	25.98	3	23.49	5	24.73	3	38.52	2	40.92	2	39.72	1
SSNM Nutrient Expert	23.85	5	25.09	2	24.47	5	37.69	4	37.63	5	37.66	5
SSNM + GreenSeeker	24.80	4	24.47	3	24.63	4	38.25	3	40.06	3	39.16	2
N-Rich plot- 150% N	27.23	1	26.76	1	26.99	1	38.53	1	38.61	4	38.57	4
Mean	25.75		24.73		25.24		38.05		39.66		38.85	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.29	1.79	4.52		N.S.		0.45	2.73	4.48	
Nutrient (B)	N.S.		0.65	1.96	6.34		N.S.		0.53	1.59	3.34	
B within A	N.S.		0.92	2.77			N.S.		0.75	2.24		
A within B			0.88	2.63					0.81	2.42		

Date of Sowing: 17.11.2014 Date of Harvesting: 06.06.2015

Table 7.1.2. Northern Hills Zone **SPL-1** **Malan** **2014-15**

Nutrient Management	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 Al	36.43	2	38.68	2	37.56	2	301	2	323	1	312	2
NPK 150:60:40 Bl	35.07	3	36.26	3	35.67	3	281	3	300	3	290	3
SSNM Nutrient Expert	32.83	4	33.82	5	33.33	5	264	4	274	5	269	5
SSNM + GreenSeeker	32.68	5	34.58	4	33.63	4	261	5	290	4	275	4
N-Rich plot- 150% N	38.58	1	39.16	1	38.87	1	304	1	321	2	313	1
Mean	35.12		36.50		35.81		282		302		292	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.90	5.46	9.70		N.S.		8.65	52.66	11.48	
Nutrient (B)	**		0.87	2.60	5.93		*		10.14	30.39	8.51	
B within A	N.S.		1.23	3.68			N.S.		14.33	42.98		
A within B			1.42	4.25					15.47	46.38		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 Al	28.88	5	28.86	5	28.87	5	42.03	1	41.58	2	41.81	1
NPK 150:60:40 Bl	31.27	3	29.94	2	30.61	3	40.00	3	40.51	4	40.25	4
SSNM Nutrient Expert	31.37	2	30.21	1	30.79	1	39.80	4	40.88	3	40.34	3
SSNM + GreenSeeker	31.65	1	29.78	3	30.71	2	39.68	5	40.12	5	39.90	5
N-Rich plot- 150% N	31.03	4	29.30	4	30.17	4	41.02	2	41.73	1	41.38	2
Mean	30.84		29.62		30.23		40.51		40.96		40.74	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.24	1.48	3.12		N.S.		0.17	1.04	1.63	
Nutrient (B)	N.S.		0.65	1.95	5.26		N.S.		0.47	1.42	2.85	
B within A	N.S.		0.92	2.75			N.S.		0.67	2.01		
A within B			0.86	2.57					0.62	1.87		

Date of Sowing: 24.11.2014 Date of Harvesting: 20.5.2015

Table 7.2.1. North Western Plains Zone **SPL-1** **Durgapura** **2014-15**

Fertlizers	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 Al	53.98	5	54.26	5	54.12	5	403	5	400	5	402	5
NPK 150:60:40 Bl	56.22	4	58.26	4	57.24	4	410	4	414	4	412	4
SSNM Nutrient Expert	60.47	2	62.00	2	61.24	2	419	2	423	2	421	2
SSNM + GreenSeeker	59.47	3	60.21	3	59.84	3	416	3	418	3	417	3
N-Rich plot- 150% N	61.62	1	62.70	1	62.16	1	421	1	424	1	422	1
Mean	58.35		59.49		58.92		414		416		415	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		1.09	6.63	7.16		N.S.		3.12	18.97	2.91	
Nutrient (B)	**		1.47	4.41	6.11		*		4.72	14.14	2.79	
B within A	N.S.		2.08	6.23			N.S.		6.67	20.00		
A within B			2.16	6.46					6.73	20.19		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 Al	33.79	4	32.62	5	33.20	5	39.77	5	41.20	5	40.48	5
NPK 150:60:40 Bl	34.01	3	34.50	2	34.25	2	41.23	3	41.47	4	41.35	4
SSNM Nutrient Expert	33.57	5	34.13	3	33.85	3	42.30	1	42.93	1	42.62	1
SSNM + GreenSeeker	34.38	2	33.12	4	33.75	4	41.20	4	42.30	2	41.75	3
N-Rich plot- 150% N	34.68	1	35.30	1	34.99	1	42.13	2	41.93	3	42.03	2
Mean	34.09		33.93		34.01		41.33		41.97		41.65	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		0.77	4.70	8.80		N.S.		0.52	3.15	4.81	
Nutrient (B)	N.S.		0.52	1.55	3.73		N.S.		0.86	2.58	5.06	
B within A	N.S.		0.73	2.19			N.S.		1.22	3.65		
A within B			1.01	3.04					1.20	3.61		

Date of Sowing: 19.11.2014 Date of harvesting: 07.04.2015

Table 7.2.2. North Western Plains Zone SPL-1 **Karnal** **2014-15**

Fertlizers	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 Al	41.55	4	42.01	3	41.78	3	370	3	458	1	414	3
NPK 150:60:40 Bl	47.71	1	46.27	1	46.99	1	464	2	450	3	457	2
SSNM Nutrient Expert	42.17	2	39.15	4	40.66	4	370	4	440	4	405	4
SSNM + GreenSeeker	42.02	3	43.54	2	42.78	2	365	5	413	5	389	5
N-Rich plot- 150% N	31.69	5	32.25	5	31.97	5	501	1	457	2	479	1
Mean	41.03		40.65		40.84		414		444		429	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		0.66	4.00	6.24		N.S.		5.69	34.63	5.14	
Nutrient (B)	**		0.73	2.18	4.36		**		4.86	14.58	2.78	
B within A	N.S.		1.03	3.08			**		6.88	20.62		
A within B			1.13	3.39					8.38	25.13		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 Al	29.80	3	24.44	3	27.12	3	37.69	2	37.60	3	37.64	3
NPK 150:60:40 Bl	28.52	4	27.98	1	28.25	2	36.12	4	36.78	4	36.45	4
SSNM Nutrient Expert	30.69	1	23.15	4	26.92	4	37.09	3	38.50	2	37.80	2
SSNM + GreenSeeker	29.99	2	26.59	2	28.29	1	38.52	1	39.65	1	39.09	1
N-Rich plot- 150% N	20.14	5	21.92	5	21.03	5	31.46	5	32.23	5	31.84	5
Mean	27.83		24.82		26.32		36.18		36.95		36.56	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	*		0.32	1.93	4.68		N.S.		0.39	2.39	4.17	
Nutrient (B)	**		0.72	2.16	6.71		**		0.50	1.51	3.37	
B within A	**		1.02	3.06			N.S.		0.71	2.13		
A within B			0.97	2.90					0.75	2.24		

Date of Sowing: 14.11.2014 Date of harvesting: 22.04.2015

Table 7.2.3. North Western Plains Zone SPL-1 **Ludhiana** **2014-15**

Fertlizers	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 Al	40.43	5	42.60	5	41.52	5	379	3	381	3	380	3
NPK 150:60:40 Bl	44.75	4	45.06	4	44.91	4	356	5	372	5	364	5
SSNM Nutrient Expert	51.23	1	51.73	1	51.48	1	397	1	399	1	398	1
SSNM + GreenSeeker	46.30	3	47.99	3	47.14	3	377	4	377	4	377	4
N-Rich plot- 150% N	47.69	2	49.22	2	48.45	2	391	2	393	2	392	2
Mean	46.08		47.32		46.70		380		384		382	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		1.26	7.66	10.44		N.S.		5.32	32.37	5.39	
Nutrient (B)	**		1.63	4.88	8.55		N.S.		8.86	26.56	5.68	
B within A	N.S.		2.30	6.91			N.S.		12.53	37.56		
A within B			2.41	7.24					12.40	37.19		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 Al	26.11	5	29.12	4	27.62	5	40.87	1	38.79	5	39.83	5
NPK 150:60:40 Bl	32.75	2	28.21	5	30.48	3	38.57	5	43.15	2	40.86	3
SSNM Nutrient Expert	33.68	1	30.44	1	32.06	1	38.83	3	43.06	3	40.95	2
SSNM + GreenSeeker	30.58	4	29.61	3	30.09	4	40.69	2	43.22	1	41.96	1
N-Rich plot- 150% N	31.54	3	30.25	2	30.89	2	38.58	4	41.56	4	40.07	4
Mean	30.93		29.52		30.23		39.51		41.96		40.73	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		1.23	7.46	15.70		N.S.		0.58	3.56	5.56	
Nutrient (B)	N.S.		1.43	4.28	11.57		N.S.		1.30	3.88	7.79	
B within A	N.S.		2.02	6.05			N.S.		1.83	5.49		
A within B			2.18	6.54					1.74	5.22		

Date of Sowing: 04.11.2014 Date of harvesting: 22.04.2015

Table 7.2.4. North Western Plains Zone SPL-1 **Pantnagar** 2014-15

Fertlizers	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield,q/ha						**Earhead/sqm**					
NPK 150:60:40 AI	46.25	3	48.33	3	47.29	3	364	3	378	3	371	3
NPK 150:60:40 BI	46.90	2	48.87	2	47.88	2	372	2	391	1	381	2
SSNM Nutrient Expert	42.34	4	44.17	4	43.26	4	339	4	344	4	341	4
SSNM + GreenSeeker	40.85	5	42.63	5	41.74	5	332	5	336	5	334	5
N-Rich plot- 150% N	48.97	1	50.33	1	49.65	1	385	1	390	2	387	1
Mean	45.06		46.87		45.96		358		368		363	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		0.84	5.11	7.08		N.S.		4.09	24.88	4.36	
Nutrient (B)	**		0.69	2.07	3.67		**		6.49	19.47	4.38	
B within A	N.S.		0.98	2.92			N.S.		9.18	27.54		
A within B			1.21	3.63					9.18	27.51		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 AI	30.19	3	28.46	3	29.33	5	42.30	1	44.97	2	43.63	1
NPK 150:60:40 BI	30.28	2	28.38	5	29.33	4	41.77	3	44.07	3	42.92	3
SSNM Nutrient Expert	29.90	4	29.30	2	29.60	1	42.00	2	43.83	4	42.92	3
SSNM + GreenSeeker	29.65	5	29.47	1	29.56	2	41.63	4	43.63	5	42.63	5
N-Rich plot- 150% N	30.68	1	28.43	4	29.55	3	41.53	5	45.47	1	43.50	2
Mean	30.14		28.81		29.48		41.85		44.39		43.12	
	F. Test		S.E.m	C.D.	C.V.(%)		F. Test		S.E.m	C.D.	C.V.(%)	
Tillage (A)	N.S.		1.29	7.83	16.90		N.S.		0.61	3.72	5.50	
Nutrient (B)	N.S.		0.85	2.54	7.05		N.S.		0.78	2.33	4.41	
B within A	N.S.		1.20	3.60			N.S.		1.10	3.29		
A within B			1.67	5.02					1.16	3.47		

Date of Sowing: 13.11.2014 Date of harvesting: 17.04.2015

Table 7.3.1 North Eastern Plain Zone SPL 1 **Coochbehar** 2014-15

Nutrient Management	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 AI	34.60	3	32.27	3	33.43	3	252	4	253	4	253	4
NPK 150:60:40 BI	32.93	4	31.23	4	32.08	4	238	5	233	5	236	5
SSNM Nutrient Expert	39.20	1	36.60	1	37.90	1	280	1	277	1	278	1
SSNM + GreenSeeker	38.63	2	34.50	2	36.57	2	265	2	267	2	266	2
N-Rich plot- 150% N	30.12	5	29.20	5	29.66	5	262	3	260	3	261	3
Mean	35.10		32.76		33.93		259		258		259	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	*		0.20	1.22	2.28		N.S.		1.31	7.99	1.96	
Nutrient (B)	**		0.35	1.05	2.52		**		2.17	6.52	2.06	
B within A	N.S.		0.49	1.48			N.S.		3.07	9.21		
A within B			0.49	1.46					3.05	9.13		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 AI	33.19	2	30.41	3	31.80	4	41.43	5	41.89	5	41.66	5
NPK 150:60:40 BI	31.88	4	31.92	1	31.90	2	43.37	3	42.00	4	42.68	3
SSNM Nutrient Expert	33.18	3	31.29	2	32.23	1	42.20	4	42.28	3	42.24	4
SSNM + GreenSeeker	33.35	1	30.32	4	31.84	3	43.73	1	42.67	2	43.20	2
N-Rich plot- 150% N	26.33	5	25.94	5	26.14	5	43.70	2	43.31	1	43.51	1
Mean	31.59		29.98		30.78		42.89		42.43		42.66	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.34	2.06	4.27		**		0.03	0.19	0.28	
Nutrient (B)	**		0.43	1.30	3.46		**		0.11	0.33	0.63	
B within A	N.S.		0.61	1.84			**		0.16	0.47		
A within B			0.65	1.94					0.14	0.43		

Date of Sowing: 28.11.2014 Date of Harvesting: 01.04.2015

Table 7.3.2 North Eastern Plain Zone SPL 1 **Ranchi** 2014-15

Nutrient Management	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 AI	33.80	4	34.87	4	34.33	4	350	4	363	5	357	5
NPK 150:60:40 BI	34.77	3	39.23	3	37.00	3	357	3	367	4	362	3
SSNM Nutrient Expert	38.70	2	43.87	2	41.28	2	373	2	380	2	377	2
SSNM + GreenSeeker	40.87	1	44.87	1	42.87	1	385	1	395	1	390	1
N-Rich plot- 150% N	30.20	5	32.43	5	31.32	5	347	5	372	3	359	4
Mean	35.67		39.05		37.36		362		375		369	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	*		0.51	3.09	5.26		N.S.		6.35	38.67	6.67	
Nutrient (B)	**		0.78	2.35	5.14		N.S.		10.89	32.65	7.23	
B within A	N.S.		1.11	3.32			N.S.		15.40	46.18		
A within B			1.11	3.34					15.17	45.48		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 AI	25.77	4	25.69	4	25.73	4	37.70	5	37.47	4	37.58	5
NPK 150:60:40 BI	25.97	3	28.70	3	27.34	3	37.77	4	37.43	5	37.60	4
SSNM Nutrient Expert	27.26	2	29.76	1	28.51	2	38.10	1	38.80	2	38.45	2
SSNM + GreenSeeker	28.00	1	29.25	2	28.62	1	38.07	3	38.97	1	38.52	1
N-Rich plot- 150% N	23.21	5	23.13	5	23.17	5	38.10	1	37.77	3	37.93	3
Mean	26.04		27.31		26.67		37.95		38.09		38.02	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.84	5.11	12.19		N.S.		0.08	0.47	0.79	
Nutrient (B)	*		1.09	3.27	10.02		N.S.		0.32	0.97	2.08	
B within A	N.S.		1.54	4.63			N.S.		0.46	1.37		
A within B			1.62	4.84					0.42	1.25		

Date of Sowing: 11.03.2015 Date of Harvesting: 10.03.2015

Table 7.3.3 North Eastern Plain Zone SPL 1 **Sabour** 2014-15

Nutrient Management	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 AI	44.22	3	45.24	2	44.73	3	265	3	272	2	269	2
NPK 150:60:40 BI	43.88	4	44.56	4	44.22	4	263	4	268	4	266	4
SSNM Nutrient Expert	44.90	2	45.24	2	45.07	2	267	2	270	3	269	2
SSNM + GreenSeeker	46.26	1	48.98	1	47.62	1	270	1	275	1	273	1
N-Rich plot- 150% N	40.48	5	40.82	5	40.65	5	258	5	260	5	259	5
Mean	43.95		44.97		44.46		265		269		267	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.60	3.65	5.23		N.S.		1.18	7.21	1.72	
Nutrient (B)	**		1.05	3.14	5.77		*		2.38	7.12	2.18	
B within A	N.S.		1.48	4.44			N.S.		3.36	10.08		
A within B			1.46	4.36					3.23	9.69		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 AI	41.01	2	40.53	4	40.77	3	40.67	4	41.00	3	40.83	4
NPK 150:60:40 BI	40.58	4	40.55	3	40.57	4	41.00	3	41.00	3	41.00	3
SSNM Nutrient Expert	40.06	5	39.91	5	39.98	5	42.00	1	42.00	2	42.00	2
SSNM + GreenSeeker	40.77	3	41.41	1	41.09	2	42.00	1	43.00	1	42.50	1
N-Rich plot- 150% N	43.58	1	41.30	2	42.44	1	36.00	5	38.00	5	37.00	5
Mean	41.20		40.74		40.97		40.33		41.00		40.67	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.19	1.14	1.78		N.S.		0.21	1.25	1.96	
Nutrient (B)	**		0.36	1.08	2.15		**		0.60	1.81	3.63	
B within A	N.S.		0.51	1.52			N.S.		0.85	2.56		
A within B			0.49	1.47					0.79	2.37		

Date of Sowing: 15.11.14 Date of Harvesting: 27.04.15

Table 7.3.4 North Eastern Plain Zone SPL 1 **Varanasi** **2014-15**

Nutrient Management	Tillage Option ZT	Rk	CT	Rk	Mean	Rk	Tillage Option ZT	Rk	CT	Rk	Mean	Rk
	Yield, q/ha						**Earhead/sq.m.**					
NPK 150:60:40 AI	31.33	4	35.97	3	33.65	5	202	2	277	1	240	1
NPK 150:60:40 BI	34.68	2	35.93	4	35.31	2	222	1	228	5	225	3
SSNM Nutrient Expert	33.47	3	35.10	5	34.28	3	188	4	238	3	213	4
SSNM + GreenSeeker	28.69	5	38.83	1	33.76	4	184	5	237	4	211	5
N-Rich plot- 150% N	35.53	1	37.33	2	36.43	1	202	3	253	2	227	2
Mean	32.74		36.63		34.69		199		247		223	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	**		0.27	1.65	3.03		*		3.47	21.12	6.03	
Nutrient (B)	**		0.25	0.75	1.76		**		4.92	14.75	5.40	
B within A	**		0.35	1.06			**		6.96	20.86		
A within B			0.42	1.25					7.13	21.36		
	Grains/earhead						**1000 Grains weight, g**					
NPK 150:60:40 AI	43.63	3	36.62	5	40.12	4	35.58	5	35.51	4	35.55	5
NPK 150:60:40 BI	42.13	4	45.15	1	43.64	3	37.41	2	34.94	5	36.17	4
SSNM Nutrient Expert	48.43	2	41.65	2	45.04	1	36.81	3	35.54	3	36.18	3
SSNM + GreenSeeker	38.59	5	40.16	4	39.38	5	40.45	1	40.83	1	40.64	1
N-Rich plot- 150% N	48.67	1	40.56	3	44.61	2	36.30	4	36.47	2	36.39	2
Mean	44.29		40.83		42.56		37.31		36.66		36.98	
	F. Test		S.E.m.	C.D.	C.V.%		F. Test		S.E.m.	C.D.	C.V.%	
Tillage (A)	N.S.		0.97	5.87	8.78		N.S.		0.36	2.18	3.75	
Nutrient (B)	**		0.78	2.33	4.46		**		0.53	1.60	3.53	
B within A	**		1.10	3.29			N.S.		0.75	2.26		
A within B			1.38	4.13					0.76	2.29		

Date of Sowing: 27.11.2015 Date of Harvesting: 21.04.2015

Table 7.9.1. North Western Plain Zone SPL-2 **Gurdaspur** **2014-15**

N Treatments in Wheat	Rice establishment methods PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk	Rice establishment methods PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
No N control	27.14	4	23.84	4	23.63	4	24.87	4	179	4	149	4	165	4	164	4
75 kg N/ha	43.78	3	41.31	3	41.94	3	42.34	3	181	3	205	3	236	1	207	3
150 kg N/ha	45.80	2	44.92	2	42.77	2	44.49	2	216	2	232	2	231	2	227	2
LCC based N	46.05	1	45.80	1	43.22	1	45.02	1	239	1	239	1	221	3	233	1
Mean	40.69		38.97		37.89		39.18		204		206		213		208	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	N.S.		1.51		5.93		13.36		N.S.		5.78		22.70		9.64	
Nitrogen (B)	**		0.91		2.71		6.98		**		6.23		18.50		8.99	
B within A	N.S.		1.58		4.69				*		10.78		32.04			
A within B			2.04		6.05						10.98		32.63			
	Grains/earhead								**1000 Grains weight, g**							
No N control	40.70	4	43.12	4	39.85	4	41.22	4	37.62	1	36.91	2	36.13	2	36.89	1
75 kg N/ha	75.68	1	54.65	3	49.20	3	59.84	2	36.26	2	37.05	1	36.18	1	36.50	2
150 kg N/ha	64.68	2	58.67	1	56.29	2	59.88	1	32.72	4	33.10	4	32.82	3	32.88	4
LCC based N	59.02	3	57.12	2	59.88	1	58.67	3	32.78	3	33.57	3	32.79	4	33.05	3
Mean	60.02		53.39		51.30		54.90		34.85		35.16		34.48		34.83	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	N.S.		4.89		19.20		30.85		N.S.		0.28		1.10		2.79	
Nitrogen (B)	**		3.65		10.85		19.94		**		0.59		1.74		5.05	
B within A	N.S.		6.32		18.79				N.S.		1.02		3.02			
A within B			7.34		21.81						0.92		2.74			

Date of Sowing: 13.11.2014 Date of Harvesting: 29.04.2015

Table 7.9.2. North Western Plain Zone SPL-2 Karnal 2014-15

N Treatments in Wheat	Rice establishment methods								Rice establishment methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
No N control	27.01	4	29.66	4	21.55	4	26.07	4	395	4	387	4	380	4	387	4
75 kg N/ha	49.60	1	50.74	1	40.46	2	46.93	2	435	3	400	3	403	2	413	3
150 kg N/ha	45.06	3	44.15	3	52.60	1	47.27	1	470	2	473	1	412	1	452	1
LCC based N	47.43	2	48.57	2	40.00	3	45.33	3	472	1	460	2	393	3	442	2
Mean	42.27		43.28		38.65		41.40		443		430		397		423	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	*		0.62		2.45		5.21		*		7.68		30.16		6.29	
Nitrogen (B)	**		1.10		3.28		8.00		**		11.71		34.81		8.30	
B within A	**		1.91		5.68				N.S.		20.29		60.28			
A within B			1.77		5.25						19.18		56.98			
	Grains/earhead								**1000 Grains weight, g**							
No N control	17.51	4	19.72	4	14.58	4	17.27	4	38.84	1	38.97	1	38.83	4	38.88	1
75 kg N/ha	30.21	1	35.11	1	25.11	3	30.14	2	37.95	2	36.22	2	40.11	1	38.09	2
150 kg N/ha	29.57	2	31.46	3	32.95	1	31.33	1	32.83	4	29.91	4	38.87	3	33.87	4
LCC based N	28.69	3	32.27	2	25.83	2	28.93	3	35.18	3	32.77	3	39.40	2	35.79	3
Mean	26.49		29.64		24.62		26.92		36.20		34.47		39.30		36.66	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	N.S.		1.02		4.01		13.14		**		0.57		2.23		5.37	
Nitrogen (B)	**		0.78		2.32		8.70		**		0.49		1.47		4.04	
B within A	*		1.35		4.02				**		0.86		2.54			
A within B			1.55		4.62						0.93		2.77			

Date of Sowing: 30.10.2014 Date of Harvesting: 15.04.2015

Table 7.9.3. North Western Plain Zone SPL-2 Pantnagar 2014-15

N Treatments in Wheat	Rice establishment methods								Rice establishment methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
	Yield, q/ha								**Earhead/sq.m.**							
No N control	21.13	4	22.40	4	23.27	4	22.27	4	295	4	257	4	264	4	272	4
75 kg N/ha	32.77	3	34.63	3	37.23	3	34.88	3	310	3	336	3	287	3	311	3
150 kg N/ha	47.80	2	45.23	2	47.03	2	46.69	2	428	1	411	1	380	2	407	1
LCC based N	48.53	1	46.33	1	48.13	1	47.67	1	361	2	364	2	413	1	379	2
Mean	37.56		37.15		38.92		37.88		349		342		336		342	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	N.S.		0.70		2.75		6.41		N.S.		8.88		34.88		8.99	
Nitrogen (B)	**		0.85		2.52		6.72		**		11.01		32.70		9.65	
B within A	N.S.		1.47		4.37				N.S.		19.06		56.64			
A within B			1.45		4.32						18.75		55.70			
	Grains/earhead								**1000 Grains weight, g**							
No N control	19.23	4	25.18	4	24.33	4	22.91	4	37.30	4	34.73	4	36.47	4	36.17	4
75 kg N/ha	27.68	3	29.27	2	35.16	1	30.70	2	38.37	3	36.13	3	37.50	3	37.33	3
150 kg N/ha	28.52	2	29.08	3	32.04	2	29.88	3	39.20	2	37.90	2	38.73	2	38.61	2
LCC based N	33.98	1	32.11	1	29.78	3	31.95	1	39.67	1	39.83	1	39.20	1	39.57	1
Mean	27.35		28.91		30.33		28.86		38.63		37.15		37.98		37.92	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	N.S.		0.78		3.05		9.32		N.S.		0.61		2.40		5.58	
Nitrogen (B)	**		1.00		2.96		10.35		*		0.76		2.25		5.99	
B within A	*		1.72		5.12				N.S.		1.31		3.90			
A within B			1.68		5.00						1.29		3.83			

Date of Sowing: 11.11.2014 Date of Harvesting: 18.04.2015

Table 7.10.1. North Western Plain Zone **SPL-2 Rice** **Gurdaspur** **2014-15**

N Treatments in Wheat	Rice establishment methods								Rice establishment methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
	Yield, q/ha								**Panicles/sq.m.**							
No N control	53.67	4	54.55	4	33.83	4	47.35	4	289	3	274	4	289	2	284	3
75 kg N/ha	57.43	3	63.78	1	36.25	3	52.49	3	276	4	285	3	276	4	279	4
150 kg N/ha	57.95	2	63.41	2	36.33	2	52.56	2	298	2	286	2	280	3	288	2
LCC based N	59.81	1	61.36	3	38.43	1	53.20	1	305	1	317	1	300	1	307	1
Mean	57.21		60.78		36.21		51.40		292		291		286		290	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	**		1.33		5.23		8.97		N.S.		4.42		17.34		5.28	
Nitrogen (B)	N.S.		2.19		6.50		12.77		N.S.		8.29		24.63		8.58	
B within A	N.S.		3.79		11.26				N.S.		14.36		42.65			
A within B			3.54		10.53						13.19		39.20			
	Grains/earhead								**1000 Grains weight, g**							
No N control	71.02	2	71.62	3	48.21	4	63.62	4	26.45	4	28.03	3	24.22	1	26.23	3
75 kg N/ha	75.59	1	79.00	2	57.23	2	70.60	1	27.85	2	28.44	1	22.95	3	26.41	1
150 kg N/ha	69.82	4	80.69	1	59.96	1	70.16	2	27.96	1	27.48	4	22.34	4	25.93	4
LCC based N	70.71	3	68.16	4	56.30	3	65.06	3	27.70	3	28.33	2	23.04	2	26.36	2
Mean	71.78		74.87		55.42		67.36		27.49		28.07		23.14		26.23	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	**		2.44		9.58		12.54		**		0.23		0.92		3.08	
Nitrogen (B)	N.S.		3.66		10.87		16.29		N.S.		0.39		1.17		4.49	
B within A	N.S.		6.34		18.83				N.S.		0.68		2.02			
A within B			6.01		17.84						0.63		1.88			

Date of Sowing: 14.06.2014 24.06.2014 Date of Harvesting: 20.10.2014 30.10.2014

Table 7.10.2. North Western Plain Zone **SPL-2 Rice** **Karnal** **2014-15**

N Treatments in Wheat	Rice establishment methods								Rice establishment methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
	Yield, q/ha								**Panicles/sq.m.**							
No N control	91.27	4	77.78	4	68.65	4	79.23	4	503	2	423	1	423	4	450	1
75 kg N/ha	94.05	1	78.97	2	72.62	3	81.88	3	490	4	382	4	462	2	444	4
150 kg N/ha	93.25	2	80.95	1	73.81	2	82.67	1	505	1	398	2	443	3	449	3
LCC based N	91.67	3	78.57	3	75.79	1	82.01	2	497	3	385	3	465	1	449	2
Mean	92.56		79.07		72.72		81.45		499		397		448		448	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	**		1.00		3.94		4.27		*		12.18		47.80		9.41	
Nitrogen (B)	N.S.		1.15		3.42		4.24		N.S.		12.04		35.77		8.06	
B within A	N.S.		1.99		5.92				N.S.		20.85		61.95			
A within B			2.00		5.93						21.78		64.71			
	Grains/earhead								**1000 Grains weight, g**							
No N control	81.32	4	81.70	4	70.29	1	77.77	4	22.33	4	22.74	4	23.13	4	22.73	4
75 kg N/ha	85.22	1	91.54	1	66.82	4	81.20	1	22.54	1	22.93	2	23.55	3	23.01	3
150 kg N/ha	82.17	3	89.56	2	69.19	2	80.31	2	22.50	3	22.80	3	24.14	1	23.15	2
LCC based N	82.45	2	88.62	3	67.62	3	79.56	3	22.54	1	23.16	1	24.13	2	23.28	1
Mean	82.79		87.86		68.48		79.71		22.48		22.91		23.74		23.04	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	**		2.09		8.20		9.08		**		0.09		0.34		1.31	
Nitrogen (B)	N.S.		2.74		8.16		10.33		N.S.		0.13		0.40		1.74	
B within A	N.S.		4.75		14.13				N.S.		0.23		0.69			
A within B			4.62		13.72						0.22		0.65			

Date of Sowing: 05.07.2014 Date of Harvesting: 28.09.2014

Table 7.10.3. North Western Plain Zone **SPL-2 Rice** **Pantnagar** **2014-15**

N Treatments in Wheat	Rice establishment methods								Rice establishment methods							
	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk	PTR	Rk	ZTTR	Rk	DDSR	Rk	Mean	Rk
	Yield, q/ha								**Panicles/sq.m.**							
No N control	44.93	4	45.27	4	38.47	4	42.89	4	295	4	282	4	275	3	284	4
75 kg N/ha	47.70	3	45.90	3	41.63	2	45.08	3	315	3	298	3	275	3	296	3
150 kg N/ha	49.97	2	46.97	2	41.43	3	46.12	2	325	2	311	2	300	2	312	2
LCC based N	51.60	1	47.77	1	43.07	1	47.48	1	335	1	318	1	301	1	318	1
Mean	48.55		46.48		41.15		45.39		318		302		288		303	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	**		0.53		2.10		4.08		*		3.61		14.19		4.14	
Nitrogen (B)	N.S.		1.10		3.26		7.26		*		7.35		21.82		7.28	
B within A	N.S.		1.90		5.65				N.S.		12.72		37.80			
A within B			1.73		5.15						11.60		34.45			
	Grains/earhead								**1000 Grains weight, g**							
No N control	58.62	1	67.39	1	59.23	2	61.75	1	26.00	4	24.03	4	23.67	4	24.57	4
75 kg N/ha	58.51	2	63.07	2	63.51	1	61.70	2	26.23	3	24.43	3	23.97	3	24.88	3
150 kg N/ha	57.88	3	61.16	3	57.36	4	58.80	3	26.63	2	24.90	2	24.27	2	25.27	2
LCC based N	57.02	4	60.00	4	57.92	3	58.31	4	27.17	1	25.07	1	24.70	1	25.64	1
Mean	58.01		62.91		59.50		60.14		26.51		24.61		24.15		25.09	
	F. Test		S.E.m		C.D.		C.V.(%)		F. Test		S.E.m		C.D.		C.V.(%)	
Methods (A)	N.S.		1.89		7.43		10.90		*		0.32		1.24		4.36	
Nitrogen (B)	N.S.		2.25		6.70		11.25		N.S.		0.33		0.99		3.99	
B within A	N.S.		3.90		11.60				N.S.		0.58		1.72			
A within B			3.88		11.51						0.59		1.76			

Date of Sowing: 13.06.2014 03.07.2014 Date of Harvesting:

Table 7.15.1. North Western Plains Zone **SPL-7** **Karnal** **2014-15**

Nutrient	Tiilage and Row Spacing in cm										Tiilage and Row Spacing in cm									
	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk	Mean	Rk	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk	Mean	Rk
	Yield, q/ha										**Earhead/sq.m.**									
Rec. NPK	51.32	2	51.19	2	49.70	1	50.58	1	50.70	1	452	3	493	2	474	2	457	3	469	3
NPK+ FYM	50.97	3	52.23	1	48.76	2	49.50	2	50.36	2	491	2	497	1	441	3	473	1	475	2
125% NPK+FYI	52.17	1	49.75	3	48.37	3	49.33	3	49.91	3	496	1	467	3	528	1	471	2	490	1
Mean	51.49		51.06		48.94		49.81		50.32		479		485		481		467		478	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		0.8		2.77		4.77				N.S.		11.5		39.69		7.20			
Nutrient (B)	N.S.		0.56		1.64		3.87				N.S.		13.9		40.55		10.06			
B within A	N.S.		1.13		3.29						N.S.		27.8		81.10					
A within B			1.22		3.56								25.4		74.20					
	Grains/Earhead										**1000 Grains Weight, g**									
Rec. NPK	26.75	1	27.04	1	26.42	2	27.75	1	26.99	1	42.48	2	39.11	3	40.09	3	39.97	2	40.41	3
NPK+ FYM	24.48	3	25.12	3	27.44	1	26.36	3	25.85	2	42.61	1	41.97	1	40.55	1	40.05	1	41.30	1
125% NPK+FYI	26.04	2	26.12	2	22.88	3	26.46	2	25.37	3	41.15	3	40.96	2	40.12	2	39.65	3	40.47	2
Mean	25.76		26.09		25.58		26.86		26.07		42.08		40.68		40.25		39.89		40.73	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		0.76		2.62		8.71				N.S.		0.44		1.53		3.25			
Nutrient (B)	N.S.		0.85		2.48		11.29				N.S.		0.4		1.16		3.38			
B within A	N.S.		1.7		4.96						N.S.		0.79		2.32					
A within B			1.58		4.61								0.78		2.29					

Date of Sowing: 13.11.2014 Date of harvesting: 21.04.2015

Table 7.15.2. North Western Plains Zone **SPL-7** **Ludhiana** **2014-15**

Nutrient	Tiilage and Row Spacing in cm								Mean	Rk	Tiilage and Row Spacing in cm								Mean	Rk
	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk			CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk		
	Yield, q/ha										**Earhead/sq.m.**									
Rec. NPK	44.61	3	46.76	3	45.69	3	45.88	3	45.74	3	346	2	345	3	332	3	342	3	341	3
NPK+ FYM	52.75	1	53.14	1	51.76	1	49.22	2	51.72	1	344	3	355	2	354	2	354	1	352	2
125% NPK+FYI	51.57	2	53.04	2	49.61	2	50.00	1	51.05	2	352	1	362	1	363	1	354	1	358	1
Mean	49.64		50.98		49.02		48.37		49.50		347		354		350		350		350	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		1.13		3.91		6.85				N.S.		3.29		11.37		2.82			
Nutrient (B)	**		1.26		3.68		8.83				**		2.51		7.34		2.49			
B within A	N.S.		2.52		7.36						N.S.		5.03		14.67					
A within B			2.35		6.86								5.26		15.35					
	Grains/Earhead										**1000 Grains Weight, g**									
Rec. NPK	43.99	3	44.20	3	41.83	3	42.82	3	43.21	3	29.33	2	30.67	3	33.30	1	31.27	1	31.14	2
NPK+ FYM	48.97	2	47.85	1	45.59	1	44.96	2	46.84	1	31.33	1	31.33	2	32.07	2	30.80	2	31.38	1
125% NPK+FYI	50.13	1	44.95	2	45.54	2	46.69	1	46.83	2	29.33	2	32.60	1	30.07	3	30.33	3	30.58	3
Mean	47.70		45.67		44.32		44.82		45.63		30.00		31.53		31.81		30.80		31.04	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		1.55		5.36		10.17				N.S.		0.48		1.66		4.64			
Nutrient (B)	N.S.		1.2		3.51		9.13				N.S.		0.5		1.46		5.57			
B within A	N.S.		2.4		7.02						N.S.		1		2.91					
A within B			2.5		7.30								0.95		2.76					

Date of Sowing: 28.11.2014 Date of harvesting: 02.05.2015

Table 7.15.3. North Western Plains Zone **SPL-7** **Pantnagar** **2014-15**

Nutrient	Tiilage and Row Spacing in cm								Mean	Rk	Tiilage and Row Spacing in cm								Mean	Rk
	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk			CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk		
	Yield, q/ha										**Earhead/sq.m.**									
Rec. NPK	44.67	3	45.70	3	41.77	3	42.43	3	43.64	3	333	3	393	3	301	3	371	3	350	3
NPK+ FYM	45.30	2	47.13	2	43.10	2	44.57	2	45.03	2	369	2	406	2	345	2	385	2	376	2
125% NPK+FYI	48.53	1	50.37	1	46.20	1	48.93	1	48.51	1	389	1	427	1	381	1	389	1	396	1
Mean	46.17		47.73		43.69		45.31		45.73		364		409		342		382		374	
	F. Test		S.E.m		C.D.		C.V.(%)				F Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		1.15		3.98		7.55				**		7.37		25.51		5.91			
Nutrient (B)	**		0.58		1.69		4.38				**		7.25		21.16		6.71			
B within A	N.S.		1.16		3.37						N.S.		14.5		42.33					
A within B			1.49		4.34								13.9		40.71					
	Grains/Earhead										**1000 Grains Weight, g**									
Rec. NPK	33.05	1	28.40	1	34.86	1	28.46	2	31.19	1	40.57	3	41.03	3	39.93	3	40.07	3	40.40	3
NPK+ FYM	29.06	3	27.77	2	29.97	2	27.66	3	28.61	3	42.87	1	42.07	2	41.83	1	41.87	2	42.16	2
125% NPK+FYI	29.69	2	27.38	3	29.21	3	30.00	1	29.07	2	42.43	2	43.13	1	41.83	1	42.03	1	42.36	1
Mean	30.60		27.85		31.35		28.70		29.63		41.96		42.08		41.20		41.32		41.64	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		1.15		3.98		11.64				N.S.		0.31		1.06		2.21			
Nutrient (B)	N.S.		0.88		2.57		10.30				*		0.47		1.36		3.87			
B within A	N.S.		1.76		5.14						N.S.		0.93		2.72					
A within B			1.84		5.37								0.82		2.39					

Date of Sowing: 30.11.2013 Date of harvesting: 25.04.2014

Table 7.16.1. North Western Plains Zone **SPL-7 Rice** **Karnal** **2014-15**

Nutrient	Tiilage and Row Spacing in cm										Tiilage and Row Spacing in cm									
	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk	Mean	Rk	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk	Mean	Rk
	Yield, q/ha										**Panicles/sq.m.**									
Rec. NPK	94.44	2	84.72	3	95.83	1	95.14	1	92.53	3	362	2	316	3	378	1	335	3	348	3
NPK+ FYM	93.06	3	96.53	1	94.44	2	94.44	3	94.62	2	346	3	378	1	367	3	373	1	366	2
125% NPK+FYI	101.04	1	92.36	2	93.75	3	94.79	2	95.49	1	409	1	342	2	374	2	354	2	370	1
Mean	96.18		91.20		94.68		94.79		94.21		372		345		373		354		361	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		2.63		9.09		8.36				N.S.		11.7		40.49		9.72			
Nutrient (B)	N.S.		1.84		5.38		6.78				*		5.58		16.30		5.36			
B within A	N.S.		3.69		10.76						**		11.2		32.60					
A within B			4		11.66								14.8		43.30					
	Grains/Panicles										**1000 Grains Weight, g**									
Rec. NPK	104.99	2	107	2	102	3	114	1	107	1	25.00	1	25.00	2	24.87	1	25.00	2	24.97	1
NPK+ FYM	111.93	1	101	3	104	1	103	3	105	2	24.07	3	25.20	1	24.80	2	24.53	3	24.65	3
125% NPK+FYI	100.53	3	110	1	103	2	106	2	105	3	24.93	2	24.60	3	24.40	3	25.27	1	24.80	2
Mean	105.81		106		103		108		106		24.67		24.93		24.69		24.93		24.81	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		3.71		12.84		10.54				N.S.		0.12		0.42		1.47			
Nutrient (B)	N.S.		2.15		6.29		7.06				N.S.		0.15		0.43		2.05			
B within A	N.S.		4.31		12.57						N.S.		0.29		0.86					
A within B			5.11		14.93								0.27		0.79					

Date of Sowing: 04.07.2014 Date of harvesting: 06.10.2014

Table 7.16.2. North Western Plains Zone **SPL-7 Rice** **Pantnagar** **2014-15**

Nutrient	Tiilage and Row Spacing in cm										Tiilage and Row Spacing in cm									
	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk	Mean	Rk	CT 20	Rk	CT 15	Rk	RT 20	Rk	RT 15	Rk	Mean	Rk
	Yield, q/ha										**Panicles/sq.m.**									
Rec. NPK	48.93	3	48.93	3	54.13	3	49.77	3	50.44	3	285	3	292	3	320	3	329	3	307	3
NPK+ FYM	53.60	2	52.83	2	59.67	2	55.77	2	55.47	2	308	2	327	2	326	2	336	2	324	2
125% NPK+FYI	55.63	1	55.67	1	62.33	1	57.03	1	57.67	1	324	1	341	1	347	1	365	1	344	1
Mean	52.72		52.48		58.71		54.19		54.53		306		320		331		343		325	
	F. Test		S.E.m		C.D.		C.V.(%)				F. Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	*		1.16		4.02		6.39				**		4.98		17.23		4.60			
Nutrient (B)	**		0.59		1.71		3.73				**		5.54		16.18		5.91			
B within A	N.S.		1.17		3.43						N.S.		11.1		32.35					
A within B			1.51		4.40								10.3		30.15					
	Grains/Panicles										**1000 Grains Weight, g**									
Rec. NPK	75.47	1	65.24	1	68.15	2	59.86	2	67.18	1	22.80	3	25.73	3	24.93	3	25.50	3	24.74	3
NPK+ FYM	70.50	2	61.56	2	69.94	1	62.70	1	66.18	2	24.80	2	26.53	2	26.27	2	26.60	2	26.05	2
125% NPK+FYI	65.42	3	59.65	3	65.13	3	56.48	3	61.67	3	26.27	1	27.43	1	27.57	1	27.67	1	27.23	1
Mean	70.46		62.15		67.74		59.68		65.01		24.62		26.57		26.26		26.59		26.01	
	F. Test		S.E.m		C.D.		C.V.(%)				F Test		S.E.m		C.D.		C.V.(%)			
Tillage & Spacir	N.S.		2.44		8.46		11.28				N.S.		0.46		1.58		5.28			
Nutrient (B)	*		1.5		4.37		7.98				**		0.34		0.98		4.48			
B within A	N.S.		2.99		8.74						N.S.		0.67		1.97					
A within B			3.46		10.09								0.72		2.09					

Date of Sowing: 05.07.2014 Date of harvesting: 05.11.2014

ANNEXURE -II

METEOROLOGICAL INFORMATION: 2014-2015

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
NORTHERN HILLS ZONE								
ALMORA	**Latitude 29°36' N**		**Longitude 79°40' E**			**Height above MSL 1250 m**		
40 (01-07 Oct)	27.4	12.9	98.7	64.1	2.5	2.1	1.9	5.71
41 (08-14 Oct)	27.1	9.9	100	67.9	41.5	2.1	-	5.21
42 (15-21 Oct)	24.1	6.9	87	56.3	8.5	2.1	-	5.21
43 (22-28 Oct)	25.5	9.6	100	64.4	0	2.4	-	7.61
44 (29-04 Nov)	25.9	6.9	100	35.3	0	2.1	-	8.5
45 (05-11 Nov)	26.1	4.4	100	34.4	0	2	1.6	8.61
46 (12-18 Nov)	25.3	2	100	34.7	0	2	1.7	8.32
47 (19-25 Nov)	24.1	1.3	100	39.4	0	1.5	1.7	7.93
48 (26-02 Dec)	23	0.3	87	43.4	0	1.7	1.5	7.32
49 (03-09 Dec)	23.2	-0.4	100	39.9	0	1.4	1.2	6.54
50 (10-16 Dec)	14.6	-1.1	100	58.7	78.5	1.8	1.4	3.61
51(17-23 Dec)	19.4	-1.1	100	43.9	0	1.1	1.2	5.18
52 (24-31 Dec)	18.2	0	100	52.1	0	1.8	1.6	6.13
1 (01-07 Jan)	16.4	6.7	98	73.1	32.5	0.9	2	4.11
2 (08-14 Jan)	18.5	1.5	94	47	2.5	1.1	1.8	5.64
3 (15-21 Jan)	17.7	-0.9	98.7	45.9	0	1.3	1.7	5.89
4 (22-28 Jan)	16.1	3.6	94.1	56	11	1.1	2.1	3.93
5 (29-04 Feb)	17.9	1.2	96.3	52.9	6.5	1.5	2.2	4.96
6 (05-11 Feb)	21.8	0.3	96.4	52.7	0	1.5	2	8.75
7 (12-18 Feb)	20.3	2.6	94	50.3	0	1.2	1.9	5.79
8 (19-25 Feb)	21.1	5.4	92.6	54	20	1.5	2	5.21
9 (26-04 Mar)	14.9	6.1	98	74	48.9	0.7	2.6	3.86
10 (05-11 Mar)	20.6	3.6	94.3	46.9	0	1.9	2.4	7.18
11 (12-18 Mar)	20.5	5.4	91.4	51.9	14.9	1.9	2.2	5.71
12 (19-25 Mar)	26.5	8.1	92.4	46.4	0	2.7	2.6	9.32
13 (26-01 Apr)	22.9	9.6	91	56.9	11.5	1.7	2.3	4.29
14 (02-08 Apr)	20.9	7.6	87.4	63.3	33.5	1.6	2.5	5.71
15 (09-15 Apr)	25.3	7.9	78.1	56	16	2.3	2.3	5.64
16 (16-22 Apr)	29.6	12.3	79.7	55.3	0	3.2	2.5	7.71
17 (23-29 Apr)	28.7	10.6	82	53.9	0	3.2	2.7	6.68
18 (30-06 May)	30.4	10.6	82.1	44.4	0	3.5	3	7.14
19 (7-13 May)	31	13	75.9	41.4	2.2	3.3	2.7	6.47
20 (14-20 May)	32.9	14.2	76.4	37.3	1.2	3.7	2.8	7.64
21 (21-27 May)	34.7	12.4	74.7	35.9	0	4.3	3.1	8.68

BAJAURA	Latitude 31°48' N		Longitude 77°00' E			Height above MSL 1090 m		
40 (01-07 Oct)	30.0	14.0	90.0	52.0	0.0	30.1		7.8
41 (08-14 Oct)	29.0	10.0	93.0	44.0	10.2	24.3		8.3
42 (15-21 Oct)	25.8	8.4	93.0	40.0	2.1	23.5		7.3
43 (22-28 Oct)	27.2	8.2	93.0	43.0	0.2	19.4		7.8
44 (29-04 Nov)	25.9	5.8	95.0	41.0	4.1	17.4		7.4
45 (05-11 Nov)	24.6	6.6	94.0	37.0	7.1	14.1		6.0
46 (12-18 Nov)	25.8	1.8	94.0	32.0	0.0	14.5		7.4
47 (19-25 Nov)	24.4	-0.1	96.0	32.0	0.0	11.9		6.8
48 (26-02 Dec)	23.1	0.2	96.0	41.0	0.0	11.2		6.3
49 (03-09 Dec)	22.2	-0.9	95.0	42.0	0.0	10.2		6.3
50 (10-16 Dec)	14.3	-0.7	91.0	48.0	65+ 250 mm snowfall	7.3		3.0
51 (17-23 Dec)	11.8	0.1	93.0	53.0	0.0	6.0		4.1
52 (24-31 Dec)	17.7	-0.4	94.0	36.0	0.0	8.9		6.2
1 (01-07 Jan)	15.5	-0.3	96.0	52.0	10.1	5.8		4.7
2 (08-14 Jan)	18.9	0.6	94.0	44.0	4.2	7.3		4.9
3 (15-21 Jan)	17.2	0.3	94.0	40.0	10.4	9.1		5.6
4 (22-28 Jan)	13.7	2.4	97.0	67.0	26.8	7.3		3.6
5 (29-04 Feb)	12.7	1.1	96.0	71.0	31.5	5.9		3.1

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)	18.3	1.5	94.0	58.0	0.0	8.0		5.9
7 (12-18 Feb)	19.9	4.2	96.0	69.0	31.8	9.9		6.2
8 (19-25 Feb)	18.0	3.9	95.0	79.0	96.1	7.2		3.9
9 (26-04 Mar)	13.6	4.6	95.0	67.0	62.9	4.8		1.6
10 (05-11 Mar)	17.3	2.8	93.0	48.0	31.6	11.2		5.9
11 (12-18 Mar)	18.1	4.8	92.0	50.0	11.5	9.3		2.7
12 (19-25 Mar)	26.2	5.8	89.0	28.0	0.0	25.3		9.5
13 (26-01 Apr)	25.0	6.8	91.0	48.0	31.7	18.6		5.6
14 (02-08 Apr)	18.6	8.4	91.0	62.0	60.0	12.0		3.1
15 (09-15 Apr)	25.7	8.4	92.0	37.0	6.5	26.2		8.8
16 (16-22 Apr)	27.2	10.5	91.0	47.0	19.7	29.1		7.2
17 (23-29 Apr)	29.3	11.1	89.0	45.0	2.7	33.7		9.5
18(30-06 May)	28.6	9.4	89.0	39.0	7.2	29.1		8.4
19 (7-13 May)	30.5	11.7	88.0	47.0	5.1	29.5		7.9
20(4-20 May)	29.7	13.3	89.0	51.0	19.3	24.7		7.3
21(21-27 May)	32.3	12.2	90.0	33.0	11.1	38.8		9.4

MALAN	Latitude 32°1' N		Longitude 76°2' E			Height above MSL 950 m		
40 (01-07 Oct)	30.1	17.2	63.4	61.1	13.3			
41 (08-14 Oct)	28.9	14.0	60.0	55.1	3.6			
42 (15-21 Oct)	28.0	13.7	55.4	50.9	0.0			
43 (22-28 Oct)	27.9	12.9	52.3	47.4	1.6			
44 (29-04 Nov)	27.9	11.9	48.1	43.7	0.0			
45 (05-11 Nov)	28.9	12.0	47.3	42.3	0.0			
46 (12-18 Nov)	28.1	11.6	45.7	41.6	0.0			
47 (19-25 Nov)	27.1	9.7	46.3	39.6	0.0			
48 (26-02 Dec)	26.8	8.2	44.7	40.9	0.0			
49 (03-09 Dec)	25.6	7.9	44.6	40.9	0.0			
50 (10-16 Dec)	16.3	6.0	52.0	48.3	77.0			
51 (17-23 Dec)	11.2	4.8	44.6	41.0	0.0			
52 (24-31 Dec)	10.4	4.9	44.1	40.6	0.0			
1 (01-07 Jan)	11.4	4.7	48.3	44.4	2.2			
2 (08-14 Jan)	13.1	4.7	52.9	49.6	109.0			
3 (15-21 Jan)	16.6	4.1	57.9	54.0	0.0			
4 (22-28 Jan)	14.1	4.1	59.8	55.2	84.1			
5 (29-04 Feb)	14.1	3.9	56.3	52.3	140.3			
6 (05-11 Feb)	17.7	5.3	58.4	53.7	0.0			
7 (12-18 Feb)	17.8	7.2	57.6	52.3	31.5			
8 (19-25 Feb)	19.0	8.6	61.6	56.8	117.8			
9 (26-04 Mar)	16.5	8.0	61.3	56.6	144.6			
10 (05-11 Mar)	19.9	8.1	64.9	60.1	6.2			
11 (12-18 Mar)	20.6	9.1	65.9	63.0	106.8			
12 (19-25 Mar)	26.0	12.8	64.6	58.7	0.0			
13 (26-01 Apr)	23.9	13.4	66.1	62.6	55.7			
14 (02-08 Apr)	20.6	11.5	65.9	62.3	50.2			
15 (09-15 Apr)	27.0	13.0	60.0	54.9	4.2			
16 (16-22 Apr)	31.0	14.1	59.6	54.1	0.0			
17 (23-29 Apr)	33.4	16.6	56.3	52.0	0.0			
18 (30-06 May)	31.5	16.4	72.0	64.6	17.4			
19 (7-13 May)	32.2	17.3	60.0	54.7	0.0			
20 (14-20 May)	33.0	18.0	66.4	62.0	4.4			
21 (21-27 May)	35.4	18.6	62.0	57.0	4.2			

SHIMLA	Latitude 31° 06'N		Longitude 77° 06'E			Height above MSL 1900 m		
40 (01-07 Oct)	22.5	13.7	96.0	64.0	10.5			
41 (08-14 Oct)	19.4	11.5	100.0	37.0	6.0			
42 (15-21 Oct)	19.4	10.4	81.0	42.0	3.9			
43 (22-28 Oct)	20.3	10.2	82.0	47.0	0.0			
44 (29-04 Nov)	19.7	9.2	70.0	36.0	8.6			
45 (05-11 Nov)	20.0	9.7	76.0	25.0	0.0			
46 (12-18 Nov)	19.2	8.8	87.0	13.0	0.0			
47 (19-25 Nov)	18.5	8.2	51.0	18.0	0.0			
48 (26-02 Dec)	15.4	7.9	55.0	15.0	0.0			

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
49 (03-09 Dec)	18.1	7.8	56.0	21.0	0.0			
50 (10-16 Dec)	12.6	2.3	97.0	24.0	97.9			
51 (17-23 Dec)	15.6	5.0	85.0	29.0	0.0			
52 (24-31 Dec)	14.1	3.1	72.0	14.0	0.0			
1 (01-07 Jan)	12.1	4.6	91.0	24.0	0.0			
2 (08-14 Jan)	14.6	7.5	94.0	12.0	2.2			
3 (15-21 Jan)	12.4	3.1	95.0	29.0	7.5			
4 (22-28 Jan)	9.2	2.1	97.0	58.0	37.2			
5 (29-04 Feb)	10.6	4.1	97.0	32.0	0.0			
6 (05-11 Feb)	13.8	5.2	83.0	30.0	0.0			
7 (12-18 Feb)	15.9	8.2	83.0	21.0	10.6			
8 (19-25 Feb)	15.7	10.3	95.0	21.0	64.7			
9 (26-04 Mar)	10.6	4.0	97.0	43.0	107.9			
10 (05-11 Mar)	14.5	5.1	88.0	32.0	43.2			
11 (12-18 Mar)	15.7	7.8	86.0	24.0	30.1			
12 (19-25 Mar)	20.7	12.9	63.0	28.0	0.0			
13 (26-01 Apr)	19.8	12.8	92.0	17.0	21.1			
14 (02-08 Apr)	15.9	8.0	97.0	57.0	52.5			
15 (09-15 Apr)	19.5	12.3	90.0	41.0	1.5			
16 (16-22 Apr)	22.8	14.3	88.0	25.0	62.3			
17 (23-29 Apr)	22.9	15.0	82.0	41.0	0.2			

NORTH WESTERN PLAINS ZONE

AGRA	Latitude 27.2° N		Longitude 77.9° E		Height above MSL 163.4 m			
40(01-07 Oct)	37.4	23.0	76.4	59.1		4.6		
41(08-14 Oct)	33.7	21.2	76.4	63.6	5.2	4.1		
42(15-21 Oct)	33.2	18.0	83.1	65.0	0.0	3.4		
43(22-28 Oct)	33.5	17.8	77.1	55.3	0.0	3.9		
44(29-04 Nov)	32.2	16.6	79.1	51.9	0.0	3.0		
45(05-11 Nov)	31.3	16.1	82.1	50.6	0.0	2.6		
46(12-18 Nov)	28.4	10.4	77.1	52.3	0.0	2.3		
47(19-25 Nov)	27.9	9.2	86.0	62.9	0.0	1.6		
48(26-02 Dec)	29.1	9.4	83.7	46.6	0.0	3.0		
49(03-09 Dec)	27.8	9.2	86.1	44.3	0.0	2.3		
50(10-16 Dec)	21.1	8.9	74.3	62.3	8.75	1.3		
51(17-23 Dec)	16.1	5.3	81.5	77.0	0.0	0.7		
52(24-31 Dec)	17.1	5.4	86.0	73.9	0.0	0.7		
1(01-07 Jan)	18.7	10.5	83.7	70.9	9.4	1.3		
2(08-14 Jan)	15.2	5.7	99.7	88.3	2.8	0.4		
3(15-21 Jan)	16.4	7.7	100.0	83.9	0.0	1.1		
4(22-28 Jan)	16.2	9.6	94.4	86.1	35.6	1.3		
5(29-04 Feb)	21.7	8.1	93.9	58.4	0.0	1.7		
6(05-11 Feb)	24.2	8.3	86.7	47.0	0.0	1.9		
7(12-18 Feb)	27.4	12.0	89.0	66.1	0.0	1.9		
8(19-25 Feb)	29.6	14.5	88.0	38.4	0.0	2.4		
9(26-04 Mar)	25.1	14.3	94.3	56.3	56.6	1.4		
10(05-11 Mar)	26.2	12.0	90.1	59.9	0.0	3.4		
11(12-18 Mar)	26.0	14.2	92.7	62.9	38.6	1.9		
12(19-25 Mar)	32.5	16.3	79.7	24.9	0.0	3.1		
13(26-01 Apr)	34.4	19.1	85.7	33.6	25	3.9		
14(02-08 Apr)	33.7	18.1	83.7	41.4	19.4	3.7		
15(09-15 Apr)	33.5	19.2	76.6	23.7	22.4	4.1		
16(16-22 Apr)	37.7	21.5	71.9	20.7	0.0	6.1		
17(23-29 Apr)	39.7	22.4	68.8	14.0	0.0	7.1		

DELHI	Latitude 28°38'N		Longitude 77°09' E		Height above MSL 228.6 m			
40(01-07 Oct)	36.7	23.2	84.0	34.0	0.0	6.8	3.5	7.9
41(08-14 Oct)	34.0	20.0	78.0	40.0	0.0	5.1	4.7	7.3
42(15-21 Oct)	30.4	15.5	84.0	38.0	0.0	4.2	3.3	7.2
43(22-28 Oct)	32.1	17.4	92.0	43.0	0.0	3.6	2.1	2.9
44(29-04 Nov)	30.7	15.6	86.0	32.0	0.0	3.8	4.2	3.8

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
45(05-11 Nov)	30.4	15.2	83.0	38.0	0.0	4.7	3.7	4.7
46(12-18 Nov)	27.0	8.0	83.0	38.0	0.0	3.8	3.4	6.0
47(19-25 Nov)	27.0	7.1	88.0	42.0	0.0	3.7	2.3	6.6
48(26-02 Dec)	27.9	10.4	83.0	35.0	0.0	3.8	3.6	6.6
49(03-09 Dec)	27.0	9.0	90.0	45.0	0.0	3.5	4.4	7.7
50(10-16 Dec)	21.7	7.7	93.0	60.0	26.4	3.0	4.1	4.0
51(17-23 Dec)	16.0	5.7	97.0	69.0	0.0	1.7	4.6	2.3
52(24-31 Dec)	16.3	3.8	98.0	77.0	0.0	1.5	3.8	2.3
1(01-07 Jan)	17.9	8.5	96.0	80.0	19.0	1.8	4.9	1.8
2(08-14 Jan)	15.0	5.2	97.0	77.0	1.4	2.1	3.8	1.3
3(15-21 Jan)	18.5	5.3	96.0	61.0	0.0	1.7	3.6	2.9
4(22-28 Jan)	16.0	9.1	96.0	73.0	15.4	1.5	5.0	1.0
5(29-04 Feb)	20.2	7.5	91.0	51.0	0.0	2.3	5.5	5.4
6(05-11 Feb)	22.6	6.7	94.0	38.0	0.0	2.5	3.9	7.0
7(12-18 Feb)	24.7	9.9	94.0	49.0	0.0	3.2	4.1	5.3
8(19-25 Feb)	27.4	15.1	91.0	59.0	0.0	4.4	5.5	3.4
9(26-04 Mar)	23.7	11.7	92.0	55.0	135.4	2.4	5.9	3.8
10(05-11 Mar)	24.1	9.6	92.0	50.0	45.0	3.9	5.0	7.2
11(12-18 Mar)	25.5	12.9	92.0	54.0	0.4	3.9	9.1	4.9
12(19-25 Mar)	29.7	13.5	90.0	39.0	0.0	6.0	5.2	9.6
13(26-01 Apr)	32.9	17.8	86.0	46.0	21.0	4.6	5.4	6.7
14(02-08 Apr)	30.1	17.0	90.0	50.0	45.8	4.5	4.7	6.5
15(09-15 Apr)	31.9	17.7	77.0	46.0	6.0	5.0	5.0	7.2
16(16-22 Apr)	36.5	20.5	73.0	38.0	0.0	7.1	5.1	7.1
17(23-29 Apr)	37.2	21.3	65.0	40.0	0.0	7.8	6.7	8.0
18(30-06 May)	38.5	20.9	65.0	33.0	0.0	9.0	5.1	8.1
19(07-13 May)	41.9	25.8	58.0	37.0	0.0	9.8	6.6	6.3
20(14-20 May)	38.5	23.5	70.0	31.0	0.8	8.6	6.1	7.7
21(21-27 May)	44.2	25.7	50.0	27.0	0.0	10.1	7.9	9.0

Dhaulakuan	Latitude 30.40 N		Longitude 77.50 E			Height above MSL 468 m		
40(01-07 Oct)	31.8	19.8	90.6	76.9	3.1		1.8	3.5
41(08-14 Oct)	31.6	14.3	92.7	68.3	0.0		2.1	7.6
42(15-21 Oct)	28.0	12.9	90.0	63.7	2.2		1.5	7.1
43(22-28 Oct)	27.8	13.5	90.9	67.3	0.4		1.3	3.4
44(29-04 Nov)	27.7	8.0	93.7	53.7	0.0		1.7	4.9
45(05-11 Nov)	28.2	8.9	93.1	63.1	0.0		1.5	6.8
46(12-18 Nov)	26.0	7.2	92.1	58.6	0.0		1.1	7.5
47(19-25 Nov)	25.4	5.2	91.4	56.4	0.0		1.2	8.1
48(26-02 Dec)	24.7	4.3	92.3	60.7	0.0		1.5	8.3
49(03-09 Dec)	24.0	3.3	92.7	62.1	0.0		1.1	7.7
50(10-16 Dec)	19.4	3.7	92.9	65.9	13.9		1.8	4.8
51(17-23 Dec)	19.4	3.1	93.0	61.3	0.0		1.7	5.6
52(24-31 Dec)	21.6	2.3	93.4	57.9	0.0		1.6	6.4
1(01-07 Jan)	17.6	6.0	93.9	73.1	2.1		1.8	3.2
2(08-14 Jan)	18.1	6.0	91.1	71.7	0.0		1.8	4.4
3(15-21 Jan)	19.0	4.9	93.7	67.0	1.2		1.9	5.2
4(22-28 Jan)	17.7	7.9	93.7	77.0	1.6		1.9	1.5
5(29-04 Feb)	19.2	5.5	93.1	64.3	1.9		2.1	3.0
6(05-11 Feb)	22.8	5.4	94.0	61.4	0.0		1.6	7.6
7(12-18 Feb)	22.8	6.1	93.1	66.0	0.0		1.6	3.7
8(19-25 Feb)	25.1	8.9	91.3	63.9	2.1		2.5	4.2
9(26-04 Mar)	21.4	7.2	92.7	62.3	37.1		2.8	3.5
10(05-11 Mar)	23.9	7.1	92.3	48.7	7.6		2.8	6.9
11(12-18 Mar)	25.3	8.9	92.1	50.4	7.2		2.4	5.7
12(19-25 Mar)	29.2	9.7	91.4	51.6			1.9	8.9
13(26-01 Apr)	31.3	12.4	88.9	57.1	2.9		2.5	6.8
14(02-08 Apr)	27.8	12.5	90.0	58.0	2.9		2.9	5.5
15(09-15 Apr)	30.7	12.8	90.0	52.1	0.0		2.0	7.4
16(16-22 Apr)	32.4	14.9	86.0	54.9	1.3		2.6	6.9
17(23-29 Apr)	33.5	14.5	79.0	53.7	0.0		2.8	9.0

DURGAPURA	Latitude 26°51'N		Longitude 75°47' E			Height above MSL 390 m		
44(29-04 Nov)	31.8	18.2	63.0	27.0	0.0	3.4	2.8	6.6
45(05-11 Nov)	31.6	18.1	66.0	27.0	0.0	3.8	3.1	7.5

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)	29.3	12.3	59.0	19.0	0.0	3.0	2.5	8.0
47(19-25 Nov)	29.1	11.2	70.0	21.0	0.0	2.5	2.4	9.2
48(26-02 Dec)	29.5	13.3	69.0	21.0	0.0	3.7	2.9	9.0
49(03-09 Dec)	27.8	10.7	71.0	19.0	0.0	3.4	3.0	9.0
50(10-16 Dec)	21.4	10.7	66.0	46.0	0.0	2.4	4.1	4.2
51(17-23 Dec)	21.5	6.6	84.0	32.0	0.0	1.8	2.9	8.2
52(24-31 Dec)	21.5	5.3	89.0	27.0	0.0	1.8	3.2	8.4
1(01-07 Jan)	20.0	9.5	87.0	50.0	0.0	2.1	4.1	4.7
2(08-14 Jan)	23.2	7.2	86.0	34.0	0.0	2.0	3.8	8.5
3(15-21 Jan)	20.9	7.7	85.0	41.0	0.0	1.9	3.6	6.6
4(22-28 Jan)	17.7	9.6	93.0	62.0	21.0	1.2	4.6	2.5
5(29-04 Feb)	21.4	8.2	78.0	33.0	0.0	2.0	4.8	8.8
6(05-11 Feb)	23.8	11.7	59.0	34.0	1.4	2.9	5.0	9.0
7(12-18 Feb)	27.6	12.7	64.0	26.0	0.0	4.1	4.6	9.6
8(19-25 Feb)	30.6	16.0	74.0	27.0	0.0	3.8	4.3	7.7
9(26-04 Mar)	25.5	13.5	60.0	30.0	29.8	3.1	6.7	6.8
10(05-11 Mar)	26.2	12.9	68.0	26.0	0.0	4.0	5.6	9.5
11(12-18 Mar)	25.6	15.1	79.0	50.0	49.6	3.3	5.8	5.9
12(19-25 Mar)	32.0	18.4	61.0	25.0	0.0	5.2	4.6	9.8
13(26-01 Apr)	35.3	21.5	62.0	29.0	0.6	6.3	5.9	7.7
14(02-08 Apr)	32.3	18.4	66.0	31.0	15.0	5.1	5.4	9.4
15(09-15 Apr)	32.3	19.7	63.0	28.0	1.0	5.5	5.6	7.9

GURDASPUR	Latitude – 32°03'		Longitude – 75°24				Height Above MSL 260 m	
40(01-07 Oct)	31.5	22.4	98.0	77.0	0.0		1.2	
41(08-14 Oct)	29.0	17.0	93.0	59.0	38.0		1.2	
42(15-21 Oct)	28.3	14.8	99.0	48.0	0.0		1.3	
43(22-28 Oct)	28.7	16.2	98.0	56.0	0.0		1.3	
44(29-04 Nov)	27.1	12.9	92.0	45.0	0.0		1.6	
45(05-11 Nov)	26.4	13.4	96.0	47.0	0.0		1.4	
46(12-18 Nov)	25.0	9.1	99.0	44.0	0.0		1.2	
47(19-25 Nov)	23.8	8.5	99.0	44.0	0.0		0.9	
48(26-02 Dec)	24.1	9.1	96.0	46.0	0.0		1.2	
49(03-09 Dec)	23.0	7.5	99.0	46.0	0.0		1.0	
50(10-16 Dec)	17.3	6.6	99.0	65.0	8.5		1.3	
51(17-23 Dec)	12.0	6.5	99.0	94.0	0.0		1.1	
52(24-31 Dec)	13.9	4.9	99.0	80.0	0.0		1.1	
1(01-07 Jan)	14.3	7.1	97.0	83.0	0.0		1.2	
2(08-14 Jan)	11.5	5.8	99.0	91.0	3.5		1.2	
3(15-21 Jan)	16.6	5.4	99.0	72.0	2.5		1.5	
4(22-28 Jan)	15.2	6.7	97.0	76.0	12.5		1.5	
5(29-04 Feb)	17.5	6.5	97.0	63.0	16.5		1.2	
6(05-11 Feb)	20.1	6.0	99.0	60.0	0.0		1.2	
7(12-18 Feb)	22.0	10.8	99.0	68.0	3.5		1.8	
8(19-25 Feb)	21.7	12.0	94.0	84.0	49.0		2.4	
9(26-04 Mar)	19.1	9.6	95.0	68.0	69.0		1.7	
10(05-11 Mar)	19.6	8.2	94.0	65.0	11.5			
11(12-18 Mar)								
12(19-25 Mar)								
13(26-01 Apr)	27.7	16.0	78.0	53.0	9.8		1.6	
14(02-08 Apr)	24.3	15.1	88.0	66.0	46.5		2.2	
15(09-15 Apr)	30.7	17.8	75.0	44.0	0.0		2.0	
16(16-22 Apr)	31.7	19.0	72.0	44.0	25.8		3.5	
17(23-29 Apr)	35.5	19.7	55.0	29.0	0.0		2.1	
18(30-06 May)	34.8	17.7	46.0	23.0	0.0		1.4	
19(07-13 May)	36.5	20.0	54.0	33.0	11.0		2.7	

HISAR	Latitude 29°10'N		Longitude 75° 46'E				Height above MSL 215.2 m	
40(01-07 Oct)	37.0	21.7	76.3	31.6	0.0	5.2	4.4	9.5
41(08-14 Oct)	34.6	18.9	79.7	38.6	20.3	4.9	5.2	9.0
42(15-21 Oct)	29.8	15.3	89.7	38.0	0.0	3.0	2.4	8.0
43(22-28 Oct)	32.4	19.0	85.3	47.1	0.0	2.9	3.5	7.0
44(29-04 Nov)	30.7	14.6	88.1	34.9	1.0	2.7	3.1	6.4

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
45(05-11 Nov)	29.9	14.3	87.1	36.3	0.0	2.8	2.9	6.7
46(12-18 Nov)	27.1	7.7	79.3	28.3	0.0	2.4	1.9	7.1
47(19-25 Nov)	26.6	6.9	87.7	28.9	0.0	2.9	1.5	7.8
48(26-02 Dec)	28.1	9.9	81.3	32.3	0.0	3.0	2.5	7.7
49(03-09 Dec)	26.9	7.9	91.4	35.0	0.0	1.9	2.2	7.8
50(10-16 Dec)	20.5	6.8	94.3	56.4	9.0	1.5	3.6	5.2
51(17-23 Dec)	13.8	5.0	100.0	88.4	0.0	0.3	2.4	1.6
52(24-31 Dec)	15.0	3.9	100.0	70.9	0.0	0.5	2.7	4.0
1(01-07 Jan)	16.1	7.6	96.9	81.4	2.6	0.9	3.3	1.8
2(08-14 Jan)	14.9	6.3	98.0	77.0	4.0	0.9	4.0	2.8
3(15-21 Jan)	18.6	4.8	98.9	62.3	2.8	1.2	3.0	5.9
4(22-28 Jan)	14.7	7.2	98.4	83.4	6.0	1.2	4.0	0.8
5(29-04 Feb)	18.8	6.0	87.7	59.4	8.5	1.6	4.4	4.2
6(05-11 Feb)	21.9	6.2	92.4	45.7	0.0	1.8	3.2	8.2
7(12-18 Feb)	24.3	9.5	90.1	52.9	0.0	2.0	6.6	6.6
8(19-25 Feb)	25.9	14.4	97.4	63.1	3.7	2.3	5.1	4.5
9(26-04 Mar)	22.4	9.2	86.9	57.4	40.4	3.1	5.1	6.0
10(05-11 Mar)	23.5	8.3	93.3	58.0	17.5	2.5	4.0	8.2
11(12-18 Mar)	24.8	11.8	94.1	57.3	49.0	2.8	4.9	6.0
12(19-25 Mar)	29.4	13.9	92.1	43.0	0.0	2.9	2.7	9.1
13(26-01 Apr)	32.0	17.5	88.3	44.7	14.2	4.5	6.0	7.4
14(02-08 Apr)	29.9	17.2	88.0	45.0	68.1	2.9	6.4	8.0
15(09-15 Apr)	32.1	17.9	79.0	40.4	5.5	4.5	4.2	8.5
16(16-22 Apr)	35.8	19.1	67.3	29.6	11.5	6.0	4.6	9.5
17(23-29 Apr)	38.0	21.6	55.6	26.6	0.0	7.8	8.5	9.8
18(30-06 May)	36.6	23.4	48.0	26.0	0.0	7.7	7.8	8.2

JAMMU	Latitude- 32°44' N		Longitude- 74°54" E				Height Above MSL - 356 m	
40(01-07 Oct)	31.7	23.9	91.0	67.0	0.0	3.9		
41(08-14 Oct)	28.8	16.8	81.0	54.0	16.9	3.2		
42(15-21 Oct)	28.1	14.6	79.0	50.0	1.6	3.7		
43(22-28 Oct)	28.4	16.6	83.0	52.0	0.0	3.5		
44(29-04 Nov)	27.1	13.0	85.0	47.0	0.0	3.4		
45(05-11 Nov)	26.8	12.7	88.0	47.0	8.0	2.9		
46(12-18 Nov)	26.1	8.4	83.0	39.0	0.0	3.0		
47(19-25 Nov)	24.7	7.3	85.0	44.0	0.0	2.9		
48(26-02 Dec)	24.8	8.1	90.0	41.0	0.0	2.5		
49(03-09 Dec)	24.9	6.0	91.0	41.0	0.0	2.4		
50(10-16 Dec)	19.8	5.4	92.0	53.0	0.0	1.2		
51(17-23 Dec)	12.9	5.1	97.0	78.0	0.0	0.3		
52(24-31 Dec)	15.8	3.3	94.0	67.0	0.0	0.6		
1(01-07 Jan)	15.9	6.5	90.0	70.0	0.0	0.9		
2(08-14 Jan)	10.9	6.3	97.0	78.0	5.4	0.3		
3(15-21 Jan)	19.2	5.0	92.0	55.0	0.0	1.0		
4(22-28 Jan)	17.3	6.4	96.0	64.0	11.2	0.7		
5(29-04 Feb)	18.3	5.4	91.0	54.0	57.8	0.5		
6(05-11 Feb)	21.4	6.4	86.0	55.0	0.0	1.2		
7(12-18 Feb)	22.6	10.3	85.0	60.0	5.8	1.4		
8(19-25 Feb)	22.8	12.4	89.0	68.0	51.3	0.8		
9(26-04 Mar)	19.5	9.7	88.0	64.0	116.6	0.7		
10(05-11 Mar)	20.6	9.7	91.0	63.0	20.8	0.7		
11(12-18 Mar)	22.6	10.1	89.0	63.0	107.4	0.9		
12(19-25 Mar)	29.1	13.5	83.0	47.0	0.0	2.9		
13(26-01 Apr)	26.1	15.5	85.0	67.0	99.6	2.0		
14(02-08 Apr)	25.0	15.1	83.0	58.0	112.0	1.4		
15(09-15 Apr)	31.4	16.8	74.0	46.0	0.0	3.9		
16(16-22 Apr)	32.1	17.8	77.0	48.0	30.0	4.0		
17(23-29 Apr)	35.1	19.2	63.0	63.0	0.0	5.4		
18(30-06 May)	33.8	16.6	67.0	35.0	0.0	5.3		

KARNAL	Latitude 29°43'N		Longitude 76°58'E				Height above MSL 245 m	
40(01-07 Oct)	34.3	22.7	95.4	48.9	00.0	03.2	02.0	05.3
41(08-14 Oct)	32.0	17.4	95.4	52.0	65.6	02.6	02.7	08.4

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)	29.1	15.0	94.3	43.7	00.0	02.5	02.3	08.8
43(22-28 Oct)	29.9	17.5	98.0	57.0	00.0	02.0	01.6	02.2
44(29-04 Nov)	29.2	14.0	88.1	32.6	00.0	02.4	02.2	06.8
45(05-11 Nov)	30.2	14.3	82.3	31.3	00.0	03.5	02.8	07.4
46(12-18 Nov)	27.1	08.6	84.3	26.6	00.0	02.2	02.2	08.0
47(19-25 Nov)	26.5	07.2	88.3	29.0	00.0	02.0	01.6	07.7
48(26-02 Dec)	26.7	10.5	81.1	31.1	00.0	02.3	02.9	07.6
49(03-09 Dec)	25.7	08.3	85.1	36.6	00.0	02.5	02.9	07.9
50(10-16 Dec)	19.3	07.8	92.6	57.9	06.4	01.4	03.1	04.7
51(17-23 Dec)	14.2	05.9	100.0	73.1	00.0	01.0	03.1	02.0
52(24-31 Dec)	14.7	05.0	98.9	68.1	00.0	01.1	02.6	02.3
1(01-07 Jan)	16.5	08.8	96.1	75.6	06.6	01.3	03.0	01.9
2(08-14 Jan)	13.4	06.5	97.0	82.0	01.2	00.8	02.5	01.1
3(15-21 Jan)	17.1	05.9	99.6	74.6	01.0	01.3	02.5	03.6
4(22-28 Jan)	15.1	07.6	98.7	80.3	06.2	01.2	03.2	02.3
5(29-04 Feb)	18.9	05.9	94.6	57.4	25.5	01.8	04.2	05.5
6(05-11 Feb)	20.7	05.9	96.6	51.3	00.0	01.9	02.0	08.7
7(12-18 Feb)	22.5	09.6	93.9	61.9	00.0	02.3	03.2	05.6
8(19-25 Feb)	25.1	14.2	90.0	60.0	02.8	02.6	04.8	03.8
9(26-04 Mar)	21.1	10.6	92.1	56.1	103.0	02.2	05.0	05.0
10(05-11 Mar)	23.0	09.2	93.3	52.3	19.0	02.2	03.5	08.3
11(12-18 Mar)	24.5	12.3	92.4	56.7	00.0	02.4	04.1	04.4
12(19-25 Mar)	28.3	14.0	93.7	46.7	00.0	02.9	03.9	09.4
13(26-01 Apr)	30.5	16.8	87.9	49.6	07.0	03.1	04.9	06.6
14(02-08 Apr)	28.3	15.6	90.9	48.3	56.0	02.3	04.5	08.9
15(09-15 Apr)	31.7	16.8	81.4	33.9	00.4	03.6	03.4	08.5
16(16-22 Apr)	36.2	19.3	70.7	28.9	11.8	04.6	04.9	09.4
17(23-29 Apr)	36.5	19.8	63.1	29.9	00.0	07.0	07.5	09.3
18(30-06 May)	37.2	19.8	60.0	20.3	00.0	06.9	04.3	10.2

LUDHIANA	Latitude 30°54' N		Longitude 75°52' E				Height above MSL 247 m	
41(08-14 Oct)	31.1	17.9	97.0	70.0	5.6	25.6		8.3
42(15-21 Oct)	30.1	15.7	89.0	64.0	0.0	22.4		8.3
43(22-28 Oct)	30.4	17.9	87.0	68.0	2.5	15.7		3.3
44(29-04 Nov)	29.1	14.1	90.0	38.0	0.0	22.2		7.2
45(05-11 Nov)	28.7	14.2	90.0	37.0	0.0	17.2		5.5
46(12-18 Nov)	26.1	8.9	90.0	31.0	0.0	17.6		8.1
47(19-25 Nov)	25.4	8.3	94.0	33.0	0.0	14.8		7.7
48(26-02 Dec)	26.2	9.8	91.0	47.0	0.0	14.0		7.4
49(03-09 Dec)	25.1	7.7	93.0	42.0	0.0	15.0		7.9
50(10-16 Dec)	18.6	7.2	92.0	60.0	42.2	11.2		4.0
51(17-23 Dec)	12.5	6.9	95.0	81.0	0.0	5.4		1.4
52(24-31 Dec)	13.3	5.2	97.0	82.0	0.0	6.2		1.8
1(01-07 Jan)	16.2	8.2	97.0	74.0	0.4	7.2		0.9
2(08-14 Jan)	13.3	7.3	95.0	80.0	4.6	6.1		0.3
3(15-21 Jan)	17.4	6.2	95.0	69.0	6.2	7.2		5.7
4(22-28 Jan)	14.7	7.7	97.0	77.0	14.6	6.0		3.1
5(29-04 Feb)	18.6	7.1	92.0	61.0	11.6	13.2		5.9
6(05-11 Feb)	20.9	7.2	95.0	59.0	0.0	13.6		7.4
7(12-18 Feb)	23.9	11.2	93.0	62.0	8.4	17.2		5.8
8(19-25 Feb)	23.5	14.5	94.0	77.0	19.0	15.4		3.7
9(26-04 Mar)	20.3	10.6	93.0	67.0	24.8	14.8		8.3
10(05-11 Mar)	22.5	9.2	94.0	61.0	8.2	16.4		8.2
11(12-18 Mar)	24.1	12.5	93.0	63.0	36.2	18.5		6.1
12(19-25 Mar)	29.0	15.2	96.0	53.0	0.0	28.2		10.2
13(26-01 Apr)	30.2	17.7	87.0	52.0	15.8	34.2		6.8
14(02-08 Apr)	27.1	17.3	85.0	60.0	3.4	28.0		6.7
15(09-15 Apr)	32.6	18.1	79.0	49.0	17.6	40.6		9.4
16(16-22 Apr)	34.7	20.3	80.0	45.0	8.0	50.0		9.0
17(23-29 Apr)	36.6	21.7	56.0	25.0	0.0	63.5		10.4

NAGINA	Latitude N29° 28'N		Longitude 78° 32'E				Height above MSL 245 m	
45(05-11 Nov)	26.7	12.3	95.0	56.0	0.0	1.9	2.4	8.2

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)	25.6	7.4	100.0	58.0	0.0	2.0	2.0	8.2
47(19-25 Nov)	25.7	6.5	100.0	58.0	0.0	1.7	1.2	8.3
48(26-02 Dec)	25.6	7.1	99.0	61.0	0.0	2.1	2.0	8.0
49(03-09 Dec)	23.1	6.4	100.0	62.0	0.0	1.3	1.6	7.2
50(10-16 Dec)	19.2	6.4	100.0	67.0	15.0	1.0	3.3	6.2
51(17-23 Dec)	15.2	6.2	99.0	79.0	0.0	0.6	2.4	3.5
52(24-31 Dec)	12.4	3.9	100.0	64.0	0.0	0.8	3.4	6.3
1(01-07 Jan)	16.5	9.1	97.0	82.0	25.0	1.0	4.0	2.6
2(08-14 Jan)	13.9	5.6	97.0	83.0	0.0	0.8	3.7	0.3
3(15-21 Jan)	15.4	6.5	100.0	81.0	0.0	1.0	2.8	1.4
4(22-28 Jan)	16.3	8.9	100.0	86.0	8.8	1.3	4.2	2.5
5(29-04 Feb)	19.8	8.2	100.0	67.0	1.0	0.9	5.4	5.2
6(05-11 Feb)	21.7	7.3	100.0	47.0	0.0	2.5	3.8	7.9
7(12-18 Feb)	23.1	9.0	99.0	59.0	0.0	1.8	2.8	6.2
8(19-25 Feb)	25.9	12.8	98.0	62.0	5.6	1.9	3.6	6.4
9(26-04 Mar)	22.3	12.7	97.0	69.0	66.4	1.4	4.9	4.6
10(05-11 Mar)	23.9	10.0	98.0	59.0	13.0	2.2	5.1	8.7
11(12-18 Mar)	26.0	14.8	96.0	60.0	0.0	3.4	4.8	7.0
12(19-25 Mar)	28.8	13.9	95.0	50.0	0.0	4.4	4.5	8.8
13(26-01 Apr)	28.0	14.1	96.0	55.0	0.0	3.6	3.6	8.0
14(02-08 Apr)	28.2	15.5	88.0	42.0	23.0	3.0	4.6	6.8
15(09-15 Apr)	31.3	16.7	84.0	34.0	2.0	3.7	4.4	8.1
16(16-22 Apr)	34.0	19.0	80.0	28.0	3.0	4.4	4.8	8.7
17(23-29 Apr)	35.4	19.9	69.0	33.0	5.0	6.8	6.6	10.3
18(30-06 May)	34.9	18.7	70.0	28.0	4.8	6.3	4.8	10.8
19(07-13 May)	39.0	24.1	70.0	30.0	2.2	6.4	4.5	8.6

PANTNAGAR	Latitude 29°N		Longitude 79° 30´E			Height above MSL 243.84 m		
40(01-07 Oct)	32.2	22.6	90.0	60.0	5.6	3.0	2.5	4.9
41(08-14 Oct)	31.4	17.9	87.0	55.0	0.0	3.2	4.2	8.3
42(15-21 Oct)	29.1	15.5	91.0	51.0	0.0	3.1	2.5	8.7
43(22-28 Oct)	29.3	16.6	88.0	55.0	0.0	2.4	1.7	3.9
44(29-04 Nov)	28.5	13.5	91.0	46.0	0.0	2.7	1.9	5.6
45(05-11 Nov)	29.2	12.8	91.0	46.0	0.0	2.5	2.8	8.2
46(12-18 Nov)	27.7	9.5	94.0	34.0	0.0	2.8	2.5	8.1
47(19-25 Nov)	26.1	8.6	92.0	38.0	0.0	2.3	2.0	8.1
48(26-02 Dec)	26.0	8.7	92.0	40.0	0.0	2.3	2.4	7.2
49(03-09 Dec)	24.2	9.9	94.0	49.0	0.0	1.7	2.0	4.9
50(10-16 Dec)	20.2	8.2	91.0	57.0	40.1	2.1	5.5	5.0
51(17-23 Dec)	16.6	7.4	96.0	78.0	0.0	1.1	3.6	3.6
52(24-31 Dec)	19.1	5.5	96.0	57.0	0.0	1.1	3.7	5.6
1(01-07 Jan)	18.0	11.2	93.0	77.0	21.9	1.3	5.5	2.0
2(08-14 Jan)	15.5	8.4	95.0	75.0	0.0	0.7	4.1	2.3
3(15-21 Jan)	16.2	8.1	94.0	71.0	0.0	1.3	3.8	1.3
4(22-28 Jan)	17.2	8.6	95.0	75.0	11.0	1.1	5.2	3.1
5(29-04 Feb)	20.2	8.1	89.0	62.0	0.0	1.7	6.0	5.1
6(05-11 Feb)	22.3	7.4	94.0	54.0	0.0	2.3	3.5	7.1
7(12-18 Feb)	23.7	9.8	88.0	51.0	0.0	1.9	3.5	4.6
8(19-25 Feb)	27.1	13.4	90.0	55.0	7.0	2.4	4.1	4.8
9(26-04 Mar)	22.8	13.0	92.0	61.0	61.1	2.6	6.2	5.2
10(05-11 Mar)	25.8	10.2	89.0	45.0	0.0	2.8	5.5	8.3
11(12-18 Mar)	26.8	12.7	90.0	51.0	1.2	3.0	5.3	6.8
12(19-25 Mar)	30.4	13.7	88.0	45.0	0.0	3.7	4.1	9.6
13(26-01 Apr)	30.9	17.7	86.0	44.0	26.2	4.1	5.5	7.4
14(02-08 Apr)	29.4	15.0	89.0	45.0	18.9	4.1	4.8	6.9
15(09-15 Apr)	31.9	16.6	82.0	36.0	0.0	5.0	4.9	7.7
16(16-22 Apr)	35.3	18.5	74.0	35.0	0.0	6.6	6.0	8.7
17(23-29 Apr)	37.7	19.2	65.0	34.0	1.2	7.0	8.2	9.0

SRIGANGANAGAR		Latitude 28° 4'N			Longitude 72° 30´E		Height above MSL 175.6 m	
40(01-07 Oct)	38.4	19.9	79.0	49.9	0.0			8.2
41(08-14 Oct)	33.8	16.9	84.6	64.9	13.6			7.4
42(15-21 Oct)	32.4	13.6	89.7	52.0	0.0			8.2

Julian weeks	Temperature^{0}C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
43(22-28 Oct)	33.5	16.3	88.7	60.6	0.0			6.5
44(29-04 Nov)	31.6	15.8	84.6	56.9	0.0			5.7
45(05-11 Nov)	29.9	14.6	82.9	50.3	0.0			5.2
46(12-18 Nov)	30.6	8.9	78.7	47.1	0.0			7.7
47(19-25 Nov)	28.0	9.1	89.6	54.3	0.0			7.1
48(26-02 Dec)	29.4	11.7	85.1	56.1	0.0			7.2
49(03-09 Dec)	28.4	10.0	91.3	54.0	0.0			7.4
50(10-16 Dec)	21.1	5.9	93.0	62.4	0.0			4.9
51(17-23 Dec)	12.8	5.4	99.6	86.7	0.0			1.3
52(24-31 Dec)	15.4	4.5	99.6	79.1	0.0			2.8
1(01-07 Jan)	17.2	6.9	99.6	82.1	0.0			1.4
2(08-14 Jan)	13.6	5.6	100.0	83.9	6.0			0.9
3(15-21 Jan)	20.7	7.2	98.3	62.6	1.2			6.1
4(22-28 Jan)	15.7	7.6	98.0	72.4	1.2			0.8
5(29-04 Feb)	20.9	8.0	91.6	59.9	1.2			6.9
6(05-11 Feb)	23.7	8.9	91.1	52.9	0.0			7.2
7(12-18 Feb)	26.8	11.3	91.9	57.3	0.0			5.7
8(19-25 Feb)	25.9	14.7	94.6	64.0	4.7			2.5
9(26-04 Mar)	21.9	9.8	87.1	57.3	43.8			5.3
10(05-11 Mar)	21.6	10.4	91.0	61.3	7.9			5.8
11(12-18 Mar)	25.8	12.8	91.7	57.3	26.7			6.6
12(19-25 Mar)	32.0	16.3	86.3	46.4	0.0			7.1
13(26-01 Apr)	32.5	17.3	89.7	50.7	0.1			7.1
14(02-08 Apr)	30.3	16.7	88.7	48.6	17.3			6.9
15(09-15 Apr)	34.6	18.2	77.1	45.0	13.2			8.7

NORTH EASTERN PLAINS ZONE

COOCHBEHAR	Latitude 26^{0}19'86" N			Longitude 89^{0}23'53" E			Height above MSL 43 m	
45(05-11 Nov)	16.9	32.4	76.4	81.4	0.0		3.1	3.8
46(12-18 Nov)	17.7	29.9	86.4	90.7	0.0		3.4	3.6
47(19-25 Nov)	15.7	29.6	87.1	87.9	0.0		2.7	2.9
48(26-02 Dec)	14.4	27.3	89.3	94.3	0.0		3.1	3.2
49(03-09 Dec)	12.9	28.7	80.7	90.7	0.0		2.6	3.6
50(10-16 Dec)	12.4	22.9	93.6	97.1	0.0		3.0	3.3
51(17-23 Dec)	12.1	25.3	85.7	85.0	0.4		3.4	3.4
52(24-31 Dec)	8.3	25.0	82.9	85.7	0.0		3.2	3.9
1(01-07 Jan)	8.4	28.1	82.1	73.6	0.0		3.9	3.1
2(08-14 Jan)	13.0	22.6	85.7	91.6	23.0		2.6	3.7
3(15-21 Jan)	8.7	24.3	84.9	80.4	0.0		4.5	4.2
4(22-28 Jan)	9.6	24.6	76.9	90.4	0.0		4.2	5.5
5(29-04 Feb)	10.4	22.9	83.7	94.9	0.1		6.4	4.8
6(05-11 Feb)	8.4	25.1	72.0	83.9	0.0		6.9	8.2
7(12-18 Feb)	10.4	26.0	71.4	89.4	0.0		6.6	5.8
8(19-25 Feb)	11.6	26.4	66.1	79.0	15.5		3.3	8.3
9(26-04 Mar)	15.9	28.9	66.9	85.0	0.0		5.6	7.4
10(05-11 Mar)	16.6	28.6	64.0	69.7	0.2		4.1	8.8
11(12-18 Mar)	14.1	30.3	52.6	71.0	0.0		6.3	8.6
12(19-25 Mar)	15.7	30.9	53.7	69.3	0.0		6.1	8.4
13(26-01 Apr)	15.1	30.9	56.3	73.0	1.5		4.8	9.0
14(02-08 Apr)	15.8	30.3	54.2	75.2	0.0		5.9	5.9
15(09-15 Apr)	16.3	32.5	55.9	85.2	0.0		4.5	5.8

FAIZABAD	Latitude 26^{0}47' N			Longitude 82^{0}12' E			Height above MSL 113 m	
40(01-07 Oct)	32.8	21.6	85.2	63.0	4.4			6.0
41(08-14 Oct)	30.5	19.7	87.0	64.1	86.4			4.2
42(15-21 Oct)	29.2	17.7	84.5	61.0	7.4			5.7
43(22-28 Oct)	30.6	17.4	80.4	59.4	0.0			5.5
44(29-04 Nov)	29.9	14.9	81.7	55.0	0.0			5.4
45(05-11 Nov)	30.0	13.7	88.8	51.2	0.0			5.2
46(12-18 Nov)	28.0	10.0	85.8	49.2	0.0			5.5
47(19-25 Nov)	27.2	8.2	85.2	48.5	0.0			6.0
48(26-02 Dec)	27.5	8.6	85.0	48.1	0.0			5.0

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
49(03-09 Dec)	23.2	7.9	97.8	49.5	0.0			1.9
50(10-16 Dec)	19.2	8.0	95.2	60.5	19.1			1.7
51(17-23 Dec)	17.0	5.9	96.5	69.5	0.0			3.1
52(24-31 Dec)	16.6	5.1	95.8	71.7	0.0			3.1
1(01-07 Jan)	18.6	11.3	91.8	74.4	27.0			1.2
2(08-14 Jan)	14.8	6.4	91.7	75.0	0.0			0.3
3(15-21 Jan)	14.3	6.8	93.5	79.7	0.0			0.9
4(22-28 Jan)	20.0	10.3	88.1	66.7	8.9			3.0
5(29-04 Feb)	20.8	8.2	86.5	59.7	3.2			5.6
6(05-11 Feb)	21.5	8.0	86.5	60.5	0.0			4.1
7(12-18 Feb)	25.0	10.5	84.1	49.7	0.0			3.3
8(19-25 Feb)	28.1	14.0	82.2	46.4	0.0			4.7
9(26-04 Mar)	24.9	14.6	86.0	59.0	49.5			2.5
10(05-11 Mar)	27.0	11.6	81.7	49.2	0.0			7.0
11(12-18 Mar)	29.1	13.1	84.4	49.7	4.2			4.4
12(19-25 Mar)	30.5	15.0	81.4	44.5	0.0			8.2
13(26-01 Apr)	33.0	17.2	82.5	42.5	2.5			4.2
14(02-08 Apr)	32.2	16.7	76.7	46.0	0.0			4.6
15(09-15 Apr)	33.7	18.5	78.6	45.7	9.6			5.2

IARI PUSA BIHAR	Latitude 25.98° N		Longitude 85.67° E				Height above MSL 52.12 m	
49(03-09 Dec)	16.7	10.7	90.0	54.0	0.6	0.1	1.5	0.7
50(10-16 Dec)	21.6	11.8	90.0	67.0	0.0	0.8	2.3	1.1
51(17-23 Dec)	20.8	8.4	92.0	61.0	0.0	1.1	3.2	4.0
52(24-31 Dec)	15.4	7.5	91.0	75.0	0.0	0.4	3.9	1.2
1(01-07 Jan)	21.7	13.4	86.0	72.0	1.0	1.0	4.2	2.3
2(08-14 Jan)	17.8	8.6	88.0	73.0	0.0	0.8	3.6	1.7
3(15-21 Jan)	16.2	7.1	90.0	71.0	0.0	0.7	3.9	1.7
4(22-28 Jan)	21.6	9.6	90.0	59.0	0.0	1.3	3.3	5.4
5(29-04 Feb)	22.3	8.1	88.0	52.0	0.1	1.5	3.2	5.5
6(05-11 Feb)	22.9	9.9	89.0	55.0	0.0	2.2	4.2	6.3
7(12-18 Feb)	24.3	11.5	88.0	52.0	0.0	1.8	3.7	3.7
8(19-25 Feb)	27.5	15.4	93.0	62.0	0.9	1.6	2.6	1.3
9(26-04 Mar)	26.7	15.9	91.0	64.0	1.5	1.8	3.9	2.4
10(05-11 Mar)	28.0	11.3	82.0	39.0	0.0	3.7	4.2	8.8
11(12-18 Mar)	28.9	14.8	86.0	49.0	0.0	3.7	5.2	7.3
12(19-25 Mar)	31.9	15.2	80.0	33.0	0.0	4.5	3.3	9.9
13(26-01 Apr)	32.9	20.5	89.0	51.0	2.8	4.1	5.0	6.3
14(02-08 Apr)	34.0	19.0	85.0	36.0	0.0	4.7	4.3	7.0

KALYANI	Latitude 22°57'N		Longitude 88°20'E				Height above MSL 9.75 m	
44(29-04 Nov)	32.4	19.8	83.7	59.7	0.0	12.3	0.0	8.0
45(05-11 Nov)	33.5	19.7	81.3	56.6	0.0	12.5	0.0	7.0
46(12-18 Nov)	32.5	15.8	77.3	47.1	0.0	11.7	0.0	7.6
47(19-25 Nov)	31.3	13.0	78.0	45.9	0.0	9.6	0.0	7.7
48(26-02 Dec)	30.7	12.4	82.7	49.3	0.0	8.3	0.0	6.6
49(03-09 Dec)	28.9	13.7	86.4	60.3	0.0	7.5	0.0	4.9
50(10-16 Dec)	26.3	13.9	87.1	59.9	0.0	6.4	0.0	3.8
51(17-23 Dec)	26.3	10.5	84.9	51.4	Trace	8.5	0.0	7.3
52(24-31 Dec)	24.6	9.9	87.3	59.4	0.0	8.0	0.0	5.4
1(01-07 Jan)	27.0	16.0	89.4	65.9	2.5	6.9	0.0	3.4
2(08-14 Jan)	24.8	9.6	85.0	57.0	0.0	6.8	0.0	6.1
3(15-21 Jan)	25.6	9.8	85.4	58.7	0.0	8.1	0.0	7.3
4(22-28 Jan)	29.2	11.0	76.4	49.6	0.0	9.9	0.0	8.1
5(29-04 Feb)	28.1	10.9	80.3	46.1	0.0	10.7	0.0	6.8
6(05-11 Feb)	28.7	12.7	78.1	43.6	0.0	12.2	0.0	6.4
7(12-18 Feb)	31.1	15.5	85.1	51.4	8.3	12.3	0.0	5.4
8(19-25 Feb)	34.2	19.7	85.9	50.1	5.3	15.1	0.0	7.2
9(26-04 Mar)	35.1	20.7	86.1	46.3	5.3	20.3	0.0	7.9
10(05-11 Mar)	33.5	15.9	77.4	35.1	2.3	22.3	0.0	9.6
11(12-18 Mar)	36.2	18.3	71.0	34.3	0.0	24.5	0.0	9.2
12(19-25 Mar)	37.3	18.9	80.4	33.9	0.0	27.6	0.0	9.4
13(26-01 Apr)	35.7	24.1	92.3	49.9	13.3	24.5	0.3	6.3

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
14(02-08 Apr)	36.1	24.1	90.9	59.9	20.1	23.9	0.2	7.0
15(09-15 Apr)	36.8	24.3	88.6	50.6	23.8	23.3	0.0	6.7
16(16-22 Apr)	37.1	25.6	85.7	53.3	4.3	28.3	0.1	7.0

KANPUR	Latitude 26°29'N		Longitude 80°18'E			Height above MSL 125.9 m		
40(01-07 Oct)	35.0	23.9	80.4	63.1	--	4.4	3.5	7.4
41(08-14 Oct)	31.8	21.4	87.5	59.8	38.8	4.5	4.8	7.5
42(15-21 Oct)	30.2	18.7	90.0	47.0	21.6	3.6	3.1	7.5
43(22-28 Oct)	31.2	18.2	90.5	46.8	--	3.0	2.7	8.0
44(29-04 Nov)	31.2	16.9	79.0	41.1	--	2.8	2.9	4.0
45(05-11 Nov)	31.0	16.0	84.1	42.1	--	2.7	2.5	5.0
46(12-18 Nov)	27.7	11.4	82.2	36.7	--	2.4	2.7	4.9
47(19-25 Nov)	27.1	9.7	87.5	41.7	--	2.4	1.9	6.4
48(26-02 Dec)	28.7	12.1	80.0	40.8	--	2.3	3.4	6.6
49(03-09 Dec)	26.1	10.9	83.8	44.4	--	2.4	4.6	4.2
50(10-16 Dec)	21.6	10.1	91.0	54.0	16.8	2.2	4.5	3.5
51(17-23 Dec)	14.4	7.4	96.5	69.1	--	2.0	6.2	1.9
52(24-31 Dec)	16.0	5.7	99.5	69.4	--	2.0	2.9	2.8
1(01-07 Jan)	20.2	11.4	96.0	72.2	9 2	1.6	5.0	1.4
2(08-14 Jan)	14.0	6.3	97.0	80.0	--	1.6	3.2	2.0
3(15-21 Jan)	14.2	8.4	96.0	81.4	--	1.0	3.5	0.2
4(22-28 Jan)	17.9	9.4	97.7	78.5	14.9	1.0	4.2	1.7
5(29-04 Feb)	21.1	8.3	91.5	60.5	10.3	1.1	6.1	5.8
6(05-11 Feb)	21.9	10.2	94.5	63.8	--	1.3	4.7	4.4
7(12-18 Feb)	25.8	11.9	88.4	55.1	--	1.4	4.4	8.1
8(19-25 Feb)	29.2	14.9	95.1	60.7	--	1.6	4.1	6.9
9(26-04 Mar)	26.3	16.2	81.1	65.2	11.5	1.8	6.3	4.8
10(05-11 Mar)	26.4	12.9	86.0	55.2	--	2.0	5.3	5.8
11(12-18 Mar)	26.8	13.9	89.8	61.7	95.0	1.9	5.6	6.4
12(19-25 Mar)	29.8	15.7	82.0	49.1	83.0	2.0	6.0	10.0
13(26-01 Apr)	33.6	18.4	83.4	48.2	4.6	2.2	2.7	7.8
14(02-08 Apr)	32.8	18.0	75.0	49.0	--	2.5	3.9	7.3
15(09-15 Apr)	32.6	18.1	76.5	58.1	4.8	2.8	5.6	6.8
16(16-22 Apr)	42.2	21.4	74.5	50.7	--	3.1	5.4	7.9
17(23-29 Apr)	36.7	22.2	73.7	57.2	--	3.8	9.1	8.6

RANCHI	Latitude 23°21'N		Longitude 85°20'E			Height above MSL 629 m		
40(01-07 Oct)	30.4	19.9	80.9	71.7	0.0	31.7	--	8.8
41(08-14 Oct)	29.7	20.1	81.4	71.4	36.3	17.7	--	6.3
42(15-21 Oct)	26.5	15.2	81.1	70.9	0.0	25.5	2.0	8.3
43(22-28 Oct)	27.9	14.9	81.1	68.9	3.1	16.3	1.4	4.7
44(29-04 Nov)	27.7	13.2	81.6	57.6	0.0	25.9	2.0	8.6
45(05-11 Nov)	26.4	11.7	81.4	69.1	0.0	22.5	2.8	9.3
46(12-18 Nov)	26.0	10.5	82.0	70.7	0.0	22.9	1.9	9.4
47(19-25 Nov)	24.0	4.7	83.0	63.0	0.0	21.9	2.0	8.6
48(26-02 Dec)	25.0	5.8	81.4	69.3	0.0	21.9	2.8	8.8
49(03-09 Dec)	25.8	5.7	80.9	68.3	0.0	26.6	2.9	8.2
50(10-16 Dec)	24.6	6.0	84.3	68.3	0.0	17.7	1.9	6.3
51(17-23 Dec)	18.0	2.7	82.1	69.1	0.0	24.0	2.9	5.6
52(24-31 Dec)	17.3	2.4	81.5	70.0	0.0	23.5	2.2	9.8
1(01-07 Jan)	21.3	9.6	82.6	71.7	22.2	11.6	5.5	2.5
2(08-14 Jan)	19.1	5.5	82.4	70.6	0.0	20.6	2.5	8.5
3(15-21 Jan)	19.2	4.4	82.6	71.1	0.0	22.0	1.6	8.3
4(22-28 Jan)	24.3	10.5	82.7	71.0	0.0	24.6	2.3	7.5
5(29-04 Feb)	22.4	8.7	82.7	70.4	0.0	23.8	1.6	8.6
6(05-11 Feb)	25.8	11.1	82.0	67.3	0.0	20.6	2.9	7.3
7(12-18 Feb)	25.9	12.8	83.9	66.3	0.0	27.0	2.5	8.2
8(19-25 Feb)	28.8	14.6	83.9	64.7	0.0	27.6	2.7	9.4
9(26-04 Mar)	28.4	16.9	82.4	66.7	12.2	21.7	2.1	5.3
10(05-11 Mar)	26.7	14.5	82.9	64.1	0.0	25.4	2.9	9.4
11(12-18 Mar)	30.5	17.0	82.7	58.9	0.0	26.8	4.0	8.6
12(19-25 Mar)	31.0	16.1	81.6	60.7	0.0	30.6	3.0	9.5
13(26-01 Apr)	33.8	21.4	83.9	67.4	0.0	25.6	2.6	8.1

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
14(02-08 Apr)	34.3	23.1	82.1	70.0	0 0	34.2	3.6	9.8
15(09-15 Apr)	32.0	20.2	82.6	68.9	24.7	28.0	3.7	7.5
16(16-22 Apr)	34.3	22.4	82.0	68.0	0 0	28.1	4.5	7.8
17(23-29 Apr)	31.8	19.1	82.7	66.6	34.8	24.7	4.2	6.7
18 (30-06 May)	35.9	22.9	83.4	63.0	10.2	30.5	3.9	8.5

VARANASI	Latitude 25° 20' N		Longitude 83° 03' E		Height above MSL 75.5 m			
40(01-07 Oct)	32.2	24.2	79.0	64.0	0.0	3.0	5.0	6.0
41(08-14 Oct)	31.2	24.0	88.0	68.0	50.7	3.1	1.8	4.0
42(15-21 Oct)	29.8	19.8	88.0	69.0	0.0	3.4	1.6	5.2
43(22-28 Oct)	29.8	19.2	83.0	58.0	6.2	4.1	3.6	9.3
44(29-04 Nov)	30.4	18.0	85.0	41.0	0.0	3.1	1.2	7.2
45(05-11 Nov)	31.4	16.3	86.0	39.0	0.0	2.6	3.7	6.1
46(12-18 Nov)	27.5	13.6	83.0	37.0	0.0	1.7	1.6	6.8
47(19-25 Nov)	26.9	11.0	89.0	36.0	0.0	1.8	0.8	6.8
48(26-02 Dec)	27.8	11.9	84.0	49.0	0.0	2.4	1.2	6.8
49(03-09 Dec)	24.5	9.4	85.0	45.0	0.0	2.3	1.3	7.2
50(10-16 Dec)	21.2	11.5	89.0	58.0	2.8	2.0	1.9	5.4
51(17-23 Dec)	19.3	8.1	94.0	54.0	0.0	1.7	1.3	7.2
52(24-31 Dec)	17.9	6.2	93.0	65.0	0.0	1.9	1.0	7.3
1(01-07 Jan)	20.0	13.3	96.0	74.0	33.1	0.8	3.7	2.8
2(08-14 Jan)	14.6	8.3	90.0	77.0	0.0	0.8	3.1	1.8
3(15-21 Jan)	14.5	7.8	91.0	74.0	0.0	0.5	2.4	1.0
4(22-28 Jan)	19.9	11.8	94.0	69.0	10.6	0.7	2.0	3.5
5(29-04 Feb)	22.1	10.2	86.0	63.0	3.5	1.2	2.3	5.2
6(05-11 Feb)	22.5	11.0	88.0	56.0	0.0	1.8	2.3	6.6
7(12-18 Feb)	25.6	13.1	84.0	52.0	0.0	2.2	2.2	6.9
8(19-25 Feb)	29.3	14.9	87.0	48.0	0.0	2.7	1.9	7.2
9(26-04 Mar)	25.6	17.4	89.0	62.0	11.8	2.5	3.2	3.1
10(05-11 Mar)	28.0	13.9	80.0	38.0	0.0	3.2	3.6	9.5
11(12-18 Mar)	28.1	16.3	79.0	49.0	8.0	3.4	3.7	6.9
12(19-25 Mar)	32.2	16.7	69.0	38.0	0.0	4.6	3.7	9.8
13(26-01 Apr)	34.1	20.9	74.0	40.0	0.0	3.7	2.4	6.9
14(02-08 Apr)	35.2	20.3	60.0	39.0	7.0	4.9	3.4	8.2
15(09-15 Apr)	33.9	20.6	64.0	44.0	29.9	4.5	4.0	7.6
16(18-22 Apr)	36.6	23.2	68.0	36.0	24.4	5.4	3.8	8.2
17(23-29 Apr)	35.0	24.8	68.0	44.0	0.0	6.4	7.2	6.9
18(30-06 May)	39.0	23.6	67.0	37.0	0.0	6.0	3.8	9.7

CENTRAL ZONE

BILASPUR	Latitude 22° 9' N		Longitude 82° 12' E		Height above MSL 292.3 m			
40 (01-07 Oct)	33.3	22.4	92.3	60.4	15.2	3.1		
41 (08-14 Oct)	30.9	23.0	89.8	69.8	86.2	2.6		
42 (15-21 Oct)	30.9	21.1	95.4	61.3	0.4	2.4		
43 (22-28 Oct)	29	19.0	94.8	63.3	1	2.1		
44 (29-04 Nov)	30.2	15.8	94.7	46.6	0	2.2		
45 (05-11 Nov)	30	16.5	89.3	51.1	0	2		
46 (12-18 Nov)	30.4	16.5	87.3	42.8	0	2.4		
47 (19-25 Nov)	28.8	10.9	86.8	39.8	0	2		
48 (26-02 Dec)	29.6	11.2	94.3	36.8	0	2		
49 (03-09 Dec)	28.4	10.2	88.7	38.8	0	2		
50 (10-16 Dec)	27.6	15	90.3	53.7	1	1.6		
51 (17-23 Dec)	24.5	8.6	95.4	43.6	0	2.1		
52 (24-31 Dec)	24.9	9.1	92.4	44.6	3.8	1.8		
1 (01-07 Jan)	23.6	14	97.3	72.8	23.8	1.4		
2 (08-14 Jan)	25	8.3	93.4	49	0	1.8		
3 (15-21 Jan)	25.2	8.4	94.1	43	0	1.7		
4 (22-28 Jan)	27.7	13.6	95.7	51.6	0	1.7		
5 (29-04 Feb)	27.5	10.8	91.6	50.7	0	2.3		
6 (05-11 Feb)	28.4	14.3	93	54.4	0	2.3		
7 (12-18 Feb)	29	13.3	93.4	54.4	2.6	2.3		
8 (19-25 Feb)	33.1	15.4	89.1	48.8	0	3.1		

Julian weeks	Temperature^{0}C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
9 (26-04 Mar)	31.2	17.6	88.3	62.1	23.4	2.6		
10 (05-11 Mar)	30.6	16	85.4	39.8	0	3		
11 (12-18 Mar)	32.4	18.8	79.8	45.1	0.2	3.7		
12 (19-25 Mar)	34.2	17.7	73.6	40.7	0	4.2		
13 (26-01 Apr)	36.2	20.2	76.8	38.3	0	3.9		
14 (02-08 Apr)	38	20.7	72.4	32	2.6	5.2		
15 (09-15 Apr)	33.6	21.1	79.6	32.1	15.2	3.8		
16 (16-22 Apr)	37.7	22.9	76.7	33.1	27	4.2		
17 (23-29 Apr)	37.7	22.5	76	42	3	5		
18 (30-06 May)	39.2	23.9	71.6	34.7	0	5.1		
19 (7-13 May)	40.5	25.3	64.2	32.7	0	5.3		

GWALIOR	Latitude 26^0 13' N		Longitude 78^0 14' E		Height above MSL 211.52 m			
45 (05-11 Nov)	32.6	15.4	86.0	46.2	000.0	4.0		
46 (12-18 Nov)	29.1	10.4	91.8	44.5	000.0	2.2		
47 (19-25 Nov)	29.8	8.6	93.5	51.4	000.0	2.8		
48 (26-02 Dec)	30.1	10.2	89.8	46.5	000.0	3.0		
49 (03-09 Dec)	28.1	8.2	88.8	49.1	000.0	3.6		
50 (10-16 Dec)	22.3	9.1	96.1	69.5	035.0	1.5		
51 (17-23 Dec)	19.2	5.1	97.5	73.7	000.0	1.2		
52 (24-31 Dec)	18.8	4.0	99.2	74.1	000.0	1.0		
1 (01-07 Jan)	18.7	10.8	94.8	78.1	003.0	1.1		
2 (08-14 Jan)	18.8	5.6	97.5	74.7	000.0	1.3		
3 (15-21 Jan)	17.0	7.5	97.0	84.0	001.4	0.8		
4 (22-28 Jan)	16.0	8.7	97.0	92.2	024.0	0.8		
5 (29-04 Feb)	21.5	6.6	95.5	70.8	000.0	2.2		
6 (05-11 Feb)	22.5	8.7	96.0	74.8	004.2	1.8		
7 (12-18 Feb)	26.9	10.5	94.7	64.7	000.0	3.0		
8 (19-25 Feb)	30.1	13.9	93.4	67.8	002.4	2.6		
9 (26-04 Mar)	26.0	12.3	91.0	73.0	018.4	2.1		
10 (05-11 Mar)	26.8	10.5	92.7	65.4	002.8	3.2		
11 (12-18 Mar)	28.2	14.7	93.2	67.2	070.4	3.0		
12 (19-25 Mar)	31.3	15.0	92.4	55.0	000.0	4.1		
13 (26-01 Apr)	34.8	18.9	90.1	60.1	026.8	4.6		
14 (02-08 Apr)	33.5	17.9	85.7	57.4	001.0	4.9		
15 (09-15 Apr)	33.5	17.7	86.0	61.8	7.4	4.4		
16 (16-22 Apr)	38.4	21.8	77.0	47.4	000.0	7.4		
17 (23-29 Apr)	40.2	22.7	76.4	40.5	000.0	8.4		
18 (30-06 May)	41.1	22.6	64.4	43.0	000.0	9.1		

INDORE	Latitude 22^0 37'N		Longitude 75^{0}50' N		Height above MSL 557 m			
40 (01-07 Oct)	32.9	20.6	80.7		14	5.9	1.7	
41 (08-14 Oct)	32.6	18.3	81.7		104	7.7	2.5	
42 (15-21 Oct)	31.8	18.8	79		7	6.9	1.9	
43 (22-28 Oct)	31.2	15.7	81.6		0	5.3	1.7	
44 (29-04 Nov)	31.3	14.5	80.9		0	6.2	1.4	
45 (05-11 Nov)	31.1	14.2	79		0	5.5	2	
46 (12-18 Nov)	30.2	17.7	81.1		0	5.2	2.1	
47 (19-25 Nov)	29.4	12.1	82.1		0	4	1.5	
48 (26-02 Dec)	29.9	11.7	80.4		0	3.5	1.3	
49 (03-09 Dec)	27.7	9.8	77.9		0	3.6	2.2	
50 (10-16 Dec)	25.7	8.5	82.1		5.8	3.6	3.1	
51 (17-23 Dec)	21.7	5.4	75.6		0	3	2.5	
52 (24-31 Dec)	22.5	5.4	76.6		0	2.9	2.3	
1 (01-07 Jan)	17.2	5.9	81.9		45.8	3.8	3.5	
2 (08-14 Jan)	23.6	6.8	77		0	3.3	1.7	
3 (15-21 Jan)	23.4	6.6	77.7		0	3.8	2.4	
4 (22-28 Jan)	22.6	8.6	79.1		14.8	3.7	4.1	
5 (29-04 Feb)	23.7	7	77.4		0	5.4	2.7	
6 (05-11 Feb)	26.2	8.6	75.6		0	7.2	4.7	
7 (12-18 Feb)	29.1	9.9	70.9		0	7.2	2.6	
8 (19-25 Feb)	30.8	10.3	72.3		0	8.4	1.7	
9 (26-04 Mar)	27.7	12.1	77.1		2	7.5	4.8	

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)	22.5	11.6	76.4		C	6.8	3.2	
11 (12-18 Mar)	29.0	15.5	76.7		C	6.3	5.2	
12 (19-25 Mar)	34.1	17.3	66.4		C	6.5	2.5	
13 (26-01 Apr)	36.9	22.3	69.9		C	6.6	4.7	
14 (02-08 Apr)	35.7	22	67.7		C	7.7	6.6	
15 (09-15 Apr)	33.7	19.1	75.6		3.8	5.5	3.7	
16 (16-22 Apr)	32.4	19.1	69.6		C	8.2	4.2	

Jabalpur	Latitude		Longitude 79^0 58' E			Height above MSL		
Oct 07-Oct 13	32.1	20.3	87.3	57.7	1.6	3.5	3.2	8.4
Oct 14-Oct 20	30.3	19.5	91.0	48.4	3.6	2.6	4.0	6.6
Oct 21-Oct 27	29.9	16.9	77.3	37.1	0.0	2.7	1.6	6.4
Oct28-Nov03	30.7	14.6	87.9	30.0	0.0	2.8	1.5	8.6
Nov04-Nov10	31.0	13.1	87.0	27.3	0.0	3.2	2.5	8.1
Nov11-Nov17	30.6	15.9	81.4	29.0	0.0	3.2	2.4	6.0
Nov18-Nov24	28.5	8.6	82.7	19.4	0.0	2.5	2.0	8.6
Nov25-Dec01	29.3	10.0	85.0	24.4	0.0	2.6	2.0	8.7
Dec 02-Dec 08	27.2	8.4	88.1	23.1	0.0	2.9	2.5	8.6
Dec 09-Dec 15	25.6	12.0	87.0	49.1	0.7	1.8	2.5	5.3
Dec 16-Dec 22	21.7	5.6	87.7	37.3	0.0	1.9	2.4	6.6
Dec 23-Dec 29	23.6	4.6	88.3	24.9	0.0	1.9	2.0	8.6
Dec 30- Jan 05	20.7	11.1	88.3	67.7	5.4	1.3	3.6	3.7
Jan 06- Jan12	22.9	6.5	87.4	33.1	0.0	1.5	1.8	8.9
Jan 13- Jan19	21.2	4.6	90.9	41.0	0.0	1.5	2.6	7.7
Jan 20- Jan26	22.2	10.1	89.4	58.7	1.5	1.3	3.0	3.7
Jan 27- Feb 02	20.1	9.2	88.4	56.9	1.5	1.2	3.1	4.6
Feb 03- Feb 09	26.1	10.5	85.9	48.4	2.1	2.9	4.3	8.1
Feb 10- Feb 16	25.1	10.0	88.1	46.3	0.9	2.5	2.8	8.1
Feb 17- Feb 23	29.8	11.7	86.3	33.3	0.0	3.2	2.3	9.7
Feb 24- Mar 02	27.9	14.3	84.6	50.7	5.9	2.8	2.8	7.2
Mar 03- Mar 09	26.8	11.8	85.6	38.3	3.4	2.9	2.6	8.5
Mar 10- Mar 16	26.8	14.7	86.1	57.4	3.4	1.9	4.2	4.7
Mar 17- Mar 23	30.2	13.7	82.4	32.1	0.0	3.3	2.0	9.5
Mar 24- Mar 30	35.6	17.0	79.6	24.7	0.4	4.8	2.6	9.4

JUNAGARH	Latitude 21^{0}31' N		Longitude 70^0 33' E			Height above MSL 61 m		
41 (08-14 Oct)	35.7	21.6	80	47	0			7.9
42 (15-21 Oct)	36.5	18.4	81	40	0			9.4
43 (22-28 Oct)	35.4	19.3	75	38	0			4.8
44 (29-04 Nov)	35.3	19.6	76	35	0			6.2
45 (05-11 Nov)	34.4	18.4	83	36	0			8.8
46 (12-18 Nov)	35.0	20.6	87	39	34.6			7.3
47 (19-25 Nov)	33.9	16.9	85	40	0			8.8
48 (26-02 Dec)	32.8	15.0	82	35	0			8.9
49 (03-09 Dec)	33.0	13.4	67	26	0			8.5
50 (10-16 Dec)	30.1	11.4	68	58	0			8.5
51 (17-23 Dec)	29.3	9.5	78	41	0			7.3
52 (24-31 Dec)	29.0	10.3	64	34	0			8.6
1 (01-07 Jan)	28.6	10.7	74	38	0			6.9
2 (08-14 Jan)	30.2	9.5	82	34	0			7.8
3 (15-21 Jan)	29.2	10.8	69	38	0			7.8
4 (22-28 Jan)	27.4	9.6	76	28	0			7.8
5 (29-04 Feb)	30.6	10.6	73	26	0			9.1
6 (05-11 Feb)	32.2	14.0	63	28	0			8.5
7 (12-18 Feb)	33.6	11.7	68	18	0			9.5
8 (19-25 Feb)	35.6	17.2	79	32	0			8.4
9 (26-04 Mar)	29.4	11.9	76	42	15			7.9
10 (05-11 Mar)	33.1	16.5	75	44	0			9.5
11 (12-18 Mar)	33.6	15.7	66	38	9			8.4
12 (19-25 Mar)	39.1	19.9	52	18	0			10.1
13 (26-01 Apr)	39.3	19.6	69	24	0			8.4

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
KOTA	Latitude 25° 13'N		Longitude 75°25'E		Height above MSL 258 m			
01-07 Sep	31.1	24.7	91	74	59.8			
08-14 Sep	31.8	23.7	91	72	18.4			
15- 21 Sep.	33.6	23.3	87	52	0			
22- 28 Sep.	34.4	21.2	85	45	0			
29- 05 Oct.	35.6	20.7	80	40	0			
06 –12 Oct.	35.1	19.3	87	38	0			
13 –19 Oct.	32.9	17.7	82	35	0			
20 –26 Oct.	34.3	16.8	83	28	0			
27 –02 Nov.	32.5	17.1	80	33	0			
03 –09 Nov.	32.3	15.1	90	30	0			
10 –16 Nov.	29.4	12.3	88	31	0			
17 –23 Nov	29.7	10	90	28	0			
24 –30 Nov	30.4	11.8	93	27	0			
01 –07 Dec.	28.1	8.6	92	26	0			
08 –14 Dec.	23.4	10.8	85	55	0			
15 –21 Dec.	20.5	4.6	93	48	0			
22 –28 Dec.	18.4	5.5	94	68	0			
29 - 04 Jan.	19	9.6	92	42	6			
05 - 11 Jan.	23.5	6.5	92	51	0			
12 - 18 Jan.	19.3	5.9	87	61	0			
19 - 25 Jan.	18	10.2	95	75	16.8			
26 –01 Feb.	22.4	5.9	90	45	0			
02 –08 Feb.	23.2	8.6	92	52	0			
09 –17 Feb.	28.4	11.6	87	38	0			
18 –22 Feb	31.1	14	90	38	0			
23 –01 Mar.	25.7	12.7	77	45	56.4			
02 –08 Mar.	27.4	11.3	85	35	0			
09 –15 Mar.	27.3	15	88	56	72.6			
16 –22 Mar.	32.5	15.9	89	29	0			
23 –29 Mar.	36.5	20	74	28	0			
POWARKHEDA	Latitude 22° 44'N			Longitude 77° 42' E			Height above MSL 299 m	
40 (01-07 Oct)	36.10	19.00	69.00	22.00	14.90	3.62		
41 (08-14 Oct)	36.10	16.40	75.00	18.00	0.00	3.98		
42 (15-21 Oct)	34.90	19.40	65.00	22.00	0.00	4.10		
43 (22-28 Oct)	34.50	16.00	58.00	20.00	0.00	3.11		
44 (29-04 Nov)	34.70	13.60	84.00	20.00	0.00	3.73		
45 (05-11 Nov)	34.50	14.00	55.00	21.00	0.00	2.24		
46 (12-18 Nov)	33.60	11.60	75.00	22.00	0.00	3.98		
47 (19-25 Nov)	32.20	9.20	68.00	15.00	0.00	2.61		
48 (26-02 Dec)	33.00	10.00	57.00	15.00	0.00	2.01		
49 (03-09 Dec)	31.60	8.90	56.00	17.00	0.00	2.42		
50 (10-16 Dec)	30.70	9.80	67.00	14.00	32.00	1.67		
51 (17-23 Dec)	27.90	6.60	78.00	21.00	0.00	1.30		
52 (24-31 Dec)	27.70	5.10	77.00	22.00	0.00	1.52		
1 (01-07 Jan)	23.70	6.00	88.00	24.00	24.10	0.93		
2 (08-14 Jan)	27.80	4.60	88.00	17.00	0.00	1.61		
3 (15-21 Jan)	26.00	4.90	77.00	25.00	0.00	1.13		
4 (22-28 Jan)	27.50	8.80	88.00	25.00	0.40	1.00		
5 (29-04 Feb)	30.70	5.60	92.00	20.00	7.00	1.30		
6 (05-11 Feb)	30.70	11.20	86.00	0.00	12.40	1.40		
7 (12-18 Feb)	30.80	8.60	0.00	0.00	0.00	2.05		
8 (19-25 Feb)	33.80	11.40	0.00	0.00	0.00	3.17		
9 (26-04 Mar)	32.80	13.20	0.00	0.00	23.60	2.24		
10 (05-11 Mar)	32.50	12.00	0.00	0.00	167.50	2.98		
11 (12-18 Mar)	32.50	13.40	0.00	0.00	4.30	3.35		
12 (19-25 Mar)	38.30	0.00	0.00	0.00	0.00	4.60		
SAGAR	Latitude 24° 27' N			Longitude 78° 21' E			Height above MSL530 m	
36 (03- 9 Sep)	30.2	20.7	93.7	79.7	66.4	-		-
37 (10-16 Sep)	30.6	21.9	93.3	82.0	89.5	-		-
38 (17-23 Sep)	28.3	18.6	71.0	57.9	1.9	-		-

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
39 (24-30 Sep)	34.2	20.6	71.7	47.1	0.0	-		-
40 (01-07 Oct)	35.2	21.2	63.9	50.4	0.0	-		-
41 (08-14 Oct)	32.4	19.6	69.0	56.0	0.8	-		-
42 (15-21 Oct)	33.5	19.6	71.1	53.6	2.6	-		-
43 (22-28 Oct)	32.2	18.5	59.6	43.1	0.0	-		-
44 (29-04 Nov)	33.2	18.4	52.9	41.0	0.0	-		-
45 (05-11 Nov)	31.8	18.1	55.6	41.9	0.0	-		-
46 (12-18 Nov)	30.2	17.4	48.3	43.3	0.0	-		-
47 (19-25 Nov)	30.3	15.1	39.9	34.9	0.0	-		-
48 (26-02 Dec)	31.1	15.5	46.0	34.7	0.0	-		-
49 (03-09 Dec)	28.6	12.8	43.6	35.4	0.0	-		-
50 (10-16 Dec)	23.2	11.6	75.3	63.1	0.0	-		-
51 (17-23 Dec)	23.0	8.0	67.7	48.3	0.0	-		-
52 (24-31 Dec)	20.8	6.8	60.0	37.3	0.0	-		-
1 (01-07 Jan)	19.5	9.6	90.9	76.6	38.1	-		-
2 (08-14 Jan)	24.7	8.2	71.6	44.6	0.0	-		-
3 (15-21 Jan)	23.1	8.5	82.3	47.7	0.0	-		-
4 (22-28 Jan)	19.1	12.4	95.7	81.1	12.4	-		-
5 (29-04 Feb)	25.7	11.5	188.1	42.1	0.2	-		-
6 (05-11 Feb)	25.0	12.2	69.9	48.1	0.0	-		-
7 (12-18 Feb)	29.7	13.9	57.3	36.1	0.0	-		-
8 (19-25 Feb)	33.0	18.1	49.9	31.3	0.0	-		-
9 (26-04 Mar)	26.5	15.7	75.9	49.6	25.0	-		-
10 (05-11 Mar)	30.6	15.9	45.3	32.9	0.0	-		-
11 (12-18 Mar)	26.3	16.0	82.0	61.7	30.2	-		-
12 (19-25 Mar)	34.9	19.8	39.7	26.3	0.0			
13 (26-01 Apr)	36.1	21.7	45.0	25.7	0.6			
14 (02-08 Apr)	35.5	21.1	44.9	28.0	0.0			
15 (09-15 Apr)	32.4	20.0	61.9	49.9	13.8			
16 (16-22 Apr)	39.7	23.6	42.4	21.1	0.4			
17 (23-29 Apr)	40.2	24.7	32.4	18.3	0.0			

UDAIPUR	Latitude 24° 34' N		Longitude 70°42'E			Height above MSL 582 m		
40 (01-07 Oct)	33.9	20.0	80.7	38.4	0.0	3.7	1.9	8.0
41 (08-14 Oct)	34.4	18.1	79.0	34.0	0.0	4.7	2.6	8.3
42 (15-21 Oct)	32.5	17.6	75.6	32.4	0.0	3.7	2.0	8.4
43 (22-28 Oct)	33.2	16.6	69.6	22.4	0.0	4.3	1.8	7.0
44 (29-04 Nov)	31.4	18.4	71.4	31.9	0.0	3.9	1.9	4.7
45 (05-11 Nov)	31.5	15.6	76.6	31.4	0.0	4.3	2.1	8.6
46 (12-18 Nov)	29.5	15.4	74.4	36.7	11.0	3.2	1.5	6.2
47 (19-25 Nov)	29.7	12.1	76.3	27.0	0.0	3.1	1.3	8.7
48 (26-02 Dec)	30.7	12.3	79.3	23.9	0.0	3.1	1.4	8.9
49 (03-09 Dec)	27.2	10.4	75.4	25.9	0.0	2.8	1.8	8.0
50 (10-16 Dec)	24.6	7.6	79.9	29.0	0.0	2.4	1.9	7.3
51 (17-23 Dec)	22.6	5.0	86.9	31.4	0.0	1.8	1.6	7.7
52 (24-31 Dec)	22.9	4.8	84.1	26.9	0.0	2.6	1.9	8.6
1 (01-07 Jan)	21.8	8.8	90.4	43.4	3.2	2.2	3.0	5.3
2 (08-14 Jan)	27.4	7.7	85.7	25.1	0.0	2.7	1.2	8.7
3 (15-21 Jan)	22.8	6.9	91.3	36.0	6.0	2.6	2.0	7.4
4 (22-28 Jan)	21.0	9.1	88.1	52.4	6.2	2.5	2.9	4.9
5 (29-04 Feb)	25.2	6.9	86.9	28.6	0.0	2.9	2.0	8.8
6 (05-11 Feb)	25.3	8.6	87.9	36.6	0.0	3.0	2.1	8.5
7 (12-18 Feb)	29.8	10.6	78.9	30.7	0.0	4.0	2.3	9.0
8 (19-25 Feb)	32.5	13.7	78.4	30.6	0.0	4.6	2.4	8.4
9 (26-04 Mar)	25.0	10.3	76.9	33.0	13.2	3.8	3.7	6.8
10 (05-11 Mar)	28.0	11.3	76.7	27.6	0.0	4.7	2.7	8.9
11 (12-18 Mar)	28.6	14.0	79.4	30.4	10.6	4.5	3.1	7.3
12 (19-25 Mar)	33.8	15.9	68.6	24.7	0.0	5.8	2.1	9.2
13 (26-01 Apr)	36.3	19.5	66.1	19.4	0.0	6.9	3.4	7.2
14 (02-08 Apr)	34.1	21.7	53.9	25.7	0.0	9.0	5.8	7.8
15 (09-15 Apr)	32.6	18.5	60.9	30.9	15.6	6.1	3.8	7.4
16 (16-22 Apr)	37.9	22.2	37.0	14.4	0.0	10.1	4.7	9.4
17 (23-29 Apr)	39.4	24.3	28.9	11.5	0.0	12.2	6.0	8.5

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
VIJAPUR	Latitude 23°35' N		Longitude 72°55' E			Height above MSL 124 m		
40 (01-07 Oct)	35.3	22.2	71	45.7	0			10.2
41 (08-14 Oct)	36	20.4	63	37.6	0			9.9
42 (15-21 Oct)	34.8	19.3	62.3	31.9	0			9.9
43 (22-28 Oct)	33.6	18.6	57.7	38	0			9.4
44 (29-04 Nov)	32.8	19.3	61.6	36	0			8.5
45 (05-11 Nov)	32.2	17.7	61.7	35.6	0			9.5
46 (12-18 Nov)	32	20.2	68	41.3	0			8.6
47 (19-25 Nov)	31.1	14.8	57.9	30.4	0			9.4
48 (26-02 Dec)	30.4	14.4	66.4	37.3	0			9.1
49 (03-09 Dec)	29.3	14.1	59.3	28.4	0	2.83		9.1
50 (10-16 Dec)	26.1	10.6	56.3	35.1	0	3.13		8.9
51 (17-23 Dec)	24.6	9.1	59.1	39.6	0	2.60		9.1
52 (24-31 Dec)	24.6	9.5	55.6	30.9	0	3.21		9.2
1 (01-07 Jan)	24.2	11	72	58.1	0	2.26		8.3
2 (08-14 Jan)	26.5	10.2	68.9	45	0	2.30		9.3
3 (15-21 Jan)	24.4	10.5	68.3	46.7	0	2.31		8.7
4 (22-28 Jan)	23	9.7	69.6	60.1	3	2.13		8.8
5 (29-04 Feb)	26.7	10	61	40.1	0	3.16		9.7
6 (05-11 Feb)	27.6	11.8	53.7	39.7	0	3.51		9.6
7 (12-18 Feb)	30.6	12.4	54.6	37.7	0	4.13		9.9
8 (19-25 Feb)	32.2	15.3	50.7	38.3	0	3.97		9.8
9 (26-04 Mar)	25.9	11.7	53.9	47.3	11	3.79		9.4
10 (05-11 Mar)	31.1	14.1	39.4	29	0	4.27		10.2
11 (12-18 Mar)	30.6	16.5	41.9	33.6	0			10.2
12 (19-25 Mar)	37.3	19.1	27.4	20	0			10.5
13 (26-01 Apr)	36.8	20.9	29.1	25.6	0			10.1
14 (02-08 Apr)	34.9	22.3	32.9	39.7	0			10.3
15 (09-15 Apr)	34.4	20.8	46.6	39.1	7.5			10.4
16 (16-22 Apr)	39.7	22	26.3	22	0			11.1
17 (23-29 Apr)	39.9	22.8	24.3	32	0			11.1
18 (30-06 May)	40.7	23.8	22.1	23	0			11.3

PENINSULAR ZONE

AKOLA	Latitude 20° 70' N		Longitude 77°03' E			Height above MSL 282 m		
40(01-07 Oct)	36.5	22.4	94	29	0	5.2	1.4	7.4
41(08-14 Oct)	36.8	22.7	93	26	0	5.4	1.7	5.6
42(15-21 Oct)	34.5	22.6	88	37	0	5.6	1.4	5.6
43(22-28 Oct)	31.9	23.1	90	37	0	4	1.1	4.3
44(29-04 Nov)	33.8	20.7	81	21	0	4.7	1.3	7.9
45(05-11 Nov)	33.5	21.1	73	28	0	5.2	1.4	6.5
46(12-18 Nov)	30.0	20.9	66	46	20.1	3.5	2.2	3.2
47(19-25 Nov)	31.7	21.8	76	16	0	4.2	0.9	7.4
48(26-02 Dec)	32.2	18	77	15	0	3.6	0.6	7.2
49(03-09 Dec)	30.8	15.9	68	18	0	4.4	0.9	8.3
50(10-16 Dec)	29.5	16.6	69	33	0.9	4.6	1.5	4.7
51(17-23 Dec)	26.4	20.4	87	16	0	5	1.6	8.3
52(24-31 Dec)	28.6	12.9	72	16	0	5.2	1.5	8.6
1(01-07 Jan)	23.7	13.4	88	49	51.4	3.3	1.1	4.2
2(08-14 Jan)	26.9	7.0	81	14	0	4	0.7	9.1
3(15-21 Jan)	27.8	10.1	77	28	0	5.2	1.5	8.3
4(22-28 Jan)	29.3	15.3	86	35	0	6.2	2.4	6.1
5(29-04 Feb)	29.5	11.9	71	23	0	6.2	1.9	8.3
6(05-11 Feb)	31.1	14.7	73	27	0	6.5	2.9	7.6
7(12-18 Feb)	32.4	12.9	64	19	0	5.1	1.9	9
8(19-25 Feb)	34.4	12.7	63	16	0	5.8	2.5	9
9(26-04 Mar)	30.4	15.0	65	31	27.7	5.7	3.7	6.7
10(05-11 Mar)	33.3	15.6	70	23	0.0	5.2	2.4	9.0
11(12-18 Mar)	31.4	18.1	81	33	15.1	5.3	3.5	7.4
12(19-25 Mar)	36.9	18.7	53	12	0.0	5.7	2.4	8.9
13(26-01 Apr)	38.8	20.3	50	15	0.0	5.6	2.4	7.9

Julian weeks	Temperature^{0}C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
14(02-08 Apr)	38.5	22.7	46	18	0.0	9.5	6.8	8.6
15(09-15 Apr)	35.2	20.0	77	32	52.3	6.2	3.8	7.0
16(16-22 Apr)	38.1	23.4	53	17	0.0	6.8	3.2	8.7
17(23-29 Apr)	41.5	26.0	40	11	0.0	10.1	6.3	9.2

ANNIGERI	Latitude		Mean RH	Longitude		Height above MSL		
40(01-07 Oct)	30.6	25.7	75.4		111.2	-	-	-
41(08-14 Oct)	30.9	22.3	76.7		4.4	-	-	-
42(15-21 Oct)	31.1	22.0	75.4		0.0	-	-	-
43(22-28 Oct)	27.9	19.1	77.1		12.8	-	-	-
44(29-04 Nov)	27.9	18.7	81.7		0.0	-	-	-
45(05-11 Nov)	29.9	18.6	84.4		0.0	-	-	-
46(12-18 Nov)	28.2	20.2	80.4		23.6	-	-	-
47(19-25 Nov)	27.4	19.1	65.7		0.0	-	-	-
48(26-02 Dec)	29.4	19.6	70.9		0.0	-	-	-
49(03-09 Dec)	31.1	20.1	73.9		0.0	-	-	-
50(10-16 Dec)	30.6	20.6	81.6		18.6	-	-	-
51(17-23 Dec)	28.9	17.2	82.3		0.0	-	-	-
52(24-31 Dec)	29.1	18.9	73.4		0.0	-	-	-
1(01-07 Jan)	30.7	21.1	81.4		0.0	-	-	-
2(08-14 Jan)	30.2	22.5	62.7		0.0	-	-	-
3(15-21 Jan)	31.9	26.6	66.9		0.0	-	-	-
4(22-28 Jan)	31.3	23.9	71.1		0.0	-	-	-
5(29-04 Feb)	32.0	22.6	69.9		0.0	-	-	-
6(05-11 Feb)	31.3	20.0	60.6		0.0	-	-	-
7(12-18 Feb)	32.4	21.6	60.9		0.0	-	-	-
8(19-25 Feb)	34.3	22.7	57.6		0.0	-	-	-
9(26-04 Mar)	32.7	18.7	62.6		0.0	-	-	-
10(05-11 Mar)	31.7	20.6	69.6		70.8	-	-	-
11(12-18 Mar)	34.3	20.5	66.6		0.0	-	-	-
12(19-25 Mar)	36.7	22.2	85.0		0.0	-	-	-
13(26-01 Apr)	34.9	22.8	75.3		0.0	-	-	-
14(02-08 Apr)	37.8	22.7	86.0		0.0			
15(09-15 Apr)	36.1	21.8	84.9		0.0			
16(16-22 Apr)	36.6	23.5	81.3		0.0			
17(23-29 Apr)	36.3	21.5	87.0		40.2			

BAGALKOT	Latitude		Longitude			Height above MSL		
October, 2014	33.9	18.6	83	68	42.0			
November, 2014	30.7	16.7	87	64	0 5			
December, 2014	29.9	14.9	77	67	15.0			
January, 2015	30.7	13.1	65	66	0 0			
February, 2015	33.2	15.3	60	32	0 0			
March, 2015	34.9	20.4	83	49	0 0			

DHARWAD	Latitude 15^{0}26'N		Longitude 75^0 07' E			Height above MSL 678 m		
40(01-07 Oct)	30.5	19.7	87	55	36.8	-	-	-
41(08-14 Oct)	29.9	20.1	92	62	2 4	-	-	-
42(15-21 Oct)	31.2	19.3	83	48	0.6	-	-	-
43(22-28 Oct)	27.6	18.7	89	67	63.4	-	-	-
44(29-04 Nov)	29.0	15.1	72	36	0.0	-	-	-
45(05-11 Nov)	29.9	16.0	72	39	0.0	-	-	-
46(12-18 Nov)	28.3	17.6	88	57	48.8	-	-	-
47(19-25 Nov)	28.9	15.5	80	45	0.0	-	-	-
48(26-02 Dec)	28.6	12.8	66	30	0.0	-	-	-
49(03-09 Dec)	28.9	13.7	72	40	0.0	-	-	-
50(10-16 Dec)	27.9	18.1	92	60	26.2	-	-	-
51(17-23 Dec)	26.6	13.7	83	48	0.0	-	-	-
52(24-31 Dec)	27.4	12.9	79	47	0.0	-	-	-
1(01-07 Jan)	27.1	15.2	84	51	0.2	-	-	-
2(08-14 Jan)	27.8	10.7	58	26	0.0	-	-	-
3(15-21 Jan)	29.1	13.1	62	33	0.0	-	-	-
4(22-28 Jan)	29.4	13.9	68	33	0.0	-	-	-

Julian weeks	Temperature°C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
5(29-04 Feb)	30.5	13.7	67	29	0.0	-	-	-
6(05-11 Feb)	31.0	13.6	53	24	0.0	-	-	-
7(12-18 Feb)	32.4	15.5	59	21	0.0	-	-	-
8(19-25 Feb)	32.8	15.0	50	18	0.0	-	-	-
9(26-04 Mar)	30.5	16.7	75	35	18.2	-	-	-
10(05-11 Mar)	32.1	18.1	70	32	86.8	-	-	-
11(12-18 Mar)	33.0	19.2	72	31	0.0	-	-	-
12(19-25 Mar)	35.2	20.2	82	29	0.0	-	-	-
13(26-01 Apr)	35.1	20.8	87	30	0.2	-	-	-

UDARKHURD	Latitude		Mean RH	Longitude		Height above MSL		
40(01-07 Oct)	29.1	21.7	74.5		62.0	-	-	-
41(08-14 Oct)	32.8	23.4	85.1		15.0	-	-	-
42(15-21 Oct)	32.4	23.5	86.0		19.0	-	-	-
43(22-28 Oct)	28.6	20.8	79.2		42.0	-	-	-
44(29-04 Nov)	31.3	21.8	75.0		0.0	-	-	-
45(05-11 Nov)	29.8	22.2	81.6		48.0	-	-	-
46(12-18 Nov)	30.0	22.1	75.1		0.0	-	-	-
47(19-25 Nov)	29.4	20.0	72.2		0.0	-	-	-
48(26-02 Dec)	29.2	19.2	71.6		0.0	-	-	-
49(03-09 Dec)	28.5	20.6	75.2		5.0	-	-	-
50(10-16 Dec)	27.6	17.3	73.2		0.0	-	-	-
51(17-23 Dec)	27.2	17.9	68.8		1.0	-	-	-
52(24-31 Dec)	27.8	18.9	73.1		0.0	-	-	-
1(01-07 Jan)	27.6	16.2	62.8		0.0	-	-	-
2(08-14 Jan)	28.8	18.8	69.0		0.0	-	-	-
3(15-21 Jan)	29.6	19.3	71.8		0.0	-	-	-
4(22-28 Jan)	29.6	18.3	67.4		0.0	-	-	-
5(29-04 Feb)	30.9	20.3	69.0		0.0	-	-	-
6(05-11 Feb)	33.2	20.4	69.4		0.0	-	-	-
7(12-18 Feb)	33.0	21.6	68.0		0.0	-	-	-
8(19-25 Feb)	31.0	20.6	68.8		14.0	-	-	-
9(26-04 Mar)	33.5	22.9	72.7		13.0	-	-	-
10(05-11 Mar)	37.0	26.0	79.7		0.0	-	-	-
11(12-18 Mar)	36.1	25.4	84.5		0.0	-	-	-
12(19-25 Mar)	37.0	25.0	84.6		0.0	-	-	-
13(26-01 Apr)	35.6	24.6	85.6		35.0	-	-	-
14(02-08 Apr)	37.2	26.1	83.0		0.0			
15(09-15 Apr)	37.5	26.0	85.0		0.0			

Vijapur	Latitude		Longitude			Height above MSL		
40(01-07 Oct)	34.2	21.0	80.3	43.0	10.6	-	-	-
41(08-14 Oct)	32.9	20.8	82.1	48.7	13.8	-	-	-
42(15-21 Oct)	33.1	19.9	86.3	43.7	0.0	-	-	-
43(22-28 Oct)	28.7	19.0	88.9	62.3	40.9	-	-	-
44(29-04 Nov)	30.1	14.7	80.6	33.9	0.0	-	-	-
45(05-11 Nov)	31.3	16.0	76.0	38.4	0.0	-	-	-
46(12-18 Nov)	29.3	18.3	92.6	61.1	15.0	-	-	-
47(19-25 Nov)	30.5	15.8	88.6	41.9	0.0	-	-	-
48(26-02 Dec)	30.1	12.3	80.6	29.6	0.0	-	-	-
49(03-09 Dec)	30.3	12.0	79.1	33.1	0.0	-	-	-
50(10-16 Dec)	29.1	17.4	93.3	56.7	16.0	-	-	-
51(17-23 Dec)	27.8	11.5	82.9	39.4	0.0	-	-	-
52(24-31 Dec)	28.4	11.4	81.9	39.9	0.0	-	-	-
1(01-07 Jan)	28.5	15.2	89.1	48.9	4.6	-	-	-
2(08-14 Jan)	28.9	8.6	66.7	22.3	0.0	-	-	-
3(15-21 Jan)	30.0	11.9	73.6	31.3	0.0	-	-	-
4(22-28 Jan)	30.4	16.4	74.6	29.4	0.0	-	-	-
5(29-04 Feb)	31.0	13.9	78.0	31.1	0.0	-	-	-
6(05-11 Feb)	31.9	14.5	64.7	19.3	0.0	-	-	-
7(12-18 Feb)	33.5	15.1	62.3	19.4	0.0	-	-	-
8(19-25 Feb)	34.5	15.7	59.9	18.9	0.0	-	-	-
9(26-04 Mar)	32.5	16.0	69.4	34.0	0.4	-	-	-

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)	33.3	18.8	67.4	34.9	34.4	-	-	-
11(12-18 Mar)	35.1	20.2	63.6	25.9	1.4	-	-	-
12(19-25 Mar)	37.7	22.0	53.9	19.1	0.0	-	-	-
13(26-01 Apr)	37.2	22.3	55.3	23.9	0.0	-	-	-
14(02-08 Apr)	38.5	21.8	45.4	17.9	0.0			
15(09-15 Apr)	34.7	20.9	76.3	37.9	10.6			
16(16-22 Apr)	36.6	22.0	74.1	25.4	21.2			
17(23-29 Apr)	38.9	23.1	74.7	21.9	0.6			

NIPHAD	Latitude 20.6° N		Longitude 74.6°E		Height above MSL 551 m			
40(01-07 Oct)	33.5	19.7	85	66	20.0	4.4	3.3	6.8
41(08-14 Oct)	32.8	19.5	88	54	13.4	4.2	3.8	8.8
42(15-21 Oct)	32.7	20.0	88	56	2.0	4.8	3.7	8.7
43(22-28 Oct)	31.6	17.5	86	61	0.0	4.8	3.5	7.9
44(29-04 Nov)	31.9	14.9	75	47	0.0	4.8	4.2	9.2
45(05-11 Nov)	31.7	13.8	74	43	0.0	4.7	4.1	9.1
46(12-18 Nov)	29.8	19.3	80	66	17.2	4.4	3.2	5.6
47(19-25 Nov)	30.4	13.5	74	54	0.0	4.2	3.0	8.8
48(26-02 Dec)	30.0	12.8	72	52	0.0	4.4	3.4	8.4
49(03-09 Dec)	29.2	12.0	75	36	0.0	4.0	4.6	7.2
50(10-16 Dec)	28.0	11.7	84	30	1.2	4.1	3.8	7.2
51(17-23 Dec)	25.0	6.1	79	31	0.0	4.1	4.2	8.6
52(24-31 Dec)	26.2	7.5	75	31	0.0	3.8	3.8	8.6
1(01-07 Jan)	24.9	11.4	79	39	0.0	4.0	3.9	6.3
2(08-14 Jan)	27.4	5.5	68	27	0.0	4.2	3.3	9.5
3(15-21 Jan)	27.2	7.7	79	36	0.0	3.9	3.9	9.1
4(22-28 Jan)	27.1	11.3	80	40	0.0	4.2	3.6	6.8
5(29-04 Feb)	28.9	10.4	75	37	0.0	5.1	3.5	7.8
6(05-11 Feb)	29.2	11.3	68	34	0.0	5.0	3.4	7.8
7(12-18 Feb)	31.8	11.0	64	26	0.0	5.6	4.0	9.0
8(19-25 Feb)	33.0	11.1	68	31	0.0	4.9	5.5	8.8
9(26-04 Mar)	28.1	10.7	85	52	21.3	4.9	5.8	5.7
10(05-11 Mar)	31.0	10.7	76	48	0.0	7.1	4.1	8.7
11(12-18 Mar)	30.6	14.4	80	36	3.0	7.5	5.6	7.6
12(19-25 Mar)	34.0	15.1	72	30	0.0	6.6	4.0	9.7
13(26-01 Apr)	31.8	13.8	82	36	7.0	5.9	4.9	8.1
14(02-08 Apr)	37.6	20.2	68	28	0.0	8.4	8.6	9.4
15(09-15 Apr)	37.8	19.8	72	34	34.0	9.6	10.2	10.2
16(16-22 Apr)	38.0	20.0	66	24	0.0	10.2	9.8	9.6
17(23-29 Apr)	38.2	19.8	74	28	0.0	11.2	8.2	10.1
18(30-06 May)	38.4	20.6	78	26	0.0	11.8	7.5	9.8
19(07-13 May)	37.6	20.4	80	32	19	10.2	8.4	9.4
20(14-20 May)	39.0	21.8	64	28	0	13.6	7.2	10.2

PUNE	Latitude 18°04' N		Longitude 74°21' E		Height above MSL 548.2 m			
40(01-07 Oct)	33.6	21.4	70.50	51.86	0			
41(08-14 Oct)	33.9	20.2	66.50	42.43	3.4			
42(15-21 Oct)	32.9	20.4	67.21	47.85	6			
43(22-28 Oct)	28.1	18.7	74.64	64.14	9.7			
44(29-04 Nov)	31.4	14.3	68.42	42.57	0			
45(05-11 Nov)	32.0	16.3	.65.21	41.00	0			
46(12-18 Nov)	29.0	20.3	82.78	69.00	32.1			
47(19-25 Nov)	29.9	15.8	72.00	48.80	4.2			
48(26-02 Dec)	29.7	11.4	66.78	45.00	0			
49(03-09 Dec)	30.2	11.9	67.35	42.57	0			
50(10-16 Dec)	28.9	15.6	74.50	55.00	28.2			
51(17-23 Dec)	26.5	9.2	69.06	44.85	0			
52(24-31 Dec)	27.1	9.2	68.21	43.86	0			
1(01-07 Jan)	26.9	14.1	73.75	55.28	0			
2(08-14 Jan)	28.0	6.9	62.92	34.57	0			
3(15-21 Jan)	29.1	10.3	64.92	39.57	0			
4(22-28 Jan)	29.6	13.6	69.76	45.28	0			
5(29-04 Feb)	30.3	12.2	68.40	43.70	0			

Julian weeks	Temperature^{0}C		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
6(05-11 Feb)	30.5	10.9	65.21	39.71	0			
7(12-18 Feb)	33.7	11.6	59.49	27.71	0			
8(19-25 Feb)	33.6	13.3	58.21	28.57	0			
9(26-04 Mar)	28.5	13.3	70.85	49.00	41.4			
10(05-11 Mar)	32.9	14.6	65.07	38.00	0			
11(12-18 Mar)	33.3	16.1	65.00	39.00	0			
12(19-25 Mar)	37.4	18.9	55.71	29.86	0			
13(26-01 Apr)	36.9	20.0	82.57	28.28	0			
14(02-08 Apr)	37.0	15.8	74.28	26.28	0			
15(09-15 Apr)	34.8	18.7	90.00	34.43	0			

WASHIM	Latitude 19^{0}37'-21^{0}10'N		Longitude 76^{0}42'-77^{0}24' E		Height above MSL 552 m			
36(03- 09 Sep)	29.4	23.8			47.0			
37 (10-16 Sep)	29.7	25.0						
38(17- 23 Sep)	30.7	25.2						
39(24-30 Sep)	31.6	26.2						
40(01-07 Oct)	33.9	26.9						
41(08-14 Oct)	33.7	26.2						
42(15-21 Oct)	29.9	26.0			39.0			
43(22-28 Oct)	32.6	25.7						
44(29-04 Nov)	31.3	24.8						
45(05-11 Nov)	31.2	23.3						
46(12-18 Nov)	32.0	23.7						
47(19-25 Nov)	30.7	23.5						
48(26-02 Dec)	30.3	23.3						
49(03-09 Dec)	29.1	21.8						
50(10-16 Dec)	27.1	20.7						
51(17-23 Dec)	27.4	18.7						
52(24-31 Dec)	28.1	19.1						
1(01-07 Jan)	27.3	18.2			15.0			
2(08-14 Jan)	27.0	17.6						
3(15-21 Jan)	27.5	18.1						
4(22-28 Jan)	27.1	19.2						
5(29-04 Feb)	28.9	18.4						
6(05-11 Feb)	30.2	20.0			6.0			
7(12-18 Feb)	30.9	20.6						
8(19-25 Feb)	33.5	24.0						
9(26-04 Mar)	31.5	20.0			46.0			
10(05-11 Mar)	32.7	22.8			31.0			
11(12-18 Mar)	31.3	21.6						
12(19-25 Mar)	32.9	24.2						
13(26-01 Apr)	37.9	29.0						
14(02-08 Apr)	37.7	27.9						
15(09-15 Apr)	35.9	26.2			53.0			

ANNEXURE-III

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													
Alomra IR-TS-TAS-DOS	Silty Clay Laom	27	41	32	1.37	28.2	17.9	1.08	367	16.1	198	6.3	0.09
Alomra RF-TS-TAS-LON	Loamy Sand	76	18	6	1.32	22.3	5.7	0.57	312	15.7	196	6.2	0.08
Bajaura IR-TS-TAS-DOS	Silty-Loam	15	48	37	-	-	-	0.55	318	35	342	6.8	-
Bajaura RF-TS-TAS-LON	Silty-Loam	15	48	37	-	-	-	0.51	298	32	320	6.9	-
Bajaura SPL-1	Silty-Loam	15	48	37	-	-	-	0.6	320	30	280	6.8	-
Malan IR-TS-TAS-DOS	Silty Clay Loam	24.6	38.2	36.8	1.52	32	13	0.62	330	29	250	6.1	-
Malan RF-TS-TAS-LON	Silty Clay Loam	24.5	38.3	36.7	1.5	31	13	0.63	350	30	240	6.1	-
Malan SPL-1	Silty Clay Loam	24.8	38.5	36.4	1.56	31	13	0.6	395	35	210	6.2	-
Malan SPL-2	Silty Clay Loam	25	38.5	36	1.51	32	13	0.61	345	32	215	6.1	-
NORTH WESTERN PLAINS ZONE													
Agra	Sandy loam	60.69	20.08	18.89	1.62	18.50	9.50	0.34	188.40	29.80	312.00	8.40	1.64
Delhi IR-TS-TDM-DOS		51.6	22.1	26.3	1.47			0.51	168.3	11.9	241.5	7.3	
Delhi RIR-TS-TAS		29.2	31.1	39.7	1.41			0.57	181.2	13.1	253.1	7.6	
Delhi RF-TAS-LON		51.6	22.1	26.3	1.41			0.57	181.2	13.1	253.1	7.6	
Delhi IR-TS-MABB-DOS		51.6	22.1	26.3	1.47			0.51	168.3	11.9	241.5	7.3	
Durgapura	Loamy sand	84.1	7.6	8.3	1.52	9.3	3.2	0.21	183.6	36.3	281	7.9	0.24
Diggi	Sandy loam	74.3	16.5	9.2	1.42	14.4	6	0.29	208	42.8	290	8	0.33
Gurdaspur IR-TS-TDM-DOS	Loam							0.8		36.5	157.5	6.3	0.6
Gurdaspur RIR-TS-TAS	Loam							0.8		43.8	150.0	6.0	0.5
Gurdaspur RF-TAS-LON	Loam							0.9		28.5	165.0	6.0	0.3
Gurdaspur SPL-2	Sandy loam							0.6		28.5	125	6.9	0.3
Hisar	Sandy loam	72.0	18.5	9.5	1.4	-	-	0.5	-	22.0	450.0	7.8	0.2
Jammu	Clay loam	40.64	30.65	28.71	1.48	21.84		0.46	206	14.8	142	7.8	0.23
Karnal	Sandy Loam	62.4	27.5	10.1	1.63	18.9	7.3	0.34	196.0	18.6	236	7.9	0.26
Ludhiana	Loamy sand	84.1	7.9	8.0	1.5	-	-	0.3	-	22.8	132.5	8.1	0.2
Pantnagar IR-TS-TDM-DOS	Loam	37	48	15	1.39	23	7	0.7	225	43	142	7.3	0.4
Pantnagar IR-TS-MABB-DOS	Loam	37	48	15	1.39	24	8	0.7	226	45	140	7.3	0.4

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}
Pantnagar RIR-TS-TAS	Loam	37	48	15	1.39	24	9	0.7	228	45	142	7.3	0.4
Pantnagar SPL-1	Silt Loam	37	50	13	1.4	20	9	0.7	232	45	140	7.3	0.4
Pantnagar SPL-2	Silt Loam	35	50	15	1.4	20	9	0.7	233	46	140	7.3	0.3
Pantnagar SPL-7	Loam	37	48	15	1.39	24	9	0.7	230	45	142	7.3	0.4
NORTH EASTERN PLAINS ZONE													
Coochbehar	Teesta Alluvial Plain	65.9	18	16.1	1.26	46.04	3.79	0.78	118.6	15.98	120.33	5.4	0.09
Kalyani	Alluvial/ loam soil	49	30	21	1.5	30	12	0.5	228	24	230	7.1	0.30
Kanpur	Sandy Loam	56	28	16	0	0	0	0.4	0	28	146	8	0.15
IARI, Samastipur	Sandy Loam	32.64	58.25	8.71	--	--	--	0.38	--	12.12	152.67	8.53	0.33
Ranchi	Sandy Loam	50.1	29.3	20.6	1.5	22.8	11.8	0.39	185.6	10.6	110.8	6.5	--
Sabour	Silty Loam	47	32	21	1.43	29	15	0.55	179	23	183	7.05	0.15
Varanasi	Sandy loam	50.2	29.81	19.99	1.44	19.5	5.4	0.37	198.4	21.3	181.6	7.3	0.26
CENTRAL ZONE													
Bilaspur	Sandy clay loam	48.43	-	30.98	1.28	22.79	8.5	0.49	239	19.78	319	7.4	0.32
Gwalior	Sandy clay loam	56	17.2	20.0	-	-	-	0.42	172	20	240	7.5	-
Indore	vertisol	6.5	40.5	53	1.45	29	12	0.56	235	14.2	550	7.9	0.18
Jabalpur	Typic Haplusterts	18.1	26.6	55.3	1.44	31.7	20.3	4.3	198	10.7	310	7.5	0.33
Junnagarh		-	-	-	-	-	-	-	212	50.7	358	-	-
Kota	Clayey	18.5	35	46	1.47	30.4	15.1	0.7	322	24.9	298	7.7	0.72
Powarkheda	clay	26	24.5	47.5	1.53	-	-	0.48	285	32.15	351	7.5	0.39
Sagar	Medium Black	24.96	29.54	48.05	1.48	-	-	0.39	207	29.02	317	7.5	0.36
Udaipur	Clay loam	37.98	27.04	34.98	1.49		-	0.79	249	19.41	371	8.1	0.86
Vijapur	Loamy sand	72.6	12.14	11.4	1.61	11.4	2.34	0.3	172	41.48	292	8.02	0.33
	Loamy sand	72.8	12.12	11.3	1.59	11.2	2.3	0.28	170	42.36	290	8.03	0.32
PENINSULAR ZONE													
Akola	Clayey	11.2	29.5	59.3	-	-	-	0.26	148	56	376	8.0	0.41
Dharwad	Silty Clay	19	28	53	1.3	39	18	0.56	254	42	396	8.4	0.70
Niphad	Silty Clay	13.5	31.2	55.3	1.26	-	-	0.68	195	20.63	568	8.16	0.59
Pune	Medium Black	-	-	-	-	-	-	0.60	300	25.27	509	7.5	0.42
Washim	Heavy	-	-	-	-	-	-	-	-	-	-	-	-

SOWING DATES FOR DIFFERENT ZONES UNDER IRRIGATED CONDITIONS

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

ANNEXURE-V

LIST OF CENTRES AND COOPERATING SCIENTISTS WORKING UNDER RESOURCE MANAGEMENT PROGRAMME OF THE AICW&BIP (2014-15)

NORTHERN HILLS ZONE

1.	Almora	Dr Dibakar Mahanta, Scientist (Agronomy), Division of CPD, VPKAS, Almora, Uttarakhand-263 601. *Email:* dibakar_mahanta@yahoo.com, *send2dmahanta@gmail.com,* *Mobile: 09456108508*
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*3.	Imphal	Sh L Chaoba Singh, Assistant Agronomist, AICW&BIP, Imphal Centre, State Mechanised Farm Complex, Lamphelpet-795004, Imphal West, Manipur.
4.	Khudwani	Dr M A Bhat, Sr scientist Agronomy Section of Plant Breeding and Genetics, SKUAST-K, Rice Research & Regional Station, Khudwani, Anantnag- 192 102, J&K, India. *Email:* g_singh72@rediffmail.com, *Mobile: 09797198851.*
*5.	Malan	Dr Sandeep Manuja, Wheat Agronomist, CSKHPKV, RWRC, Malan-176 047, Distt. Kangra, HP. *Email: sandeepmanuja70@gmail.com; sandeepmanuja70@rediffmail.com* Mobile: 09418112682, 09816900266.
6.	Shimla	Dr Dharam Pal, Senior Scientist (Plant Breeding), IARI Regional Station, Tutikandi, Shimla-171 004, HP. *Email: dpwalia@rediffmail.com*

NORTH WESTERN PLAINS ZONE

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*2.	Durgapura	Dr PK Sharma, Agronomist (Wheat), Agricultural Research Station, Durgapura, Jaipur (Rajasthan) *Email:* pksharmaskrau@gmail.com, *Mobile:09413239604*
3.	Gurdaspur	Dr (Mrs) Charanjit Kaur, Agronomist, PAU Regional Research Station, Gurdaspur- 143521, Punjab. *Email: virgocharan@yahoo.com, Mobile-0917287920*
*4.	Hisar	Dr Bhagat Singh, Assistant Wheat Agronomist, Department of Plant Breeding, CCS HAU, Hisar (Haryana)-125 004. *Email:* bsdahiya@gmail.com, *Mobile:09813078155*
*5.	Jammu	Dr Ramphool Puniya, Assist. Prof. Agronomy, Division of Agronomy, FOA, SKUAS&T-J, Chatha, Jammu - 180 009. *Email: ramagron@gmail.com, Mobile:09419256171*
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9.	New Delhi	Dr Shiva Dhar, Senior Scientist (Agronomy), Division of Agronomy, IARI, New Delhi - 110 012. *Email: drsdmisra@gmail.com, Mobile:09868354933*
*10.	Pantnagar	Dr DS Pandey, Prof (Agronomy), *Email:* drdspandey@gmail.com, *, Mobile:09412438860* Dr VP Singh, Prof (Agronomy), *Email: vps@yahoo.com, Mobile:09451407245* Dr Rajeew Kumar, Jr. Research Officer, *Email: shuklarajeew@gmail.com, Mobile: 09411320357* Department of Agronomy Science, College of Agriculture, GBPUA&T, Pantnagar, US Nagar, Uttarakhand, - 263 145
11.	Sriganganagar	Dr Balram Godara, Wheat Agronomist, Agricultural Research Station Karni Road, Sriganganagar- 335 001 *Email:balram.g.ars@gmail.com, Mobile: 09413155287*

NORTH EASTERN PLAINS ZONE

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