प्रगति प्रतिवेदन
PROGRESS REPORT
2023-24

संसाधन प्रबंधन
RESOURCE MANAGEMENT

अखिल भारतीय समन्वित गेहूँ एवं जौ अनुसंधान परियोजना

AICRP on Wheat and Barley

भा.कृ.अनु.प.–भारतीय गेहूँ एवं जौ अनुसंधान संस्थान, करनाल (हरियाणा)

ICAR-Indian Institute of Wheat & Barley Research, Karnal (Haryana)

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S.C. Gill

(Resource Management)

CONTENTS

SUMMARY

Present era of Indian agriculture is focusing on improving the input use for sustainable crop production. Efforts are being made in this direction to maximise the productivity of wheat/barley based cropping systems by identifying the high yielding wheat/barley genotypes suitable for different sowing times and irrigation levels across the various growing zones (NHZ, NWPZ, NEPZ, CZ, and PZ). Simultaneously, it is equally important to reduce the input cost and improve the profitability of wheat/barley based cropping systems along with reduced negative impact on the environment.

India contributes approximately 14.38% (112.92 million tonnes) to global wheat production (784.91 million tonnes) from an area of 34.16 million hectares, achieving a national average productivity of 3306 kg/ha (Ministry of Agriculture and Farmers Welfare, Government of India, 2023-24). This success is attributed to the widespread adoption of new technologies, such as high-yielding wheat varieties tailored to different zones and climatic conditions, suitable agronomical measures such as early sowing of wheat in NWPZ, cultivation of high yielding genotypes at increased fertility levels, and, most importantly, the diligent efforts of Indian farmers. The expansion of wheat acreage and policy support from government agencies have also contributed to tremendous growth in wheat production. To keep the pace with the increasing food demand driven by population growth, researchers, planners, and farmers must address the hurdles in the way of achieving the maximum yield potential. The issues like imbalanced nutrient application and intensive tillage continue to degrade the natural resources. Furthermore, micro-nutrient deficiencies have been reported in various parts of the Indo-Gangetic plains, India's food basket, due to continuous nutrients depletion, imbalanced fertilizer application, and mono-cropping systems. For example, farmers in NWPZ often apply excessive nitrogen in pursuit of higher grain yields, while in NEPZ, farmers apply insufficient nutrients such as potash and micro-nutrients due to economic constraint and small land holdings. Alarming situation arises when crop residue is burnt, which causes loss of essential nutrients and environmental pollution, affecting the human as well as soil health.

To ensure food security and to reverse the trend of natural resource degradation, technological advancements are crucial, including the development of better wheat varieties suited to various cropping systems and growing conditions across the agro-ecological zones. Achieving higher agricultural productivity must go hand in hand with environmental sustainability to ensure the long-term viability. Besides varietal improvement, research efforts are focused on refining the technologies, diversifying and intensifying the cropping systems with leguminous crops, and

adopting integrated and precise nutrient, water, and weed management to reduce the input costs and improve the profitability.

The Resource Management group of the "All India Coordinated Wheat and Barley Improvement Project" (AICW&BIP) is not only evaluating the performance of newly developed genotypes but also actively working on developing and refining eco-friendly, location-specific, and cost-effective wheat and barley production technologies to increase the productivity and profitability of farmers. This work includes special trials on input-responsive technologies, tailored to the priorities of different wheat/barley growing zones. The results of multi-location varietal evaluations and special coordinated trials are summarized below.

In five wheat/barley growing zones, fourteen varietal evaluation trial series were conducted at 77 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, 77 trials were proposed, of which 76 were conducted. Out of the conducted trials, eight trials were rejected either by monitoring team or due to low mean yield of the trial. The overall conduct of trial was 98.7 percent with a success and rejection rate of 89.6 percent and 10.4 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
North Western Plain Zone						
IR-TS-DOS-TAS	10	10	-	-	01	Jammu
IR-LS-DOS-TAS	10	10	-	-	03	Durgapura, Jammu, Karnal
IR-TS-HL-DOS (Barley)	03	03	-	-	-	-
IR-SL- LON (Barley)	02	02	-	-	-	-
Total	**25**	**25**			**04**	
North Eastern Plain Zone						
IR-TS-DOS-TAS	09	08	01	RPCAU Pusa	01	Kanpur
IR-SL- LON (Barley)	02	02	-	-	-	-
IR-TS-FB- DOS (Barley)	03	03	-	-	-	-
Total	**14**	**13**	**01**		**01**	
Central Zone						
IR-TS-DOS-TAD	08	08	-	-	02	Jabalpur, Vijapur
IR-LS-DOS-TAS	08	08	-	-	-	-
RIR-TS-TAD	06	06	-	-	-	-
SPL-IR-ES-HYPT	05	05	-	-	-	-
IR-TS-HL-DOS (Barley)	03	03	-	-	01	Vijapur
Total	**30**	**30**			**03**	
Peninsular Zone						
IR-TS-DOS-TAD	04	04	-	-	-	-
IR-LS-DOS-TAS	04	04	-	-	-	-
Total	**08**	**08**				
Grand Total	**77**	**76**	**01**		**08**	

In NHZ, no coordinated trial was constituted. In NWPZ, out of 25 proposed trials, all the trials were successfully conducted. A total of four trials were rejected with one being at Jammu (low mean yield) in timely sown conditions, and three trials being at Durgapura (low mean yield), Jammu (rejected by monitoring team) and Karnal (low mean yield) in late sown conditions. In NEPZ, out of 14 proposed trials, 13 trials were successfully conducted, while one trial at Kanpur centre in timely sown condition was rejected by the monitoring team. In CZ, out of 30 proposed trials, all the trials were successfully conducted. A total of three trials were rejected with two being at Jabalpur and Vijapur (low mean yield) in timely sown conditions of wheat and one being at Vijapur (rejected by monitoring team) in irrigated timely sown trial of hulless barley. In PZ, out of 08 proposed trials, all trials were successfully conducted. The centres where the trials were not conducted or where the trials were rejected have been listed in the Table 1.

The performance of 24 final year test entries under different growing conditions is presented in Table 2. In NWPZ, test entry HD 3428 showed numerical superiority over all check varieties in late sown conditions. In NEPZ, the test entry DBW 386 exhibited numerical superiority over all check varieties in timely as well as late sown conditions. In NEPZ, under

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

Zone wise trial	Test entries	Entry sowing superiority		Best check	Yield gain, %	Locations
		Numerical	Significant			
North Western Plain Zone						
IR-TS-DOS-TAS	HI 1668, HD 3471[M], DBW 386	-	-	HD 3386	-	09
IR-LS-DOS-TAS	HD 3428	HD 3428		JKW 261	0.67	07
IR-TS-HL-DOS	DWRB 223	-	-	Karan 16	-	03
IR-SL- LON	KB 2031	-	-	NDB 1173	-	02
North Eastern Plain Zone						
IR-TS-DOS-TAS	DBW 386	DBW 386		PBW 826	0.23	07
IR-SL- LON	KB 2031	-	KB 2031	NDB 1173	1.97	02
IR-TS-FB- DOS	UPB 1106	-	-	DWRB 137	-	03
Central Zone						
IR-TS-DOS-TAD	HI 1669	-	-	GW 322	-	06
IR-LS-DOS-TAS	HI 1674	-	-	HI 1634	-	08
RIR-TS-TAD	DBW 441[M]	-	-	DBW 359 (I)	-	06
SPL-IR-ES-HYPT	CG 1044, GW 543	-	-	DBW 377 (I)	-	05
IR-TS-HL-DOS	DWRB 223	-	-	Karan 16	-	02
Peninsular Zone						
IR-TS-DOS-TAD	WH 1306, NWS 2222, DBW 443, PBW 891, AKAW 5100	NWS 2222	-	MACS 6222	2.1	04
IR-LS-DOS-TAS	HI 1674, LOK 79, NIAW 4114, NIAW 4120	NIAW 4120, NIAW 4114 LOK 79	-	HD 3090	3.72 1.76 0.09	04

IR-SL-LON trial of barley, test entry KB 2031 showed significant superiority than all check varieties with a yield gain of 1.97% against the best check (NDB 1173). In PZ, test entry NWS 2222 demonstrated numerical superiority over the best check (MACS 6222) on the mean basis in timey sown conditions. In PZ, under IR-LS-DOS-TAS trial, test genotypes NIAW 4120, NIAW 4114 and LOK 79 showed numerical superiority over the best check (HD 3090) with yield gains in the range of 0.09-3.72% on the mean basis.

The details of the special trials conducted in different zones are presented in Table 3. In all, 57 trials were proposed, out of which 47 were conducted and the conduct percentage was 82.5. The maximum numbers of special trials were conducted in NWPZ (25) followed by NEPZ (11), NHZ (05), CZ (05) and PZ (01).

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

Trial Series	Locations	Trials conducted	Trials not conducted	
			Number	Centres
Northern Hill Zone				
SPL-2: Effect of seed rate and growth regulators on wheat productivity	01	01	-	-
SPL-3: Precision N management in wheat using green seeker tool	01	01	-	-
SPL-5: Efficacy of herbicides against broad-leaved weed flora of barley	02	02	-	-
SPL-6: Effect of seed rate and growth regulators on barley productivity	01	01	-	-
Total	**05**	**05**	-	-
North Western Plains Zone				
SPL-1: Effect of tillage, rice residue and microbial consortia management on wheat productivity	03	03	-	-
SPL-2: Effect of seed rate and growth regulators on wheat productivity	08	07	01	Jammu
SPL-3: Precision N management in wheat using green seeker tool	06	06	-	-
SPL-4: Intercropping of oilseed/pulses with wheat and barley	02	00	02	Hisar, Jammu
SPL-5: Efficacy of herbicides against broad-leaved weed flora of barley	04	04	-	-
SPL-6: Effect of seed rate and growth regulators on barley productivity	06	05	01	Ludhiana
Total	**29**	**25**	**04**	
North Eastern Plains Zone				
SPL-1: Effect of tillage, rice residue and microbial consortia management on wheat productivity	02	01	01	Kalyani
SPL-3: Precision N management in wheat using green seeker tool	04	03	01	Kanpur
SPL-4: Intercropping of oilseed/pulses with wheat and barley	07	05	02	RPCAU Pusa, Sabour
SPL-5: Efficacy of herbicides against broad-leaved weed flora of barley	04	02	02	Kalyani, Kanpur
Total	**17**	**11**	**06**	
Central Zone				
SPL-3: Precision N management in wheat using green seeker tool	01	01	-	-
SPL-5: Efficacy of herbicides against broad-leaved weed flora of barley	04	04	-	-
Total	**05**	**05**	**-**	
Peninsular Zone				
SPL-3: Precision N management in wheat using green seeker tool	01	01	-	-
Total	**01**	**01**	**-**	**-**
Grand Total	**57**	**47**	**10**	

North Western Plains Zone

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

Irrigated Timely Sown

The performance of three *aestivum* test entries HI 1668, HD 3471 and DBW 386 against five checks (HD 2967, HD 3386, DBW 222, DBW 187 and PBW 826) was evaluated at ten centres *i.e.* Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganganagar under timely and late sown conditions. For pooled analysis, data of nine centres were considered and data of Jammu centre were not included due to low mean yield under timely sown conditions. The perusal of pooled data presented in Fig. 1 revealed that there was a significant decline in yield from normal (59.34 q/ha) to late (50.26 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2 and thousand grains weight under late sown conditions. Yield decline in late sown condition was 15.3% as compared to timely sown condition. On average basis, the recently identified check variety HD 3386 (I)(C) ranked first with mean yield of 56.31 q/ha and second-best yielder was check variety PBW 826 (C) with a mean yield of 56.23 q/ha. The highest yield of 62.41 q/ha was recorded for PBW 826 (C) under timely sown conditions, whereas under late sown conditions, HD 3386 (I)(C) produced the highest yield of 52.24 q/ha.

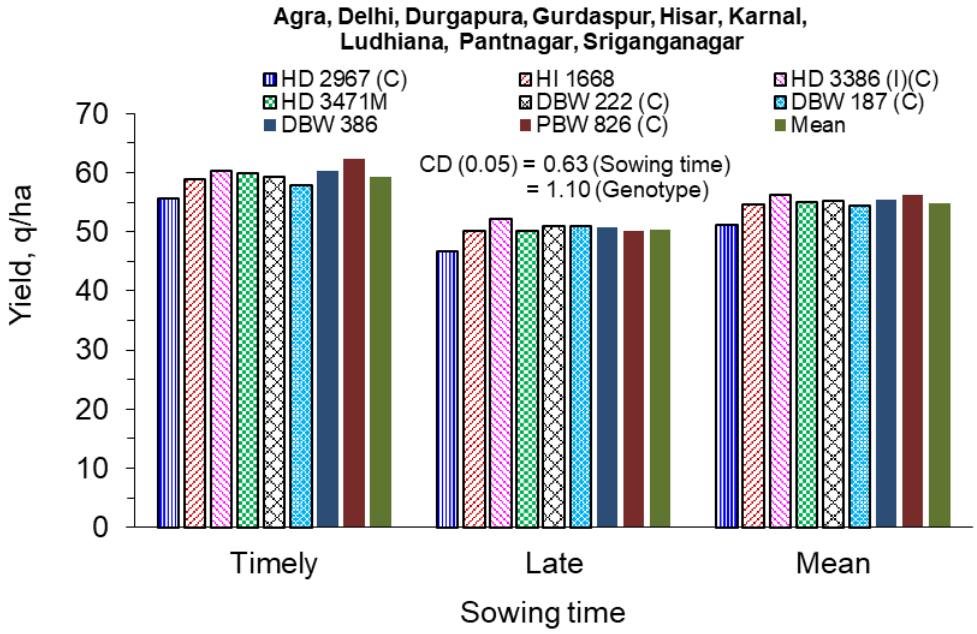

Fig.1 Genotype performance under timely and late sown conditions in NWPZ

Irrigated Late Sown

The performance of one *aestivum* test entry HD 3428 against four checks (HD 3059, PBW 771, DBW 173 and JKW 261) was evaluated at ten centres *i.e.* Agra, Delhi, Durgapura,

Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganganagar under late and very late sown conditions. For pooled analysis data of seven centres were considered and data of Durgapura, Jammu and Karnal centres were not included due to low mean yield under late sown conditions. The late sowing time was from 10th to 16th December and very late sowing was from 1st to 7th January. The perusal of pooled data in Fig. 2 revealed that there was a significant decline in yield from late (52.07 q/ha) to very late (36.95 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2, grains/earhead and thousand grain weight under very late sown conditions. Yield decline in very late sown condition was 29.0% as compared to late sown condition. On average basis, the test entry HD 3428 ranked first with a mean yield of 46.06 q/ha and second-best yielder was check variety JKW 261 (C) with a mean yield of 45.75 q/ha. JKW 261 (C) produced the highest yield of 54.32 q/ha under late sown conditions, whereas under very late sown conditions, test entry HD 3428 produced the highest yield of 39.01 q/ha.

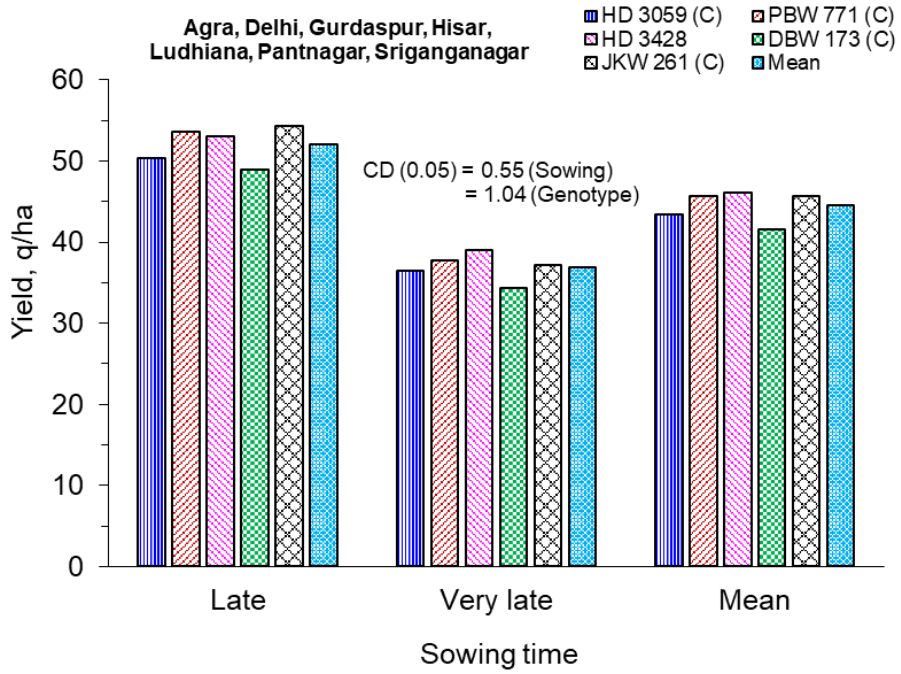

Fig.2 Genotype performance under late and very late sown conditions in NWPZ

North Eastern Plains Zone

The performance of test genotypes was evaluated under irrigated timely sown conditions at different locations and the results are summarized here under;

Irrigated Timely Sown

One test entry DBW 386 was evaluated against four checks *viz.* HD 3249 (C), DBW 187 (C), DBW 222 (C) and PBW 826 (C) at eight locations (Ayodhya, Coochbehar, Kalyani, Kanpur, Ranchi, Sabour, Shillongani and Varanasi) under timely (12th November to 18th November) and

late (10th December to 16th December) sown conditions. The data of Kanpur and RPCAU Pusa were not considered in pooled analysis due to rejection of trial by the monitoring team. Timely sowing registered higher yield of all genotypes compared to late sown conditions and on mean basis, yield declined by 7.10% when sowing was delayed from timely to late sowing condition (Fig. 3). The yield decline was due to significant reduction in 1000 grains weight under late sown condition as compared to timely sown condition. On mean basis, the test entry DBW 386 was the highest yielder (48.74 q/ha) and recorded significantly higher grain yield compared to all check varieties except PBW 826.

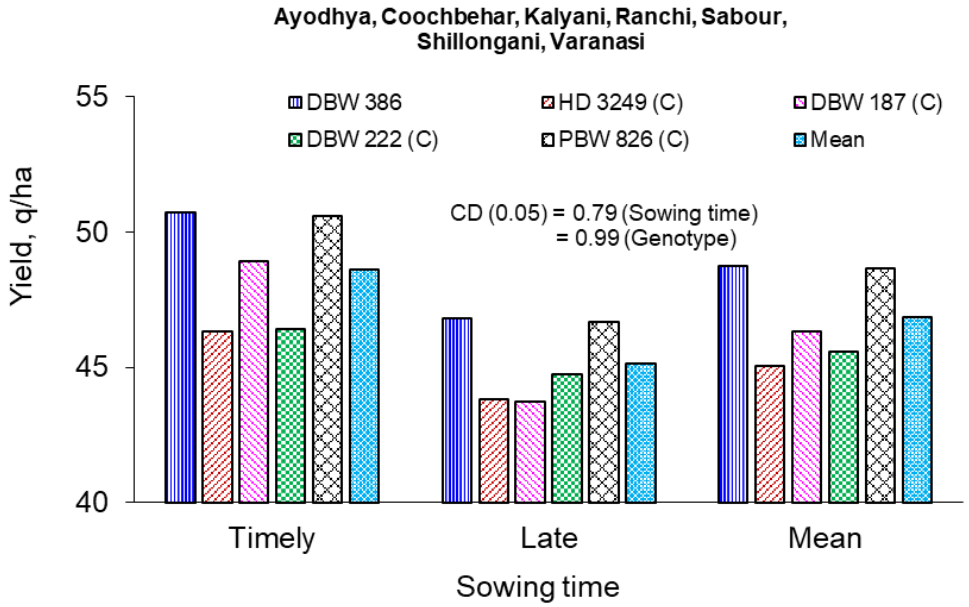

Fig.3 Genotype performance under timely and late sown conditions in NEPZ

Central Zone

The performance of test genotypes was evaluated under different sowing time, restricted irrigation and high fertility conditions, and the results are summarized here under;

Irrigated Timely Sown

In irrigated timely sown trial, the performance of one *aestivum* test entry HI 1669 over four check varieties GW 547 (I)(C), MACS 6768(C), HI 1650 (C) and GW 322 (C) was evaluated under timely and late sown conditions at eight locations *i.e.* Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Powarkheda, Udaipur and Vijapur. The data of Jabalpur and Vijapur centres were not included in pooled analysis due to low mean yield under timely sown conditions. The perusal of pooled data of Bilaspur, Gwalior, Indore, Junagarh, Powarkheda and Udaipur indicated that grain yield reduced significantly on changing of sowing from timely to late condition (Fig. 4). The mean grain yield under timely and late sowing conditions was recorded to be 50.36 and 42.99 q/ha, respectively. The mean grain yield of test entry HI 1669 was significantly inferior the best check GW 322 (C).

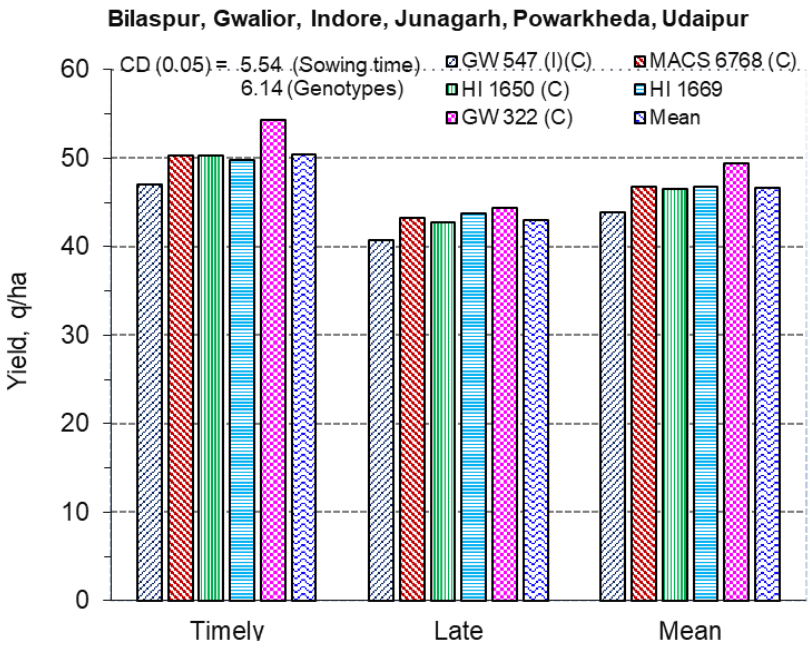

Fig.4 Genotype performance under timely and late sown conditions in CZ

Irrigated Late Sown

In irrigated late sown trial, the performance of one *aestivum* test entry HI 1674 over four check varieties MP 4010 (C), HD 2932 (C), CG 1029 (C) and HI 1634 (C) was evaluated under late and very late sowing conditions at eight centres (Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Powarkheda, Udaipur and Vijapur). The results of pooled data of all the centres revealed that grain yield declined drastically on shifting the sowing time from late to very late condition (Fig. 5). The mean grain yield under late and very late condition was observed to be 42.19 and 33.72 q/ha, respectively. The mean yield of test entry HI 1674 was significantly inferior to the best check HI 1634 (C).

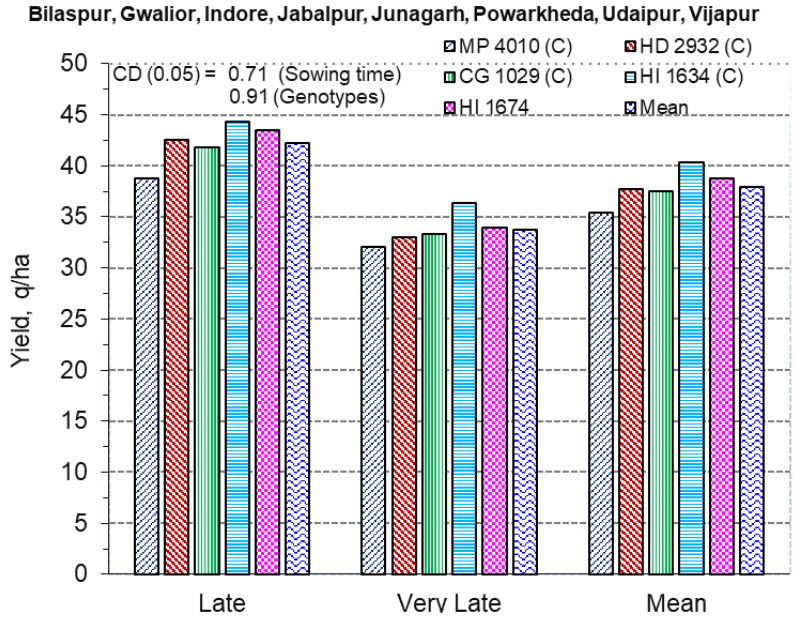

Fig.5 Genotype performance under late and very late sown conditions in CZ

Restricted Irrigation

In restricted irrigation trial, one test entry DBW 441^{M} was evaluated against four check varieties {DBW 110, HI 1655, DBW 359 (I) and CG 1036} at six locations (Bilaspur, Gwalior, Indore, Jabalpur, Powarkheda, Udaipur). The pooled analysis showed that increasing the number of irrigation successively produced significantly higher yield (Fig. 6). The maximum and significantly higher yield (39.96 q/ha) was obtained with two irrigations as compared with zero and one irrigation. The check variety DBW 359 (I) turned out to be top yielder, while test entry DBW 441^{M} ranked fourth on the mean basis.

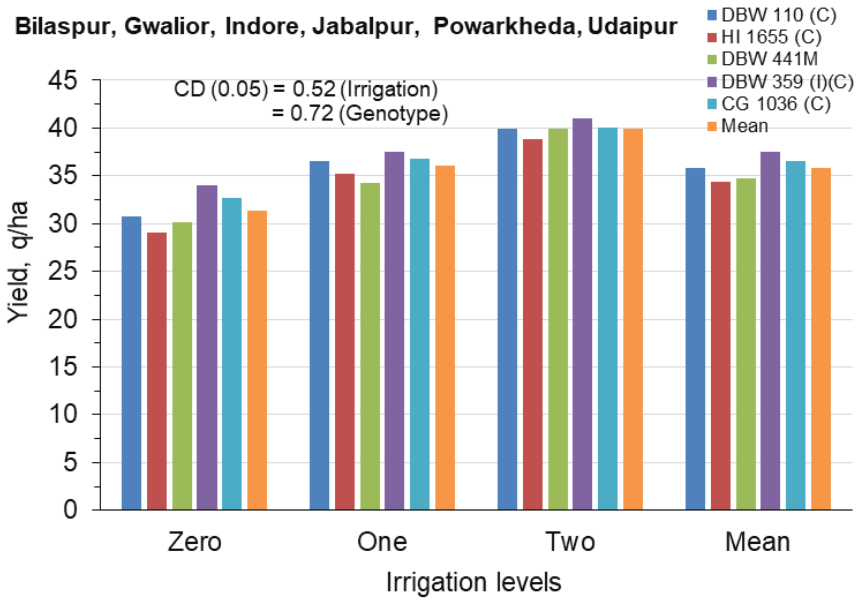

Fig. 6 Genotype performance under restricted irrigation conditions in CZ

High Yield Potential Trial

High yield potential trial was conducted to maximise the wheat yield with target yield of 8 t/ha by using higher level of inorganic and organic fertilisers, and spraying of growth retardant for control of lodging. The trial was conducted at five centres namely BISA Jabalpur, Jabalpur, Powarkheda, Udaipur, Vijapur. The pooled analysis showed (Fig. 7) significant effect of fertiliser application and growth regulators on yield. Addition of 15 t FYM/ha with 150% RFD significantly increased the grain yield (17.5%). Variety DBW 377 (I) remained the top yielder (64.09 q/ha) followed by GW 543 (62.65 q/ha). The mean grain yield of test entry GW 543 was slightly lower but statistically at par to the best check DBW 377 (I). The yield of other test entry CG 1044 was significantly inferior to the best check DBW 377 (I).

Peninsular Zone

In Peninsular zone, the performance of test genotypes was evaluated under two trials on sowing time (timely & late, and late & very late sown) at different locations. The results of these trials are summarized below.

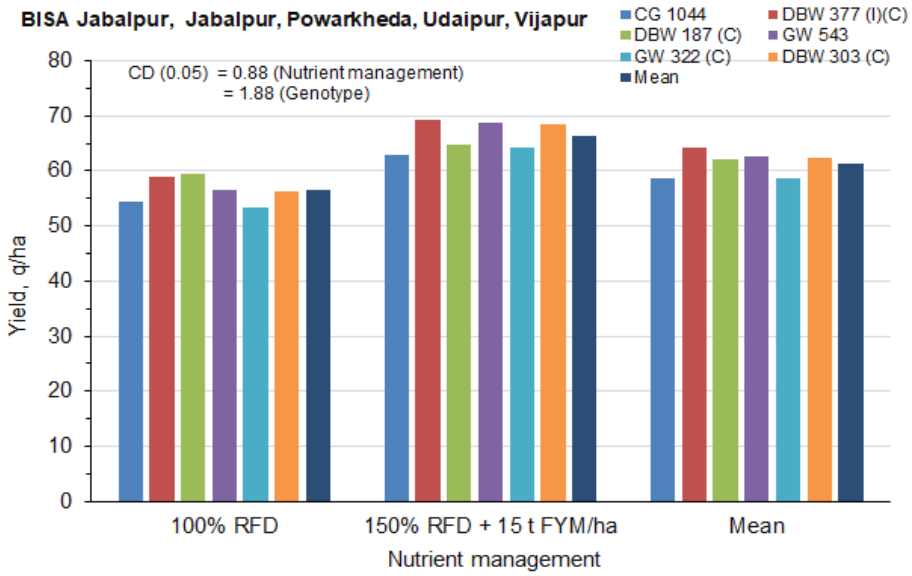

Fig.7 Genotype performance under high fertility (conditions in CZ

Irrigated Timely Sown

In irrigated timely sown trial, the performance of five *aestivum* test entries WH 1306, NWS 2222, DBW 443, PBW 891 and AKAW 5100 over three check varieties GW 322 (C), MP 1378 (I)(C) and MACS 6222 (C) was evaluated under timely and late sown conditions at four locations *i.e.* Akola, Dharwad, Niphad and Pune. The perusal of pooled data (Akola, Dharwad, Niphad and Pune) indicated that grain yield reduced significantly on changing of sowing from timely to late condition (Fig. 8). The mean grain yield under timely and late sowing conditions was recorded to be 53.3 and 47.2 q/ha, respectively. The mean grain yield of test entry NWS 2222 was numerically superior but statistically similar to the best check MACS 6222 (C). Among all the test entries, grain yield of AKAW 5100 was inferior to all check varieties.

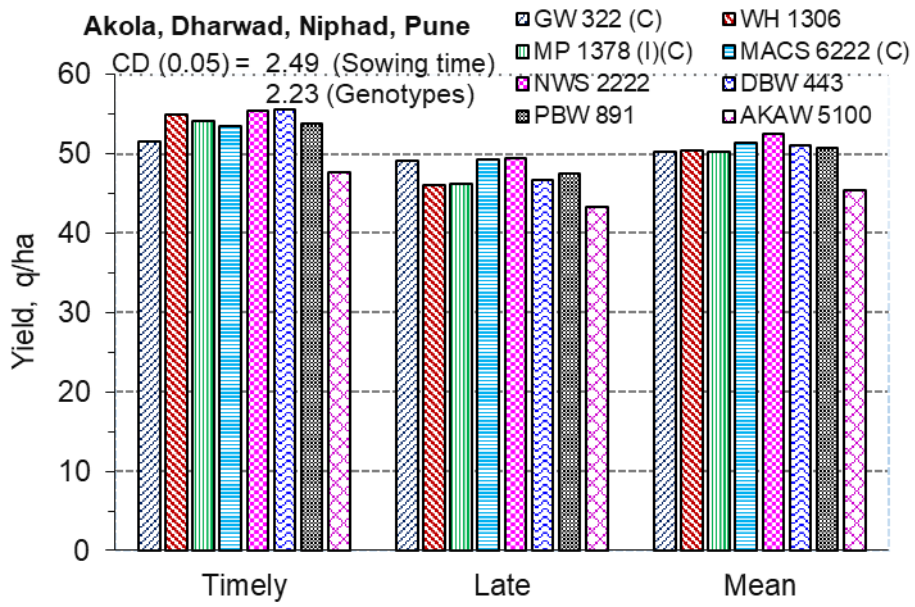

Fig. 8. Genotype performance under timely and late sown conditions in PZ

Irrigated Late Sown

In irrigated late sown trial, the performance of four *aestivum* test entries HI 1674, LOK 79, NIAW 4114 and NIAW 4120 over four check varieties HI 1633 (C), RAJ 4083 (C), HD 3090 (C) and HD 2932 (C) was evaluated under late and very late sown conditions at four centres (Akola, Dharwad, Niphad and Pune). The results of pooled data of Akola, Dharwad, Niphad and Pune centres revealed that grain yield declined drastically on shifting the sowing time from late to very late condition (Fig. 9). The mean grain yield under late and very late condition was observed to be 48.6 and 35.9 q/ha, respectively. The mean yield of test entries NIAW 4120, NIAW 4114 and LOK79 were statistically similar to the yield of the best check HD 3090 (C). However, the mean grain yield of test entry HI 1674 was significantly lower than the yield of the best check variety HD 3090 (C).

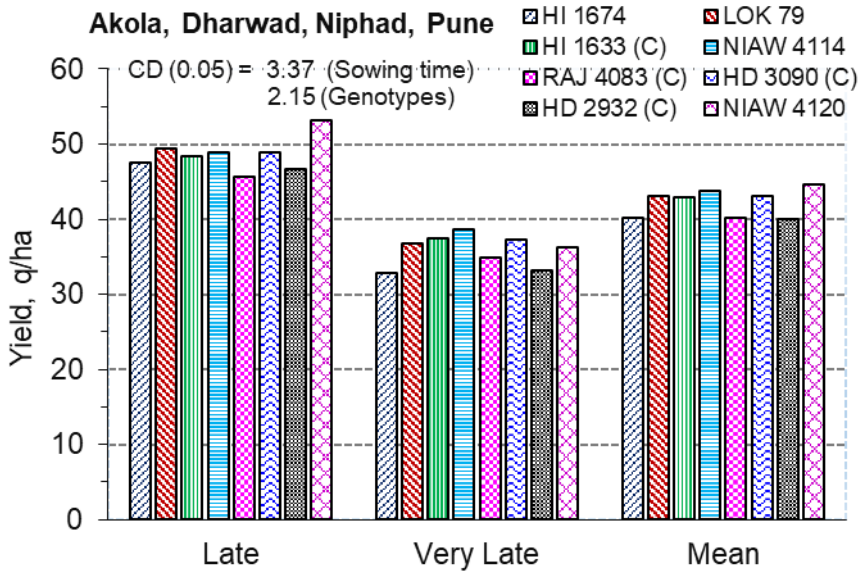

Fig. 9. Performance of genotypes under late and very late sown conditions in PZ

PRODUCTION TECHNOLOGIES

In this section, the results of various experiments on updating the package of practices of various wheat growing zones are presented. Various special coordinated trials on tillage and residue management, seed rate, precision N management and intercropping in wheat/barley were conducted to address the various issues in different wheat growing zones of the country.

SPL-1: Effect of tillage, rice residue and microbial consortia management on wheat productivity

In NWPZ, this trial was conducted with an objective to identify the effective tillage and rice residue management strategy at three centres (Karnal, Ludhiana and BISA Ludhiana). The pooled analysis of data presented in Fig.10 revealed that the maximum mean grain

yield (57.53 q/ha) was produced under the treatment of strip tillage. However, it remained at par with conventional tillage and zero tillage. The effect of residue management treatments was also non-significant. However, numerically maximum yield (58.13 q/ha) was observed with the full rice residue retention and minimum wheat grain yield (54.73 q/ha) was recorded where no rice residue was retained.

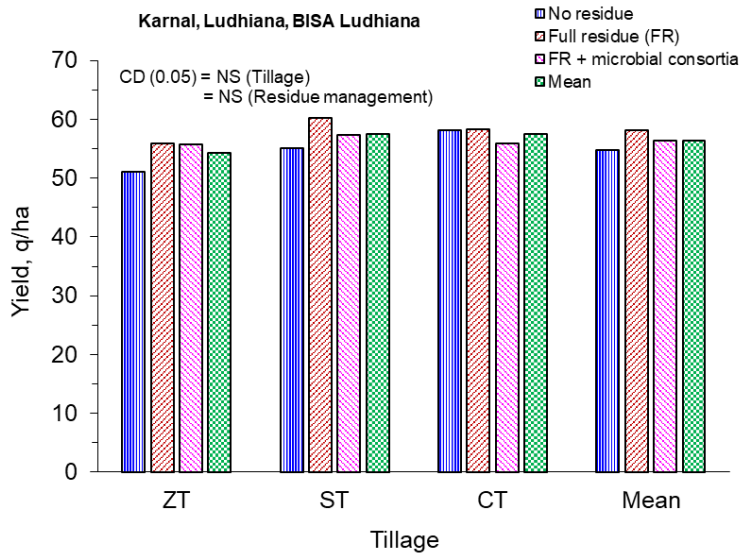

Fig. 10 Effect of tillage and residue management on wheat productivity in NWPZ

In NEPZ, this trial was conducted at one location (BISA Samastipur). The analysis of data presented in Fig. 11 revealed that the maximum mean grain yield (55.0 q/ha) was recorded under the treatment of conventional tillage. However, it remained at par with zero tillage and was significantly superior to strip tillage. The effect of residue management treatments was non-significant. However, numerically the maximum yield (52.72 q/ha) was observed with

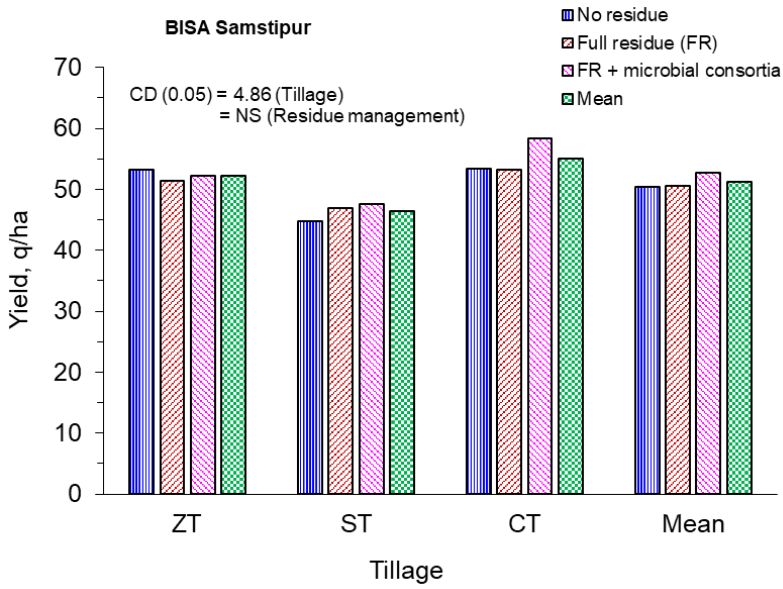

Fig. 11 Effect of tillage and residue management on wheat productivity in NEPZ

full rice residue retention + microbial consortia and minimum wheat grain yield (50.43 q/ha) was recorded where no rice residue was retained.

SPL-2: Effect of seed rate and growth regulators on wheat productivity

In NHZ, this trial was conducted at Almora centre. The data presented in Fig. 12 revealed that grain yield of wheat increased with rise in seed rate primarily due to more number of tillers. The maximum mean grain yield was found to be 71.0 q/ha at 100 kg/ha seed rate. The mean grain yield at 100 kg/ha seed rate was 6.5 and 11.9% higher than those at 80 and 60 kg/ha seed rate, respectively. The growth regulators application did not produce any positive effect on grain yield; however, these (except drum rolling) produced bolder grains with more test weight as compared to control. On the mean basis, the maximum test weight of grains was recorded to be 46.98 g with TIBA spray at tillering @100 ppm over control (43.87 g).

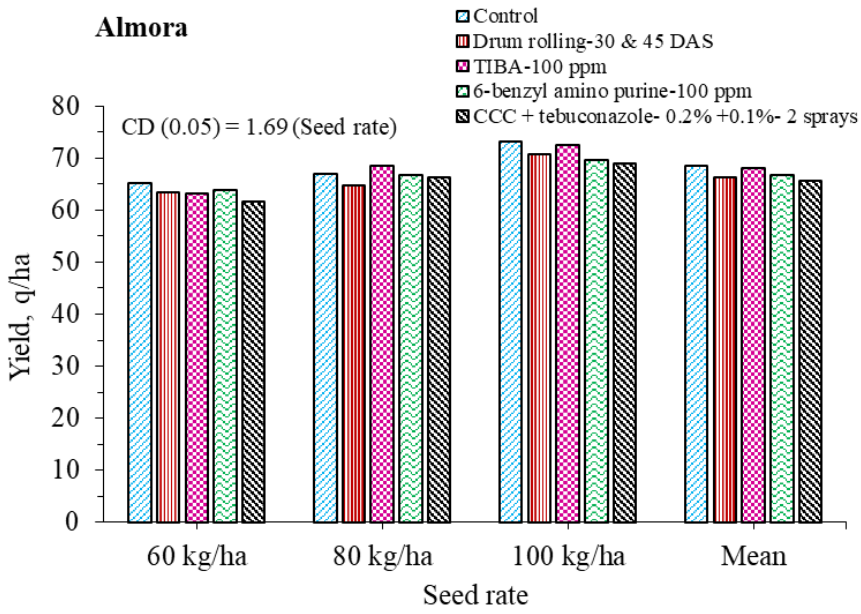

Fig. 12 Effect of seed rate and PGRs application on wheat productivity in NHZ

In NWPZ, this trial was conducted at seven centres (Agra, Durgapura, Gurdaspur, Hisar, Karnal, Ludhiana, Pantnagar). The pooled analysis of data presented in Fig. 13 revealed that the maximum mean grain yield (59.14 q/ha) was produced under the treatment of 100 kg/ha seed rate and it was significantly superior to both the lower seed rates (60 and 80 kg/ha). The effect of growth regulators was also significant. Among growth regulators treatments, TIBA-100 ppm produced the maximum grain yield (57.00 q/ha); however, it was statistically at par with 6-benzyl amino purine-100 ppm and CCC + tebuconazole- 0.2% +0.1%- 2 sprays. All these three treatments were significantly superior to drum rolling and control treatments.

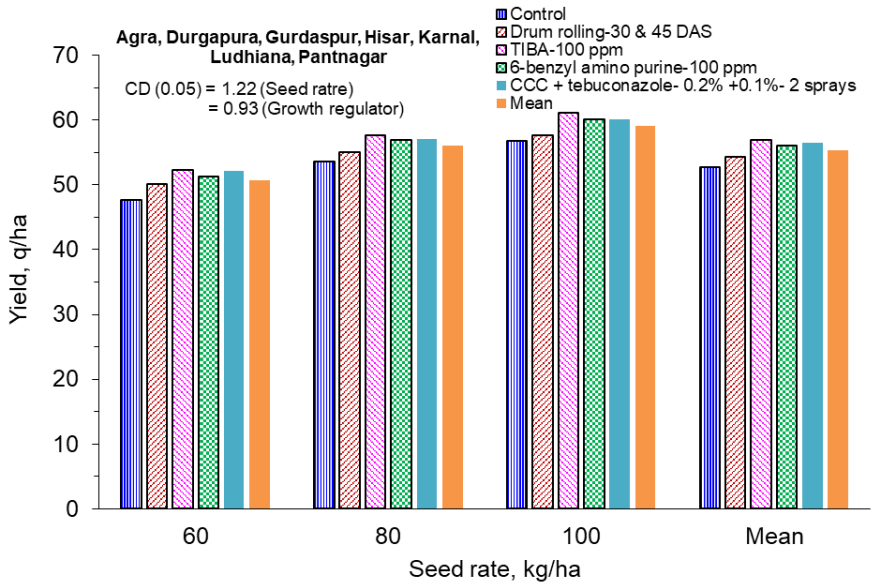

Fig. 13 Effect of seed rate and PGRs application on wheat productivity in NWPZ

SPL-3: Precision N management in wheat using green seeker (GS) tool

In NHZ, this experiment was conducted at Malan centre. The data presented in Fig. 14 showed that the maximum yield of 51.9 q/ha was recorded in N-rich plot having nitrogen application of 210 kg/ha. The application of nitrogen @75 kg/ha at basal, 75 kg/ha at the first irrigation and green seeker based nitrogen application of 8.6 kg/ha at the second irrigation produced the grain yield (50.7 q/ha) statistically similar to N-rich plot, thereby registering a 24.5% savings of nitrogen.

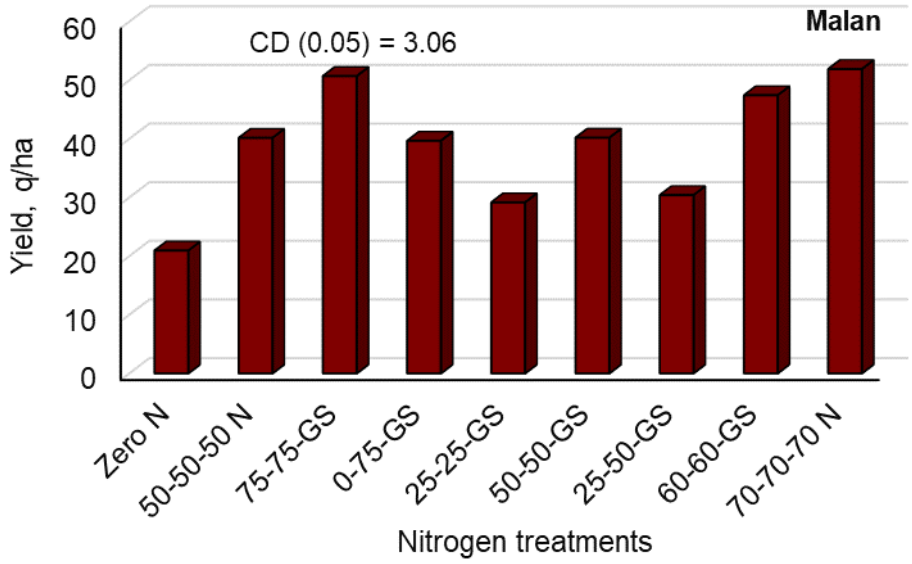

Fig. 14 Effect of green seeker based nitrogen application on wheat productivity in NHZ

In NWPZ, this experiment was conducted at six locations (Agra, Gurdaspur, Hisar, Karnal, Ludhiana and Pantnagar). The perusal of pooled analysis data presented in Fig. 15 showed that application of recommended N (rec. N - 1/3rd as basal, 1/3rd at CRI and 1/3rd

at second irrigation) produced the maximum grain yield of 58.63 q/ha. However, the grain yield with 75-75-GS and N rich (70-70-70) were statistically similar to recommended N treatment. All these treatments were significantly superior to rest of the treatments for grain yield.

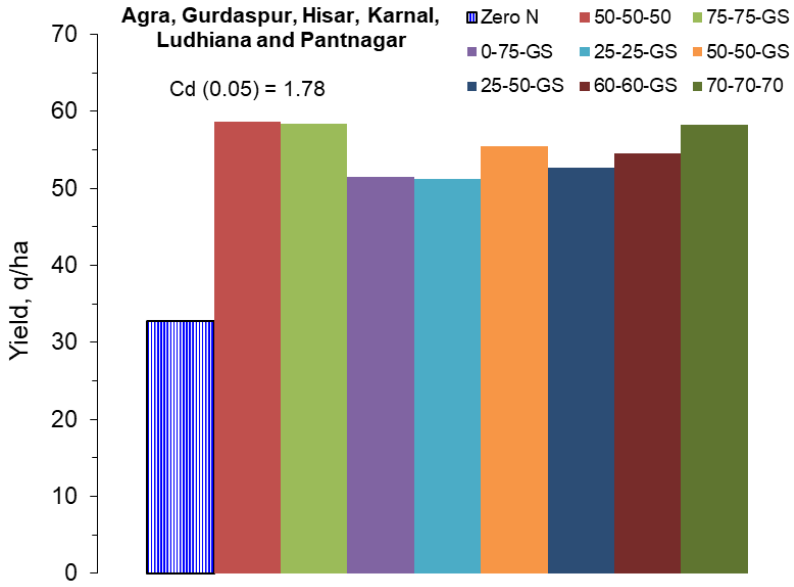

Fig. 15 Effect of green seeker based nitrogen application on wheat productivity in NWPZ

In NEPZ, this experiment was conducted at three locations (Coochbehar, Sabour and Varanasi). The perusal of pooled analysis data presented in Fig. 16 showed that application of 60-60-GS N produced the maximum grain yield of 50.04 q/ha. However, the grain yield with recommended N, 75-75-GS and N rich (70-70-70) treatments were statistically similar to 60-60-GS N treatment. All these treatments were significantly superior to rest of the treatments for grain yield.

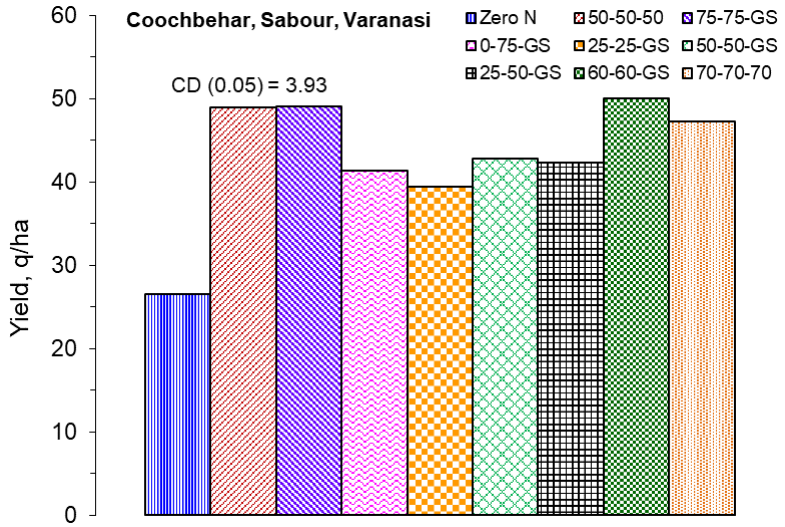

Fig. 16 Effect of green seeker based nitrogen application on wheat productivity in NEPZ

In CZ, this experiment was conducted at Vijapur centre. The data presented in Fig. 17 showed that the maximum yield of 52.6 q/ha was recorded in N-rich plot having nitrogen application of 210 kg/ha. In 50-50-GS treatment, the application of 50 kg/ha nitrogen at basal, 50 kg/ha at the first irrigation and green seeker based 30 kg/ha at the second irrigation recorded 51.6 q/ha yield statistically similar to N-rich plot, thereby registering a 38.1 savings in nitrogen.

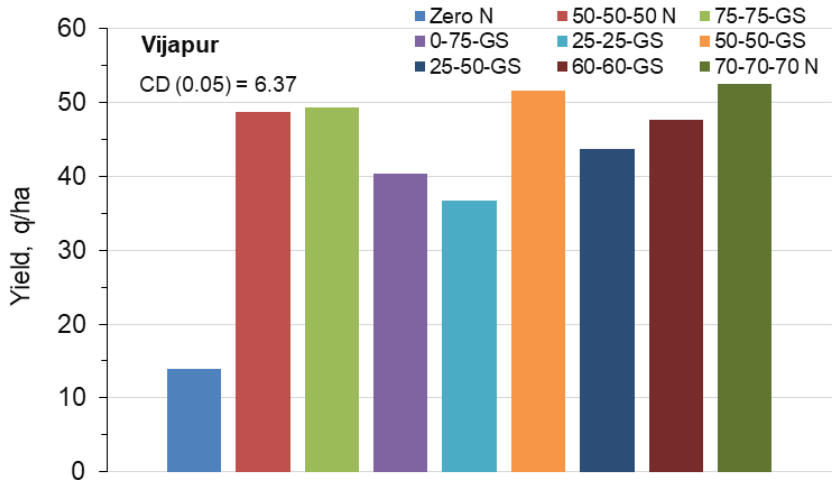

Fig. 17 Effect of green seeker based nitrogen application on wheat productivity in CZ

In PZ, this experiment was conducted at Dharwad centre. The data presented in Fig. 18 showed that the maximum yield of 49.3 q/ha was recorded in N-rich plot having nitrogen application of 210 kg/ha. Green seeker based other nitrogen treatments *viz.* 75-75-GS, 50-50-GS and 60-60-GS also showed statistically similar grain yield as with N-rich plot. Therefore, 28.6-38.1% N can be saved but with a yield penalty of 2.8-3.2 q/ha.

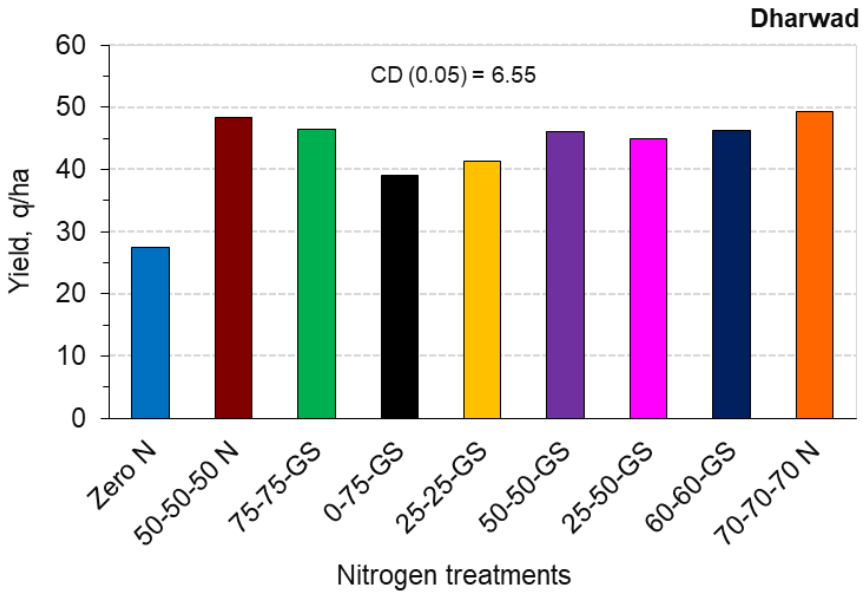

Fig. 18 Effect of green seeker based nitrogen application on wheat productivity in PZ

SPL-4: Intercropping of oilseed/pulses with wheat and barley

This experiment was conducted to explore the possibility of maximizing productivity and profitability by intercropping of oilseed/pulses with wheat and barley. The experiment was laid out in randomized complete block design with eleven treatments *viz.* wheat + toria (8:2), wheat + lentil (4:2), wheat + linseed (4:2), barley + toria (8:2), barley + lentil (4:2), barley + linseed (4:2), wheat (sole), barley (sole), toria (sole), lentil (sole) and linseed (sole).

In NEPZ, this experiment was conducted at five locations (Ayodhya, Burdwan, Kanpur, Shillongani and Varanasi). The perusal of pooled analysis data presented in Fig. 19 showed that wheat + lentil (4:2) treatment produced the maximum wheat equivalent yield of 53.95 q/ha. However, the wheat equivalent yield with wheat + linseed (4:2) intercropping treatment was statistically at par with wheat + lentil (4:2) treatment. The lowest wheat equivalent yield of 20.9 q/ha was recorded in sole toria treatment.

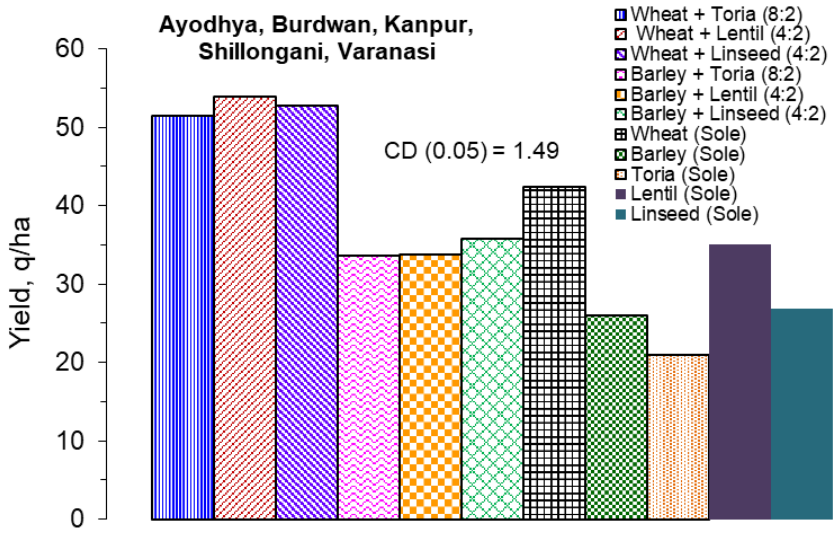

Fig. 19 Wheat equivalent yield under intercropping of oilseed/pulses with wheat/barley in NEPZ

Barley

Irrigated Timely Sown Hulless Barley

The performance of one hulless barley test entry DWRB 223 against three checks (PL 891, Karan 16 and NDB 943) was evaluated at three locations of NWPZ *i.e.* Durgapura, Karnal and Ludhiana under timely and late sown conditions. The perusal of pooled data in Fig. 20 revealed that there was a significant decline in yield from normal (46.78 q/ha) to late (29.12 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2, grains/earhead and thousand grain weight under late sown conditions. Yield decline in late sown condition was 37.7% as compared to timely sown condition. On average basis, the check variety Karan 16 (C) ranked first with mean yield of 43.64 q/ha and it was significantly

superior to rest of the check varieties and test entry. The check variety Karan 16 was top yielder under both the timely and late sown conditions.

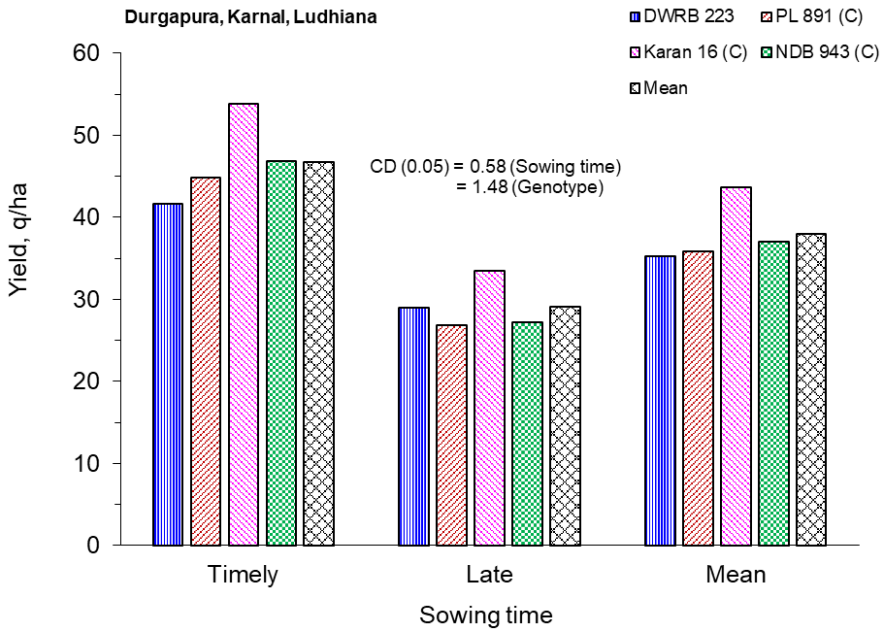

Fig. 20 Performance of hulless barley genotypes under timely sown conditions in NWPZ

In irrigated timely sown trial of hulless barley, one test entry DWRB 223 was evaluated against three check varieties (PL 891, Karnal 16 and NDB 943) at three locations of CZ *i.e.* Gwalior, Udaiur and Vijapur under timely and late sown conditions. The trial at Vijapur centre was rejected by the monitoring team. The perusal of pooled data of two centres presented in Fig. 21 revealed that shifting the sowing from timely conditions to late conditions reduced the grain yield by 8.8%. The mean grain yield of test entry DWRB 223 was significantly inferior to the best check Karan 16. The maximum test weight of grains (37.16 g

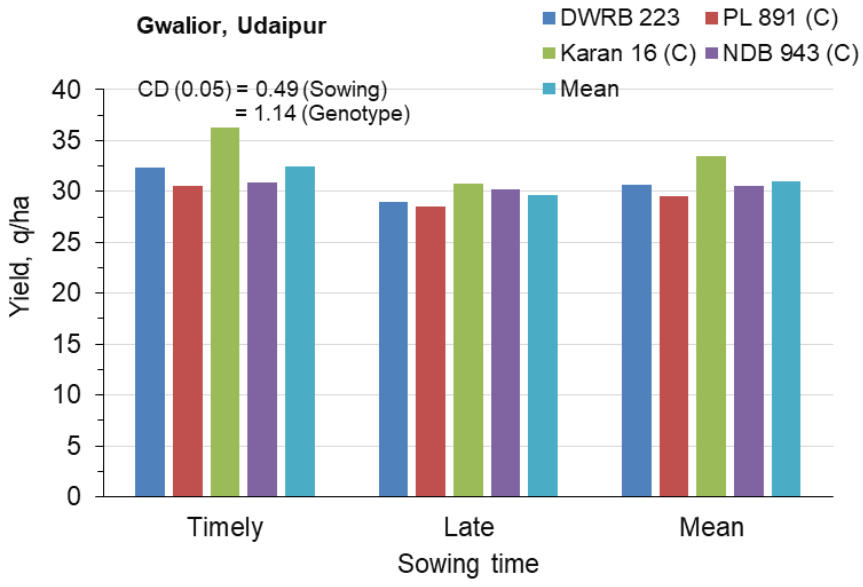

Fig. 21 Performance of hulless barley genotypes under timely sown conditions in CZ

for 1000 grains) was recorded for check entry PL 891, which was significantly higher than other genotypes.

Genotypes response to different N levels under salinity conditions

In NWPZ, the performance of one barley test entry KB 2031 against three checks (RD 2794, RD 2907 and NDB 1173) was evaluated at two locations *i.e.* Hisar (CCS HAU) and Hisar (IIWBR) with three nitrogen levels (60, 75 and 90 kg/ha) under salinity conditions. The perusal of pooled data in Fig. 22 revealed that there was a significant increase in yield from 60 kg N/ha (36.19 q/ha) to 90 kg N/ha (42.48 q/ha). This yield increase was due to significant increase in earhead/m^2 under higher N levels. The differences among genotypes were non-significant and on average basis, the check variety NDB 1173 produced the numerically highest yield and it was followed by test entry KB 2031.

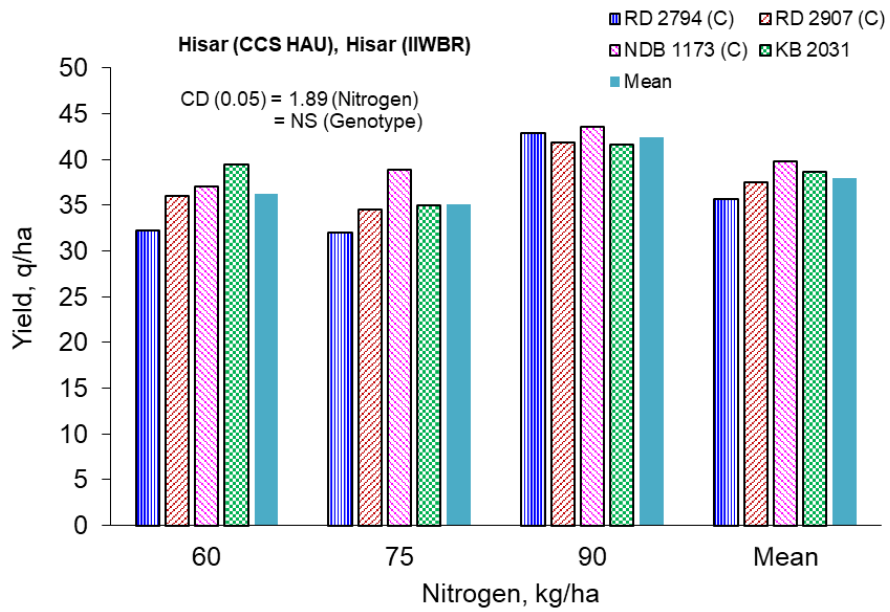

Fig. 22 Genotypes response to different N levels under salinity conditions in NWPZ

In NEPZ, one test entry of feed barley KB 2031 was evaluated with different nitrogen levels against three check varieties *viz.* RD 2794 (C), RD 2907(C) and NDB 1173 (C) at two locations (Ayodhya and Kanpur) under salinity conditions. Under salinity condition, yield increased significantly with increase in nitrogen doses on mean basis and yield increase was 10.37% when N dose was increased from 60 kg/ha to 90 kg/ha (Fig. 23). The yield increase was due to significantly higher 1000 grains weight. On mean basis, the test entry KB 2031 was the highest yielder (34.76 q/ha) and recorded significantly higher grain yield compared to all check varieties.

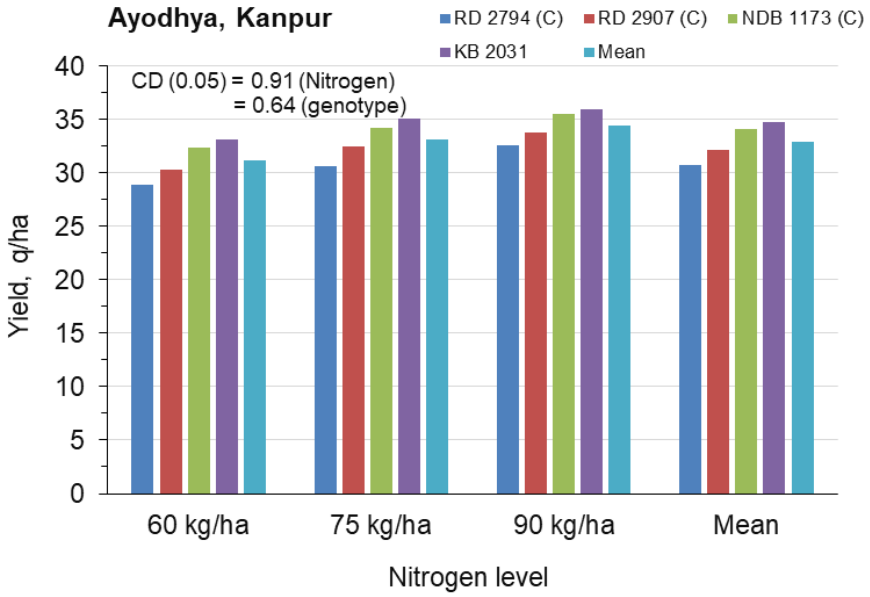

Fig. 23 Genotypes response to different N levels under salinity conditions in NEPZ

Irrigated Timely Sown Feed Barley

One test entry of feed barley UPB 1106 was evaluated against three checks *viz.* HUB 113 (C), BH 946 (C) and DWRB 137 (C) at three locations (Ayodhya, Kanpur and Ranchi) under timely (11th November to 20th November) and late (6th December to 15th December) sown conditions. Timely sowing registered higher yield of all genotypes compared to late sown conditions and on mean basis, yield declined by 14.84% when sowing was delayed from timely to late sowing condition (Fig. 24). The yield decline was due to significant reduction in effective tillers under late sown condition as compared to timely sown condition. On mean basis, the check variety HUB 113 was the highest yielder (35.06 q/ha), which was significantly at par to DWRB 137 (C) and UPB 1106 but significantly higher than BH 946 (C). Under timely sown conditions, yield of HUB 113 (C) was significantly higher than other genotypes.

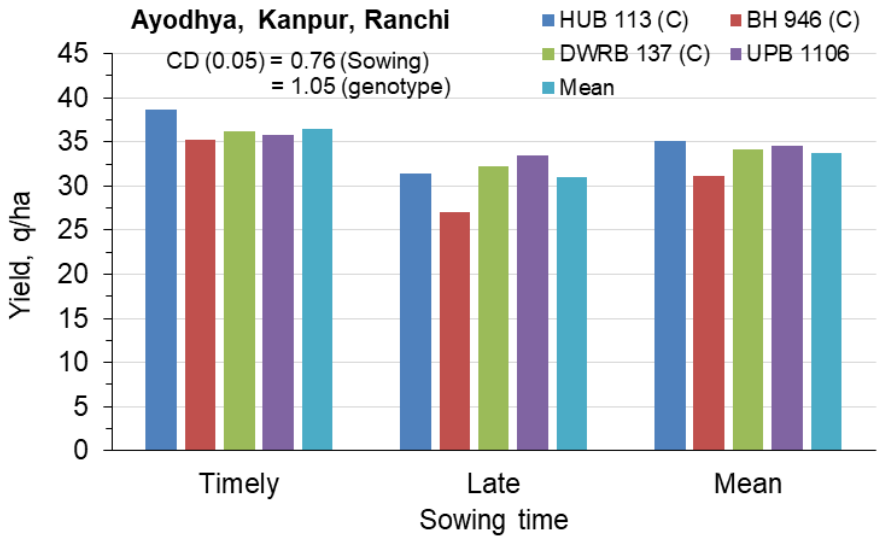

Fig. 24 Performance of feed barley under timely sowing conditions in NEPZ

SPL-5: Efficacy of herbicides against broad-leaved weed flora of barley

In NHZ, this trial was conducted at Khudwani and Malan centres. The data presented in Fig. 25(a) and Fig. 25(b) revealed that the maximum grain yield of 34.7 q/ha was recorded under weed free condition possibly due to proper utilization of moisture, light, nutrients and space by the crop plants. Among herbicide treatments, the maximum yield of 31.2 q/ha was recorded with metsulfuron methyl 20 WG + surfactant at 4 g *a.i.*/ha+ 0.2% S application. In terms of weed control, the minimum weed dry weight (5.16 g/m^2) at 90 DAS was recorded with tank-mix application of metsulfuron + carfentrazone + surfactant at 25 (5 + 20) g *a.i.*/ha + 0.2% S. Weed dry weight at 90 DAS under all herbicide treatments except 2,4-D-Na 500 g *a.i.*/ha was statistically similar. In the treatment of 2,4-D-Na 500 g *a.i.*/ha, weed dry weight of 8.37 g/m^2 was recorded at 90 DAS which was significantly higher than those under halauxifen-methyl 1.21% + fluroxypyr 38.9% EC at 200.6 (6.1+194.5) g *a.i.*/ha, metsulfuron

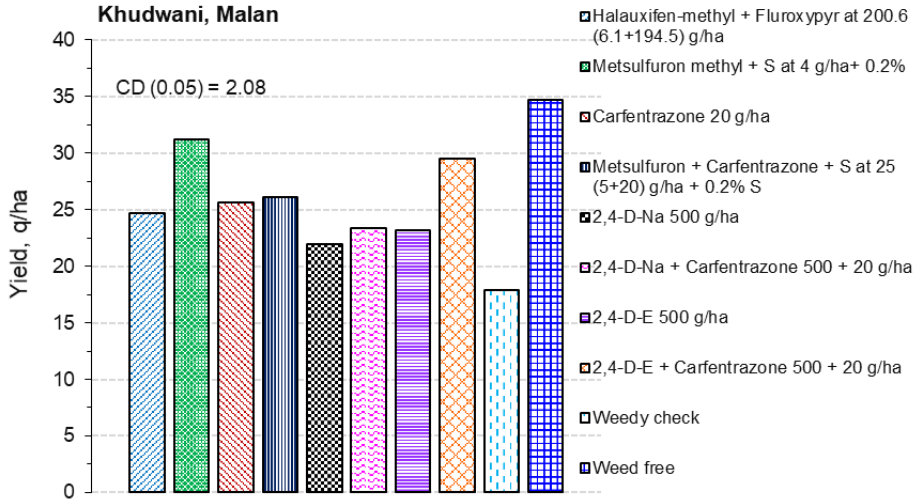

Fig. 25(a) Grain yield of barley under different herbicides application in NHZ

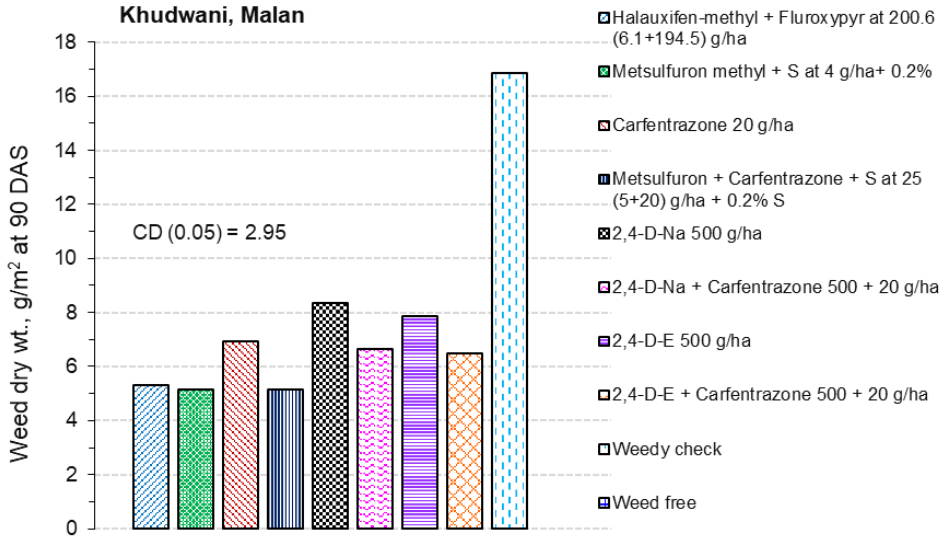

Fig. 25(b). Efficacy of herbicides against diverse weed flora of barley in NHZ

methyl 20 WG + surfactant at 4 g *a.i.*/ha+ 0.2% S and metsulfuron + carfentrazone + surfactant at 25 (5+20) g *a.i.*/ha + 0.2% S.

In NWPZ, this trial was conducted at four centres namely Agra, Durgapura, Hisar and Karnal. The analysis of pooled data as shown in Fig. 26(a) and Fig. 26(b) revealed that weed control treatments produced significant effect on grain yield. The highest yield was obtained under weed free situation (54.33 q/ha) which might be attributed to higher and better use of moisture, light, nutrients and space by the crop plants, whereas the minimum yield was recorded under weedy check (37.59 q/ha) due to strong weed competition.

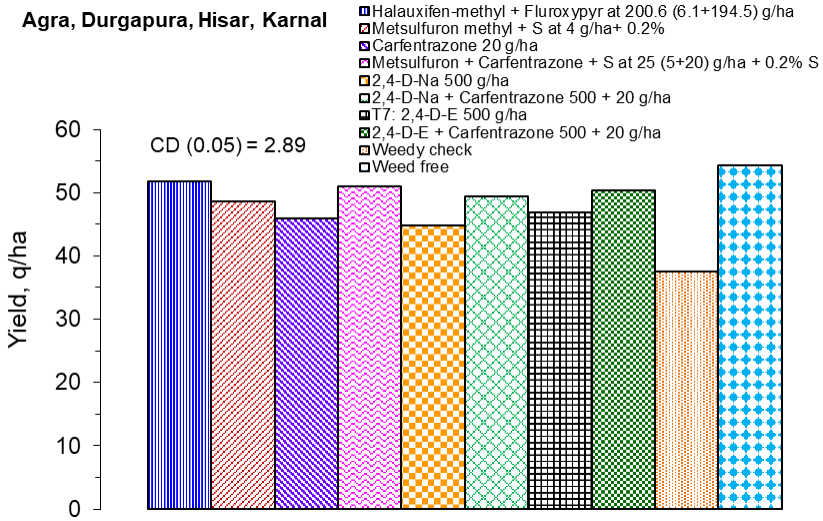

Fig. 26(a) Grain yield of barley under different herbicides application in NWPZ

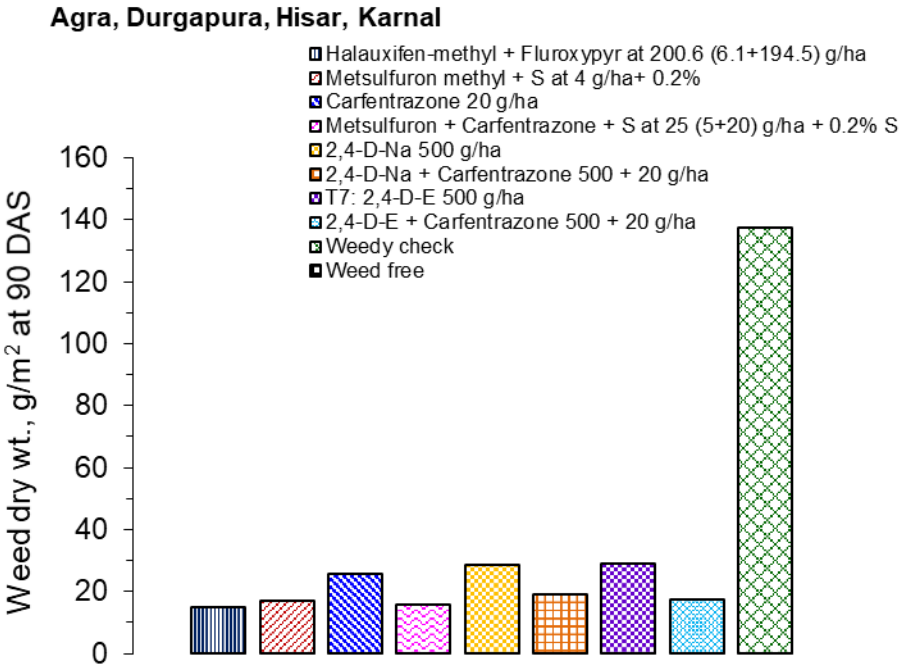

Fig. 26(b) Efficacy of herbicides against diverse weed flora of barley in NWPZ

Among herbicides, ready mixture of halauxifen-methyl + fluroxypyr at 200.6 (6.1+194.5) g/ha showed the least number of weed count of 12.8/m^2 and weed dry weight of 14.9 g/m^2 at 90 DAS, whereas the maximum values of these parameters were observed in weedy check with respective values of 62.8/m^2 and 137.2 g/m^2 at 90 DAS. Carfentrazone tank mixed with either metsulfuron or 2,4-D Na or 2,4-D-E also effectively controlled the broadleaved weeds and as a result yield improved as compared to their solo application.

In NEPZ, this trial was conducted at two locations (Ayodhya and Ranchi). The analysis of pooled data as shown in Fig. 27(a) and Fig. 27(b) revealed that weed control treatments produced significant effect on grain yield. The highest yield was obtained under weed free situation (34.51 q/ha) which might be attributed to higher and better use of moisture, light,

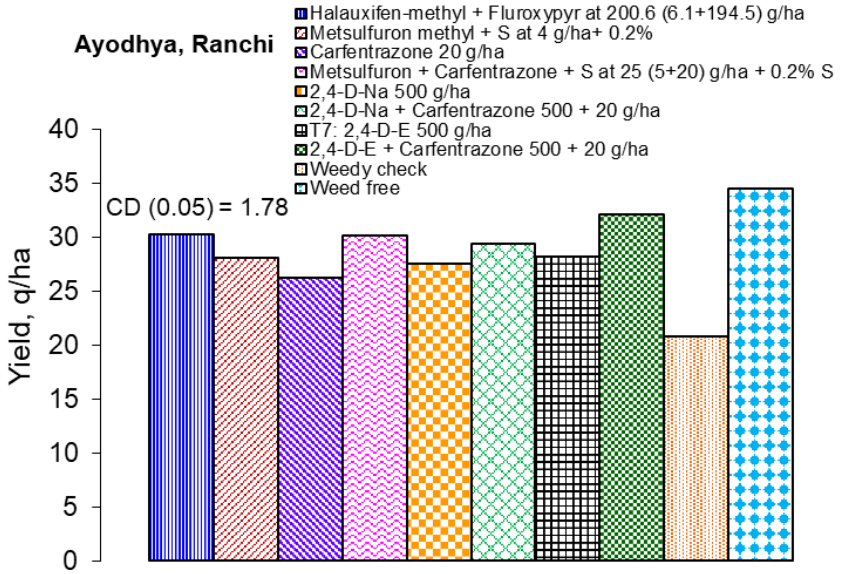

Fig. 27(a) Grain yield of barley under different herbicides application in NEPZ

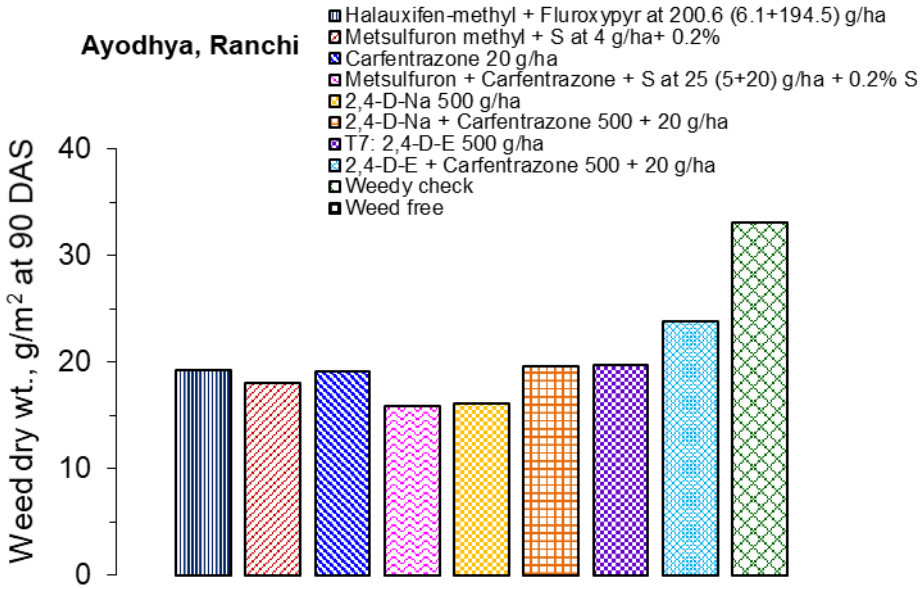

Fig. 27(b) Efficacy of herbicides against diverse weed flora of barley in NEPZ

nutrients and space by the crop plants, whereas the minimum yield was recorded under weedy check (20.73 q/ha) due to strong weed competition. Among herbicides, metsulfuron + carfentrazone + S at 25 (5+20) g/ha + 0.2% S recorded the least number of weed count (7.9/m^2) and weed dry weight (9.2 g/m^2) at 90 DAS, whereas the maximum values of these parameters were observed in weedy check with respective values of 13.4/m^2 and 17.7 g/m^2 at 90 DAS. All the herbicide applied alone or in combination reduced the weed population and weed dry weight significantly compared to weedy check.

In CZ, this trial was conducted at four locations (Gwalior, Jabalpur, Udaipur and Vijapur). The analysis of pooled data as shown in Fig. 28(a) and Fig. 28(b) revealed that weed control treatments produced significant effect on grain yield. The highest yield was obtained under weed free situation (43.98 q/ha) which might be attributed to higher and

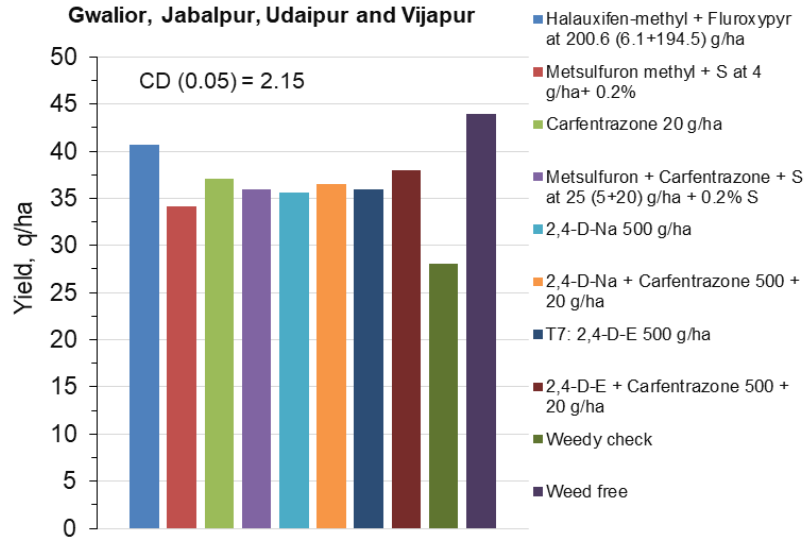

Fig. 28(a) Grain yield of barley under different herbicides application in CZ

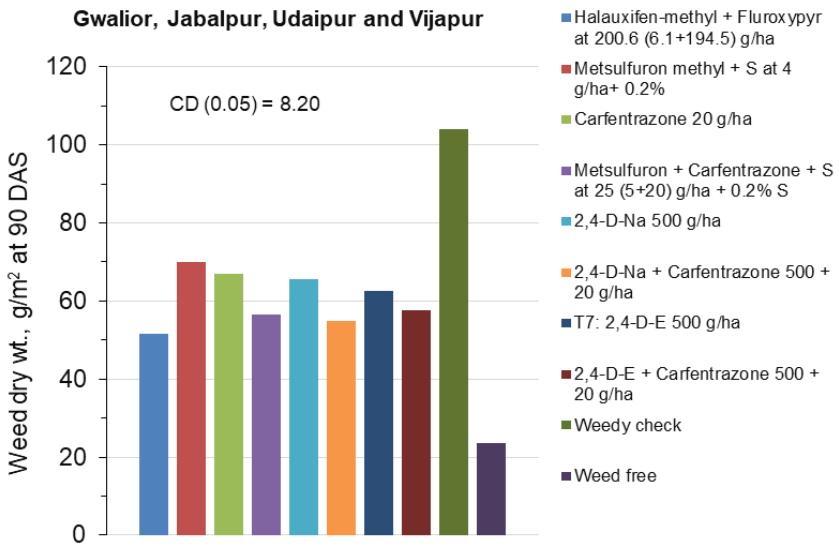

Fig. 28(b) Efficacy of herbicides against diverse weed flora of barley in CZ

better use of moisture, light, nutrients and space by the crop plants, whereas the minimum yield was recorded under weedy check (28.08 q/ha) due to strong weed competition. Among herbicides, halauxifen-methyl + fluroxypyr at 200.6 (6.1+194.5) g/ha recorded the least number of weed count (29.6/m^2) and weed dry weight (51.7 g/m^2) at 90 DAS, whereas the maximum values of these parameters were observed in weedy check with respective values of 80.2/m^2 and 104.1 g/m^2 at 90 DAS. All the herbicide applied alone or in combination reduced the weed population and weed dry weight significantly compared to weedy check.

SPL-6: Effect of seed rate and growth regulators on barley productivity

In NHZ, this trial was conducted at Almora centre. The data presented in Fig. 29 showed that barley yield numerically increased with seed rate without any significant difference. The growth regulator application showed a significant effect on grain yield. The maximum mean grain yield of 35.1 q/ha was recorded with the treatment of drum rolling at 30 and 45 DAS followed by grain yield of 33.9 q/ha with two sprays as tank-mix of chlormequat chloride (Lihocin) @ 0.2% + tebuconazole (Folicur 430SC) @0.1% of commercial product dose at the first node and flag leaf. The grain yield with drum rolling (30 and 45 DAS) was significantly higher than all other treatments except the treatment of tank-mix application of chlormequat chloride + tebuconazole. The grain yield of barley increased by 8.6 and 5% with drum rolling and tank-mix application of chlormequat chloride + tebuconazole, respectively, over control (water spray).

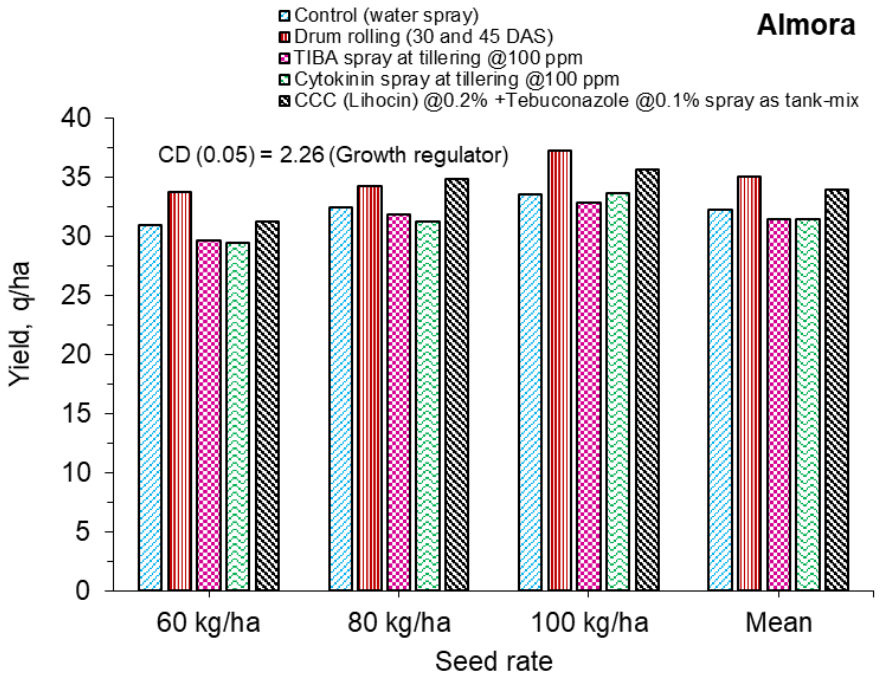

Fig. 29 Effect of seed rate and PGRs application on barley productivity in NHZ

In NWPZ, this trial was conducted at five centres (Agra, Durgapura, Gurdaspur, Hisar and Karnal). The pooled analysis of data presented in Fig. 30 revealed that the maximum mean grain yield (49.77 q/ha) was produced under the treatment of 100 kg/ha seed rate and it was significantly superior to both the lower seed rates (60 and 80 kg/ha). The effect of growth regulators was also significant. Among growth regulators treatments, TIBA-100 ppm produced the maximum grain yield (47.68 q/ha) and it was statistically at par with CCC + tebuconazole- 0.2% +0.1%- 2 sprays. All the three growth regulators treatments were significantly superior to drum rolling and control treatments.

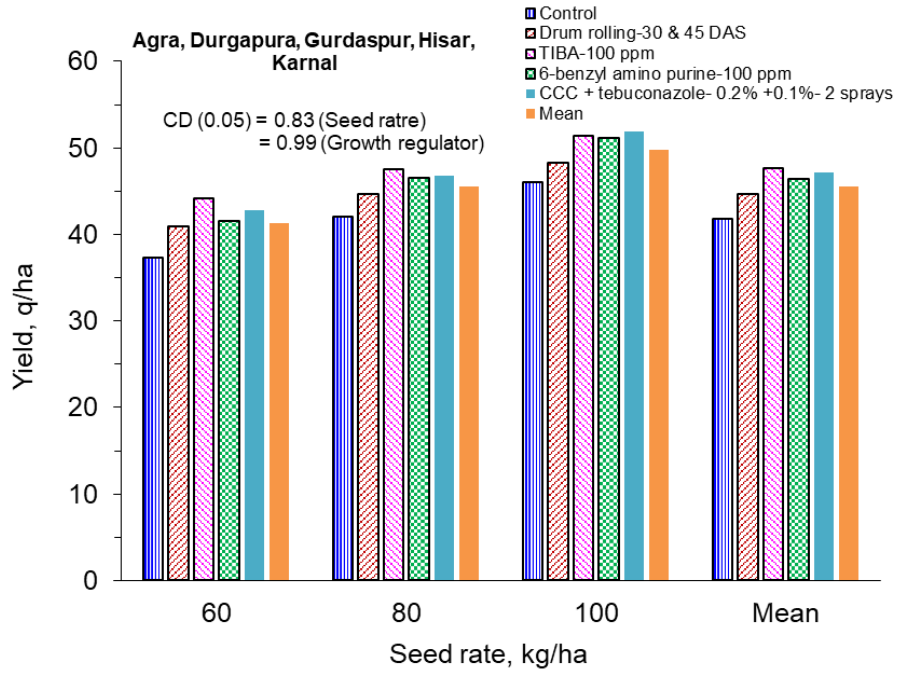

Fig. 30 Effect of seed rate and PGRs application on barley productivity in NWPZ

WHEAT

Northern Hill Zone

The Northern Hills Zone represents Himachal Pradesh, parts of Jammu & Kashmir, and Uttarakhand. The five centres namely Almora, Bajaura, Khudwani, Malan and Shimla are actively engaged in wheat research under All India Coordinated Wheat and Barley Improvement Project. The data on meteorological parameters received from centres have been reported in Annexure II. The rainfall was well distributed at all the locations; the highest rainfall of 337.9 mm was recorded at Malan during the crop growing period followed by 126 mm at Almora. The minimum and maximum temperatures were -2.3 ºC and 36.2 ºC at Almora, and 6.2 ºC and 34.5 ºC at Malan, respectively. The soil data received from two centres (Almora, and Malan) are presented in Annexure III. The organic carbon content of Almora and Malan centres was 1.35 and 0.73 per cent, respectively, with high in phosphorus and medium in potash contents.

No coordination trial on evaluating the performance of test genotypes was constituted for NHZ.

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. Ten centres in this zone namely Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganganagar are actively engaged in wheat research activities under All India Coordinated Wheat and Barley Improvement Project (AICW&BIP). The data on various meteorological and soil parameters for various centres are given in Annexure-II and Annexure-III, respectively. Soils of this zone are sandy loam to loam. The soil organic carbon at various locations varied from 0.24% at Gurdaspur to 0.70% at Pantnagar. Soils of this zone are low in available nitrogen, medium to high in available phosphorus and potash. The maximum rainfall was received at Jammu (177.4 mm) followed by Agra (165 mm), Gurdaspur (162 mm), Ludhiana (89.8 mm), Pantnagar (76.0 mm), Karnal (69.2 mm), Hisar (61.8 mm), Delhi (52.4 mm) and the lowest amount of rain (25.6 mm) during the wheat crop season 2023-24 was received at Durgapura. The maximum and minimum temperatures at different locations were 38.3 ºC and 5.6 ºC at Agra, 37.2 ºC and 5.3 ºC at Delhi, 38.7ºC and 4.5ºC at Durgapura, 32.9 ºC and 4.6 ºC at Gurdaspur, 36.3 ºC and 4.8 ºC at Hisar, 32.7 ºC and 2.8 ºC at Jammu, 36.1 ºC and 4.9 ºC at Karnal, 33.8 ºC and 5.1 ºC at Ludhiana, 35.5 ºC and 5.9 ºC at Pantnagar, respectively. In this zone, two coordinated wheat trials were conducted to evaluate second year AVT genotypes for different growing conditions at various locations.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

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

Irrigated Timely Sown

The performance of three *aestivum* test entries HI 1668, HD 3471^{M} and DBW 386 was evaluated against five checks (HD 2967, HD 3386, DBW 222, DBW 187 and PBW 826) at ten centres *i.e.* Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganganagar under timely and late sown conditions. For pooled analysis, data of nine centres were considered, while data of Jammu centre were not included due to low mean yield under timely sown condition. The trial was laid out in a split plot design with sowing time in main and genotypes in sub-plots with three replications. The sowing was done using the normalized (adjusted considering 1000 grains weight of 38 g) seed rate of 100 kg/ha at a row-to-row spacing of 20 cm. Nitrogen was applied in three splits (1/3rd at sowing and remaining 2/3rd nitrogen as 1/3rd at first irrigation *i.e.* at 20-25 days after sowing and 1/3rd at second irrigation *i.e.* 40-45 days after sowing), whereas full phosphorus and potash were applied as basal.

The centrewise yield and zonal mean yield are given in Table 2.1. The pooled data are presented in Table 2.2 and the centrewise data are in Annexure-I as Tables 2.2.1 to 2.2.10. The perusal of pooled data in Table 2.1 and 2.2 revealed that there was a significant decline in yield from normal (59.34 q/ha) to late (50.26 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2 and thousand grain weight under late sown conditions. Yield decline in late sown condition was 15.3% as compared to timely sown condition. On average basis, the recently identified check variety HD 3386 (I)(C) ranked first with mean yield of 56.31 q/ha and second-best yielder was check variety PBW 826 (C) with a mean yield of 56.23 q/ha. PBW 826 (C) produced the highest yield of 62.41 q/ha under timely sown conditions whereas, under late sown conditions HD 3386 (I) produced the highest yield of 52.24 q/ha. On mean basis, test entry DBW 386 recorded the maximum earhead density (352/m^2) and whereas HI 1668 recorded the bolder grains (1000 grains weight 43.63 g). The interaction effect was significant for yield.

Irrigated Late Sown

The performance of one *aestivum* test entry HD 3428 against four checks (HD 3059, PBW 771, DBW 173 and JKW 261) was evaluated at ten centres *i.e.* Agra, Delhi, Durgapura, Gurdaspur, Hisar, Jammu, Karnal, Ludhiana, Pantnagar and Sriganganagar under late and very late sown conditions. For pooled analysis, data of seven centres were considered, while data of Durgapura, Jammu and Karnal centres were not included due to low mean yield under late sown conditions. The trial was laid out in a split plot design with sowing time in main and genotypes in sub-plots with three replications. The sowing was done using the normalized (adjusted considering 1000 grains weight of 38 g) seed rate of 125 kg/ha at a row-to-row spacing of 20 cm. Nitrogen was applied in three splits (1/3rd at sowing and remaining 2/3rd nitrogen as 1/3rd at first irrigation *i.e.* at 20-25 days after sowing and 1/3rd at second irrigation *i.e.* 40-45 days after sowing), whereas full phosphorus and potash were applied as basal.

The centrewise yield and zonal mean yield are given in Table 2.3. The pooled data are presented in Table 2.4 and centrewise data are given in Annexure-I as Tables 2.4.1 to 2.4.10. The perusal of pooled data in Table 2.3 and 2.4 revealed that there was a significant decline (29%) in yield from late (52.07 q/ha) to very late (36.95 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2, grains/earhead and thousand grains weight under very late sown conditions. On mean basis, the test entry HD 3428 ranked first with a mean yield of 46.06 q/ha and second best yielder was check variety JKW 261 (C) with a mean yield of 45.75 q/ha. JKW 261 (C) produced the highest yield of 54.32 q/ha under late sown conditions, whereas under very late sown conditions, test entry HD 3428 produced the highest yield of 39.01 q/ha. On mean basis, check variety JKW 261 (C)

Table 2.1. North Western Plain Zone	IR-TS-DOS-TAS	Centrewise	Yield, q/ha							2023-24
Sowing Time	Genotype	Agra	Delhi	Durgapura	Gurdaspur	Hisar	Karnal	Ludhiana	Pantnagar	Sriganganagar	Zonal mean
Timely	HD 2967 (C)	57.67	56.15	55.50	58.46	48.69	58.81	45.76	52.78	66.49	55.59
	HI 1668	59.84	57.78	50.12	57.86	57.38	60.97	57.92	56.20	72.08	58.91
	HD 3386 (I)(C)	58.41	52.40	56.65	63.54	58.17	66.15	58.80	58.18	71.17	60.39
	HD 3471[M]	60.53	54.76	53.08	65.05	57.26	60.10	56.51	57.99	74.16	59.94
	DBW 222 (C)	63.41	54.99	48.83	63.07	53.69	66.04	61.46	54.33	68.25	59.34
	DBW 187 (C)	60.69	49.96	52.91	63.31	52.30	57.38	53.33	58.17	73.43	57.94
	DBW 386	62.82	56.55	49.54	66.38	61.51	59.79	60.81	55.04	69.44	60.21
	PBW 826 (C)	61.90	54.60	53.97	68.39	66.07	69.50	60.13	56.35	70.74	62.41
	Mean	60.66	54.65	52.57	63.26	56.88	62.34	56.84	56.13	70.72	59.34
Late	HD 2967 (C)	55.61	50.12	46.67	55.23	44.36	47.45	31.02	43.10	47.34	46.77
	HI 1668	57.53	46.06	47.66	57.32	50.52	59.09	38.26	48.96	45.87	50.14
	HD 3386 (I)(C)	56.94	40.36	45.61	61.38	52.26	59.03	52.06	52.79	49.76	52.24
	HD 3471[M]	58.03	41.26	43.40	62.66	46.07	58.21	44.35	48.50	49.19	50.18
	DBW 222 (C)	61.13	40.79	45.66	61.77	47.94	56.12	49.82	55.18	40.22	50.96
	DBW 187 (C)	58.82	39.21	48.45	62.16	43.21	57.87	44.35	51.43	52.46	50.88
	DBW 386	60.33	44.29	43.21	66.90	47.74	57.35	41.77	48.92	47.08	50.84
	PBW 826 (C)	59.26	43.67	48.80	65.99	49.48	57.00	35.27	50.77	40.24	50.05
	Mean	58.46	43.22	46.18	61.68	47.70	56.51	42.11	49.96	46.52	50.26
Mean	HD 2967 (C)	56.64	53.13	51.09	56.85	46.53	53.13	38.39	47.94	56.92	51.18
	HI 1668	58.69	51.92	48.89	57.59	53.95	60.03	48.09	52.58	58.98	54.52
	HD 3386 (I)(C)	57.68	46.38	51.13	62.46	55.22	62.59	55.43	55.49	60.47	56.31
	HD 3471[M]	59.28	48.01	48.24	63.85	51.67	59.16	50.43	53.24	61.68	55.06
	DBW 222 (C)	62.27	47.89	47.25	62.42	50.81	61.08	55.64	54.75	54.24	55.15
	DBW 187 (C)	59.76	44.58	50.68	62.73	47.76	57.63	48.84	54.80	62.95	54.41
	DBW 386	61.58	50.42	46.38	66.64	54.62	58.57	51.29	51.98	58.26	55.53
	PBW 826 (C)	60.58	49.14	51.38	67.19	57.78	63.25	47.70	53.56	55.49	56.23
	Mean	59.56	48.93	49.38	62.47	52.29	59.43	49.48	53.04	58.62	54.80
CD (0.05)	Sowing (A)	1.07	7.63	1.25	1.56	2.93	0.96	2.94	2.85	0.83	0.63
	Variety (B)	1.90	2.34	3.89	5.14	3.37	2.26	4.12	2.48	3.65	1.10
	B within A	2.69	3.32	5.51	7.27	4.77	3.20	5.83	3.51	5.16	1.55
	A within B	2.59	5.42	5.20	6.86	4.78	3.04	5.72	3.68	4.85	1.64
Date of Sowing:	Timely	10.11.2023	07.11.2023	09.11.2023	07.11.2023	09.11.2023	10.11.2023	10.11.2023	09.11.2023	09.11.2023	
	Late	10.12.2023	14.12.2023	07.12.2023	12.12.2023	16.12.2023	16.12.2023	15.12.2023	12.12.2023	10.12.2023	
Date of Harvesting:	Timely	23.03.2024	16.04.2024	10.03.2024	25.04.2024	14.04.2024	22.04.2024	27.04.2024	16.04.2024	24.04.2024	
	Late	10.04.2024	16.04.2024	25.03.2024	08.05.2024	26.04.2024	29.04.2024	27.04.2024	26.04.2024	26.04.2024	

Table 2.2. North Western Plain Zone	IR-TS-DOS-TAS				Pooled	2023-24
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	55.59	8	46.77	8	51.18	8
HI 1668	58.91	6	50.14	6	54.52	6
HD 3386 (I)(C)	60.39	2	52.24	1	56.31	1
HD 3471[M]	59.94	4	50.18	5	55.06	5
DBW 222 (C)	59.34	5	50.96	2	55.15	4
DBW 187 (C)	57.94	7	50.88	3	54.41	7
DBW 386	60.21	3	50.84	4	55.53	3
PBW 826 (C)	62.41	1	50.05	7	56.23	2
Mean	59.34		50.26		54.80	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.63	1.10		1.55		1.64
			Earhead/sq.m.			
HD 2967 (C)	362	1	326	7	344	6
HI 1668	354	6	325	8	340	8
HD 3386 (I)(C)	350	8	343	2	346	5
HD 3471[M]	360	4	333	6	347	4
DBW 222 (C)	351	7	337	5	344	7
DBW 187 (C)	357	5	338	3	348	3
DBW 386	361	3	343	1	352	1
PBW 826 (C)	362	2	337	4	350	2
Mean	357		335		346	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	6.03	NS		NS		NS
			Grains/earhead			
HD 2967 (C)	38.78	4	39.92	2	39.35	3
HI 1668	38.27	6	38.17	4	38.22	5
HD 3386 (I)(C)	40.02	3	37.51	6	38.77	4
HD 3471[M]	40.37	2	39.22	3	39.79	2
DBW 222 (C)	42.27	1	41.06	1	41.66	1
DBW 187 (C)	37.27	8	38.03	5	37.65	7
DBW 386	38.08	7	37.42	7	37.75	6
PBW 826 (C)	38.39	5	36.84	8	37.61	8
Mean	39.18		38.52		38.85	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	NS	1.32		NS		1.93
			1000 grains weight, g			
HD 2967 (C)	39.57	8	36.37	8	37.97	8
HI 1668	44.84	2	42.42	1	43.63	1
HD 3386 (I)(C)	44.14	3	41.40	3	42.77	3
HD 3471[M]	41.58	6	40.02	6	40.80	6
DBW 222 (C)	40.50	7	38.88	7	39.69	7
DBW 187 (C)	43.45	5	40.66	5	42.05	5
DBW 386	43.88	4	40.75	4	42.32	4
PBW 826 (C)	45.20	1	41.42	2	43.31	2
Mean	42.90		40.24		41.57	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.39	0.58		0.82		0.89
Centres: Agra, Delhi, Durgapura, Gurdaspur, Hisar, Karnal, Ludhiana, Pantnagar, Sriganganagar						

recorded the maximum earhead density (352/m^2) and whereas check variety PBW 771 (C) produced the bolder grains (1000 grains weight 38.16 g).

Table 2.3. North Western Plain Zone	IR-LS-DOS-TAS	Centrewise	Yield, q/ha					2023-24
Sowing Time	Genotype	**Agra**	**Delhi**	**Gurdaspur**	**Hisar**	**Ludhiana**	**Pantnagar**	**Sriganganagar**	**Zonal mean**
Late	HD 3059 (C)	54.11	40.80	53.75	50.83	52.23	48.99	51.90	50.37
	PBW 771 (C)	55.91	41.55	53.02	58.10	54.08	51.06	61.15	53.55
	HD 3428	53.72	42.45	60.49	57.14	51.22	49.62	57.10	53.11
	DBW 173 (C)	47.45	43.34	54.74	52.78	43.99	52.27	48.29	48.98
	JKW 261 (C)	54.89	43.38	56.98	55.95	55.45	50.62	62.96	54.32
	Mean	53.22	42.30	55.80	54.96	51.39	50.51	56.28	52.07
Very late	HD 3059 (C)	36.64	33.97	48.15	35.71	20.03	39.77	41.33	36.51
	PBW 771 (C)	41.07	33.76	46.28	38.02	28.36	41.15	35.75	37.77
	HD 3428	38.13	35.43	50.73	39.92	23.13	45.24	40.49	39.01
	DBW 173 (C)	35.79	35.34	47.89	35.16	14.23	37.47	34.13	34.29
	JKW 261 (C)	39.04	37.83	50.42	37.14	21.79	39.81	34.19	37.17
	Mean	38.13	35.27	48.69	37.19	21.51	40.69	37.18	36.95
Mean	HD 3059 (C)	45.37	37.38	50.95	43.27	36.13	44.38	46.62	43.44
	PBW 771 (C)	48.49	37.65	49.65	48.06	41.22	46.10	48.45	45.66
	HD 3428	45.93	38.94	55.61	48.53	37.17	47.43	48.80	46.06
	DBW 173 (C)	41.62	39.34	51.32	43.97	29.11	44.87	41.21	41.63
	JKW 261 (C)	46.97	40.60	53.70	46.55	38.62	45.22	48.57	45.75
	Mean	45.67	38.79	52.24	46.07	36.45	45.60	46.73	44.51
CD (0.05)	Sowing (A)	2.97	4.88	4.71	3.13	4.55	1.72	1.07	0.55
	Variety (B)	2.51	2.63	4.98	3.86	2.80	2.38	4.92	1.04
	B within A	3.55	3.72	7.04	5.46	3.95	3.37	6.95	NS
	A within B	3.49	4.11	6.71	5.12	4.19	3.13	6.24	1.49
Date of Sowing:	Late	10.12.2023	14.12.2023	11.12.2023	16.12.2023	10.11.2023	11.12.2023	10.12.2023	
	Very Late	05.01.2024	04.01.2024	02.01.2024	05.01.2024	07.01.2024	04.01.2024	02.01.2024	
Date of Harvesting:	Late	09.04.2024	25.04.2024	02.05.2024	24.04.2024	11.05.2024	23.04.2024	24.04.2024	
	Very Late	20.04.2024	30.04.2024	14.05.2024	30.04.2024	11.05.2024	29.04.2024	26.04.2024	

Table 2.4. North Western Plain Zone	IR-LS-DOS-TAS				Pooled	2023-24
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	50.37	4	36.51	4	43.44	4
PBW 771 (C)	53.55	2	37.77	2	45.66	3
HD 3428	53.11	3	39.01	1	46.06	1
DBW 173 (C)	48.98	5	34.29	5	41.63	5
JKW 261 (C)	54.32	1	37.17	3	45.75	2
Mean	52.07		36.95		44.51	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.55	1.04		NS		1.49
			Earhead/sq.m.			
HD 3059 (C)	353	3	325	4	339	3
PBW 771 (C)	362	2	326	3	344	2
HD 3428	344	5	331	2	338	4
DBW 173 (C)	347	4	304	5	325	5
JKW 261 (C)	363	1	341	1	352	1
Mean	354		325		339	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	8.06	7.76		10.97		13.06
			Grains/earhead			
HD 3059 (C)	38.26	4	33.61	3	35.93	3
PBW 771 (C)	37.57	5	33.24	4	35.40	4
HD 3428	39.30	2	35.21	1	37.25	1
DBW 173 (C)	38.36	3	32.18	5	35.27	5
JKW 261 (C)	40.16	1	33.61	2	36.89	2
Mean	38.73		33.57		36.15	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.80	1.09		NS		1.66
			1000 grains weight, g			
HD 3059 (C)	38.58	3	34.86	3	36.72	3
PBW 771 (C)	39.73	2	36.58	1	38.16	1
HD 3428	40.11	1	34.72	4	37.42	2
DBW 173 (C)	38.10	4	35.15	2	36.63	4
JKW 261 (C)	37.22	5	34.26	5	35.74	5
Mean	38.75		35.12		36.93	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.41	0.54		0.77		0.83
Centres: Agra, Delhi, Gurdaspur, Hisar, Ludhiana, Pantnagar and 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 Ayodhya, Burdwan, Coochbehar, IARI Pusa Bihar, Kalyani, Kanpur, Ranchi, RPCAU Pusa, RAU Sabour, Shillongani and Varanasi are actively involved in coordinated research activities. Soils of this zone are sandy to clay loam having organic carbon contents varying from 0.27 per cent at Ayodhya to 1.16 per cent at Shillongani. The soils of this zone are low in available nitrogen, medium in available phosphorus and potash. Wheat production and productivity in this zone are more dependent on weather conditions during the crop season. The temperature is an important factor affecting the wheat productivity. Rainfall received varied from 11.3 mm at Sabour to 234.3 mm at Burdwan during the wheat season starting from November 2023 to April, 2024. The rainfall (November to April) received in decreasing order was Burdwan (234.3 mm) followed by Kalyani (231.4 mm), Shillongani (116.3 mm), Ranchi (107.4 mm), Varanasi (70.3 mm), Kanpur (64.2 mm), Coochbehar (53 mm), Ayodhya (23.4) and Sabour (11.3 mm). The maximum and minimum temperatures at different locations from November to April were 40.9 ºC and 5.3 ºC at Ayodhya, 39.4 ºC and 10.8 ºC at Burdwan, 32.2 ºC and 7.6 ºC at Coochbehar, 40.6 ºC and 10.9 ºC at Kalyani, 40.1 ºC and 4.2 ºC at Kanpur, 31.0 ºC and 3.9 ºC at Ranchi, 38.9 ºC and 7.4 ºC at Sabour and 33.1 ºC and 11.6 ºC at Shillongani, respectively.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

The performance of test genotypes was evaluated under irrigated timely sown conditions at different locations and the results are summarized here under;

Irrigated Timely Sown

One test entry DBW 386 was evaluated against four checks *viz.* HD 3249 (C), DBW 187(C), DBW 222 (C) and PBW 826 (C) at eight locations (Ayodhya, Coochbehar, Kalyani, Kanpur, Ranchi, Sabour, Shillongani and Varanasi) under timely and late sown conditions. The data of Kanpur were not considered in pooled analysis due to rejection of trial by monitoring team. The trial was conducted in split plot design with dates of sowing in main plots and genotypes in sub-plots. Nitrogen was applied in three splits (1/3rd at sowing, 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.

The centrewise yield and zonal mean yield are given in Table 3.1. The pooled data are presented in Table 3.2 and the centre wise data are given in Annexure-I as Tables 3.2.1 to 3.2.8. Timely sowing registered higher yield of all genotypes compared to late sown

Table 3.1. North Eastern Plain Zone		IR-TS-DOS-TAS			Centrewise			Yield, q/ha	2023-24
Sowing Time	Genotype	**Ayodhya**	**Coochbehar**	**Kalyani**	**Ranchi**	**Sabour**	**Shillongani**	**Varanasi**	**Zonal Mean**
Timely	DBW 386	52.95	64.37	43.63	49.03	48.36	48.01	48.53	50.70
	HD 3249 (C)	55.43	50.67	44.00	43.30	39.52	45.46	45.79	46.31
	DBW 187 (C)	56.82	60.10	38.13	46.03	46.39	49.85	45.01	48.91
	DBW 222 (C)	54.98	43.13	41.00	47.10	42.73	54.57	41.40	46.42
	PBW 826 (C)	52.23	59.67	48.27	50.63	48.19	49.04	46.16	50.60
	Mean	54.48	55.59	43.01	47.22	45.04	49.39	45.38	48.59
Late	DBW 386	48.38	66.10	50.70	39.63	38.11	46.17	38.41	46.79
	HD 3249 (C)	49.38	54.87	43.20	37.50	33.07	49.88	38.74	43.81
	DBW 187 (C)	51.83	54.77	46.93	33.80	33.00	50.86	35.01	43.74
	DBW 222 (C)	49.07	55.30	41.77	40.45	32.00	58.66	35.80	44.72
	PBW 826 (C)	47.15	58.27	54.93	40.34	38.74	50.77	36.45	46.67
	Mean	49.16	57.86	47.51	38.35	34.99	51.27	36.88	45.14
Mean	DBW 386	50.67	65.23	47.17	44.33	43.24	47.09	43.47	48.74
	HD 3249 (C)	52.41	52.77	43.60	40.40	36.30	47.67	42.27	45.06
	DBW 187 (C)	54.33	57.43	42.53	39.92	39.70	50.36	40.01	46.32
	DBW 222 (C)	52.03	49.22	41.38	43.78	37.37	56.62	38.60	45.57
	PBW 826 (C)	49.69	58.97	51.60	45.49	43.47	49.91	41.31	48.63
	Mean	51.82	56.72	45.26	42.78	40.01	50.33	41.13	46.87
CD (0.05)	Sowing (A)	1.38	6.72	3.20	5.15	8.27	5.39	1.28	0.79
	Genotype (B)	1.58	4.50	2.69	2.01	4.90	2.46	3.73	0.99
	B within A	2.23	6.37	3.80	2.85	6.93	3.48	5.27	1.40
	A within B	2.11	6.59	3.75	3.59	7.42	4.09	4.76	1.53
Date of Sowing:	Timely	16.11.2023	13.11.2023	17.11.2023	15.11.2023	18.11.2023	06.11.2023	18.11.2023	
	Late	15.12.2023	10.12.2023	16.12.2023	14.12.2023	16.12.2023	06.12.2023	14.12.2023	
Date of Harvesting:	Timely	14.03.2024		18.03.2024	25.03.2024	12.04.2024	10.03.2024	23.03.2024	
	Late	02.04.2024		30.03.2024	15.04.2024	20.04.2024	01.04.2024	04.04.2024	

conditions and on mean basis, yield declined by 7.10% when sowing was delayed from timely to late sowing condition. The yield decline was due to significant reduction in 1000 grains weight under late sown condition as compared to timely sown condition. On mean basis, the test entry DBW 386 was the highest yielder (48.74 q/ha) and recorded significantly higher grain yield compared to all checks except PBW 826. The check variety PBW 826 recorded the maximum effective tillers (363 earheads/m^2). The maximum grains/earhead were observed in check variety DBW 187 (36.45 grains/earhead) followed by DBW 222 (35.70 grains/earhead). The check variety PBW 826 produced the boldest grains having mean 1000 grains weight of 38.90 g.

Table 3.2. North Eastern Plain Zone **IR-TS-DOS-TAS** **Pooled** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	50.70	1	46.79	1	48.74	1
HD 3249 (C)	46.31	5	43.81	4	45.06	5
DBW 187 (C)	48.91	3	43.74	5	46.32	3
DBW 222 (C)	46.42	4	44.72	3	45.57	4
PBW 826 (C)	50.60	2	46.67	2	48.63	2
Mean	48.59		45.14		46.87	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.79	0.99		1.40		1.53
			Earhead/sq.m.			
DBW 386	366	2	360	1	363	2
HD 3249 (C)	353	3	334	5	343	5
DBW 187 (C)	350	4	338	4	344	3
DBW 222 (C)	348	5	339	3	343	4
PBW 826 (C)	368	1	359	2	363	1
Mean	357		346		351	
	Sowing (A)	Genotype(B)		B within A		A within B
CD (0.05)	5.44	7.70		NS		11.59
			Grains/earhead			
DBW 386	35.98	2	35.12	5	35.55	3
HD 3249 (C)	34.68	5	35.90	1	35.29	5
DBW 187 (C)	37.44	1	35.47	4	36.45	1
DBW 222 (C)	35.71	3	35.69	2	35.70	2
PBW 826 (C)	35.21	4	35.55	3	35.38	4
Mean	35.80		35.54		35.67	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	NS	NS		NS		NS
			1000 grains weight, g			
DBW 386	39.55	2	37.71	3	38.63	2
HD 3249 (C)	39.11	3	37.62	4	38.36	4
DBW 187 (C)	38.53	5	37.98	2	38.25	5
DBW 222 (C)	38.83	4	37.98	1	38.40	3
PBW 826 (C)	40.46	1	37.35	5	38.90	1
Mean	39.29		37.73		38.51	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.55	NS		0.93		1.03

Centres: Ayodhya, Coochbehar, Kalyani, Ranchi, Sabour, Shillongani, Varanasi

Central Zone

In central zone, nine centres namely Bilaspur, BISA Jabalpur, Gwalior, Indore, Jabalpur, Junagadh, Powarkheda, Udaipur and Vijapur are actively involved in the coordinated wheat programme of Resource Management during the year 2023-24. The data on various meteorological and soil parameters have been reported under Annexure II and Annexure III, respectively. The soils in this zone vary from sandy loam (Vijapur) to medium black soils (Junagarh). Soil was sandy clay loam at Bilaspur and Gwalior, Vertisols at Indore, medium black at Junagadh and clay loam at Udaipur. Soils were neutral to slightly alkaline in reaction (pH: 7.2 to 8.22). Soils of all the centres were low to medium in organic carbon (0.31-0.66 per cent), low to medium in available N (95.0-288 kg/ha), low to high in phosphorus (12.5-63.84 kg/ha) and high in potassium (200-417 kg/ha) at different locations. The rainfall in this zone during the wheat growing season 2023-24 was recorded as 220.4 mm at Bilaspur, 64.8 mm at Gwalior, 77.6 mm at Indore, 119.6 mm at Jabalpur, 119.9 mm at Junagadh, 123.8 mm at Powarkheda, 52.8 mm at Udaipur and 73.0 mm at Vijapur. The average maximum and minimum temperatures were 40.4 and 8.1 ºC at Bilaspur, 43.3 and 5.3 ºC at Gwalior, 39.6 and 5.6 ºC at Indore, 39.3 and 5.8 ºC at Jabalpur, 39.0 and 11.0 ºC at Junagadh, 41.5 and 4.2 ºC at Powarkheda, 36.9 and 4.8 ºC at Udaipur and 41.6 and 12.3 ºC at Vijapur.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

In this zone, the performance of test genotypes was evaluated under different sowing conditions and restricted irrigation conditions at different locations. High yield potential trial was also conducted to maximize the wheat yield and the results are summarized here as under:

Irrigated Timely Sown

In irrigated timely sown conditions, one test entry (HI 1669) was evaluated against four check varieties {MACS 6768, HI 1650, GW 547 (I) and GW 322} at eight locations (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Powarkheda, Udaipur and Vijapur) under timely (12th November to 18th November) and late (03rd December to 09th December) sown conditions. For pooled analysis, data of six centres were considered, while the data of Jabalpur and Vijapur centres were not included due to low mean yield under timely sown conditions. The trial was laid out in a split plot design with sowing time in main and genotypes in sub-plots with three replications. The sowing was done using the normalized (adjusted considering 1000 grains weight of 38 g) seed rate of 100 kg/ha at a row-to-row spacing of 20 cm. Nitrogen was applied in three splits (1/3rd at sowing and remaining 2/3rd nitrogen as 1/3rd at

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

The centrewise yield and zonal mean yield are given in Table 4.1. The pooled data are presented in Table 4.2 and the centre wise data are in Annexure-1 as Tables 4.2.1 to 4.2.8. The perusal of pooled data in Table 4.2 revealed that there was a significant decline in yield from normal (50.36 q/ha) to late (42.99 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2 and thousand grain weight under late sown conditions. The grain yield decline in late sown condition was 14.6% as compared to normal sown condition. On average basis, the test entry HI 1669 ranked second with mean yield of 46.80 q/ha and check variety GW 322 (C) yielded of 49.40 q/ha on mean basis which was significantly higher than all other genotypes. This also ranked first in timely (54.36 q/ha) as well as late sown (44.43 q/ha) conditions. On mean basis, check variety GW 322 recorded the maximum tiller density (386/m^2).

Irrigated Late Sown

In irrigated late sown conditions, one test entry (HI 1674) was evaluated against four check varieties (MP 4010, HD 2932, CG 1029 and HI 1634) at eight locations (Bilaspur, Gwalior, Indore, Jabalpur, Junagadh, Powarkheda, Udaipur and Vijapur) under late (03rd December to 09th December) and very late (24th December to 31st December) sown conditions. For pooled analysis, data of all the centres were considered. The trial was laid out in a split plot design with sowing time in main plots and genotypes in sub-plots with three replications. Nitrogen was applied in three splits (1/3rd at sowing and remaining 2/3rd nitrogen as 1/3rd at first irrigation i.e. at 20-25 days after sowing and 1/3rd at second irrigation i.e. 40-45 days after sowing), whereas full phosphorus and potash were applied as basal.

The centrewise yield and zonal mean yield are given in Table 4.3. The pooled data are presented in Table 4.4 and the centre wise data are in Annexure-I as Tables 4.4.1 to 4.4.8. The perusal of pooled data in Table 4.4 revealed that there was a significant decline in yield from late (42.19 q/ha) to very late (33.72 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2 and thousand grain weight under very late sown conditions. The grain yield decline in very late sown condition was 20.1% as compared to late sown condition. On average basis, the test entry HI 1674 ranked second with a mean yield of 38.72 q/ha and check variety HI 1634 yielded 40.34 q/ha on mean basis which was significantly higher than all other genotypes. This also ranked first in late (44.36 q/ha) as well as very late sown (36.33 q/ha) conditions. On mean basis, check variety HD 2932 recorded the maximum tiller density (335).

Table 4.1. Central Zone	**IR-TS-DOS-TAD**		**Centrewise**		**Yield, q/ha**		**2023-24**
Sowing time	Genotype	**Bilaspur**	**Gwalior**	**Indore**	**Junagarh**	**Powarkheda**	**Udaipur**	**Zonal mean**
Timely	GW 547 (I)(C)	44.03	42.10	46.27	53.02	51.82	44.92	47.03
	MACS 6768 (C)	48.13	51.46	44.47	48.80	49.82	59.17	50.31
	HI 1650 (C)	46.59	49.52	48.83	45.23	53.39	57.97	50.26
	HI 1669	48.86	41.71	50.13	44.24	49.22	64.96	49.85
	GW 322 (C)	51.59	52.72	46.00	57.34	57.03	61.51	54.36
	Mean	47.84	47.50	47.14	49.73	52.26	57.71	50.36
Late	GW 547 (I)(C)	37.58	37.38	42.43	43.84	37.55	45.44	40.70
	MACS 6768 (C)	40.54	41.80	45.60	39.83	45.93	45.83	43.25
	HI 1650 (C)	38.14	42.56	48.50	40.20	42.31	45.08	42.80
	HI 1669	40.74	39.28	50.63	41.69	39.71	50.40	43.74
	GW 322 (C)	43.80	43.29	44.00	42.67	44.66	48.18	44.43
	Mean	40.16	40.86	46.23	41.64	42.03	46.98	42.99
Mean	GW 547 (I)(C)	40.81	39.74	44.35	48.43	44.68	45.18	43.86
	MACS 6768 (C)	44.33	46.63	45.03	44.31	47.88	52.50	46.78
	HI 1650 (C)	42.36	46.04	48.67	42.71	47.85	51.53	46.53
	HI 1669	44.80	40.49	50.38	42.96	44.46	57.68	46.80
	GW 322 (C)	47.69	48.01	45.00	50.00	50.84	54.84	49.40
	Mean	44.00	44.18	46.69	45.68	47.14	52.35	46.67
CD (0.05)	Sowing time (A)	1.38	3.77	3.25	7.25	1.37	10.12	0.93
	Genotype (B)	2.69	3.81	2.03	3.06	1.28	7.22	1.23
	B within A	3.80	5.39	2.87	4.32	1.81	10.21	N.S.
	A within B	3.47	5.16	3.02	5.26	1.76	10.41	1.90
Date of Sowing:	Timely	11.11.2023	11.11.2023	10.11.2023	08.11.2023	11.11.2023	05.11.2023	
	Late	03.12.2023	09.12.2023	05.12.2023	04.12.2023	07.12.2023	03.12.2023	
Date of Harvesting:	Timely	11.03.2024	09.04.2024	18.03.2024	22.02.2024	15.04.2024	20.03.2024	
	Late	05.04.2024	12.04.2024	09.04.2024	12.03.2024	19.04.2024	06.04.2024	

Table 4.2. Central Zone	IR-TS-DOS-TAD				Pooled	2023-24
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	47.03	5	40.70	5	43.86	5
MACS 6768 (C)	50.31	2	43.25	3	46.78	3
HI 1650 (C)	50.26	3	42.80	4	46.53	4
HI 1669	49.85	4	43.74	2	46.80	2
GW 322 (C)	54.36	1	44.43	1	49.40	1
Mean	50.36		42.99		46.67	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.93		1.23		N.S.	1.90
			Earhead/sqm			
GW 547 (I)(C)	379	4	342	4	360	4
MACS 6768 (C)	388	3	348	3	368	3
HI 1650 (C)	377	5	321	5	349	5
HI 1669	392	2	360	2	376	2
GW 322 (C)	405	1	368	1	386	1
Mean	388		348		368	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	5.54		6.14		8.68	9.88
			Grains/Earhead			
GW 547 (I)(C)	29.32	5	31.79	5	30.56	5
MACS 6768 (C)	30.57	3	32.77	3	31.67	4
HI 1650 (C)	29.84	4	33.87	1	31.86	2
HI 1669	30.79	2	32.90	2	31.85	3
GW 322 (C)	32.18	1	32.65	4	32.41	1
Mean	30.54		32.80		31.67	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	1.21		N.S.		N.S.	1.88
			1000 Grains Weight, g			
GW 547 (I)(C)	43.82	2	38.76	3	41.29	3
MACS 6768 (C)	43.66	3	39.22	2	41.44	2
HI 1650 (C)	46.26	1	40.54	1	43.40	1
HI 1669	41.97	5	38.30	5	40.14	5
GW 322 (C)	43.17	4	38.41	4	40.79	4
Mean	43.77		39.05		41.41	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.45		0.50		0.71	0.81
Centres:	Bilaspur, Gwalior, Indore, Junagarh, Powarkheda, Udaipur					

Table 4.3. Central Zone	IR-LS-DOS-TAS	Centrewise	Yield, q/ha	2023-24					
Sowing time	Genotype	**Bilaspur**	**Gwalior**	**Indore**	**Jabalpur**	**Junagarh**	**Powarkheda**	**Udaipur**	**Vijapur**	**Zonal mean**
Late	MP 4010 (C)	40.42	39.81	39.80	35.58	44.92	35.81	37.38	36.31	38.75
	HD 2932 (C)	41.86	41.61	44.50	34.98	49.29	46.49	38.45	43.14	42.54
	CG 1029 (C)	44.35	37.94	42.07	34.11	45.79	42.06	45.67	42.43	41.80
	HI 1634 (C)	42.82	43.14	42.17	42.35	50.40	39.72	56.35	37.91	44.36
	HI 1674	39.75	37.49	47.93	36.03	52.98	38.16	52.38	43.19	43.49
	Mean	41.84	40.00	43.29	36.61	48.67	40.45	46.05	40.60	42.19
Very late	MP 4010 (C)	35.31	33.09	27.87	33.10	33.02	31.05	34.88	28.35	32.08
	HD 2932 (C)	36.75	35.69	24.77	30.39	31.51	37.82	36.15	30.69	32.97
	CG 1029 (C)	41.25	31.88	29.70	27.10	32.48	32.88	35.24	35.63	33.27
	HI 1634 (C)	37.71	36.75	38.50	32.58	31.84	36.52	45.40	31.33	36.33
	HI 1674	33.97	32.73	34.67	29.27	35.20	35.22	38.10	32.43	33.95
	Mean	37.00	34.03	31.10	30.49	32.81	34.70	37.95	31.69	33.72
Mean	MP 4010 (C)	37.87	36.45	33.83	34.34	38.97	33.43	36.13	32.33	35.42
	HD 2932 (C)	39.31	38.65	34.63	32.68	40.40	42.16	37.30	36.91	37.76
	CG 1029 (C)	42.80	34.91	35.88	30.61	39.13	37.47	40.46	39.03	37.54
	HI 1634 (C)	40.26	39.95	40.33	37.47	41.12	38.12	50.87	34.62	40.34
	HI 1674	36.86	35.11	41.30	32.65	44.09	36.69	45.24	37.81	38.72
	Mean	39.42	37.01	37.20	33.55	40.74	37.57	42.00	36.14	37.95
CD (0.05)	Sowing time (A)	2.67	2.78	2.52	1.82	7.97	5.72	7.43	4.61	0.71
	Genotype (B)	1.43	2.72	2.08	1.52	5.03	2.06	4.53	4.43	0.91
	B within A	2.02	3.84	2.95	2.15	7.12	2.91	6.41	6.27	N.S.
	A within B	2.24	3.70	2.91	2.12	7.48	3.83	6.80	6.05	1.39
Date of Sowing:	Late	03.12.2023	09.12.2023	05.12.2023	08.12.2023	04.12.2023	09.12.2023	09.12.2023	05.12.2023	
	Very late	24.12.2023	31.12.2023	27.12.2023	31.12.2023	26.12.2023	31.12.2023	26.12.2023	20.12.2023	
Date of Harvesting:	Late	04.04.2024	12.04.2024	12.04.2024	10.04.2024	12.03.2024	25.04.2024	10.04.2024	19.03.2024	
	Very late	18.04.2024	17.04.2024	18.04.2024	17.04.2024	27.03.2024	28.04.2024	19.04.2024	02.04.2024	

Table 4.4. Central Zone			IR-LS-DOS-TAS		Pooled	2023-24
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	38.75	5	32.08	5	35.42	5
HD 2932 (C)	42.54	3	32.97	4	37.76	3
CG 1029 (C)	41.80	4	33.27	3	37.54	4
HI 1634 (C)	44.36	1	36.33	1	40.34	1
HI 1674	43.49	2	33.95	2	38.72	2
Mean	42.19		33.72		37.95	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.71		0.91		N.S.	1.39
			Earhead/sqm			
MP 4010 (C)	354	1	292	5	323	5
HD 2932 (C)	351	2	319	3	335	1
CG 1029 (C)	345	3	301	4	323	4
HI 1634 (C)	343	4	323	2	333	3
HI 1674	342	5	324	1	333	2
Mean	347		312		329	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	6.11		7.52		10.63	11.63
			Grains/Earhead			
MP 4010 (C)	28.98	4	32.27	1	30.62	4
HD 2932 (C)	31.42	3	30.84	3	31.13	2
CG 1029 (C)	27.94	5	28.23	5	28.09	5
HI 1634 (C)	32.99	1	31.94	2	32.46	1
HI 1674	32.18	2	29.56	4	30.87	3
Mean	30.70		30.57		30.64	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	N.S.		1.03		1.45	1.54
			1000 Grains Weight, g			
MP 4010 (C)	38.51	5	35.62	4	37.07	5
HD 2932 (C)	39.59	4	35.22	5	37.41	4
CG 1029 (C)	45.09	1	40.97	1	43.03	1
HI 1634 (C)	40.33	3	36.63	3	38.48	3
HI 1674	40.35	2	37.38	2	38.87	2
Mean	40.77		37.17		38.97	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.34		0.55		N.S.	0.81
Centres:	Bilaspur, Gwalior, Indore, Jabalpur, Junagarh, Powarkheda, Udaipur,Vijapur					

Restricted Irrigation

The restricted irrigation trial was conducted with the objective to evaluate one test entry DBW 441^{M} against four checks (DBW 110, HI 1655, DBW 539(I) and CG 1036) at six locations (Bilaspur, Gwalior, Indore, Jabalpur, Powarkheda and Udaipur). The trial was laid out in a split plot design with number of irrigations in main plots 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 in I_1 treatment *i.e.* no irrigation, whereas 1/3rd N and full phosphorus and potash were

applied as basal at sowing and remaining 2/3rd nitrogen at first irrigation *i.e.* at 20-25 days after sowing in I_2 and I_3 treatments.

The centre wise yield and zonal mean yield are presented in Table 4.5. The perusal of pooled data in Table 4.6 indicated that increasing the irrigation level significantly increased the grain yield, earhead/m^2 and thousand grains weight. The maximum and significantly higher grain yield (39.96 q/ha) was obtained with two irrigations as compared with zero and one irrigation level. Increasing irrigation level enhanced the grain yield mainly due to significant increase in earhead/m^2 and thousand grain weight. The test entry DBW 441^M produced an average yield of 34.79 q/ha, which was significantly lower to all the checks varieties HI 1655 which was at par. However, check variety DBW 359 (I) and CG 1036 ranked first and second, respectively, at all irrigation levels and overall mean basis. The interaction effect was significant for yield and yield attributes. The centre wise data are presented in Tables 4.6.1 to 4.6.6 in Annexure-I.

High Yield Potential Trial

This experiment was conducted to maximise the wheat yield using higher level of inorganic and organic fertilisers and spraying of growth retardant for control of lodging. Experiment consists of two fertiliser treatments *viz.* NM1 {recommended doses of fertilizers (RDF) of NPK} and NM2 {150% RFD + 15 t FYM/ha + two sprays as tank-mix of chlormequat chloride (Lihocin) @0.2% + tebuconazole (Folicur 430 SC) @0.1%} of commercial product dose at the first node and flag leaf stage in main plots. Sub-plots consist of six high yielding wheat genotypes (CG1044, DBW 377, DBW187, GW 543, GW 322, DBW 303). The trial was conducted in split plot design with three replications at five centres namely BISA Jabalpur, Jabalpur, Powarkheda, Udaipur and Vijapur. The sowing was done using normalized seed rate of 100 kg/ha (adjusted considering 1000 grains weight as 38 g). Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone.

The centrewise yield and zonal mean yield are shown in Table 4.7. The analysis of pooled data presented in Table 4.8 showed significant effect of fertiliser application and growth regulators on grain yield and yield attributes. The grain yield enhanced significantly with increasing fertiliser doses. Addition of 15 t FYM/ha with 150% RFD significantly increased the grain yield (66.35 q/ha) as compared to RDF (56.48 q/ha). This increase was to the tune of 17.5% as compared with RDF. The dose of 150% RFD + 15 t FYM/ha+GR significantly (5.7%) enhanced number of earhead/m^2 (429), number of grains per earhead (33.27) and bolder grains (47.64 g per thousand grains weight) compared to RFD (406, 30.40 and 46.76 g per thousand grains weight, respectively). The application of growth retardant

Table 4.5. Central Zone	RIR-TS-TAD		Centrewise		Yield, q/ha		2023-24
Number of Irrigation	Genotype	**Bilaspur**	**Gwalior**	**Indore**	**Jabalpur**	**Powarkheda**	**Udaipur**	**Zonal mean**
No	DBW 110 (C)	35.19	32.20	33.03	37.62	20.28	26.47	30.80
	HI 1655 (C)	36.32	27.78	28.33	27.75	22.62	31.86	29.11
	DBW 441^{M}	37.08	30.67	31.37	34.33	25.00	22.66	30.19
	DBW 359 (I)(C)	33.80	34.37	37.63	40.68	27.90	29.37	33.96
	CG 1036 (C)	38.40	39.01	30.57	41.04	19.33	27.94	32.71
	Mean	36.16	32.81	32.19	36.29	23.02	27.66	31.35
One	DBW 110 (C)	36.88	36.51	32.60	45.89	34.52	33.06	36.58
	HI 1655 (C)	38.02	30.04	31.33	38.99	30.36	42.66	35.23
	DBW 441^{M}	38.77	34.63	33.87	35.87	31.55	30.59	34.21
	DBW 359 (I)(C)	35.49	38.79	36.17	43.59	33.21	37.50	37.46
	CG 1036 (C)	40.09	43.78	31.83	42.31	29.17	33.73	36.82
	Mean	37.85	36.75	33.16	41.33	31.76	35.51	36.06
Two	DBW 110 (C)	38.24	41.00	37.73	46.88	37.47	38.57	39.98
	HI 1655 (C)	39.37	32.62	37.90	39.67	33.66	49.60	38.80
	DBW 441^{M}	40.13	38.48	38.03	48.71	38.86	35.68	39.98
	DBW 359 (I)(C)	36.85	41.95	38.63	47.03	34.69	46.75	40.98
	CG 1036 (C)	41.45	44.65	32.40	49.83	32.31	39.76	40.07
	Mean	39.208	39.74	36.94	46.42	35.40	42.07	39.96
Mean	DBW 110 (C)	36.77	36.57	34.46	43.46	30.76	32.70	35.79
	HI 1655 (C)	37.90	30.15	32.52	35.47	28.88	41.37	34.38
	DBW 441^{M}	38.66	34.59	34.42	39.64	31.80	29.64	34.79
	DBW 359 (I)(C)	35.38	38.37	37.48	43.77	31.93	37.87	37.47
	CG 1036 (C)	39.98	42.48	31.60	44.40	26.93	33.81	36.53
	Mean	37.74	36.43	34.10	41.35	30.06	35.08	35.79
CD (0.05)	Irrigation (A)	0.96	0.70	1.58	1.30	0.96	2.95	0.52
	Genotype (B)	0.95	1.15	1.61	1.41	0.53	3.59	0.72
	B within A	1.64	1.99	2.80	2.44	0.91	6.21	1.25
	A within B	1.66	1.87	2.80	2.42	1.12	6.04	1.26
Date of Sowing:		02.11.2023	11.11.2023	04.11.2023	05.11.2023	05.11.2023	05.11.2023	
Date of Harvesting:		27.02.2024	10.04.2024	13.03.2024	13.03.2024	31.03.2024	08.03.2024	

Table 4.6. Central Zone			RIR-TS-TAD				Pooled	2023-24
Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
			Yield, q/ha					
DBW 110 (C)	30.80	3	36.58	3	39.98	3	35.79	3
HI 1655 (C)	29.11	5	35.23	4	38.80	5	34.38	5
DBW 441[M]	30.19	4	34.21	5	39.98	4	34.79	4
DBW 359 (I)(C)	33.96	1	37.46	1	40.98	1	37.47	1
CG 1036 (C)	32.71	2	36.82	2	40.07	2	36.53	2
Mean	31.35		36.06		39.96		35.79	
	Irrigation(A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.52		0.72		1.25		1.26	
			Earhead/sqm					
DBW 110 (C)	282	5	308	4	325	5	305	5
HI 1655 (C)	287	4	308	5	329	4	308	4
DBW 441[M]	325	2	336	3	357	2	339	2
DBW 359 (I)(C)	332	1	347	1	362	1	347	1
CG 1036 (C)	323	3	339	2	354	3	339	3
Mean	310		328		345		328	
	Irrigation(A)		Genotype (B)		B within A		A within B	
CD (0.05)	3.89		5.37		NS		9.38	
			Grains/Earhead					
DBW 110 (C)	30.50	1	31.81	1	31.46	1	31.26	1
HI 1655 (C)	30.35	2	31.28	2	30.77	2	30.80	2
DBW 441[M]	27.08	4	27.18	4	28.00	4	27.42	4
DBW 359 (I)(C)	29.61	3	28.95	3	28.16	3	28.91	3
CG 1036 (C)	26.90	5	27.11	5	27.16	5	27.06	5
Mean	28.89		29.26		29.11		29.09	
	Irrigation(A)		Genotype (B)		B within A		A within B	
CD (0.05)	N.S.		N.S.		0.85		1.47	
			1000 Grains Weight, g					
DBW 110 (C)	36.58	3	38.36	4	40.22	4	38.39	4
HI 1655 (C)	34.80	5	37.51	5	39.01	5	37.11	5
DBW 441[M]	36.47	4	39.75	2	41.80	2	39.34	2
DBW 359 (I)(C)	36.69	2	39.12	3	41.76	3	39.19	3
CG 1036 (C)	38.52	1	41.09	1	42.24	1	40.62	1
Mean	36.61		39.17		41.01		38.93	
	Irrigation(A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.27		0.38		0.65		0.66	
Centres:	Bilaspur, Gwalior, Indore, Jabalpur, Powarkheda, Udaipur							

significantly decreased plant height (87.3 cm) over no use (91.8 cm). This showed that growth retardant in combination with fungicide tebuconazole was effective for control of lodging and enhancing the grain yield owing to more tillering. On mean basis, DBW 377 (I) recorded the highest grain yield (64.09 q/ha). The centre wise data are presented in Tables 4.8.1 to 4.8.5 of Annexure-I.

Table 4.7. Central Zone		**SPL-IR-ES-HYPT**		**Centrewise**		**Yield, q/ha**	**2023-24**
Nutrients Management	Genotype	**BISA Jabalpur**	**Jabalpur**	**Powarkheda**	**Udaipur**	**Vijapur**	**Zonal mean**
100% RFD	CG 1044	62.10	49.96	52.06	55.64	51.91	54.33
	DBW 377 (I)(C)	72.47	65.29	51.57	56.03	49.18	58.91
	DBW 187 (C)	64.32	54.00	51.72	71.47	55.44	59.39
	GW 543	64.88	62.66	46.03	55.67	53.90	56.63
	GW 322 (C)	62.47	40.63	47.84	67.14	48.50	53.32
	DBW 303 (C)	67.35	54.64	54.95	52.94	51.61	56.30
	Mean	65.60	54.53	50.70	59.81	51.76	56.48
150% RFD+FYM	CG 1044	66.38	52.25	61.14	76.39	58.40	62.91
	DBW 377 (I)(C)	75.41	70.21	58.16	81.47	61.13	69.27
	DBW 187 (C)	69.76	49.66	60.61	84.21	59.74	64.79
	GW 543	72.66	69.34	64.96	75.00	61.37	68.67
	GW 322 (C)	65.32	52.54	59.70	83.37	59.71	64.13
	DBW 303 (C)	74.59	71.34	62.40	72.82	60.56	68.34
	Mean	70.69	60.89	61.16	78.88	60.15	66.35
Mean	CG 1044	64.24	51.11	56.60	66.01	55.15	58.62
	DBW 377 (I)(C)	73.94	67.75	54.86	68.75	55.15	64.09
	DBW 187 (C)	67.04	51.83	56.16	77.84	57.59	62.09
	GW 543	68.77	66.00	55.50	65.34	57.63	62.65
	GW 322 (C)	63.90	46.59	53.77	75.26	54.10	58.72
	DBW 303 (C)	70.97	62.99	58.67	62.88	56.09	62.32
	Mean	68.14	57.71	55.93	69.35	55.95	61.42
CD (0.05)	NM (A)	2.28	2.16	0.82	3.11	5.50	2.77
	Genotype (B)	3.73	3.32	1.84	6.78	3.64	3.86
	B within A	5.27	4.69	2.60	9.59	5.15	5.46
	A within B	5.00	4.47	2.42	8.94	5.72	5.31
Date of Sowing:		04.11.2023	14.11.2023	05.11.2023	10.11.2023	04.11.2023	
Date of Harvesting:		07.04.2024	07.04.2024	01.04.2024	25.03.2024	06.03.2024	

Table 4.8. Central Zone			**SPL-IR-ES-HYPT**		**Pooled**	**2023-24**
Genotype	Nutrients Management				Mean	Rk
	100% RFD	Rk	150% RFD+FYM	Rk		
			Yield, q/ha			
CG 1044	54.33	5	62.91	6	58.62	6
DBW 377 (I)(C)	58.91	2	69.27	1	64.09	1
DBW 187 (C)	59.39	1	64.79	4	62.09	4
GW 543	56.63	3	68.67	2	62.65	2
GW 322 (C)	53.32	6	64.13	5	58.72	5
DBW 303 (C)	56.30	4	68.34	3	62.32	3
Mean	56.48		66.35		61.42	
	NM(A)		Genotype (B)		B within A	A within B
CD (0.05)	0.88		1.80		2.55	2.67
			Earhead/sqm			
CG 1044	410	3	410	5	410	4
DBW 377 (I)(C)	406	4	442	2	424	3
DBW 187 (C)	424	2	432	4	428	2
GW 543	386	5	433	3	410	5
GW 322 (C)	425	1	449	1	437	1
DBW 303 (C)	383	6	407	6	395	6
Mean	406		429		417	
	NM(A)		Genotype (B)		B within A	A within B
CD (0.05)	10.92		16.00		NS	24.83
			Grains/Earhead			
CG 1044	28.41	6	33.47	2	30.94	5
DBW 377 (I)(C)	30.76	2	32.65	5	31.71	3
DBW 187 (C)	29.11	5	30.30	6	29.70	6
GW 543	29.46	4	32.73	4	31.10	4
GW 322 (C)	30.55	3	33.31	3	31.93	2
DBW 303 (C)	34.11	1	37.15	1	35.63	1
Mean	30.40		33.27		31.83	
	NM(A)		Genotype (B)		B within A	A within B
CD (0.05)	0.84		1.50		N.S.	2.26
			1000 Grains Weight, g			
CG 1044	47.65	3	46.41	4	47.03	4
DBW 377 (I)(C)	47.39	4	49.24	3	48.32	3
DBW 187 (C)	48.90	2	50.99	1	49.94	2
GW 543	50.20	1	49.69	2	49.95	1
GW 322 (C)	42.45	6	43.35	6	42.90	6
DBW 303 (C)	43.99	5	46.19	5	45.09	5
Mean	46.76		47.64		47.20	
	NM(A)		Genotype (B)		B within A	A within B
CD (0.05)	0.57		0.85		1.20	1.31
			Plant Height, cm			
CG 1044	99.94	1	97.01	1	98.48	1
DBW 377 (I)(C)	88.95	5	86.20	3	87.57	3
DBW 187 (C)	92.75	2	87.84	2	90.30	2
GW 543	89.26	4	85.48	4	87.37	4
GW 322 (C)	88.42	6	84.41	5	86.41	6
DBW 303 (C)	91.46	3	83.12	6	87.29	5
Mean	91.80		87.34		89.57	
	NM(A)		Genotype (B)		B within A	A within B
CD (0.05)	1.51		2.04			3.21
Centres:	BISA Jabalpur, Jabalpur, Powarkheda, Udaipur, Vijapur					

Peninsular Zone

In Peninsular zone, four centres (Akola, Dharwad, Niphad and Pune) were actively engaged in research activities of coordinated wheat agronomy programme. The data on weather and soil parameters are reported in Annexure II and Annexure III, respectively. The soils of this zone fall under the order vertisols and predominantly are clayey in nature with medium to high organic carbon ranging between 0.4-0.91 per cent. The available soil nitrogen is low in content ranging between (112 to 252 kg N/ha); while the content of phosphorus is medium to high (22.6-37.6 kg/ha). The potash content in soil is very high (326-510 kg/ha). The soils of this region are predominantly alkaline in reaction. Majority of the rainfall was received during October to the first week of December except a few showers which were received during later stages in the crop season. The maximum rainfall received was 109.6 mm at Niphad followed by 101.6 mm at Akola, 78.2 mm at Dharwad and 45.8 mm at Pune. The average maximum and minimum temperatures were 31.8 °C and 13.7 °C at Akola, 32.7 °C and 18.3 °C at Dharwad, 32.3 °C and 14.3 °C at Niphad, and 33.0 °C and 16.7 °C at Pune.

EVALUATION UNDER DIFFERENT GROWING CONDITIONS

The performance of genotypes was evaluated under timely and late sown conditions at different locations and the results are summarized under the following heads:

Irrigated Timely Sown

In this trial, five *aestivum* entries *viz.* WH 1306, NWS 2222, DBW 443, PBW 891 and AKAW 5100 were evaluated against three check varieties GW 322 (C), MP 1378 (I)(C) and MACS 6222 (C). The trial was conducted to evaluate the performance of timely sown genotypes under timely and late sown conditions at four locations (Akola, Dharwad, Niphad and Pune) in split plot design with sowing time in main-plots and genotypes in sub-plots with three replications. The allowed period for timely and late sown conditions was kept as 5th to 11th Nov and 26th Nov. to 02nd Dec., respectively. Sowing was done using the normalized (adjusted considering 1000 grains weight as 38 g) seed rate of 100 kg/ha. The dose of NPK fertilizers was maintained as 120:60:40 kg/ha with 1/3rd N, full P and K as basal application during sowing and application of remaining 2/3rd N equally at the first and second irrigation.

The centrewise and zonal mean yield of the trial is given in Table 5.1. The results of pooled analysis, and centrewise data of yield and yield attributes are presented in Table 5.2 and Annexure-I (Tables 5.2.1 to 5.2.4), respectively. The perusal of pooled data revealed that grain yield reduced by 11.4% on shifting the sowing from timely to late condition. The mean grain yield under timely and late sown conditions was found to be 53.3 and 47.2 q/ha, respectively. The decline in grain yield with late sown condition was associated with lesser

earhead density and test weight of grains. In terms of yield, the test entry NWS 2222 showed numerical superiority but statistically was at par to the best check MACS 6222 (C). The grain yield of test entry DBW 443 and PBW 891 was slightly lesser but statistically at par to the best check MACS 6222 (C). Among the test entries, grain yield of AKAW 5100 was inferior to all check varieties. The maximum test weight of grains was recorded as 43.5 g for the best check MACS 6222 (C) followed by 43.1 g, 42.3 g and 42.2 g for DBW 443, WH 1306 and PBW 891, respectively, without any significant differences.

Table 5.1. Peninsular Zone **IR-TS-DOS-TAD** **Centrewise Yield, q/ha** **2023-24**

Sowing time	Genotype	**Akola**	**Dharwad**	**Niphad**	**Pune**	**Zonal mean**
Timely	GW 322 (C)	68.17	43.23	46.12	48.43	51.49
	WH 1306	70.90	51.89	45.82	50.88	54.87
	MP 1378 (I)(C)	66.83	45.61	49.72	54.46	54.16
	MACS 6222 (C)	63.63	42.53	50.39	57.44	53.50
	NWS 2222	74.77	46.40	51.12	49.22	55.38
	DBW 443	72.29	50.38	46.51	52.96	55.54
	PBW 891	73.33	47.39	46.62	48.06	53.85
	AKAW 5100	62.34	42.90	39.49	45.70	47.61
	Mean	69.03	46.29	46.97	50.89	53.30
Late	GW 322 (C)	64.14	44.02	39.09	49.32	49.14
	WH 1306	57.14	39.76	38.30	48.65	45.96
	MP 1378 (I)(C)	54.88	42.17	42.14	45.58	46.19
	MACS 6222 (C)	64.98	43.41	43.03	45.45	49.22
	NWS 2222	60.93	48.06	44.69	44.30	49.50
	DBW 443	62.35	37.32	39.20	47.99	46.72
	PBW 891	62.02	42.00	39.76	46.36	47.54
	AKAW 5100	57.24	38.53	31.51	46.09	43.34
	Mean	60.46	41.91	39.71	46.72	47.20
Mean	GW 322 (C)	66.15	43.62	42.60	48.88	50.31
	WH 1306	64.02	45.83	42.06	49.77	50.42
	MP 1378 (I)(C)	60.86	43.89	45.93	50.02	50.18
	MACS 6222 (C)	64.31	42.97	46.71	51.44	51.36
	NWS 2222	67.85	47.23	47.90	46.76	52.44
	DBW 443	67.32	43.85	42.85	50.47	51.12
	PBW 891	67.68	44.69	43.19	47.21	50.69
	AKAW 5100	59.79	40.71	35.50	45.89	45.47
	Mean	64.75	44.10	43.34	48.81	50.25
CD (0.05)	Sowing time (A)	N.S.	N.S.	4.16	N.S.	2.49
	Genotype (B)	4.11	N.S.	4.10	N.S.	2.23
	B within A	5.82	5.76	NS	N.S.	N.S.
	A within B	10.04	6.10	NS	N.S.	N.S.
Date of Sowing:	Timely	10.11.2023	10.11.2023	09.11.2023	07.11.2023	
	Late	02.12.2023	25.11.2023	02.12.2023	28.11.2023	
Date of Harvesting:	Timely	09.03.2024	15.03.2024	10.03.2024	15.03.2024	
	Late	22.03.2024	28.03.2024	01.04.2024	28.03.2024	
Centres:	Akola, Dharwad, Niphad, Pune					

Table 5.2.	Peninsular Zone		IR-TS-DOS-TAD		Pooled	2023-24
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 322 (C)	51.49	7	49.14	3	50.31	6
WH 1306	54.87	3	45.97	7	50.42	5
MP 1378 (I)(C)	54.16	4	46.19	6	50.17	7
MACS 6222 (C)	53.50	6	49.22	2	51.36	2
NWS 2222	55.38	2	49.50	1	52.44	1
DBW 443	55.53	1	46.71	5	51.12	3
PBW 891	53.85	5	47.54	4	50.69	4
AKAW 5100	47.61	8	43.34	8	45.48	8
Mean	53.30		47.20		50.25	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	2.49		2.23		N.S.	N.S.
			Earhead/sqm			
GW 322 (C)	434	2	379	4	407	2
WH 1306	408	4	383	3	396	4
MP 1378 (I)(C)	404	5	402	1	403	3
MACS 6222 (C)	398	6	359	7	378	7
NWS 2222	454	1	390	2	422	1
DBW 443	396	7	351	8	374	8
PBW 891	395	8	364	6	380	6
AKAW 5100	414	3	371	5	392	5
Mean	413		375		394	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	13.78		27.80		N.S.	N.S.
			Grains/Earhead			
GW 322 (C)	31.66	3	34.95	1	33.31	2
WH 1306	30.05	7	32.08	7	31.07	7
MP 1378 (I)(C)	35.49	1	32.30	6	33.89	1
MACS 6222 (C)	31.04	6	33.63	4	32.33	5
NWS 2222	29.06	8	32.02	8	30.54	8
DBW 443	31.98	2	33.95	3	32.96	3
PBW 891	31.57	4	34.08	2	32.82	4
AKAW 5100	31.47	5	32.94	5	32.21	6
Mean	31.54		33.24		32.39	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	N.S.		N.S.		N.S.	N.S.
			1000 Grains Weight, g			
GW 322 (C)	39.49	7	38.47	6	38.98	6
WH 1306	45.03	3	39.50	5	42.26	3
MP 1378 (I)(C)	39.64	6	37.13	7	38.38	7
MACS 6222 (C)	45.64	1	41.41	1	43.53	1
NWS 2222	43.06	5	40.43	3	41.75	5
DBW 443	45.27	2	40.96	2	43.11	2
PBW 891	44.12	4	40.19	4	42.15	4
AKAW 5100	38.29	8	36.43	8	37.36	8
Mean	42.57		39.31		40.94	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	1.67		1.41		N.S.	N.S.
Centres:	Akola, Dharwad, Niphad, Pune					

Irrigated Late Sown

In this trial, four genotypes *viz.* HI 1674, LOK 79, NIAW 4114 and NIAW 4120 were evaluated against four checks HI1633 (C), RAJ 4083 (C), HD 3090 (C) and HD 2932 (C). The trial was conducted to assess the performance of late sown genotype under different sowing time (late and very late) at four locations (Akola, Dharwad, Niphad and Pune). A split plot design with sowing time in main plots and genotypes in sub-plots with three replications was considered for experimentation. The dose of NPK fertilizers was kept as 90:60:40 kg/ha with 1/3rd N, full P and K as basal application during the sowing and application of remaining 2/3rd N equally in two splits at the first and second irrigation.

The centrewise and zonal mean yield of the trial is given in Table 5.3. The results of pooled

Table 5.3. Peninsular Zone **IR-LS-DOS-TAS** **Centrewise Yield, q/ha** **2023-24**

Sowing time	Genotype	**Akola**	**Dharwad**	**Niphad**	**Pune**	**Zonal mean**
Late	HI 1674	73.27	30.00	38.28	48.40	47.49
	LOK 79	68.02	35.09	50.71	44.01	49.46
	HI 1633 (C)	72.06	35.48	37.94	47.73	48.30
	NIAW 4114	73.53	36.63	43.40	42.18	48.94
	RAJ 4083 (C)	70.91	31.29	38.28	41.90	45.60
	HD 3090 (C)	67.54	40.39	38.72	48.83	48.87
	HD 2932 (C)	67.87	37.77	35.64	45.55	46.71
	NIAW 4120	70.92	41.78	44.79	55.04	53.13
	Mean	70.51	36.05	40.97	46.71	48.56
Very Late	HI 1674	35.74	30.04	25.84	39.65	32.82
	LOK 79	36.54	28.59	40.52	41.28	36.73
	HI 1633 (C)	43.79	34.54	26.18	45.05	37.39
	NIAW 4114	36.28	35.72	39.30	43.54	38.71
	RAJ 4083 (C)	35.21	29.72	33.41	40.99	34.83
	HD 3090 (C)	44.10	32.32	34.74	37.82	37.25
	HD 2932 (C)	39.06	26.81	25.07	41.59	33.13
	NIAW 4120	34.15	24.92	39.36	46.33	36.19
	Mean	38.11	30.33	33.05	42.03	35.88
Mean	HI 1674	54.50	30.02	32.06	44.02	40.15
	LOK 79	52.28	31.84	45.62	42.65	43.10
	HI 1633 (C)	57.92	35.01	32.06	46.39	42.85
	NIAW 4114	54.90	36.18	41.35	42.86	43.82
	RAJ 4083 (C)	53.06	30.51	35.85	41.45	40.22
	HD 3090 (C)	55.82	36.35	36.73	43.33	43.06
	HD 2932 (C)	53.46	32.29	30.35	43.57	39.92
	NIAW 4120	52.53	33.35	42.08	50.69	44.66
	Mean	54.31	33.19	37.01	44.37	42.22
CD (0.05)	Sowing time (A)	12.20	1.07	2.98	N.S.	3.37
	Genotype (B)	N.S.	3.35	3.47	N.S.	2.15
	B within A	5.70	4.74	4.90	N.S.	N.S.
	A within B	8.89	4.48	4.91	N.S.	N.S.
Date of Sowing:	Late	07.12.2023	25.11.2023	02.12.2023	28.11.2023	
	Very Late	23.12.2023	22.12.2023	19.12.2023	17.12.2023	
Date of Harvesting:	Late	29.03.2024	23.03.2024	29.03.2024	25.03.2024	
	Very Late	05.04.2024	15.04.2024	09.04.2024	31.03.2024	

analysis, and centrewise data of yield and yield attributes are presented in Table 5.4 and Annexure-I (Tables 5.4.1 to 5.4.4), respectively. The results of pooled data showed that grain yield declined drastically on changing the sowing time from late to very late condition due to reduced earhead density under very late sown condition. The mean grain yield under late and very late sown conditions was observed to be 48.56 and 35.88 q/ha, respectively. The mean yield of test entry NIAW 4120, NIAW 4114 and LOK79, were numerically better but statistically similar to the yield of the best check HD 3090 (C). The mean grain yield of test entry HI 1674 was significantly lower than the yield of the best check variety HD 3090 (C). The maximum test weight of grains (44 g per 1000 grains) was recorded for test entry NIAW 4120, which was significantly higher than all other genotypes.

Table 5.4. Peninsular Zone **IR-LS-DOS-TAS** **Pooled** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HI 1674	47.49	6	32.82	8	40.15	7
LOK 79	49.46	2	36.73	4	43.10	3
HI 1633 (C)	48.30	5	37.39	2	42.85	5
NIAW 4114	48.93	3	38.71	1	43.82	2
RAJ 4083 (C)	45.60	8	34.83	6	40.22	6
HD 3090 (C)	48.87	4	37.25	3	43.06	4
HD 2932 (C)	46.71	7	33.13	7	39.92	8
NIAW 4120	53.13	1	36.19	5	44.66	1
Mean	48.56		35.88		42.22	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	3.37		2.15		N.S.	N.S.
			Earhead/sqm			
HI 1674	424	6	380	1	402	2
LOK 79	448	3	358	4	403	1
HI 1633 (C)	429	5	365	2	397	5
NIAW 4114	441	4	357	5	399	4
RAJ 4083 (C)	405	8	361	3	383	7
HD 3090 (C)	416	7	337	7	377	8
HD 2932 (C)	449	1	352	6	401	3
NIAW 4120	449	1	326	8	388	6
Mean	433		355		394	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	14.68		N.S.		N.S.	N.S.
			Grains/Earhead			
HI 1674	27.49	7	23.42	8	25.46	8
LOK 79	27.54	6	28.20	3	27.87	3
HI 1633 (C)	28.04	5	27.53	4	27.79	5
NIAW 4114	28.42	3	29.81	2	29.12	2
RAJ 4083 (C)	28.23	4	27.01	5	27.62	6
HD 3090 (C)	33.40	1	30.52	1	31.96	1
HD 2932 (C)	25.21	8	25.90	7	25.55	7
NIAW 4120	29.39	2	26.28	6	27.83	4
Mean	28.46		27.34		27.90	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.76		2.95		N.S.	N.S.

			1000 Grains Weight, g			
HI 1674	40.49	6	39.66	2	40.08	2
LOK 79	40.60	4	38.96	5	39.78	5
HI 1633 (C)	40.59	5	39.19	3	39.89	3
NIAW 4114	40.16	7	39.01	4	39.58	6
RAJ 4083 (C)	40.97	3	38.74	6	39.85	4
HD 3090 (C)	39.47	8	37.65	7	38.56	8
HD 2932 (C)	41.22	2	37.57	8	39.39	7
NIAW 4120	44.10	1	43.96	1	44.03	1
Mean	40.95		39.34		40.15	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	N.S.		1.06		N.S.	N.S.
Centres:	Akola, Dharwad, Niphad, Pune					

PRODUCTION TECHNOLOGIES

In this section, the results of various experiments on updating the package of practices of various wheat growing zones are presented. Various special coordinated trials on tillage and residue management, seed rate, precision N management and intercropping in wheat/barley were conducted to address the various issues in different wheat growing zones of the country.

SPL-1: Effect of tillage, rice residue and microbial consortia management on wheat productivity

The trial was conducted in split-plot design with three tillage methods (zero tillage, strip tillage and conventional tillage) in main plots and three residue levels (no residue, full residue and full residue + microbial consortia) in sub-plots with three replications. The experiment was conducted with recommended dose of NPK as 150:60:40 kg/ha. One-third nitrogen, full phosphorus and potash as basal dose and the remaining 2/3rd nitrogen as 1/3rd at first irrigation and 1/3rd at second irrigation were applied.

In NWPZ, this trial was conducted with an objective of identifying the effective tillage and rice residue management strategy at three centres (Karnal, Ludhiana and BISA Ludhiana). The pooled analysis of data presented in Table 6.1 revealed that the maximum mean grain yield (57.53 q/ha) was recorded under the treatment of strip tillage. However, it remained at par with conventional tillage and zero tillage. The effect of residue management treatments was also non-significant. However, numerically maximum yield (58.13 q/ha) was observed with the full rice residue retention and minimum wheat grain yield (54.73 q/ha) was recorded where no rice residue was retained. The centrewise data of yield and yield attributes are given in Table 6.1.1 to 6.1.4 of Annexure-I.

In NEPZ, this trial was conducted at one location (BISA Samastipur). The analysis of data presented in Table 6.2 revealed that the maximum mean grain yield (55.0 q/ha) was produced under the treatment of conventional tillage. However, it remained at par with zero tillage. Both these treatments were significantly superior to strip tillage. The effect of residue management treatments was non-significant. However, numerically the maximum yield (52.72 q/ha) was observed with the full rice residue retention + microbial consortia and minimum wheat grain yield (50.43 q/ha) was recorded where no rice residue was retained.

Table 6.1. North Western Plain Zone	SPL-1				Pooled		2023-24	
Residue management (B)	Tillage option						Mean	Rk
	ZT	Rk	ST	Rk	CT	Rk		
			Yield, q/ha					
No residue	51.01	3	55.04	3	58.15	2	54.73	3
Full residue (FR)	55.87	1	60.29	1	58.23	1	58.13	1
FR + microbial consortia	55.74	2	57.26	2	55.88	3	56.29	2
Mean	54.21		57.53		57.42		56.38	
	Tillage (A)		Residue management (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	
			Earhead/sq.m.					
No residue	325	2	318	3	302	3	315	3
Full residue (FR)	304	3	372	1	329	2	335	2
FR + microbial consortia	333	1	346	2	330	1	336	1
Mean	321		345		320		329	
	Tillage (A)		Residue management (B)		B within A		A within B	
CD (0.05)	16.30		NS		NS		33.75	
			Grains/earhead					
No residue	29.06	3	31.16	1	33.71	1	31.31	2
Full residue (FR)	33.61	1	28.89	3	31.62	2	31.37	1
FR + microbial consortia	31.66	2	30.85	2	31.25	3	31.25	3
Mean	31.44		30.30		32.19		31.31	
	Tillage (A)		Residue management (B)		B within A		A within B	
CD (0.05)	NS		1.62		NS		NS	
			1000 grains weight, g					
No residue	49.36	1	50.10	1	48.91	2	49.46	1
Full residue (FR)	47.69	3	47.35	3	49.03	1	48.02	3
FR + microbial consortia	47.76	2	49.23	2	48.89	3	48.63	2
Mean	48.27		48.89		48.94		48.70	
	Tillage (A)		Residue management (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	
			Biomass, q/ha					
No residue	113.85	3	118.88	3	126.18	3	119.64	3
Full residue (FR)	126.26	2	136.12	1	127.44	2	129.94	1
FR + microbial consortia	126.78	1	131.51	2	129.88	1	129.39	2
Mean	122.30		128.84		127.83		126.32	
	Tillage (A)		Residue management (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	
Centres: Karnal, Ludhiana, BISA Ludhiana								

Table 6.2. North Eastern Plains Zone	SPL-1	Pusa Samastipur	2023-24

Residue management	Tillage option						Mean	Rk
	ZT	Rk	ST	Rk	CT	Rk		
			Yield, q/ha					
No residue	53.13	1	44.77	3	53.39	2	50.43	3
Full residue (FR)	51.38	3	46.98	2	53.24	3	50.53	2
FR + microbial consortia	52.24	2	47.56	1	58.37	1	52.72	1
Mean	52.25		46.44		55.00		51.23	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	*		1.61		4.86		9.44	
Residue management (B)	N.S.		0.99		2.49		5.78	
B within A	N.S.		1.71		4.31			
A within B			2.13		5.37			
			1000 grains weight, g					
No residue	38.54	2	39.75	1	39.31	3	39.20	1
Full residue (FR)	38.71	1	38.37	3	40.50	1	39.19	2
FR + microbial consortia	38.33	3	38.76	2	39.95	2	39.02	3
Mean	38.53		38.96		39.92		39.14	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		0.63		1.91		4.85	
Residue management (B)	N.S.		0.65		1.64		4.99	
B within A	N.S.		1.13		2.84			
A within B			1.12		2.82			

SPL-2: Effect of seed rate and growth regulators on wheat productivity

It is always desirable to have improved crop productivity with lesser inputs. Seed is one of the precious input in agriculture and optimum application of seed rate can help to improve the productivity as well as profitability of wheat. Therefore, keeping these in view, an experiment involving three seed rate and five foliar application of growth regulators was conducted across zones at eight locations.

This experiment was conducted in split-plot design using seed rate (60, 80, and 100 kg/ha) in main plots and foliar application of growth regulators and mechanical drum rolling [Control as water spray, drum rolling (30 and 45 DAS), spray of 2,3,5-triiodobenzoic acid at tillering @100 ppm, spray of 6-benzyl amino purine at tillering @100 ppm and two sprays of tank-mix of chlormequat chloride (Lihocin) @ 0.2%+ tebuconazole (Folicur 430 SC) @ 0.1% of commercial product dose at the first node and flag leaf] in sub-plots with three replications. Out of total NPK dose as 150:60:40 kg/ha, one-third nitrogen, full phosphorus and potash as basal dose and the remaining 2/3rd nitrogen as 1/3rd at first irrigation and 1/3rd at second irrigation were applied. The sowing was done using the seed rate as per treatments

(adjusted considering 1000 grains weight of 38 g) at a row-to-row spacing of 20 cm using DBW 327 variety.

In NHZ, this trial was conducted at Almora centre. The data of yield and yield attributes are presented in Table 6.3. The results revealed that effect of seed rate on grain yield, earheads density and grains per earhead was significant. The maximum mean grain yield of 71 q/ha was recorded at 100 kg/ha seed rate, which was 11.9 and 6.5% higher than those at 60 kg/ha and 80 kg/ha seed rate, respectively. The increased yield at higher seed rate was mainly due to improved earheads density. The application of plant growth regulators (PGRs) made significant changes in grains per earhead and test weight of grains. The application of (PGRs) increased the test weight of grains being maximum as 46.98 g with spray of TIBA @100 ppm at tillering as compared to 43.87 g for control. The plant height and biomass were similar across seed rate and PGRs application.

Table 6.3. Northern Hill Zone **SPL-2** **Almora** **2023-24**

Growth regulator	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
	Yield, q/ha							
Control (water spray)	65.15	1	67.04	2	73.12	1	68.43	1
Drum rolling (30 and 45 DAS)	63.32	3	64.69	5	70.76	3	66.26	4
TIBA spray at tillering @100 ppm	63.13	4	68.61	1	72.49	2	68.08	2
Cytokinin spray at tillering @100 ppm	63.82	2	66.71	3	69.68	4	66.74	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	61.72	5	66.40	4	68.96	5	65.69	5
Mean	63.43		66.69		71.00		67.04	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	1.69		N.S.		N.S.		N.S.	
	Earheads/sqm							
Control (water spray)	366	2	388	4	438	4	397	2
Drum rolling (30 and 45 DAS)	353	5	387	5	446	2	395	4
TIBA spray at tillering @100 ppm	358	4	390	1	442	3	396	3
Cytokinin spray at tillering @100 ppm	365	3	390	3	454	1	403	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	366	1	390	1	425	5	394	5
Mean	361		389		441		397	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	3.67		N.S.		N.S.		N.S.	
	Grains/Earhead							
Control (water spray)	41.37	1	38.07	2	38.83	1	39.42	1
Drum rolling (30 and 45 DAS)	40.85	2	35.77	5	35.63	2	37.41	2
TIBA spray at tillering @100 ppm	37.77	5	38.23	1	34.18	4	36.73	3
Cytokinin spray at tillering @100 ppm	38.01	3	37.23	3	32.38	5	35.87	5
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	37.90	4	36.90	4	34.69	3	36.50	4
Mean	39.18		37.24		35.14		37.19	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	2.11		1.75		N.S.		N.S.	

1000 Grains Weight, g								
Control (water spray)	43.10	5	45.43	5	43.07	5	43.87	5
Drum rolling (30 and 45 DAS)	44.10	4	46.73	1	44.70	4	45.18	4
TIBA spray at tillering @100 ppm	46.80	1	46.07	3	48.07	1	46.98	1
Cytokinin spray at tillering @100 ppm	46.00	2	46.00	4	47.43	2	46.48	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	44.73	3	46.20	2	46.80	3	45.91	3
Mean	44.95		46.09		46.01		45.68	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	N.S.		1.45		N.S.		N.S.	
Plant height, cm								
Control (water spray)	112.47	3	114.04	3	112.04	3	112.85	4
Drum rolling (30 and 45 DAS)	110.31	4	115.11	1	116.09	2	113.84	2
TIBA spray at tillering @100 ppm	116.16	1	114.78	2	110.62	4	113.85	1
Cytokinin spray at tillering @100 ppm	115.18	2	108.51	4	116.24	1	113.31	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	108.51	5	107.78	5	105.80	5	107.36	5
Mean	112.52		112.04		112.16		112.24	
CD (0.05)	Seed rate (A)		Growth regulator (B)		B within A		A within B	
	N.S.		N.S.		N.S.		N.S.	
Biomass, q/ha								
Control (water spray)	161.42	4	169.58	2	168.35	3	166.45	3
Drum rolling (30 and 45 DAS)	162.33	3	163.69	3	176.25	1	167.42	1
TIBA spray at tillering @100 ppm	163.37	2	160.58	5	166.60	4	163.52	4
Cytokinin spray at tillering @100 ppm	166.08	1	161.94	4	173.40	2	167.14	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	149.90	5	171.07	1	164.34	5	161.77	5
Mean	160.62		165.37		169.79		165.26	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	N.S.		N.S.		N.S.		N.S.	
Date of Sowing:	21.11.2023		Date of harvesting:		13.05.2024			

In NWPZ, this trial was conducted with an objective to maximise the wheat productivity by optimum plant stand and growth regulator application at seven centres (Agra, Durgapura, Gurdaspur, Hisar, Karnal, Ludhiana and Pantnagar). The pooled analysis of data presented in Table 6.4 revealed that the maximum mean grain yield (59.14 q/ha) was recorded under the treatment of 100 kg/ha seed rate and it was significantly superior to both the lower seed rates (60 and 80 kg/ha). The effect of growth regulator application was also significant. Among growth regulators treatments, TIBA-100 ppm produced the maximum grain yield (57.00 q/ha) and it was statistically at par with 6-benzyl amino purine-100 ppm and CCC + tebuconazole- 0.2% +0.1%- 2 sprays. All these three treatments were significantly superior to drum rolling and control treatments. There was a significant increase in earhead density with increase in the seed rate from 60 to 100 kg/ha. Control and drum rolling treatments were significantly inferior to three growth regulator treatments for the earhead density. The grain weight was not affected by seed rate. Crop biomass was significantly increased with increase in seed rate from 60 to 100 kg/ha. Whereas among growth regulators treatments,

compared to control all the growth regulator treatments produced significantly higher crop biomass. The centrewise data of yield and yield attributes are given in Table 6.4.1 to 6.4.7 of Annexure-I, respectively.

Table 6.4. North Western Plain Zone			**SPL-2**		**Pooled**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
	Yield, q/ha							
Control (water spray)	47.69	5	53.56	5	56.76	5	52.67	5
Drum rolling (30 and 45 DAS)	50.18	4	55.03	4	57.59	4	54.26	4
TIBA spray at tillering @100 ppm	52.25	1	57.67	1	61.08	1	57.00	1
Cytokinin spray at tillering @100 ppm	51.31	3	56.90	3	60.13	2	56.11	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	52.19	2	57.04	2	60.13	3	56.46	2
Mean	50.72		56.04		59.14		55.30	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	1.22		0.93		NS		1.9	
	Earhead/sq.m.							
Control (water spray)	327	5	348	5	365	5	347	5
Drum rolling (30 and 45 DAS)	339	3	359	4	379	4	359	4
TIBA spray at tillering @100 ppm	343	2	369	1	384	3	365	2
Cytokinin spray at tillering @100 ppm	335	4	362	3	385	2	360	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	343	1	367	2	390	1	367	1
Mean	337		361		381		360	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	4.59		6.57		NS		11.38	
	Grains/earhead							
Control (water spray)	32.89	5	35.93	1	36.66	1	35.16	4
Drum rolling (30 and 45 DAS)	33.80	4	35.27	5	35.65	4	34.91	5
TIBA spray at tillering @100 ppm	34.01	3	35.60	4	36.42	2	35.34	2
Cytokinin spray at tillering @100 ppm	34.15	2	35.87	2	35.83	3	35.28	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	34.95	1	35.74	3	35.62	5	35.44	1
Mean	33.96		35.68		36.04		35.23	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	0.66		NS		NS		1.46	
	1000 grains weight, g							
Control (water spray)	45.26	3	44.05	5	44.04	5	44.45	5
Drum rolling (30 and 45 DAS)	45.23	4	45.33	3	45.06	4	45.21	3
TIBA spray at tillering @100 ppm	46.54	2	46.05	1	46.13	1	46.24	1
Cytokinin spray at tillering @100 ppm	46.58	1	45.46	2	45.38	2	45.81	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	44.73	5	45.09	4	45.32	3	45.05	4
Mean	45.67		45.20		45.19		45.35	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	NS		0.58		NS		1.06	
	Plant height, cm							
Control (water spray)	90.18	4	91.87	4	92.30	4	91.45	4
Drum rolling (30 and 45 DAS)	92.88	2	93.97	1	93.32	3	93.39	2
TIBA spray at tillering @100 ppm	93.89	1	93.91	2	94.64	1	94.15	1
Cytokinin spray at tillering @100 ppm	92.65	3	93.09	3	94.04	2	93.26	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	84.61	5	84.48	5	85.96	5	85.02	5
Mean	90.84		91.46		92.05		91.45	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	NS		1.02		NS		1.86	

	Biomass, q/ha							
Control (water spray)	115.72	5	126.21	5	133.33	5	125.09	5
Drum rolling (30 and 45 DAS)	124.46	3	133.58	4	138.29	4	132.11	4
TIBA spray at tillering @100 ppm	127.01	1	137.24	1	144.78	2	136.34	1
Cytokinin spray at tillering @100 ppm	124.26	4	136.00	2	145.38	1	135.21	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	125.45	2	134.85	3	140.58	3	133.63	3
Mean	123.38		133.57		140.47		132.48	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	2.40		2.07		NS		4.05	

Centres: Agra, Durgapura, Gurdaspur, Hisar, Karnal, Ludhiana, Pantnagar

SPL-3: Precision N management in wheat using green seeker (GS) tool

The imbalanced and overdose application of fertilizer have a great negative impact on productivity, profitability and natural resources. The precise application of inputs such as nitrogen can play an imperative role in improving the productivity while supplying the nitrogen as per requirement. Considering these views, an experiment was conducted with the objective of precision nutrient management for wheat-based cropping systems using green seeker tool.

The experiment was conducted using nine treatments (Zero N, 50-50-50 N, 75-75-GS, 0-75-GS, 25-25-GS, 50-50-GS, 25-50-GS, 60-60-GS, 70-70-70 N) in randomized block design with three replications. Full dose of phosphorus and potassium as per zone were applied as basal dose while nitrogen dose was applied as per treatment.

In NHZ, this experiment was conducted at Malan centre. The data of yield and yield attributes are presented in Table 6.5. It is evident from the presented results that nitrogen treatment significantly affected the yield and yield attributing parameters. The maximum yield of 51.9 q/ha was recorded in N-rich plot (210 kg N/ha) which was significantly higher than all other treatments except 75-75-GS (75-75-8.7 N). The higher yield in N-rich and 75-75-GS plots was attributed to more earheads density, biomass production and grains per earhead. Nitrogen treatment *viz.* 75-75-GS produced slightly lesser (without significant difference) yield (50.7 q/ha) but saved 24.5% nitrogen in comparison to N-rich plot.

In NWPZ, this experiment was conducted at six locations (Agra, Gurdaspur, Hisar, Karnal, Ludhiana and Pantnagar). The perusal of pooled analysis data presented in Table 6.6 showed that application of recommended N (rec. N - 1/3rd as basal, 1/3rd at CRI and 1/3rd at second irrigation) produced the maximum grain yield of 58.63 q/ha. However, the grain yield with 75-75-GS and N rich (70-70-70) were statistically similar to recommended N treatment. All these treatments were significantly superior to rest of the treatments for grain yield. The better yields in these treatments were due to the bolder grains and higher earhead density. The centrewise data have been given in Table 6.6.1 to Table 6.6.6 of Annexure-I.

Table 6.5. Northern Hill Zone SPL-3 Malan 2023-24

Treatments	GS based N application, kg/ha	Earhead/ m^2	Yield, q/ha	1000 grains wt.,g	Grains/ Earhead	Plant ht., cm	Biomass, q/ha
Zero N	0.00	405	20.95	36.00	14.39	87.33	46.68
50-50-50 N	22.34	480	40.17	40.00	20.95	98.00	90.65
75-75-GS	8.65	505	50.71	41.00	24.50	99.67	113.24
0-75-GS	25.05	485	39.69	40.00	20.45	92.33	88.76
25-25-GS	40.17	458	29.18	37.33	17.10	89.33	65.45
50-50-GS	23.71	486	40.20	40.67	20.34	98.33	90.45
25-50-GS	33.47	456	30.41	38.67	17.29	90.33	67.85
60-60-GS	15.04	494	47.45	41.00	23.45	98.67	105.67
70-70-70 N	0.00	507	51.91	40.33	25.44	101.00	115.17
CD (0.05)		10.97	3.06	1.62	2.10	3.02	7.16
Date of Sowing:		16.11.2023		Date of Harvesting:		13.05.2024	

Table 6.6. North Western Plains Zone SPL-3 Pooled 2023-24

Treatments	Yield, q/ha	Earhead/ sq.m.	1000 GW, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	32.76	264	41.57	29.98	89.80	81.1
50-50-50 N	58.63	349	43.71	39.38	135.55	98.1
75-75-GS	58.42	350	43.96	38.98	138.65	99.1
0-75-GS	51.51	324	42.32	38.25	120.63	95.7
25-25-GS	51.21	324	42.05	38.20	119.48	96.4
50-50-GS	55.52	343	43.33	38.40	129.99	98.0
25-50-GS	52.61	336	42.65	38.19	122.49	96.8
60-60-GS	54.58	340	43.10	38.38	132.51	97.4
70-70-70 N	58.24	367	43.79	37.79	137.70	99.1
CD (0.05)	1.78	12.91	0.73	1.51	2.98	1.90

Centres: Agra, Gurdaspur, Hisar, Karnal, Ludhiana, Pantnagar

In NEPZ, this experiment was conducted at three locations (Coochbehar, Sabour and Varanasi). The perusal of pooled analysis data presented in Table 6.7 showed that application of 60-60-GS N produced the maximum grain yield of 50.04 q/ha. However, the grain yield with recommended N, 75-75-GS and N rich (70-70-70) were statistically similar to 60-60-GS N treatment. All these treatments were significantly superior to rest of the treatments for grain yield. The maximum earhead density (340 earhead/m^2) and

boldest grains were recorded in N-rich (70-70-70) treatment. The centrewise data have been given in Table 6.7.1 to Table 6.7.3 of Annexure-I.

Table 6.7. North Eastern Plains Zone		**SPL-3**	**Pooled**	**2023-24**
Treatments	Yield, q/ha	Earhead/sq.m.	1000 GW, g	Grains/Earhead
Zero N	26.56	211	34.59	36.88
50-50-50 N	48.94	316	39.31	39.38
75-75-GS	49.03	332	39.81	37.61
0-75-GS	41.35	282	38.80	38.48
25-25-GS	39.37	284	40.11	35.64
50-50-GS	42.78	309	40.94	34.21
25-50-GS	42.32	304	40.04	35.19
60-60-GS	50.04	322	40.56	38.49
70-70-70 N	47.28	340	40.94	34.78
CD (0.05)	3.93	22.20	1.54	4.33
Centres: Coochbehar, Sabour, Varanasi				

In CZ, this experiment was conducted at one location (Vijapur). The perusal of results obtained clearly revealed the savings of 20-30 kg N/ha without much affecting the wheat grain yield which means 13-20% saving in applied nitrogen fertilizer (Table 6.8). The treatment of N-rich (70-70-70 N) produced the maximum grain yield of 52.55 q/ha. However, the grain yield with the treatments of 50-50-GS, 75-75-GS, 60-60-GS and recommended N (50-50-50) were statistically similar to N-rich treatment. All these treatments were significantly superior to rest of the treatments for grain yield.

Table 6.8 Central Zone			**SPL-3**		**Vijapur**		**2023-24**
Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	13.92	356	45.79	8.69	22.58	60.87
50-50-50 N	0.00	48.77	382	51.76	24.93	108.75	96.20
75-75-GS	0.00	49.33	378	48.34	27.43	113.75	96.87
0-75-GS	75.00	40.36	326	47.22	26.47	88.50	85.67
25-25-GS	90.00	36.77	365	44.64	22.81	80.63	87.47
50-50-GS	30.00	51.62	418	49.98	24.88	113.83	95.40
25-50-GS	75.00	43.78	326	46.29	29.02	93.58	93.93
60-60-GS	0.00	47.75	394	49.11	25.10	98.08	96.13
70-70-70 N	0.00	52.55	435	55.38	21.88	114.42	94.07
CD (0.05)		6.37	56.30	6.53	5.00	14.66	9.14
Date of Sowing:		16.11.2023		Date of Harvesting:			14.03.2024

In PZ, this experiment was conducted at Dharwad centre. The data of yield and yield attributes data are presented in Table 6.9. The results revealed the significant effect of nitrogen treatments on yield and supporting parameters. The maximum yield of 49.3 q/ha was recorded in N-rich plot (210 kg N/ha) which was significantly higher than zero N, 0-75-GS and 25-25-GS treatments. The increased yield in N-rich plot might be due to more test weight of grains and biomass production as compared to other treatments. The application of nitrogen @150 kg/ha in three equally split doses also produced similar grain yield (48.3 q/ha) as with N-rich plot. With a penalty of 2.8-3.2 q/ha, green seeker based nitrogen treatments 75-75-GS, 50-50-GS and 60-60-GS could save nitrogen in the range of 28.6-38.1% over N-rich plot.

Table 6.9. Peninsular Zone **SPL-3** **Dharwad** **2023-24**

Treatments	GS based N application, kg/ha	Earhead/ m^2	Yield, q/ha	1000 grains wt., g	Grains/ Earhead	Biomass, q/ha
Zero N	0.00	366	27.46	34.31	21.85	95.49
50-50-50 N	0.00	470	48.25	38.78	26.50	125.23
75-75-GS		454	46.50	38.29	26.58	116.90
0-75-GS		391	38.96	36.08	27.66	103.01
25-25-GS		428	41.40	38.48	25.21	112.73
50-50-GS		444	46.14	38.33	27.39	116.44
25-50-GS		433	44.91	38.22	27.39	101.85
60-60-GS		452	46.28	38.70	26.66	127.55
70-70-70 N	0.00	477	49.28	39.46	26.31	133.33
CD (0.05)		49.66	6.55	1.17	4.66	5.51
Date of Sowing:		11.11.2023	Date of Harvesting:		20.03.2024	

SPL-4: Intercropping of oilseed/pulses with wheat and barley

This experiment was conducted to explore the possibility of maximizing the productivity and profitability by intercropping of oilseed/pulses with wheat and barley**.** The experiment was laid out in randomized complete block design with eleven treatments *viz.* wheat +toria (8:2), wheat + lentil (4:2), wheat + linseed (4:2), barley +toria (8:2), barley + lentil (4:2), barley + linseed (4:2), wheat (sole), barley (sole), toria (sole),lentil (sole) and linseed (sole). Fertilizer was applied as per recommendation of different crops. Irrigation and weed control measures were followed as per recommended package of practices for the concerned zone.

In NEPZ, this experiment was conducted at five locations (Ayodhya, Burdwan, Kanpur, Shillongani and Varanasi). The perusal of pooled analysis data presented in Table 6.10 showed that wheat + lentil (4:2) treatment produced the maximum wheat equivalent yield of 53.95 q/ha. However, the wheat equivalent yield with wheat + linseed (4:2)

intercropping treatment was statistically at par with wheat + lentil (4:2) treatment. The lowest wheat equivalent yield of 20.9 q/ha was recorded in sole toria treatment. The centrewise data have been given in Table 6.10.1 to Table 6.10.5 of Annexure-I.

Table 6.10. North Eastern Plains Zone	**SPL-4**	**Pooled**	**2023-24**
Treatments	Wheat Equivalent Yield, q/ha		
T1: Wheat +Toria (8:2)	51.44		
T2: Wheat + Lentil (4:2)	53.95		
T3: Wheat + Linseed (4:2)	52.74		
T4: Barley +Toria (8:2)	33.65		
T5: Barley + Lentil (4:2)	33.83		
T6: Barley + Linseed (4:2)	35.81		
T7: Wheat (Sole)	42.33		
T8: Barley (Sole)	25.97		
T9: Toria (Sole)	20.90		
T10: Lentil (Sole)	35.07		
T11: Linseed (Sole)	26.88		
CD (0.05)	1.49		
Centres: Ayodhya, Burdwan, Kanpur, Shillongani, Varanasi			

BARLEY

Resource Management group of AICRP Wheat and Barley are engaged in agronomic evaluation of new genotypes and updating the package of practices under different agro climatic conditions. Input management *viz.* Nutrients under salinity conditions, sowing timings in different zones under changing climatic conditions, and other crop management practices for yield maximization are the priority researchable areas in barley agronomy. In spite of the fact that the crop is being grown mostly on fringe and problematic lands, the productivity increased during the recent years and the newly developed improved technologies contributes in the increased productivity.

Irrigated Timely Sown Hulless Barley

The performance of one hulless barley test entry DWRB 223 against three checks (PL 891, Karan 16 and NDB 943) was evaluated at three locations of NWPZ *i.e.* Durgapura, Karnal and Ludhiana under timely and late sown conditions. The timely sowing time was from 6th to 15th November and late sowing was from 1st to 10th December. The trial was laid out in a split plot design with sowing time in main plots 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 23 cm. Nitrogen was applied in two splits (half at sowing and remaining half nitrogen at first irrigation), whereas full phosphorus and potash were applied as basal.

The centrewise yield and zonal mean yield are given in Table 7.1. The pooled data are presented in Table 7.2 and the centrewise data are in Annexure-I as Tables 7.2.1 to 7.2.3. The perusal of pooled data in Table 7.1 and 7.2 revealed that there was a significant decline in yield from normal (46.78 q/ha) to late (29.12 q/ha) sown condition. This yield reduction was due to significant reduction in earhead/m^2, grains/earhead and thousand grains weight under late sown conditions. Yield decline in late sown condition was 37.7% as compared to timely sown condition. On average basis, the check variety Karan 16 (C) ranked first with a mean yield of 43.64 q/ha and it was significantly superior to rest of the check varieties and test entry. The check variety Karan 16 was top yielder under both the timely and late sown conditions. On mean basis, check variety Karan 16 recorded the maximum earhead density (325/m^2) and grains/earhead (35.33). Whereas PL 891 (C) recorded the bolder grains (1000 grains weight 44.14 g). The interaction effect was significant for yield.

In CZ, this trial was conducted at three locations (Gwalior, Udaipur and Vijapur). However, trial at Vijapur centre was rejected by the monitoring team. Therefore, data of two centres (Gwalior and Udaipur) were considered for analysis and pool. The centrewise yield and

Table 7.1. North Western Plain Zone	IR-TS-HL-DOS	Centrewise	Yield, q/ha	2023-24	
Sowing Time	Genotype	**Durgapura**	**Karnal**	**Ludhiana**	**Zonal mean**
Timely	DWRB 223	43.47	37.82	43.50	41.59
	PL 891 (C)	52.39	37.87	44.30	44.85
	Karan 16 (C)	64.33	39.34	57.75	53.81
	NDB 943 (C)	58.70	32.07	49.83	46.87
	Mean	54.72	36.77	48.84	46.78
Late	DWRB 223	25.30	34.38	27.17	28.95
	PL 891 (C)	22.77	34.14	23.71	26.88
	Karan 16 (C)	26.94	35.43	38.04	33.47
	NDB 943 (C)	20.20	29.50	31.92	27.21
	Mean	23.80	33.36	30.21	29.12
Mean	DWRB 223	34.38	36.10	35.33	35.27
	PL 891 (C)	37.58	36.01	34.00	35.86
	Karan 16 (C)	45.63	37.38	47.90	43.64
	NDB 943 (C)	39.45	30.79	40.87	37.04
	Mean	39.26	35.07	39.53	37.95
CD (0.05)	Sowing (A)	1.51	0.81	1.98	0.58
	Genotype (B)	3.19	1.57	3.08	1.48
	B within A	4.50	2.22	4.36	2.10
	A within B	4.01	1.98	3.96	2.16
Date of Sowing:	Timely	09.11.2023	12.11.2023	15.11.2023	
	Late	07.12.2023	10.12.2023	10.12.2023	
Date of Harvesting:	Timely	04.03.2024	15.04.2024	12.04.2024	
	Late	18.03.2024	22.04.2024	12.04.2024	

zonal mean yield are given in Table 7.3. The pooled data are presented in Table 7.4 and the centrewise data are in Annexure-I as Tables 7.4.1 to 7.4.2. The perusal of pooled data in Table 4.9 and 4.10 revealed that there was a significant decline in yield from normal (32.48 q/ha) to late (29.61 q/ha) sown condition, causing a yield reduction of 8.8%. This yield reduction was due to significant reduction in earhead/m^2 under late sown conditions. On average basis, the check variety Karan 16 (C) ranked first with a mean yield of 33.50 q/ha and it was significantly superior to rest of the check varieties and test entry. The check variety Karan 16 was top yielder under both the timely and late sown conditions. On mean basis check Karan 16 recorded the maximum earhead density (327/m^2). Whereas PL 891 (C) recorded the bolder grains (1000 grain weight 37.16 g). The interaction effect was significant for yield.

Table 7.2. North Western Plain Zone	IR-TS-HL-DOS		Pooled			2023-24
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	41.59	4	28.95	2	35.27	4
PL 891 (C)	44.85	3	26.88	4	35.86	3
Karan 16 (C)	53.81	1	33.47	1	43.64	1
NDB 943 (C)	46.87	2	27.21	3	37.04	2
Mean	46.78		29.12		37.95	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.58		1.48		2.10	2.16
			Earhead/sq.m.			
DWRB 223	324.70	4	266.05	3	295.37	3
PL 891 (C)	335.08	3	270.83	2	302.95	2
Karan 16 (C)	367.97	1	282.43	1	325.20	1
NDB 943 (C)	338.17	2	249.70	4	293.93	4
Mean	341.48		267.25		304.36	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	4.71		8.46		11.97	12.71
			Grains/earhead			
DWRB 223	31.91	3	29.37	3	30.64	3
PL 891 (C)	29.57	4	23.73	4	26.65	4
Karan 16 (C)	39.07	1	31.59	1	35.33	1
NDB 943 (C)	33.70	2	30.84	2	32.27	2
Mean	33.56		28.88		31.22	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	1.31		1.81		NS	2.82
			1000 grains weight, g			
DWRB 223	40.67	3	38.23	3	39.45	2
PL 891 (C)	45.32	1	42.96	1	44.14	1
Karan 16 (C)	38.97	4	38.63	2	38.80	4
NDB 943 (C)	41.52	2	37.35	4	39.43	3
Mean	41.62		39.29		40.45	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	1.37		1.13		NS	2.03
Centres: Durgapura, Karnal, Ludhiana						

Table 7.3. Central Zone IR-TS-HL-DOS Centrewise Yield, q/ha 2023-24				
Sowing time	**Genotype**	**Gwalior**	**Udaipur**	**Zonal mean**
Timely	DWRB 223	21.52	43.12	32.32
	PL 891 (C)	17.45	43.62	30.53
	Karan 16 (C)	22.97	49.52	36.25
	NDB 943 (C)	21.18	40.48	30.83
	Mean	20.78	44.19	32.48
Late	DWRB 223	20.79	37.16	28.98
	PL 891 (C)	16.81	40.12	28.47
	Karan 16 (C)	16.56	44.93	30.75
	NDB 943 (C)	21.54	38.97	30.25
	Mean	18.93	40.30	29.61
Mean	DWRB 223	21.15	40.14	30.65
	PL 891 (C)	17.13	41.87	29.50
	Karan 16 (C)	19.77	47.23	33.50
	NDB 943 (C)	21.36	39.72	30.54
	Mean	19.85	42.24	31.05
CD (0.05)	Sowing time (A)	1.04	0.87	0.49
	Genotype (B)	1.15	2.08	1.14
	B within A	1.63	2.94	1.61
	A within B	1.54	2.60	1.79
Date of Sowing:	Timely	11.11.2023	06.11.2023	
	Late	09.12.2023	01.12.2023	
Date of Harvesting:	Timely	09.04.2024	05.03.2024	
	Late	12.04.2024	18.03.2024	

Table 7.4. Central Zone IR-TS-HL-DOS Pooled 2023-24						
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	32.32	2	28.98	3	30.65	2
PL 891 (C)	30.53	4	28.47	4	29.50	4
Karan 16 (C)	36.25	1	30.75	1	33.50	1
NDB 943 (C)	30.83	3	30.25	2	30.54	3
Mean	32.48		29.61		31.05	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	0.49		1.14		1.61	1.79

			Earhead/sqm			
DWRB 223	328	2	300	3	314	2
PL 891 (C)	311	4	286	4	299	4
Karan 16 (C)	345	1	309	1	327	1
NDB 943 (C)	323	3	302	2	313	3
Mean	327		299		313	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	NS		13.05		NS	27.22
			Grains/Earhead			
DWRB 223	27.42	2	27.47	3	27.44	2
PL 891 (C)	25.20	4	26.64	4	25.92	4
Karan 16 (C)	28.06	1	28.20	1	28.13	1
NDB 943 (C)	25.70	3	28.07	2	26.89	3
Mean	26.60		27.59		27.10	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	N.S.		N.S.		N.S.	N.S.
			1000 Grains Weight, g			
DWRB 223	35.88	4	34.89	3	35.39	4
PL 891 (C)	37.88	1	36.43	1	37.16	1
Karan 16 (C)	36.50	2	34.40	4	35.45	3
NDB 943 (C)	36.43	3	35.22	2	35.82	2
Mean	36.67		35.23		35.95	
	Sowing (A)		Genotype (B)		B within A	A within B
CD (0.05)	N.S.		1.15		N.S.	2.11
Centres:	Gwalior, Udaipur					

Genotypes response to different N levels under salinity conditions

The performance of one barley test entry KB 2031 against three checks (RD 2794, RD 2907 and NDB 1173) was evaluated at two locations in NWPZ *i.e.* Hisar (CCS HAU) and Hisar (IIWBR) and two locations of NEPZ (Ayodhya and Kanpur) with three nitrogen levels (60, 75 and 90 kg/ha) under salinity conditions. The trial was laid out in a split plot design with N levels in main plots 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 23 cm. Nitrogen was applied in two splits (half at sowing and remaining half nitrogen at first irrigation), whereas full phosphorus (60 kg/ha) and potash (20 kg/ha) were applied as basal.

In NWPZ, this trial was conducted at two centres namely Hisar (CCS HAU) and Hisar (IIWBR). The centre wise yield and zonal mean yield are given in Table 7.5. The pooled data are presented in Table 7.6 and the centrewise data are in Annexure-I as Tables 7.6.1 to 7.6.2.

The perusal of pooled data in Table 7.5 and 7.6 revealed that there was a significant increase in yield with increase in N dose from 60 kg/ha (36.19 q/ha) to 90 kg/ha (42.48 q/ha). This yield increase was due to significant increase in earhead/m^2 under higher N levels. The differences among genotypes were non-significant and on average basis, check variety NDB 1173 produced the numerically highest yield followed by test entry KB 2031. Among genotypes, test entry KB 2031 produced the boldest grains with 1000 grains weight of 47.49 g.

Table 7.5. North Western Plain Zone IR-SL-LON Centrewise Yield, q/ha 2023-24

Nitrogen	Genotype	**Hisar (CCS HAU)**	**Hisar (IIWBR)**	**Zonal mean**
60 kg/ha	RD 2794 (C)	31.08	33.33	32.21
	RD 2907 (C)	32.63	39.33	35.98
	NDB 1173 (C)	36.17	38.00	37.09
	KB 2031	34.35	44.67	39.51
	Mean	33.56	38.83	36.19
75 kg/ha	RD 2794 (C)	34.29	29.67	31.98
	RD 2907 (C)	35.18	33.93	34.56
	NDB 1173 (C)	37.85	39.83	38.84
	KB 2031	35.94	34.00	34.97
	Mean	35.81	34.36	35.09
90 kg/ha	RD 2794 (C)	36.79	49.00	42.90
	RD 2907 (C)	36.65	47.00	41.82
	NDB 1173 (C)	40.08	47.00	43.54
	KB 2031	37.29	46.00	41.64
	Mean	37.70	47.25	42.48
Mean	RD 2794 (C)	34.05	37.33	35.69
	RD 2907 (C)	34.82	40.09	37.45
	NDB 1173 (C)	38.03	41.61	39.82
	KB 2031	35.86	41.56	38.71
	Mean	35.69	40.15	37.92
CD (0.05)	Nitrogen (A)	2.97	4.79	1.89
	Genotype (B)	2.65	5.68	NS
	B within A	4.60	9.83	NS
	A within B	4.57	9.25	4.52
Date of Sowing:		15.11.2023	24.11.2023	
Date of Harvesting:		12.04.2024	27.04.2024	

Table 7.6. North Western Plain Zone IR-SL-LON Pooled 2023-24

Genotype	Nitrogen Levels, kg/ha						Mean	Rk
	60	Rk	75	Rk	90	Rk		
				Yield, q/ha				
RD 2794 (C)	32.21	4	31.98	4	42.90	2	35.69	4
RD 2907 (C)	35.98	3	34.56	3	41.82	3	37.45	3
NDB 1173 (C)	37.09	2	38.84	1	43.54	1	39.82	1
KB 2031	39.51	1	34.97	2	41.64	4	38.71	2
Mean	36.19		35.09		42.48		37.92	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	1.89		NS		NS		4.52	
				Earhead/sq.m.				
RD 2794 (C)	380	4	416	2	443	1	413	3
RD 2907 (C)	396	3	415	3	433	2	415	2
NDB 1173 (C)	428	1	423	1	411	4	420	1
KB 2031	396	2	383	4	433	3	404	4
Mean	400		409		430		413	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	13.89		NS		27.44		29.14	
				Grains/earhead				
RD 2794 (C)	20.94	1	18.75	3	20.75	3	20.15	3
RD 2907 (C)	19.90	3	18.26	4	20.92	2	19.69	4
NDB 1173 (C)	19.86	4	22.96	1	24.75	1	22.53	1
KB 2031	20.91	2	19.76	2	20.15	4	20.27	2
Mean	20.40		19.93		21.64		20.66	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	NS		1.62		NS		NS	
				1000 grains weight, g				
RD 2794 (C)	40.79	4	41.19	3	46.37	3	42.78	3
RD 2907 (C)	46.08	2	45.90	2	46.67	2	46.22	2
NDB 1173 (C)	43.99	3	40.37	4	43.27	4	42.54	4
KB 2031	47.51	1	46.78	1	48.18	1	47.49	1
Mean	44.59		43.56		46.12		44.76	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	NS		1.59		NS		3.05	

Centres: Hisar (CCS HAU) and Hisar (IIWBR)

In NEPZ, this trial was conducted at two centres (Ayodhya and Kanpur). The centre wise yield and zonal mean yield are given in Table 7.7. The pooled data are presented in Table 7.8 and the centre wise data are in Annexure-I as Tables 7.8.1 to 7.8.2. Under salinity

condition, yield increased significantly with increase in nitrogen doses on mean basis and yield increase was 10.37% when N dose was increased from 60 kg/ha to 90 kg/ha. The yield increase was due to significantly higher 1000 grains weight. On mean basis, the test entry KB 2031 was the highest yielder (34.76 q/ha) and recorded significantly higher grain yield compared to all check varieties. The earheads/m^2 were statistically at par among all the genotypes. Significantly maximum grains/earhead were also observed in test entry KB 2031 (23.52 grains/earhead) followed by check variety NDB 1173 (21.80 grains/earhead), RD 2794 (20.13 grains/earhead) and RD 2907 (20.09 grains/earhead). The check variety RD 2907 produced the boldest grains having the mean 1000 grains weight of 41.91 g.

Table 7.7. North Eastern Plain Zone IR-SL- LON Centrewise Yield, q/ha 2023-24

Nitrogen Levels	Genotype	Ayodhya	Kanpur	Zonal mean
60 kg/ha	RD 2794 (C)	31.1	26.8	28.95
	RD 2907 (C)	32.45	28.3	30.38
	NDB 1173 (C)	35.07	29.8	32.43
	KB 2031	33.80	32.6	33.20
	Mean	33.10	29.38	31.24
75 kg/ha	RD 2794 (C)	32.87	28.4	30.63
	RD 2907 (C)	34.12	30.8	32.46
	NDB 1173 (C)	37.30	31.2	34.25
	KB 2031	35.75	34.4	35.08
	Mean	35.01	31.2	33.10
90 kg/ha	RD 2794 (C)	34.00	31.2	32.60
	RD 2907 (C)	35.12	32.4	33.76
	NDB 1173 (C)	37.65	33.5	35.58
	KB 2031	35.50	36.5	36.00
	Mean	35.57	33.4	34.48
Mean	RD 2794 (C)	32.66	28.8	30.73
	RD 2907 (C)	33.89	30.5	32.20
	NDB 1173 (C)	36.67	31.5	34.09
	KB 2031	35.02	34.5	34.76
	Mean	34.56	31.33	32.94
CD (0.05)	Nitrogen (A)	0.74	2.60	0.91
	Genotype (B)	1.15	1.10	0.64
	B within A	1.98	1.91	NS
	A within B	1.81	2.57	1.35
Date of Sowing:		13.11.2023	20.12.2023	
Date of Harvesting:		01.03.2024	25.04.2023	

Table 7.8. North Eastern Plain Zone			IR-SL-LON			Pooled		2023-24
Genotype	Nitrogen levels, kg/ha						Mean	Rk
	60	Rk	75	Rk	90	Rk		
Yield, q/ha								
RD 2794 (C)	28.95	4	30.63	4	32.60	4	30.73	4
RD 2907 (C)	30.38	3	32.46	3	33.76	3	32.20	3
NDB 1173 (C)	32.43	2	34.25	2	35.58	2	34.09	2
KB 2031	33.20	1	35.08	1	36.00	1	34.76	1
Mean	31.24		33.10		34.48		32.94	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.91		0.64		NS		1.35	
Earhead/sq.m.								
RD 2794 (C)	379	4	380	4	381	4	380	4
RD 2907 (C)	382	2	386	2	390	1	386	1
NDB 1173 (C)	385	1	380	3	385	3	383	3
KB 2031	380	3	389	1	387	2	385	2
Mean	382		384		386		384	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	NS		NS		NS		NS	
Grains/earhead								
RD 2794 (C)	20.43	3	19.37	4	20.59	3	20.13	3
RD 2907 (C)	19.82	4	20.03	3	20.42	4	20.09	4
NDB 1173 (C)	22.31	2	21.57	2	21.53	2	21.80	2
KB 2031	23.60	1	24.01	1	22.95	1	23.52	1
Mean	21.54		21.24		21.37		21.39	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	NS		0.82		NS		1.59	
1000 grains weight, g								
RD 2794 (C)	37.43	3	42.38	3	42.17	3	40.66	3
RD 2907 (C)	40.60	1	42.40	2	42.73	2	41.91	1
NDB 1173 (C)	37.68	2	42.62	1	43.57	1	41.29	2
KB 2031	37.08	4	37.67	4	40.67	4	38.47	4
Mean	38.20		41.27		42.28		40.58	
	Nitrogen (A)		Genotype (B)		B within A		A within B	
CD (0.05)	0.25		0.24		0.42		0.47	
Centres: Ayodhya, Kanpur								

Irrigated Timely Sown Feed Barley

One test entry of feed barley UPB 1106 was evaluated against three checks *viz.* HUB 113 (C), BH 946 (C) and DWRB 137 (C) at three locations (Ayodhya, Kanpur and Ranchi) under timely (11th November to 20th November) and late (6th December to 15th December) sown conditions. The trial was conducted in split plot design with dates of sowing in main plots and genotypes in sub-plots. 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 23 cm. Nitrogen was applied in two splits (half at sowing and half at first irrigation *i.e.* at 20-25 days after sowing.), whereas full phosphorus and potash were applied as basal.

In NEPZ, this trial was conducted at three centres (Ayodhya, Kanpur and Ranchi). The centre wise yield and zonal mean yield are given in Table 7.9. The pooled data are presented in Table 7.10 and the centre wise data are in Annexure-I as Tables 7.10.1 to 7.10.3. Timely sowing

Table 7.9. North Eastern Plain Zone IR-TS- FB-DOS Centrewise Yield, q/ha 2023-24

Sowing Time	Genotype	**Ayodhya**	**Kanpur**	**Ranchi**	**Zonal Mean**
Timely	HUB 113 (C)	29.33	34.69	52.00	38.68
	BH 946 (C)	31.53	26.31	47.75	35.20
	DWRB 137 (C)	34.33	28.28	45.90	36.17
	UPB 1106	33.07	34.86	39.40	35.77
	Mean	32.07	31.04	46.26	36.45
Late	HUB 113 (C)	23.78	40.60	29.93	31.44
	BH 946 (C)	25.35	29.65	26.07	27.02
	DWRB 137 (C)	28.53	36.77	31.50	32.27
	UPB 1106	27.08	41.24	31.93	33.42
	Mean	26.19	37.07	29.86	31.04
Mean	HUB 113 (C)	26.56	37.65	40.97	35.06
	BH 946 (C)	28.44	27.98	36.91	31.11
	DWRB 137 (C)	31.43	32.52	38.70	34.22
	UPB 1106	30.08	38.05	35.67	34.60
	Mean	29.13	34.05	38.06	33.75
CD (0.05)	Sowing (A)	0.76	2.09	2.61	0.76
	Genotype (B)	1.17	2.11	2.41	1.08
	B within A	1.65	2.98	3.41	1.52
	A within B	1.50	2.88	3.36	1.67
Date of Sowing:	Timely	16.11.2023	11.11.2023	15.11.2023	
	Late	12.12.2023	06.12.2023	14.12.2023	
Date of Harvesting:	Timely	03.03.2024	01.04.2024	25.03.2024	
	Late	29.03.2024	10.04.2024	15.04.2024	

registered higher yield of all genotypes compared to late sowing and on mean basis, yield declined by 14.84% when sowing was delayed from timely to late sowing condition. The yield decline was due to significant reduction in effective tillers under late sown condition as compared to timely sown condition. On mean basis, the check variety HUB 113 was the highest yielder (35.06 q/ha) and recorded significantly higher grain yield compared to check variety BH 946 but at par to UPB 1106 and DWRB 137 (C). The check entry HUB 113 also recorded maximum effective tillers (378 earheads/m^2). The maximum grains/earhead were also observed in check HUB 113 (24.10 grains/earhead) followed by DWRB 137 (23.18 grains/earhead) and test entry UPB 1106 (23.16 grains/earhead) which were statistically at par with each other. The test entry UPB 1106 produced the boldest grains having the mean 1000 grains weight of 41.55 g.

Table 7.10. North Eastern Plain Zone **IR-TS- FB-DOS** **Pooled** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HUB 113 (C)	38.68	1	31.44	3	35.06	4
BH 946 (C)	35.20	4	27.02	4	31.11	3
DWRB 137 (C)	36.17	2	32.27	2	34.22	1
UPB 1106	35.77	3	33.42	1	34.60	2
Mean	36.45		31.04		33.75	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	0.76	1.08		1.52		1.67
			Earhead/sq.m.			
HUB 113 (C)	399	1	357	3	378	1
BH 946 (C)	396	2	353	4	375	3
DWRB 137 (C)	390	3	365	2	378	2
UPB 1106	375	4	370	1	372	4
Mean	390		361		376	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	7.74	NS		10.00		12.00
			Grains/earhead			
HUB 113 (C)	25.18	1	23.02	1	24.10	1
BH 946 (C)	22.45	4	21.41	4	21.93	4
DWRB 137 (C)	24.78	2	21.58	3	23.18	2
UPB 1106	23.87	3	22.46	2	23.16	3
Mean	24.07		22.12		23.09	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	1.34	1.21		NS		2.11
			1000 grains weight, g			
HUB 113 (C)	38.79	3	39.46	3	39.12	3
BH 946 (C)	40.18	2	37.41	4	38.80	4
DWRB 137 (C)	38.69	4	43.13	1	40.91	2
UPB 1106	41.98	1	41.12	2	41.55	1
Mean	39.91		40.28		40.10	
	Sowing (A)	Genotype (B)		B within A		A within B
CD (0.05)	NS	0.63		0.90		1.10

Centres: Ayodhya, Kanpur, Ranchi

PRODUCTION TECHNOLOGIES

SPL -5: Efficacy of herbicides against broad-leaved weed flora of barley

Broadleaved weeds are major problem in barley production. Chemical weed control is preferred over other weed control methods. Moreover, barley is infested with diverse weed flora and for control of complex weed flora, herbicide combinations are required. Therefore, keeping these in view, an experiment involving ten weed control treatments was conducted across zones at 14 locations.

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 23 cm. One third nitrogen, full phosphorus and potash as basal dose as per treatments and the remaining 2/3rd nitrogen as 1/3rd at the first irrigation and 1/3rd at second irrigation. Weed control measures were followed as per treatments. Herbicide spraying was done using Knapsack sprayer. The observations were recorded on weed density and weed dry weight at 60 and 90 DAS.

In NHZ, this trial was conducted at Khudwani and Malan centres. The data of yield and yield attributes are presented in Table 7.11(a). The results of the pooled data revealed that herbicide treatments introduced a significant effect on yield, earhead density, test weight and biomass yield. The grain yield reduced by 48.5% on switching the treatment from weed free to weedy check. The maximum grain yield (34.7 q/ha) was recorded under weed free condition due to improved earhead density, test weight and biomass yield. Among herbicide

Table 7.11(a). Northern Hill Zone **SPL-5** **Pooled** **2023-24**

Treatments	Earhead/ m^2	Yield, q/ha	1000 grains wt., g	GPEH	Plant ht., cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	193	24.71	39.11	33.63	100.23	66.33
Metsulfuron methyl + S at 4 g/ha+ 0.2%	224	31.23	42.65	35.70	103.50	75.60
Carfentrazone 20 g/ha	204	25.64	40.44	32.31	98.62	65.20
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	213	26.09	41.56	30.55	102.00	68.41
2,4-D-Na 500 g/ha	195	21.91	39.74	29.75	97.63	61.64
2,4-D-Na + Carfentrazone 500 + 20 g/ha	203	23.38	39.51	30.76	97.53	63.62
2,4-D-E 500 g/ha	192	23.21	39.58	31.84	97.14	62.50
2,4-D-E + Carfentrazone 500 + 20 g/ha	220	29.52	42.38	32.93	80.91	71.90
Weedy check	171	17.86	35.77	32.76	89.65	49.62
Weed free	232	34.67	43.08	36.81	104.07	82.40
CD (0.05)	17.10	2.08	1.96	N.S.	N.S.	4.41

Centres: Khudwani and Malan

treatments, the maximum grain yield (31.2 q/ha) was recorded with treatment of metsulfuron methyl 20 WG + surfactant at 4 g *a.i.*/ha + 0.2% S followed by 29.5 q/ha with 2,4-D-E + carfentrazone 500 + 20 g *a.i.*/ha. In terms of weed control as shown in Table 7.11(b), the lowest weed density and dry weight were recorded as 52.3/m^2 and 5.16 g/m^2, respectively, with metsulfuron methyl 20 WG + surfactant at 4 g *a.i.*/ha + 0.2% S application followed by the treatment of 2,4-D-E + carfentrazone 500 + 20 g *a.i.*/ha (58.5/m^2 and 6.5 g/m^2). The centre wise yield and weed data are presented in Table 7.11.1(a) to 7.11.2(b) of Annexure-I.

Table 7.11(b). Northern Hill Zone **SPL-5** **Pooled** **2024-25**

Treatments	Weed density, No./m^2		Weed dry weight, g/m^2	
	60	90	60	90
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	7.48 (56.17)	8.05 (65.83)	2.58 (5.84)	2.48 (5.30)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	6.98 (48.00)	7.26 (52.33)	2.4 (5.24)	2.4 (5.16)
Carfentrazone 20 g/ha	7.93 (62.5)	8.31 (70.67)	2.87 (7.76)	2.77 (6.92)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	7.14 (51.17)	6.91 (53.50)	2.56 (5.92)	2.45 (5.16)
2,4-D-Na 500 g/ha	8.21 (67.67)	8.59 (76.50)	2.90 (7.98)	2.97 (8.37)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	6.52 (42.33)	7.14 (50.17)	2.65 (6.63)	2.67 (6.66)
2,4-D-E 500 g/ha	6.79 (45.67)	7.35 (53.67)	2.94 (8.30)	2.88 (7.87)
2,4-D-E + Carfentrazone 500 + 20 g/ha	6.75 (45.00)	7.67 (58.50)	2.62 (6.41)	2.65 (6.47)
Weedy check	9.33 (89.17)	9.90 (102.67)	3.55 (12.10)	4.10 (16.85)
Weed free	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)
CD(0.05)	0.90	1.51	0.45	0.48

Centres: Khudwani and Malan

In NWPZ, this trial was conducted at four centres namely Agra, Durgapura, Hisar and Karnal. The analysis of pooled data as shown in Table 7.12(a) and 7.12(b) revealed that weed control treatments produced significant effect on grain yield and yield attributes except grains/earhead. The highest yield was obtained under weed free situation (54.33 q/ha) which might be attributed to higher and better use of moisture, light, nutrients and space by the crop plants, whereas the minimum yield was recorded under weedy check (37.59 q/ha) due to strong weed competition. Among herbicides, ready mixture of halauxifen-methyl + fluroxypyr at 200.6 (6.1+194.5) g/ha showed the least number of weed count of 11.6/m^2 and weed dry weight of 14.9 g/m^2 at 90 DAS, whereas the maximum values of these parameters were observed in weedy check with respective values of 127.4/m^2 and 137.2 g/m^2 at 90 DAS. Carfentrazone tank mixed with either metsulfuron or

2,4-D Na or 2,4-D-E also effectively controlled the broadleaved weeds and as a result yield improved as compared to their solo application. The centre-wise data of yield and weeds have been given in Table 7.12.1(a) to 7.12.4(b) of Annexure-I.

Table 7.12(a). North Western Plains Zone **SPL-5** **Pooled** **2023-24**

Treatments	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ earhead	Biomass, q/ha	Plant Ht., cm
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	51.70	344.1	45.11	33.73	124.73	85.3
Metsulfuron methyl + S at 4 g/ha+ 0.2%	48.58	331.3	44.22	33.60	118.58	87.9
Carfentrazone 20 g/ha	45.88	319.5	43.90	33.15	112.67	82.2
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	51.02	342.1	45.07	33.51	124.03	85.8
2,4-D-Na 500 g/ha	44.88	315.3	43.96	32.73	111.23	85.8
2,4-D-Na + Carfentrazone 500 + 20 g/ha	49.44	335.9	44.69	33.43	120.93	84.0
2,4-D-E 500 g/ha	46.83	324.1	44.21	32.99	114.32	86.7
2,4-D-E + Carfentrazone 500 + 20 g/ha	50.27	339.9	44.91	33.37	121.96	85.3
Weedy check	37.59	274.2	42.11	33.07	92.20	83.6
Weed free	54.33	355.8	44.95	34.69	131.80	89.9
CD (0.05)	2.89	10.51	0.87	NS	7.09	NS

Centres: Agra, Durgapura, Hisar and Karnal

Table 7.12(b). North Western Plains Zone **SPL-5** **Pooled** **2023-24**

Treatments	Weed density, No./m^2		Weed dry weight, g/m^2	
	60	90	60	90
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	3.55(11.8)	3.52(11.6)	3.71(12.8)	3.98(14.9)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	3.74(13)	6.34(40)	3.93(14.5)	4.24(17)
Carfentrazone 20 g/ha	5.83(33.1)	6.75(44.7)	4.49(19.1)	5.15(25.5)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	4.54(19.7)	4.57(19.9)	3.81(13.6)	4.09(15.8)
2,4-D-Na 500 g/ha	6.36(39.5)	6.7(43.9)	4.8(22)	5.44(28.6)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	5.27(26.8)	5.37(27.8)	4.08(15.7)	4.48(19.1)
2,4-D-E 500 g/ha	6.42(40.3)	6.92(47)	4.95(23.6)	5.45(28.9)
2,4-D-E + Carfentrazone 500 + 20 g/ha	4.72(21.3)	4.88(22.8)	3.84(13.8)	4.27(17.3)
Weedy check	9.24(84.6)	11.3(127.4)	7.99(62.8)	11.75(137.2)
Weed free	1(0)	1(0)	1(0)	1(0)
CD (0.05)	0.64	1.00	0.33	0.53

Centres: Agra, Durgapura, Hisar and Karnal

In NEPZ, this trial was conducted at two locations (Ayodhya and Ranchi). The analysis of pooled data as shown in Table 7.13(a) and 7.13(b) revealed that weed control treatments produced significant effect on grain yield and all the yield attributes. The highest yield was

obtained under weed free situation (34.51 q/ha) which might be attributed to higher and better use of moisture, light, nutrients and space by the crop plants. Whereas the minimum yield was recorded under weedy check (20.73 q/ha) due to strong weed competition. Among herbicides, metsulfuron + carfentrazone + S at 25 (5+20) g/ha + 0.2% S recorded the least number of weed count (7.9/ m^2) and weed dry weight (9.2 g/ m^2at 90 DAS and whereas maximum values of these parameters were observed in weedy check with respective values of 13.4/m^2 and 17.7 g/m^2 at 90 DAS. All the herbicide applied alone or in combination reduced the weed population and weed dry weight significantly compared to weedy check. The centre-wise data of yield and weeds have been given in Table 7.13.1(a) to 7.13.2(b) of Annexure-I.

Table 7.13(a). North Eastern Plains Zone | **SPL-5** | **Pooled** | **2023-24**

Treatments	Yield, q/ha	Earhead/ sq.m	1000 GW, g	Grains/ earhead
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	30.27	361	37.65	23.45
Metsulfuron methyl + S at 4 g/ha+ 0.2%	28.03	366	37.42	22.07
Carfentrazone 20 g/ha	26.25	356	37.62	21.03
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	30.10	383	38.03	22.72
2,4-D-Na 500 g/ha	27.56	368	37.58	21.87
2,4-D-Na + Carfentrazone 500 + 20 g/ha	29.37	353	37.25	23.73
2,4-D-E 500 g/ha	28.18	352	37.08	23.02
2,4-D-E + Carfentrazone 500 + 20 g/ha	32.04	355	38.05	24.75
Weedy check	20.73	317	36.18	18.66
Weed free	34.51	404	39.12	23.55
CD (0.05)	1.78	17.46	1.44	2.45
Centres: Ayodhya, Ranchi				

Table 7.13(b). North Eastern Plains Zone | **SPL-5** | **Pooled** | **2023-24**

Treatments	Weed density, No./m^2		Weed dry weight, g/m^2	
	60	90	60	90
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	3.39(11.4)	2.98(8.3)	3.89(17.4)	3.20(11.0)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	3.34(10.8)	3.05(8.6)	3.86(16.8)	3.23(10.7)
Carfentrazone 20 g/ha	3.40(11.2)	3.02(8.4)	3.95(17.7)	3.17(10.8)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	3.30(10.6)	2.95(7.9)	3.84(16.8)	2.98(9.2)
2,4-D-Na 500 g/ha	3.42(11.4)	2.98(8.1)	3.86(16.8)	3.00(9.3)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	3.45(11.8)	2.99(8.5)	3.97(18.2)	3.21(11.1)
2,4-D-E 500 g/ha	3.42(11.5)	2.99(8.5)	3.99(18.3)	3.24(11.2)
2,4-D-E + Carfentrazone 500 + 20 g/ha	3.52(12.8)	3.09(9.3)	3.95(17.7)	3.41(13.1)
Weedy check	4.09(17.0)	3.72(13.4)	4.54(24.1)	3.81(17.7)
Weed free	1(0.0)	1(0.0)	1(0.0)	1(0.0)
CD (0.05)	0.08	0.10	0.06	0.08
Centres: Ayodhya, Ranchi				

In CZ, this trial was conducted at four centres namely Gwalior, Jabalpur, Udaipur and Vijapur. The analysis of pooled data as shown in Table 7.14(a) and 7.14(b) revealed that weed control treatments produced significant effect on grain yield and yield attributes except grains/earhead. The highest yield was obtained under weed free situation (43.98 q/ha) which might be attributed to higher and better use of moisture, light, nutrients and space by the crop plants, whereas the minimum yield was recorded under weedy check (28.08 q/ha)

Table 7.14(a). Central Zone **SPL-5** **Pooled** **2023-24**

Treatments	Yield, q/ha	Earheads/ sqm	1000 GW, g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	40.69	414	42.32	23.80	87.20	103.24
Metsulfuron methyl + S at 4 g/ha+ 0.2%	34.10	394	43.20	20.40	83.55	92.82
Carfentrazone 20 g/ha	37.04	399	43.01	21.97	84.63	97.54
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	35.98	425	43.28	19.32	85.93	95.06
2,4-D-Na 500 g/ha	35.57	403	45.03	20.45	84.56	97.81
2,4-D-Na + Carfentrazone 500 + 20 g/ha	36.53	419	42.22	20.64	85.61	97.12
2,4-D-E 500 g/ha	35.93	409	41.84	21.38	84.63	96.56
2,4-D-E + Carfentrazone 500 + 20 g/ha	37.94	423	43.71	20.66	84.83	99.32
Weedy check	28.08	377	44.15	17.79	84.51	81.86
Weed free	43.98	427	42.80	24.65	87.27	107.90
CD (0.05)	2.15	21.41	2.50	1.76	2.60	7.05

Centres: Gwalior, Jabalpur, Udaipur and Vijapur

Table 7.14(b). Central Zone **SPL-5** **Pooled** **2023-24**

Treatments	Weed density, No./m^2		Weed dry weight, g/m^2	
	60	90	60	90
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	5.44 (28.71)	5.53 (29.62)	6.32 (39.36)	7.26 (51.7)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	6.57 (42.16)	7.06 (48.89)	7.52 (55.74)	8.42 (70.01)
Carfentrazone 20 g/ha	6.35 (40.48)	6.78 (45.11)	7.26 (51.77)	8.24 (66.89)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	6.38 (39.9)	6.61 (42.78)	6.56 (42.03)	7.57 (56.4)
2,4-D-Na 500 g/ha	6.42 (40.91)	6.49 (41.44)	7.09 (49.52)	8.15 (65.62)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	5.28 (26.84)	6.16 (37)	6.56 (42.07)	7.47 (54.88)
2,4-D-E 500 g/ha	6.16 (37.11)	6.9 (46.67)	6.96 (47.55)	7.96 (62.43)
2,4-D-E + Carfentrazone 500 + 20 g/ha	5.17 (26.11)	5.66 (31)	6.52 (41.61)	7.65 (57.61)
Weedy check	8.79 (76.44)	9.01 (80.22)	9.39 (87.3)	10.25 (104.09)
Weed free	-	-	-	-
CD (0.05)	1.00	0.59	0.68	0.52

Centres: Gwalior, Udaipur and Vijapur

due to strong weed competition. Among herbicides, ready mixture of halauxifen-methyl + fluroxypyr at 200.6 (6.1+194.5) g/ha showed the least number of weed count of 29.6/m^2 and weed dry weight of 51.7 g/m^2 at 90 DAS, whereas the maximum values of these parameters were observed in weedy check with respective values of 80.2/m^2 and 104.1 g/m^2 at 90 DAS. Carfentrazone tank mixed with either metsulfuron or 2,4-D Na or 2,4-D-E also effectively controlled the broadleaved weeds and as a result yield improved as compared to their solo application. The centre-wise data of yield and weeds have been given in Table 7.14.1(a) to 7.14.4(b) of Annexure-I.

SPL-6: Effect of seed rate and growth regulators on barley productivity

Similar to SPL-2 for wheat, a field experiment involving three seed rate and five foliar application of growth regulators in barley was conducted across zones at six locations. This experiment was conducted in split-plot design using seed rate (60, 80, and 100 kg/ha) in main plots and foliar application of growth regulators and mechanical drum rolling {Control as water spray, drum rolling (30 and 45 DAS), spray of 2,3,5-triiodobenzoic acid at tillering @100 ppm, spray of 6-benzyl amino purine at tillering @100 ppm and two sprays of tank-mix of chlormequat chloride (Lihocin) @ 0.2%+ tebuconazole (Folicur 430 SC) @ 0.1% of commercial product dose at first node and flag leaf} in sub-plots with three replications. One-third nitrogen, full phosphorus and potash as basal dose and the remaining 2/3rd nitrogen as 1/3rd at first irrigation and 1/3rd at second irrigation were applied. The sowing was done using the seed rate as per treatments (adjusted considering 1000 grains weight of 38 g) at a row-to-row spacing of 23 cm using DBWB 137 variety.

In NHZ, this trial was conducted at Almora centre. The data of yield and yield attributes are presented in Table 7.15. The results of pooled data revealed that earhead density significantly increased with seed rate but there was marginal increase (without statistical difference) in yield with seed rate. The maximum mean grain yield (34.6 q/ha), earhead density (213 per m^2), test weight (45.5 g for 1000 grains) and biomass yield (63.2 q/ha) were recorded at a seed rate of 100 kg/ha. The application of PGRs showed a significant effect on grain yield. The maximum mean grain yield of 35.1 q/ha was observed with drum rolling (30 and 45 DAS), which was significantly higher than all other treatments except tank-mix application of chloremequat chloride + tebuconazole. The treatment of drum rolling increased the grain yield by 8.6% as compared to control (water spray).

In NWPZ, this trial was conducted with an objective to maximise the barley productivity by optimum plant stand and growth regulators application at five centres (Agra, Durgapura, Gurdaspur, Hisar and Karnal). The pooled analysis of data presented in Table 7.16 revealed that the maximum mean grain yield (49.77 q/ha) was produced under the treatment of 100

kg/ha seed rate and it was significantly superior to both the lower seed rates (60 and 80 kg/ha). The effect of growth regulators was also significant. Among growth regulators treatments, TIBA-100 ppm produced the maximum grain yield (47.68 q/ha) and it was statistically at par with CCC + tebuconazole- 0.2% +0.1%- 2 sprays. All the three growth regulators treatments were significantly superior to drum rolling and control treatments. There was significant increase in earhead density with increase in the seed rate from 60 to 100 kg/ha. Control and drum rolling treatments were significantly inferior to three growth regulator treatments for the earhead density. The grain weight was not affected by seed rate. All the growth regulators treatments as well as the drum rolling had significantly bolder grains compared to control. Crop biomass was significantly increased with increase in seed rate from 60 to 100 kg/ha. All growth regulator treatments produced significantly higher crop biomass compared to control. The centrewise data of yield and yield attributes are given in Table 7.16.1 to 7.16.5 of Annexure-I.

Table 7.15. Northern Hill Zone **SPL-6** **Almora** **2023-24**

Growth regulator	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
	Yield, q/ha							
Control (water spray)	30.93	3	32.44	3	33.58	4	32.32	3
Drum rolling (30 and 45 DAS)	33.77	1	34.27	2	37.23	1	35.09	1
TIBA spray at tillering @100 ppm	29.62	4	31.89	4	32.83	5	31.44	5
Cytokinin spray at tillering @100 ppm	29.42	5	31.26	5	33.72	3	31.47	4
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	31.24	2	34.87	1	35.69	2	33.93	2
Mean	31.00		32.95		34.61		32.85	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	N.S.		2.26		N.S.		N.S.	
	Earheads/sqm							
Control (water spray)	175	2	186	1	213	3	192	2
Drum rolling (30 and 45 DAS)	180	1	185	2	212	4	192	1
TIBA spray at tillering @100 ppm	175	3	181	4	216	2	191	3
Cytokinin spray at tillering @100 ppm	169	5	181	5	217	1	189	4
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	172	4	184	3	206	5	187	5
Mean	174		183		213		190	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	9.84		N.S.		N.S.		N.S.	
	Grains/Earhead							
Control (water spray)	39.14	4	38.91	4	35.69	3	37.91	3
Drum rolling (30 and 45 DAS)	42.86	1	40.30	2	36.90	2	40.02	2
TIBA spray at tillering @100 ppm	38.13	5	39.10	3	34.18	4	37.14	5
Cytokinin spray at tillering @100 ppm	40.74	2	38.54	5	33.57	5	37.62	4
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	40.61	3	41.23	1	39.30	1	40.38	1
Mean	40.30		39.62		35.93		38.61	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	N.S.		N.S.		N.S.		N.S.	

1000 Grains Weight, g								
Control (water spray)	45.47	1	44.80	4	44.13	5	44.80	4
Drum rolling (30 and 45 DAS)	43.97	4	45.93	2	47.83	1	45.91	1
TIBA spray at tillering @100 ppm	44.67	3	45.00	3	44.83	3	44.83	3
Cytokinin spray at tillering @100 ppm	43.20	5	44.60	5	46.40	2	44.73	5
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	44.80	2	46.00	1	44.43	4	45.08	2
Mean	44.42		45.27		45.53		45.07	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	N.S.		N.S.		N.S.		N.S.	
Plant height, cm								
Control (water spray)	67.42	2	62.62	4	60.61	5	63.55	4
Drum rolling (30 and 45 DAS)	68.76	1	70.50	1	67.82	2	69.03	1
TIBA spray at tillering @100 ppm	65.11	5	62.09	5	63.04	4	63.41	5
Cytokinin spray at tillering @100 ppm	66.99	3	66.31	3	68.42	1	67.24	2
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	65.97	4	67.78	2	65.40	3	66.38	3
Mean	66.85		65.86		65.06		65.92	
CD (0.05)	Seed rate (A)		Growth regulator (B)		B within A		A within B	
	N.S.		N.S.		N.S.		N.S.	
Biomass, q/ha								
Control (water spray)	61.56	1	59.43	4	60.59	5	60.53	5
Drum rolling (30 and 45 DAS)	61.36	2	62.43	1	62.99	3	62.26	1
TIBA spray at tillering @100 ppm	60.60	4	59.44	3	61.78	4	60.61	4
Cytokinin spray at tillering @100 ppm	61.10	3	59.09	5	64.07	2	61.42	3
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	58.18	5	61.22	2	66.43	1	61.94	2
Mean	60.56		60.32		63.17		61.35	
	Seed rate (A)		Growth regulator (B)		B within A		A within B	
CD (0.05)	N.S.		N.S.		N.S.		N.S.	
Date of Sowing: 21.11.2023			Date of Harvesting:		13.05.2024			

Table 7.16. North Western Plain Zone **SPL-6** **Pooled** **2023-24**

Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	37.28	5	42.07	5	46.01	5	41.79	5
Drum rolling (30 and 45 DAS)	40.88	4	44.62	4	48.33	4	44.61	4
TIBA spray at tillering @100 ppm	44.11	1	47.51	1	51.41	2	47.68	1
Cytokinin spray at tillering @100 ppm	41.50	3	46.59	3	51.16	3	46.42	3
CCC+tebuconazole (0.2%+0.1%) - 2 sprays	42.82	2	46.74	2	51.94	1	47.17	2
Mean	41.32		45.51		49.77		45.53	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	0.83		0.99		NS		1.78	

Earhead/sq.m.								
Control (water spray)	290	5	318	5	338	5	315	5
Drum rolling (30 and 45 DAS)	305	4	333	4	357	4	332	4
TIBA spray at tillering @100 ppm	311	3	348	2	371	2	343	2
Cytokinin spray at tillering @100 ppm	312	2	345	3	366	3	341	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	316	1	351	1	375	1	347	1
Mean	307		339		361		336	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	4.31		6.13		NS		11.38	
Grains/earhead								
Control (water spray)	32.34	3	31.89	3	32.21	4	32.14	5
Drum rolling (30 and 45 DAS)	32.54	2	32.06	2	32.07	5	32.23	4
TIBA spray at tillering @100 ppm	33.23	1	32.42	1	32.70	3	32.78	1
Cytokinin spray at tillering @100 ppm	31.44	5	31.80	4	33.54	1	32.26	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	32.19	4	31.41	5	33.36	2	32.32	2
Mean	32.35		31.92		32.78		32.35	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	0.52		NS		NS		1,46	
1000 grains weight, g								
Control (water spray)	40.62	5	42.19	5	42.75	3	41.85	5
Drum rolling (30 and 45 DAS)	41.82	4	42.57	4	43.03	2	42.47	4
TIBA spray at tillering @100 ppm	43.14	1	42.98	3	43.29	1	43.14	1
Cytokinin spray at tillering @100 ppm	43.12	2	43.36	1	42.69	4	43.06	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	42.64	3	43.02	2	42.33	5	42.66	3
Mean	42.27		42.82		42.82		42.64	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	NS		0.55		0.95		1.06	
Plant height, cm								
Control (water spray)	94.71	3	95.27	3	95.66	3	95.21	3
Drum rolling (30 and 45 DAS)	91.61	4	94.22	4	95.13	4	93.65	4
TIBA spray at tillering @100 ppm	96.67	2	98.12	2	100.51	2	98.43	2
Cytokinin spray at tillering @100 ppm	97.44	1	100.02	1	101.36	1	99.61	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	89.78	5	93.00	5	93.25	5	92.01	5
Mean	94.04		96.13		97.18		95.78	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	0.83		1.01		NS		1.83	
Biomass, q/ha								
Control (water spray)	104.22	5	112.15	5	120.84	5	112.40	5
Drum rolling (30 and 45 DAS)	111.95	2	118.24	4	125.90	4	118.70	4
TIBA spray at tillering @100 ppm	116.56	1	121.33	2	132.50	1	123.46	1
Cytokinin spray at tillering @100 ppm	110.70	4	121.12	3	129.47	2	120.43	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	111.80	3	121.37	1	128.96	3	120.71	2
Mean	111.04		118.84		127.53		119.14	
	Seed rate (A)		Growth regulators (B)		B within A		A within B	
CD (0.05)	2.00		2.46		NS		4.41	
Centres: Agra, Durgapura, Gurdaspur, Hisar, Karnal								

Table 2.2.1. North Western Plain Zone IR-TS-DOS-TAS Agra 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	57.67	8	55.61	8	56.64	8
HI 1668	59.84	6	57.53	6	58.69	6
HD 3386 (I)(C)	58.41	7	56.94	7	57.68	7
HD 3471^{M}	60.53	5	58.03	5	59.28	5
DBW 222 (C)	63.41	1	61.13	1	62.27	1
DBW 187 (C)	60.69	4	58.82	4	59.76	4
DBW 386	62.82	2	60.33	2	61.58	2
PBW 826 (C)	61.90	3	59.26	3	60.58	3
Mean	60.66		58.46		59.56	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.26	1.07	2.14	
Genotype (B)	**		0.79	1.90	3.25	
B within A	N.S.		1.12	2.69		
A within B			1.08	2.59		
			Earhead/sq.m.			
HD 2967 (C)	297	8	297	8	297	8
HI 1668	303	6	305	5	304	6
HD 3386 (I)(C)	300	7	298	7	299	7
HD 3471^{M}	307	5	304	6	305	5
DBW 222 (C)	320	1	318	1	319	1
DBW 187 (C)	310	4	307	4	309	4
DBW 386	317	2	314	2	315	2
PBW 826 (C)	314	3	310	3	312	3
Mean	308		307		308	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.38	1.55	0.60	
Genotype (B)	**		0.70	1.70	0.56	
B within A	N.S.		1.00	2.40		
A within B			1.01	2.42		
			Grains/earhead			
HD 2967 (C)	49.58	1	48.76	1	49.17	1
HI 1668	48.93	2	47.32	4	48.13	3
HD 3386 (I)(C)	48.76	3	48.67	2	48.72	2
HD 3471^{M}	48.05	4	47.67	3	47.86	4
DBW 222 (C)	45.65	8	45.28	8	45.46	8
DBW 187 (C)	46.85	5	46.99	5	46.92	5
DBW 386	46.40	7	45.98	7	46.19	7
PBW 826 (C)	46.81	6	46.40	6	46.61	6
Mean	47.63		47.13		47.38	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.15	0.63	1.59	
Genotype (B)	**		0.38	0.92	1.97	
B within A	N.S.		0.54	1.30		
A within B			0.53	1.27		

			1000 grains weight, g			
HD 2967 (C)	39.13	8	38.47	8	38.80	8
HI 1668	40.34	6	39.92	6	40.13	6
HD 3386 (I)(C)	39.92	7	39.22	7	39.57	7
HD 3471^{M}	41.09	5	40.03	5	40.56	5
DBW 222 (C)	43.40	1	42.51	1	42.96	1
DBW 187 (C)	41.76	4	40.76	4	41.26	4
DBW 386	42.80	2	41.81	2	42.31	2
PBW 826 (C)	42.15	3	41.17	3	41.66	3
Mean	41.32		40.49		40.91	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.10	0.43	1.24	
Genotype (B)	**		0.56	1.36	3.38	
B within A	N.S.		0.80	1.92		
A within B			0.75	1.81		
Date of Sowing:	10.11.2023	10.12.2023	Date of Harvesting:		23.03.2024	10.04.2024

Table 2.2.2. North Western Plain Zone **IR-TS-DOS-TAS** **Delhi** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	56.15	3	50.12	1	53.13	1
HI 1668	57.78	1	46.06	2	51.92	2
HD 3386 (I)(C)	52.40	7	40.36	7	46.38	7
HD 3471^{M}	54.76	5	41.26	5	48.01	5
DBW 222 (C)	54.99	4	40.79	6	47.89	6
DBW 187 (C)	49.96	8	39.21	8	44.58	8
DBW 386	56.55	2	44.29	3	50.42	3
PBW 826 (C)	54.60	6	43.67	4	49.14	4
Mean	54.65		43.22		48.93	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		1.85	7.63	18.50	
Genotype (B)	**		0.97	2.34	4.88	
B within A	N.S.		1.38	3.32		
A within B			2.25	5.42		
			Earhead/sq.m.			
HD 2967 (C)	416	1	383	3	400	1
HI 1668	405	3	345	8	375	5
HD 3386 (I)(C)	332	8	364	6	348	8
HD 3471^{M}	415	2	380	4	398	2
DBW 222 (C)	343	7	399	1	371	6
DBW 187 (C)	382	5	391	2	387	3
DBW 386	394	4	372	5	383	4
PBW 826 (C)	359	6	354	7	357	7
Mean	381		374		377	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		17.56	72.51	22.81	
Genotype (B)	N.S.		19.12	45.99	12.42	
B within A	N.S.		27.04	65.04		
A within B			30.79	74.06		

			Grains/earhead			
HD 2967 (C)	36.71	5	38.81	1	37.76	3
HI 1668	37.81	4	38.67	2	38.24	2
HD 3386 (I)(C)	46.22	1	32.59	3	39.40	1
HD 3471^{M}	38.20	3	29.51	6	33.85	5
DBW 222 (C)	45.05	2	26.73	7	35.89	4
DBW 187 (C)	30.72	8	24.81	8	27.76	8
DBW 386	33.37	7	30.42	5	31.90	7
PBW 826 (C)	33.80	6	32.56	4	33.18	6
Mean	37.73		31.76		34.75	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.11	4.59	15.66	
Genotype (B)	*		2.17	5.22	15.30	
B within A	*		3.07	7.38		
A within B			3.08	7.41		
			1000 grains weight, g			
HD 2967 (C)	37.42	5	34.44	7	35.93	7
HI 1668	37.84	4	35.24	6	36.54	5
HD 3386 (I)(C)	34.30	8	33.90	8	34.10	8
HD 3471^{M}	34.86	7	37.04	5	35.95	6
DBW 222 (C)	36.55	6	38.26	4	37.41	4
DBW 187 (C)	43.09	3	40.73	1	41.91	2
DBW 386	43.35	2	39.50	2	41.42	3
PBW 826 (C)	46.32	1	38.38	3	42.35	1
Mean	39.22		37.19		38.20	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.32	1.32	4.09	
Genotype (B)	**		0.62	1.50	4.00	
B within A	**		0.88	2.12		
A within B			0.89	2.13		
Date of Sowing:	07.11.2023	14.12.2023	Date of Harvesting:		16.04.2024	16.04.2024

Table 2.2.3. North Western Plain Zone IR-TS-DOS-TAS Durgapura 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	55.50	2	46.67	4	51.09	3
HI 1668	50.12	6	47.66	3	48.89	5
HD 3386 (I)(C)	56.65	1	45.61	6	51.13	2
HD 3471^{M}	53.08	4	43.40	7	48.24	6
DBW 222 (C)	48.83	8	45.66	5	47.25	7
DBW 187 (C)	52.91	5	48.45	2	50.68	4
DBW 386	49.54	7	43.21	8	46.38	8
PBW 826 (C)	53.97	3	48.80	1	51.38	1
Mean	52.57		46.18		49.38	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.30	1.25	3.00	
Genotype (B)	N.S.		1.62	3.89	8.03	
B within A	N.S.		2.29	5.51		
A within B			2.16	5.20		

			Earhead/sq.m.			
HD 2967 (C)	379	1	314	5	346	3
HI 1668	346	6	324	3	335	5
HD 3386 (I)(C)	377	2	302	6	340	4
HD 3471^{M}	369	3	293	8	331	6
DBW 222 (C)	337	7	317	4	327	7
DBW 187 (C)	367	5	331	1	349	2
DBW 386	334	8	295	7	315	8
PBW 826 (C)	368	4	331	1	349	1
Mean	360		313		337	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.59	2.43	0.86	
Genotype (B)	N.S.		11.89	28.60	8.65	
B within A	N.S.		16.81	40.44		
A within B			15.74	37.85		
			Grains/earhead			
HD 2967 (C)	30.55	8	34.42	5	32.48	6
HI 1668	30.57	7	34.15	7	32.36	7
HD 3386 (I)(C)	32.90	2	35.15	3	34.03	2
HD 3471^{M}	31.14	6	35.23	2	33.18	4
DBW 222 (C)	31.99	4	34.23	6	33.11	5
DBW 187 (C)	31.22	5	33.37	8	32.29	8
DBW 386	32.40	3	35.09	4	33.75	3
PBW 826 (C)	35.40	1	35.88	1	35.64	1
Mean	32.02		34.69		33.36	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.30	1.26	4.47	
Genotype (B)	N.S.		0.80	1.91	5.84	
B within A	N.S.		1.12	2.70		
A within B			1.09	2.63		
			1000 grains weight, g			
HD 2967 (C)	47.93	1	43.43	2	45.68	1
HI 1668	47.43	2	43.20	3	45.32	2
HD 3386 (I)(C)	45.80	6	43.07	4	44.43	4
HD 3471^{M}	46.17	4	42.20	6	44.18	5
DBW 222 (C)	45.30	7	42.20	5	43.75	7
DBW 187 (C)	46.37	3	44.00	1	45.18	3
DBW 386	45.90	5	41.87	7	43.88	6
PBW 826 (C)	41.43	8	41.23	8	41.33	8
Mean	45.79		42.65		44.22	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.51	2.10	5.63	
Genotype (B)	*		0.88	2.13	4.89	
B within A	N.S.		1.25	3.01		
A within B			1.27	3.07		
Date of Sowing:	9.11.2023	7.12.2023	Date of Harvesting:		10.03.2024	25.03.2024

Table 2.2.4. North Western Plain Zone IR-TS-DOS-TAS Gurdaspur 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	58.46	7	55.23	8	56.85	8
HI 1668	57.86	8	57.32	7	57.59	7
HD 3386 (I)(C)	63.54	4	61.38	6	62.46	5
HD 3471^{M}	65.05	3	62.66	3	63.85	3
DBW 222 (C)	63.07	6	61.77	5	62.42	6
DBW 187 (C)	63.31	5	62.16	4	62.73	4
DBW 386	66.38	2	66.90	1	66.64	2
PBW 826 (C)	68.39	1	65.99	2	67.19	1
Mean	63.26		61.68		62.47	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.38	1.56	2.95	
Genotype (B)	*		2.14	5.14	8.37	
B within A	N.S.		3.02	7.27		
A within B			2.85	6.86		
			Earhead/sq.m.			
HD 2967 (C)	386	3	317	8	351	6
HI 1668	341	8	322	7	332	8
HD 3386 (I)(C)	367	7	359	3	363	5
HD 3471^{M}	392	2	340	4	366	4
DBW 222 (C)	372	6	326	6	349	7
DBW 187 (C)	399	1	333	5	366	3
DBW 386	385	5	375	1	380	1
PBW 826 (C)	385	4	366	2	375	2
Mean	378		342		360	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		4.03	16.66	5.49	
Genotype (B)	*		8.61	20.71	5.85	
B within A	N.S.		12.17	29.28		
A within B			12.08	29.06		
			Grains/earhead			
HD 2967 (C)	38.62	7	45.00	4	41.81	7
HI 1668	41.90	3	43.89	5	42.89	4
HD 3386 (I)(C)	44.03	1	43.15	6	43.59	3
HD 3471^{M}	41.77	4	46.55	3	44.16	2
DBW 222 (C)	42.17	2	47.10	1	44.63	1
DBW 187 (C)	38.25	8	46.71	2	42.48	5
DBW 386	41.06	6	42.30	8	41.68	8
PBW 826 (C)	41.67	5	42.53	7	42.10	6
Mean	41.18		44.65		42.92	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.14	0.59	1.63	
Genotype (B)	N.S.		2.07	4.99	11.84	
B within A	N.S.		2.93	7.06		
A within B			2.75	6.61		

			1000 grains weight, g			
HD 2967 (C)	39.50	7	39.17	8	39.33	8
HI 1668	40.79	4	40.85	3	40.82	4
HD 3386 (I)(C)	39.45	8	39.80	7	39.63	7
HD 3471^{M}	39.73	6	40.01	6	39.87	6
DBW 222 (C)	40.21	5	40.19	5	40.20	5
DBW 187 (C)	41.49	3	40.27	4	40.88	3
DBW 386	42.05	2	42.29	2	42.17	2
PBW 826 (C)	42.62	1	42.35	1	42.48	1
Mean	40.73		40.61		40.67	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.32	1.30	3.81	
Genotype (B)	**		0.60	1.45	3.64	
B within A	N.S.		0.85	2.05		
A within B			0.86	2.07		
Date of Sowing:	7.11.2023	12.12.2023	Date of Harvesting:		25.4.2024	08.5.2024

Table 2.2.5. North Western Plain Zone IR-TS-DOS-TAS Hisar 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	48.69	8	44.36	7	46.53	8
HI 1668	57.38	4	50.52	2	53.95	4
HD 3386 (I)(C)	58.17	3	52.26	1	55.22	2
HD 3471^{M}	57.26	5	46.07	6	51.67	5
DBW 222 (C)	53.69	6	47.94	4	50.81	6
DBW 187 (C)	52.30	7	43.21	8	47.76	7
DBW 386	61.51	2	47.74	5	54.62	3
PBW 826 (C)	66.07	1	49.48	3	57.78	1
Mean	56.88		47.70		52.29	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.71	2.93	6.64	
Genotype (B)	**		1.40	3.37	6.57	
B within A	*		1.98	4.77		
A within B			1.99	4.78		
			Earhead/sq.m.			
HD 2967 (C)	407	8	361	8	384	8
HI 1668	432	4	403	1	417	3
HD 3386 (I)(C)	445	1	399	3	422	2
HD 3471^{M}	416	6	377	6	397	6
DBW 222 (C)	417	5	380	5	399	5
DBW 187 (C)	409	7	365	7	387	7
DBW 386	443	3	389	4	416	4
PBW 826 (C)	444	2	401	2	423	1
Mean	427		385		406	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		4.25	17.57	5.14	
Genotype (B)	*		9.04	21.75	5.46	
B within A	N.S.		12.79	30.76		
A within B			12.70	30.54		

			Grains/earhead			
HD 2967 (C)	34.74	4	44.14	1	39.44	1
HI 1668	36.52	3	36.66	4	36.59	4
HD 3386 (I)(C)	30.01	8	32.46	7	31.23	8
HD 3471^{M}	38.90	1	39.94	3	39.42	2
DBW 222 (C)	38.18	2	40.35	2	39.26	3
DBW 187 (C)	31.67	6	35.70	5	33.68	5
DBW 386	31.31	7	32.65	6	31.98	7
PBW 826 (C)	33.71	5	31.04	8	32.37	6
Mean	34.38		36.62		35.50	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.13	0.54	1.81	
Genotype (B)	**		1.28	3.09	8.85	
B within A	N.S.		1.81	4.36		
A within B			1.70	4.09		
			1000 grains weight, g			
HD 2967 (C)	34.46	7	27.82	8	31.14	8
HI 1668	36.57	5	34.37	4	35.47	5
HD 3386 (I)(C)	43.63	3	40.49	1	42.06	2
HD 3471^{M}	35.41	6	30.54	7	32.98	6
DBW 222 (C)	33.78	8	31.36	6	32.57	7
DBW 187 (C)	40.35	4	33.33	5	36.84	4
DBW 386	44.44	1	37.60	3	41.02	3
PBW 826 (C)	44.26	2	39.94	2	42.10	1
Mean	39.11		34.43		36.77	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.39	1.60	5.16	
Genotype (B)	**		0.57	1.38	3.82	
B within A	*		0.81	1.95		
A within B			0.85	2.05		
Date of Sowing:	09.11.2023	16.12.2023	Date of Harvesting:		14.04.2024	26.04.2024

Table 2.2.6. North Western Plain Zone IR-TS-DOS-TAS Jammu 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	45.30	8	33.43	8	39.36	8
HI 1668	50.23	3	38.52	3	44.38	3
HD 3386 (I)(C)	46.16	7	34.18	7	40.17	7
HD 3471^{M}	52.45	1	39.14	1	45.79	1
DBW 222 (C)	47.41	5	35.41	5	41.41	5
DBW 187 (C)	51.07	2	38.89	2	44.98	2
DBW 386	46.59	6	34.86	6	40.72	6
PBW 826 (C)	49.37	4	37.02	4	43.20	4
Mean	48.57		36.43		42.50	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.54	2.22	6.21	
Genotype (B)	**		1.03	2.47	5.91	
B within A	N.S.		1.45	3.49		
A within B			1.46	3.51		

Not included in pooled due to low mean yield

			Earhead/sq.m.			
HD 2967 (C)	392	8	386	8	389	8
HI 1668	414	3	402	3	408	3
HD 3386 (I)(C)	397	7	387	7	392	7
HD 3471^{M}	436	1	432	1	434	1
DBW 222 (C)	406	5	396	5	401	5
DBW 187 (C)	427	2	422	2	425	2
DBW 386	403	6	393	6	398	6
PBW 826 (C)	410	4	396	4	403	4
Mean	411		402		406	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.71	2.95	0.86	
Genotype (B)	**		7.57	18.21	4.56	
B within A	N.S.		10.70	25.75		
A within B			10.04	24.15		
			Grains/earhead			
HD 2967 (C)	26.18	1	20.71	5	23.44	4
HI 1668	26.06	2	22.41	1	24.24	1
HD 3386 (I)(C)	25.97	3	21.20	3	23.59	3
HD 3471^{M}	25.43	6	20.52	7	22.97	6
DBW 222 (C)	25.20	8	20.61	6	22.91	7
DBW 187 (C)	25.49	5	20.91	4	23.20	5
DBW 386	25.21	7	20.39	8	22.80	8
PBW 826 (C)	25.97	4	21.35	2	23.66	2
Mean	25.69		21.01		23.35	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.07	0.30	1.50	
Genotype (B)	N.S.		1.07	2.58	11.24	
B within A	N.S.		1.51	3.64		
A within B			1.42	3.41		
			1000 grains weight, g			
HD 2967 (C)	44.56	8	41.85	8	43.20	8
HI 1668	46.67	3	43.86	4	45.26	3
HD 3386 (I)(C)	44.95	7	42.15	7	43.55	7
HD 3471^{M}	47.29	1	44.17	1	45.73	1
DBW 222 (C)	46.34	5	43.39	6	44.87	5
DBW 187 (C)	47.21	2	44.10	2	45.66	2
DBW 386	45.93	6	43.49	5	44.71	6
PBW 826 (C)	46.45	4	43.86	3	45.15	4
Mean	46.17		43.36		44.77	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.34	1.42	3.76	
Genotype (B)	N.S.		1.04	2.51	5.71	
B within A	N.S.		1.48	3.55		
A within B			1.42	3.42		
Date of Sowing:	08.11.2023	12.12.2023	Date of Harvesting:		30..04.2024	07..05.2024

Table 2.2.7. North Western Plain Zone IR-TS-DOS-TAS Karnal 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	58.81	7	47.45	8	53.13	8
HI 1668	60.97	4	59.09	1	60.03	4
HD 3386 (I)(C)	66.15	2	59.03	2	62.59	2
HD 3471^{M}	60.10	5	58.21	3	59.16	5
DBW 222 (C)	66.04	3	56.12	7	61.08	3
DBW 187 (C)	57.38	8	57.87	4	57.63	7
DBW 386	59.79	6	57.35	5	58.57	6
PBW 826 (C)	69.50	1	57.00	6	63.25	1
Mean	62.34		56.51		59.43	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.23	0.96	1.91	
Genotype (B)	**		0.94	2.26	3.88	
B within A	**		1.33	3.20		
A within B			1.27	3.04		
			Earhead/sq.m.			
HD 2967 (C)	442	3	416	5	429	5
HI 1668	434	4	388	8	411	8
HD 3386 (I)(C)	429	7	413	6	421	7
HD 3471^{M}	433	5	432	1	433	2
DBW 222 (C)	450	2	408	7	429	3
DBW 187 (C)	421	8	423	3	422	6
DBW 386	430	6	428	2	429	3
PBW 826 (C)	456	1	419	4	438	1
Mean	437		416		426	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		3.12	12.87	3.58	
Genotype (B)	N.S.		6.67	16.05	3.83	
B within A	N.S.		9.44	22.70		
A within B			9.36	22.52		
			Grains/earhead			
HD 2967 (C)	38.58	1	34.35	4	36.47	3
HI 1668	31.19	8	32.39	7	31.79	8
HD 3386 (I)(C)	32.94	7	32.05	8	32.49	7
HD 3471^{M}	34.66	5	32.91	5	33.78	5
DBW 222 (C)	36.78	4	36.55	1	36.67	1
DBW 187 (C)	38.06	2	34.45	3	36.25	4
DBW 386	37.21	3	35.83	2	36.52	2
PBW 826 (C)	33.95	6	32.47	6	33.21	6
Mean	35.42		33.88		34.65	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.18	4.89	16.74	
Genotype (B)	*		1.24	2.98	8.77	
B within A	N.S.		1.75	4.22		
A within B			2.02	4.87		

			1000 grains weight, g			
HD 2967 (C)	35.15	8	33.24	8	34.19	8
HI 1668	45.11	2	47.05	1	46.08	1
HD 3386 (I)(C)	47.03	1	44.77	2	45.90	2
HD 3471^{M}	40.05	4	41.01	4	40.53	4
DBW 222 (C)	39.99	5	37.64	7	38.82	5
DBW 187 (C)	36.13	7	39.83	5	37.98	6
DBW 386	37.45	6	37.67	6	37.56	7
PBW 826 (C)	44.98	3	42.20	3	43.59	3
Mean	40.74		40.43		40.58	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.05	4.35	12.71	
Genotype (B)	**		0.88	2.11	5.30	
B within A	N.S.		1.24	2.99		
A within B			1.57	3.77		
Date of Sowing:	10.11.2023	16.12.2023	Date of Harvesting:		22.04.2024	29.04.2024

Table 2.2.8. North Western Plain Zone IR-TS-DOS-TAS Ludhiana 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	45.76	8	31.02	8	38.39	8
HI 1668	57.92	5	38.26	6	48.09	6
HD 3386 (I)(C)	58.80	4	52.06	1	55.43	2
HD 3471^{M}	56.51	6	44.35	3	50.43	4
DBW 222 (C)	61.46	1	49.82	2	55.64	1
DBW 187 (C)	53.33	7	44.35	3	48.84	5
DBW 386	60.81	2	41.77	5	51.29	3
PBW 826 (C)	60.13	3	35.27	7	47.70	7
Mean	56.84		42.11		49.48	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.71	2.94	7.04	
Genotype (B)	**		1.71	4.12	8.49	
B within A	*		2.42	5.83		
A within B			2.38	5.72		
			Earhead/sq.m.			
HD 2967 (C)	289	8	271	8	280	8
HI 1668	308	6	278	5	293	6
HD 3386 (I)(C)	310	4	325	1	318	2
HD 3471^{M}	317	3	313	2	315	3
DBW 222 (C)	343	1	299	4	321	1
DBW 187 (C)	297	7	307	3	302	4
DBW 386	323	2	274	6	299	5
PBW 826 (C)	310	4	273	7	292	7
Mean	312		293		302	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.73	3.03	1.19	
Genotype (B)	N.S.		9.64	23.19	7.81	
B within A	N.S.		13.64	32.80		
A within B			12.78	30.73		

			Grains/earhead			
HD 2967 (C)	43.74	3	30.76	6	37.25	5
HI 1668	44.54	2	29.57	7	37.05	6
HD 3386 (I)(C)	41.70	5	34.95	4	38.32	2
HD 3471^{M}	40.69	8	32.66	5	36.67	7
DBW 222 (C)	49.59	1	43.74	1	46.66	1
DBW 187 (C)	41.40	6	35.21	2	38.30	3
DBW 386	41.08	7	34.99	3	38.03	4
PBW 826 (C)	42.38	4	28.66	8	35.52	8
Mean	43.14		33.82		38.48	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.28	1.18	3.63	
Genotype (B)	*		1.98	4.76	12.59	
B within A	N.S.		2.80	6.73		
A within B			2.63	6.33		
			1000 grains weight, g			
HD 2967 (C)	36.43	8	37.45	8	36.94	8
HI 1668	42.38	6	46.57	1	44.47	4
HD 3386 (I)(C)	45.44	3	45.91	2	45.67	1
HD 3471^{M}	44.48	4	43.50	4	43.99	5
DBW 222 (C)	36.52	7	38.21	7	37.36	7
DBW 187 (C)	43.79	5	41.27	6	42.53	6
DBW 386	46.01	2	43.48	5	44.74	3
PBW 826 (C)	46.25	1	45.04	3	45.65	2
Mean	42.66		42.68		42.67	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.43	1.76	4.89	
Genotype (B)	**		1.06	2.55	6.08	
B within A	N.S.		1.50	3.60		
A within B			1.46	3.52		
Date of Sowing:	10.11.2023	15.12.2023	Date of Harvesting:		27.04.2024	27.04.2024

Table 2.2.9. North Western Plain Zone IR-TS-DOS-TAS Pantnagar 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	52.78	8	43.10	8	47.94	8
HI 1668	56.20	5	48.96	5	52.58	6
HD 3386 (I)(C)	58.18	1	52.79	2	55.49	1
HD 3471^{M}	57.99	3	48.50	7	53.24	5
DBW 222 (C)	54.33	7	55.18	1	54.75	3
DBW 187 (C)	58.17	2	51.43	3	54.80	2
DBW 386	55.04	6	48.92	6	51.98	7
PBW 826 (C)	56.35	4	50.77	4	53.56	4
Mean	56.13		49.96		53.04	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.69	2.85	6.38	
Genotype (B)	**		1.03	2.48	4.76	
B within A	*		1.46	3.51		
A within B			1.53	3.68		

			Earhead/sq.m.			
HD 2967 (C)	283	1	253	3	268	2
HI 1668	266	3	239	7	252	6
HD 3386 (I)(C)	237	6	280	2	258	4
HD 3471^{M}	234	7	227	8	231	8
DBW 222 (C)	229	8	249	5	239	7
DBW 187 (C)	273	2	252	4	263	3
DBW 386	266	3	293	1	280	1
PBW 826 (C)	260	5	245	6	253	5
Mean	256		255		255	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		5.33	22.02	10.23	
Genotype (B)	*		9.36	22.52	8.98	
B within A	N.S.		13.24	31.85		
A within B			13.48	32.44		
			Grains/earhead			
HD 2967 (C)	37.67	7	43.16	5	40.42	7
HI 1668	34.74	8	42.73	6	38.73	8
HD 3386 (I)(C)	43.63	3	41.05	8	42.34	4
HD 3471^{M}	49.53	1	49.31	2	49.42	2
DBW 222 (C)	48.72	2	54.51	1	51.62	1
DBW 187 (C)	39.97	5	47.04	3	43.50	3
DBW 386	41.79	4	42.09	7	41.94	6
PBW 826 (C)	39.41	6	45.16	4	42.29	5
Mean	41.93		45.63		43.78	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.80	3.31	8.96	
Genotype (B)	**		1.89	4.55	10.59	
B within A	N.S.		2.68	6.44		
A within B			2.63	6.32		
			1000 grains weight, g			
HD 2967 (C)	49.73	7	39.80	8	44.77	8
HI 1668	61.33	1	48.21	1	54.77	1
HD 3386 (I)(C)	56.50	2	45.94	3	51.22	2
HD 3471^{M}	50.07	5	43.52	5	46.80	5
DBW 222 (C)	49.17	8	40.90	6	45.03	6
DBW 187 (C)	53.69	4	44.34	4	49.02	4
DBW 386	50.03	6	39.97	7	45.00	7
PBW 826 (C)	55.19	3	45.98	2	50.58	3
Mean	53.21		43.58		48.40	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.39	1.63	4.00	
Genotype (B)	**		0.92	2.21	4.65	
B within A	N.S.		1.30	3.13		
A within B			1.28	3.07		
Date of Sowing:	09.11.2023	12.12.2023	Date of Harvesting:		16.04.2024	26.04.2024

Table 2.2.10. North Western Plain Zone IR-TS-DOS-TAS Sriganganagar 2023-24

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HD 2967 (C)	66.49	8	47.34	4	56.92	6
HI 1668	72.08	3	45.87	6	58.98	4
HD 3386 (I)(C)	71.17	4	49.76	2	60.47	3
HD 3471^{M}	74.16	1	49.19	3	61.68	2
DBW 222 (C)	68.25	7	40.22	8	54.24	8
DBW 187 (C)	73.43	2	52.46	1	62.95	1
DBW 386	69.44	6	47.08	5	58.26	5
PBW 826 (C)	70.74	5	40.24	7	55.49	7
Mean	70.72		46.52		58.62	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.20	0.83	1.67	
Genotype (B)	**		1.52	3.65	6.34	
B within A	N.S.		2.15	5.16		
A within B			2.02	4.85		
			Earhead/sq.m.			
HD 2967 (C)						
HI 1668						
HD 3386 (I)(C)						
HD 3471^{M}	Data not reported by the centre					
DBW 222 (C)						
DBW 187 (C)						
DBW 386						
PBW 826 (C)						
Mean						
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)						
Genotype (B)						
B within A						
A within B						
			1000 grains weight, g			
HD 2967 (C)	36.33	8	33.50	8	34.92	8
HI 1668	51.80	1	46.40	1	49.10	1
HD 3386 (I)(C)	45.23	2	39.50	5	42.37	4
HD 3471^{M}	42.33	6	42.37	3	42.35	5
DBW 222 (C)	39.60	7	38.60	6	39.10	7
DBW 187 (C)	44.37	3	41.43	4	42.90	2
DBW 386	42.93	5	42.57	2	42.75	3
PBW 826 (C)	43.60	4	36.50	7	40.05	6
Mean	43.28		40.11		41.69	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.14	0.60	1.70	
Genotype (B)	**		0.23	0.56	1.37	
B within A	**		0.33	0.79		
A within B			0.34	0.82		
Date of Sowing:	09.11.2023	10.12.2023	Date of Harvesting:		24.04.2024	26.04.2024

Table 2.4.1. North Western Plain Zone			**IR-LS-DOS-TAS**		**Agra**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	54.11	3	36.64	4	45.37	4
PBW 771 (C)	55.91	1	41.07	1	48.49	1
HD 3428	53.72	4	38.13	3	45.93	3
DBW 173 (C)	47.45	5	35.79	5	41.62	5
JKW 261 (C)	54.89	2	39.04	2	46.97	2
Mean	53.22		38.13		45.67	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.49	2.97	4.13	
Genotype (B)	**		0.84	2.51	4.49	
B within A	N.S.		1.18	3.55		
A within B			1.17	3.49		
			Earhead/sq.m.			
HD 3059 (C)	276	4	245	4	260	4
PBW 771 (C)	278	1	253	1	266	1
HD 3428	277	3	249	3	263	3
DBW 173 (C)	275	5	244	5	259	5
JKW 261 (C)	277	2	251	2	264	2
Mean	276		248		262	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.64	3.88	0.94	
Genotype (B)	*		1.25	3.76	1.17	
B within A	N.S.		1.77	5.31		
A within B			1.71	5.12		
			Grains/earhead			
HD 3059 (C)	49.69	1	40.91	3	45.30	1
PBW 771 (C)	48.48	2	42.05	1	45.27	2
HD 3428	47.90	4	41.13	2	44.52	3
DBW 173 (C)	44.63	5	40.81	4	42.72	5
JKW 261 (C)	48.20	3	40.71	5	44.46	4
Mean	47.78		41.12		44.45	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.17	1.01	1.45	
Genotype (B)	*		0.52	1.57	2.88	
B within A	*		0.74	2.22		
A within B			0.68	2.05		
			1000 grains weight, g			
HD 3059 (C)	39.50	4	36.50	4	38.00	4
PBW 771 (C)	41.50	1	38.60	1	40.05	1
HD 3428	40.57	3	37.20	3	38.89	3
DBW 173 (C)	38.75	5	36.00	5	37.38	5
JKW 261 (C)	41.10	2	38.20	2	39.65	2
Mean	40.28		37.30		38.79	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.24	1.48	2.43	
Genotype (B)	**		0.42	1.26	2.66	
B within A	N.S.		0.59	1.78		
A within B			0.58	1.75		
Date of Sowing:	10.12.2023	05.01.2024	Date of Harvesting:		09.04.2024	20.04.2024

Table 2.4.2. North Western Plain Zone			**IR-LS-DOS-TAS**		**Delhi**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	40.80	5	33.97	4	37.38	5
PBW 771 (C)	41.55	4	33.76	5	37.65	4
HD 3428	42.45	3	35.43	2	38.94	3
DBW 173 (C)	43.34	2	35.34	3	39.34	2
JKW 261 (C)	43.38	1	37.83	1	40.60	1
Mean	42.30		35.27		38.79	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.80	4.88	8.00	
Genotype (B)	N.S.		0.88	2.63	5.55	
B within A	N.S.		1.24	3.72		
A within B			1.37	4.11		
			Earhead/sq.m.			
HD 3059 (C)	380	2	368	2	374	2
PBW 771 (C)	359	5	336	5	348	5
HD 3428	375	3	357	3	366	4
DBW 173 (C)	368	4	388	1	378	1
JKW 261 (C)	386	1	346	4	366	3
Mean	374		359		366	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		9.85	59.92	10.41	
Genotype (B)	N.S.		11.29	33.84	7.55	
B within A	N.S.		15.96	47.85		
A within B			17.34	51.99		
			Grains/earhead			
HD 3059 (C)	26.44	5	23.43	4	24.93	5
PBW 771 (C)	30.14	1	24.86	3	27.50	2
HD 3428	28.31	4	26.57	2	27.44	3
DBW 173 (C)	30.06	2	23.35	5	26.71	4
JKW 261 (C)	28.39	3	28.55	1	28.47	1
Mean	28.67		25.35		27.01	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.02	6.19	14.58	
Genotype (B)	N.S.		0.96	2.89	8.75	
B within A	N.S.		1.36	4.09		
A within B			1.59	4.76		
			1000 grains weight, g			
HD 3059 (C)	40.75	1	39.44	2	40.09	1
PBW 771 (C)	39.03	5	40.49	1	39.76	2
HD 3428	40.18	2	37.84	5	39.01	5
DBW 173 (C)	39.45	4	39.07	3	39.26	3
JKW 261 (C)	39.67	3	38.38	4	39.02	4
Mean	39.81		39.04		39.43	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.82	4.97	8.02	
Genotype (B)	N.S.		0.65	1.96	4.06	
B within A	N.S.		0.92	2.77		
A within B			1.16	3.48		
Date of Sowing:	14.12.2023	4.1.2024	Date of Harvesting:		25.04.2024	30.4.2024

Table 2.4.3. North Western Plain Zone **IR-LS-DOS-TAS** **Durgapura** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	27.97	2	25.87	3	26.92	2
PBW 771 (C)	24.16	5	22.02	4	23.09	5
HD 3428	29.26	1	27.94	1	28.60	1
DBW 173 (C)	27.83	3	20.16	5	24.00	4
JKW 261 (C)	25.18	4	26.45	2	25.82	3
Mean	26.88		24.49		25.69	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.58	3.51	8.71	
Genotype (B)	**		0.76	2.28	7.24	
B within A	*		1.07	3.22		
A within B			1.12	3.36		
			Earhead/sq.m.			
HD 3059 (C)	281	2	259	3	270	2
PBW 771 (C)	250	5	241	4	246	5
HD 3428	285	1	276	1	280	1
DBW 173 (C)	278	3	229	5	254	4
JKW 261 (C)	264	4	267	2	266	3
Mean	272		254		263	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		1.56	9.52	2.30	
Genotype (B)	**		2.92	8.75	2.72	
B within A	**		4.13	12.37		
A within B			4.01	12.01		
			Grains/earhead			
HD 3059 (C)	23.92	4	26.89	1	25.40	2
PBW 771 (C)	26.62	1	26.18	3	26.40	1
HD 3428	24.78	3	25.86	4	25.32	3
DBW 173 (C)	25.32	2	24.13	5	24.72	5
JKW 261 (C)	23.29	5	26.68	2	24.99	4
Mean	24.78		25.95		25.37	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.39	2.35	5.89	
Genotype (B)	N.S.		0.98	2.93	9.44	
B within A	N.S.		1.38	4.15		
A within B			1.30	3.89		
			1000 grains weight, g			
HD 3059 (C)	41.50	1	37.37	2	39.43	2
PBW 771 (C)	36.50	5	35.00	5	35.75	5
HD 3428	41.40	2	39.33	1	40.37	1
DBW 173 (C)	39.67	4	36.50	4	38.08	4
JKW 261 (C)	41.00	3	37.17	3	39.08	3
Mean	40.01		37.07		38.54	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.16	0.99	1.64	
Genotype (B)	*		0.91	2.72	5.77	
B within A	N.S.		1.28	3.85		
A within B			1.16	3.48		
Date of Sowing:	12.12.2023	5.1.2024	Date of Harvesting:		27.3.2024	10.4.2024

Table 2.4.4. North Western Plain Zone			**IR-LS-DOS-TAS**		**Gurdaspur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	53.75	4	48.15	3	50.95	4
PBW 771 (C)	53.02	5	46.28	5	49.65	5
HD 3428	60.49	1	50.73	1	55.61	1
DBW 173 (C)	54.74	3	47.89	4	51.32	3
JKW 261 (C)	56.98	2	50.42	2	53.70	2
Mean	55.80		48.69		52.24	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.77	4.71	5.74	
Genotype (B)	N.S.		1.66	4.98	7.79	
B within A	N.S.		2.35	7.04		
A within B			2.24	6.71		
			Earhead/sq.m.			
HD 3059 (C)	332	4	290	4	311	4
PBW 771 (C)	334	3	292	2	313	3
HD 3428	306	5	282	5	294	5
DBW 173 (C)	345	2	292	3	318	2
JKW 261 (C)	390	1	330	1	360	1
Mean	341		297		319	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		5.47	33.29	6.64	
Genotype (B)	**		7.12	21.34	5.46	
B within A	N.S.		10.07	30.18		
A within B			10.54	31.59		
			Grains/earhead			
HD 3059 (C)	41.44	2	42.44	2	41.94	2
PBW 771 (C)	40.44	3	39.87	4	40.16	4
HD 3428	47.87	1	44.59	1	46.23	1
DBW 173 (C)	39.23	4	41.50	3	40.36	3
JKW 261 (C)	37.35	5	39.38	5	38.37	5
Mean	41.27		41.56		41.41	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.03	6.29	9.66	
Genotype (B)	N.S.		1.72	5.17	10.20	
B within A	N.S.		2.44	7.31		
A within B			2.41	7.24		
			1000 grains weight, g			
HD 3059 (C)	39.07	5	39.19	4	39.13	5
PBW 771 (C)	39.31	3	39.60	3	39.46	3
HD 3428	41.43	1	40.44	1	40.94	1
DBW 173 (C)	40.66	2	39.95	2	40.30	2
JKW 261 (C)	39.19	4	39.18	5	39.19	4
Mean	39.93		39.67		39.80	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.52	3.14	5.01	
Genotype (B)	*		0.41	1.22	2.51	
B within A	N.S.		0.58	1.73		
A within B			0.73	2.18		
Date of Sowing:	11.12.2023	2.1.2024	Date of Harvesting:		2.5.2024	14.5.2024

Table 2.4.5. North Western Plain Zone			**IR-LS-DOS-TAS**		**Hisar**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	50.83	5	35.71	4	43.27	5
PBW 771 (C)	58.10	1	38.02	2	48.06	2
HD 3428	57.14	2	39.92	1	48.53	1
DBW 173 (C)	52.78	4	35.16	5	43.97	4
JKW 261 (C)	55.95	3	37.14	3	46.55	3
Mean	54.96		37.19		46.07	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.52	3.13	4.33	
Genotype (B)	*		1.29	3.86	6.84	
B within A	N.S.		1.82	5.46		
A within B			1.71	5.12		
			Earhead/sq.m.			
HD 3059 (C)	372	4	297	5	335	4
PBW 771 (C)	407	1	321	1	364	1
HD 3428	397	2	312	3	355	3
DBW 173 (C)	364	5	300	4	332	5
JKW 261 (C)	395	3	317	2	356	2
Mean	387		310		348	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		4.46	27.13	4.96	
Genotype (B)	**		6.28	18.83	4.42	
B within A	N.S.		8.88	26.63		
A within B			9.11	27.31		
			Grains/earhead			
HD 3059 (C)	43.80	4	45.41	2	44.60	3
PBW 771 (C)	40.18	5	38.11	5	39.14	5
HD 3428	44.11	3	45.65	1	44.88	2
DBW 173 (C)	45.76	2	38.94	4	42.35	4
JKW 261 (C)	51.74	1	44.31	3	48.03	1
Mean	45.12		42.48		43.80	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.48	2.95	4.28	
Genotype (B)	**		1.43	4.30	8.02	
B within A	N.S.		2.03	6.08		
A within B			1.88	5.63		
			1000 grains weight, g			
HD 3059 (C)	31.30	4	26.43	4	28.87	4
PBW 771 (C)	35.57	1	31.13	1	33.35	1
HD 3428	32.70	2	28.10	3	30.40	3
DBW 173 (C)	31.73	3	30.17	2	30.95	2
JKW 261 (C)	27.40	5	26.43	5	26.92	5
Mean	31.74		28.45		30.10	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.17	1.05	2.23	
Genotype (B)	**		0.42	1.26	3.43	
B within A	**		0.60	1.78		
A within B			0.56	1.68		
Date of Sowing:	16.12.2023	05.01.2024	Date of Harvesting:		24.04.2024	30.04.2024

Table 2.4.6. North Western Plain Zone **IR-LS-DOS-TAS** **Jammu** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	38.53	1	32.43	1	35.48	1
PBW 771 (C)	36.40	3	28.88	3	32.64	3
HD 3428	36.14	4	27.58	4	31.86	4
DBW 173 (C)	37.26	2	31.23	2	34.25	2
JKW 261 (C)	34.33	5	26.86	5	30.60	5
Mean	36.53		29.40		32.97	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.99	6.02	11.63	
Genotype (B)	*		0.95	2.85	7.07	
B within A	N.S.		1.35	4.03		
A within B			1.56	4.67		
			Earhead/sq.m.			
HD 3059 (C)	424	2	391	1	407	2
PBW 771 (C)	419	3	379	3	399	3
HD 3428	410	4	366	4	388	4
DBW 173 (C)	433	1	383	2	408	1
JKW 261 (C)	405	5	353	5	379	5
Mean	418		374		396	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		1.40	8.50	1.36	
Genotype (B)	*		6.96	20.86	4.30	
B within A	N.S.		9.84	29.51		
A within B			8.91	26.72		
			Grains/earhead			
HD 3059 (C)	20.31	1	19.39	1	19.85	1
PBW 771 (C)	19.69	3	17.94	5	18.81	5
HD 3428	20.13	2	18.33	3	19.23	2
DBW 173 (C)	19.11	5	18.98	2	19.05	3
JKW 261 (C)	19.58	4	18.16	4	18.87	4
Mean	19.76		18.56		19.16	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.36	2.17	7.20	
Genotype (B)	N.S.		0.63	1.89	8.07	
B within A	N.S.		0.89	2.68		
A within B			0.87	2.62		
			1000 grains weight, g			
HD 3059 (C)	44.80	2	42.93	2	43.86	2
PBW 771 (C)	44.19	3	42.55	3	43.37	3
HD 3428	43.82	4	41.33	5	42.58	5
DBW 173 (C)	44.81	1	42.94	1	43.88	1
JKW 261 (C)	43.34	5	42.01	4	42.68	4
Mean	44.19		42.35		43.27	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.50	3.05	4.48	
Genotype (B)	N.S.		0.94	2.81	5.31	
B within A	N.S.		1.33	3.98		
A within B			1.29	3.86		
Date of Sowing:	13.12.2023	5.1.2024	Date of Harvesting:		06.05.2024	10.05.2024

Table 2.4.7. North Western Plain Zone **IR-LS-DOS-TAS** **Karnal** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	35.85	5	33.84	3	34.85	4
PBW 771 (C)	38.51	3	32.68	4	35.59	3
HD 3428	41.84	2	35.52	1	38.68	2
DBW 173 (C)	36.67	4	27.50	5	32.08	5
JKW 261 (C)	42.60	1	35.14	2	38.87	1
Mean	39.09		32.94		36.01	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.65	10.01	17.69	
Genotype (B)	*		1.31	3.94	8.93	
B within A	N.S.		1.86	5.57		
A within B			2.34	7.01		
			Earhead/sq.m.			
HD 3059 (C)	471	4	410	4	440	4
PBW 771 (C)	508	2	424	3	466	3
HD 3428	461	5	473	2	467	2
DBW 173 (C)	476	3	390	5	433	5
JKW 261 (C)	533	1	493	1	513	1
Mean	490		438		464	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		18.73	113.96	15.64	
Genotype (B)	*		16.26	48.75	8.59	
B within A	N.S.		23.00	68.95		
A within B			27.82	83.40		
			Grains/earhead			
HD 3059 (C)	22.30	3	22.77	1	22.54	3
PBW 771 (C)	22.13	4	21.86	3	22.00	4
HD 3428	25.23	2	22.08	2	23.66	1
DBW 173 (C)	20.39	5	19.89	5	20.14	5
JKW 261 (C)	25.60	1	21.04	4	23.32	2
Mean	23.13		21.53		22.33	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.42	2.55	7.27	
Genotype (B)	N.S.		0.90	2.70	9.88	
B within A	N.S.		1.27	3.82		
A within B			1.21	3.64		
			1000 grains weight, g			
HD 3059 (C)	34.33	4	36.05	1	35.19	2
PBW 771 (C)	34.37	3	35.34	3	34.85	4
HD 3428	36.02	2	34.18	4	35.10	3
DBW 173 (C)	37.85	1	35.76	2	36.81	1
JKW 261 (C)	31.32	5	33.91	5	32.62	5
Mean	34.78		35.05		34.91	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.51	3.10	5.65	
Genotype (B)	**		0.34	1.02	2.39	
B within A	**		0.48	1.44		
A within B			0.67	2.00		
Date of Sowing:	16.12.2023	04.01.2024	Date of Harvesting:		29.04.2024	29.04.2024

Not included in pooled due to low mean yield

Table 2.4.8. North Western Plain Zone			**IR-LS-DOS-TAS**		**Ludhiana**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	52.23	3	20.03	4	36.13	4
PBW 771 (C)	54.08	2	28.36	1	41.22	1
HD 3428	51.22	4	23.13	2	37.17	3
DBW 173 (C)	43.99	5	14.23	5	29.11	5
JKW 261 (C)	55.45	1	21.79	3	38.62	2
Mean	51.39		21.51		36.45	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.75	4.55	7.95	
Genotype (B)	**		0.93	2.80	6.27	
B within A	N.S.		1.32	3.95		
A within B			1.40	4.19		
			Earhead/sq.m.			
HD 3059 (C)	381	1	285	4	333	4
PBW 771 (C)	371	3	307	2	339	1
HD 3428	356	5	313	1	334	3
DBW 173 (C)	364	4	269	5	316	5
JKW 261 (C)	379	2	290	3	334	2
Mean	370		293		331	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		5.98	36.40	6.99	
Genotype (B)	N.S.		8.49	25.45	6.27	
B within A	N.S.		12.00	35.99		
A within B			12.29	36.85		
			Grains/earhead			
HD 3059 (C)	38.49	1	21.95	4	30.22	4
PBW 771 (C)	36.97	3	26.78	1	31.88	1
HD 3428	36.08	4	24.94	2	30.51	3
DBW 173 (C)	35.63	5	15.86	5	25.74	5
JKW 261 (C)	38.48	2	23.51	3	30.99	2
Mean	37.13		22.61		29.87	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.65	3.96	8.44	
Genotype (B)	N.S.		1.83	5.49	15.02	
B within A	N.S.		2.59	7.77		
A within B			2.41	7.22		
			1000 grains weight, g			
HD 3059 (C)	36.18	4	32.73	3	34.45	4
PBW 771 (C)	39.43	2	34.81	1	37.12	1
HD 3428	40.39	1	29.91	5	35.15	3
DBW 173 (C)	34.20	5	34.00	2	34.10	5
JKW 261 (C)	38.03	3	32.33	4	35.18	2
Mean	37.65		32.75		35.20	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.39	2.37	4.28	
Genotype (B)	N.S.		1.24	3.72	8.63	
B within A	N.S.		1.75	5.26		
A within B			1.62	4.85		
Date of Sowing:	10.11.2023	07.01.2024	Date of Harvesting:		11.05.2024	11.05.2024

Table 2.4.9. North Western Plain Zone			**IR-LS-DOS-TAS**		**Pantnagar**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	48.99	5	39.77	4	44.38	5
PBW 771 (C)	51.06	2	41.15	2	46.10	2
HD 3428	49.62	4	45.24	1	47.43	1
DBW 173 (C)	52.27	1	37.47	5	44.87	4
JKW 261 (C)	50.62	3	39.81	3	45.22	3
Mean	50.51		40.69		45.60	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.28	1.72	2.39	
Genotype (B)	N.S.		0.79	2.38	4.26	
B within A	**		1.12	3.37		
A within B			1.04	3.13		
			Earhead/sq.m.			
HD 3059 (C)	376	2	464	3	420	3
PBW 771 (C)	424	1	444	4	434	1
HD 3428	355	4	474	2	415	4
DBW 173 (C)	365	3	333	5	349	5
JKW 261 (C)	349	5	510	1	430	2
Mean	374		445		409	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		13.62	82.88	12.88	
Genotype (B)	**		11.76	35.25	7.03	
B within A	**		16.63	49.85		
A within B			20.16	60.46		
			Grains/earhead			
HD 3059 (C)	29.68	4	27.53	4	28.60	4
PBW 771 (C)	29.18	5	27.78	3	28.48	5
HD 3428	31.51	3	28.36	2	29.93	3
DBW 173 (C)	34.82	2	32.64	1	33.73	1
JKW 261 (C)	36.83	1	25.22	5	31.03	2
Mean	32.40		28.31		30.35	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.93	5.68	11.90	
Genotype (B)	*		1.02	3.05	8.20	
B within A	*		1.44	4.31		
A within B			1.59	4.76		
			1000 grains weight, g			
HD 3059 (C)	44.11	2	31.25	4	37.68	3
PBW 771 (C)	41.66	3	33.43	3	37.55	4
HD 3428	44.78	1	33.74	2	39.26	1
DBW 173 (C)	41.36	4	34.66	1	38.01	2
JKW 261 (C)	39.52	5	31.16	5	35.34	5
Mean	42.29		32.85		37.57	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.37	2.25	3.82	
Genotype (B)	**		0.53	1.59	3.47	
B within A	**		0.75	2.25		
A within B			0.77	2.30		
Date of Sowing:	11.12.2023	04.01.2024	Date of Harvesting:		23.04.2024	29.04.2024

Table 2.4.10. North Western Plain Zone **IR-LS-DOS-TAS-TAS** **Sriganganagar** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HD 3059 (C)	51.90	4	41.33	1	46.62	4
PBW 771 (C)	61.15	2	35.75	3	48.45	3
HD 3428	57.10	3	40.49	2	48.80	1
DBW 173 (C)	48.29	5	34.13	5	41.21	5
JKW 261 (C)	62.96	1	34.19	4	48.57	2
Mean	56.28		37.18		46.73	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.18	1.07	1.46	
Genotype (B)	*		1.64	4.92	8.60	
B within A	**		2.32	6.95		
A within B			2.08	6.24		
			Earhead/sq.m.			
HD 3059 (C)						
PBW 771 (C)						
HD 3428	Data not reported by the centre					
DBW 173 (C)						
JKW 261 (C)						
Mean						
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)						
Genotype (B)						
B within A						
A within B						
			Grains/earhead			
HD 3059 (C)						
PBW 771 (C)						
HD 3428	Data not reported by the centre					
DBW 173 (C)						
JKW 261 (C)						
Mean						
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)						
Genotype (B)						
B within A						
A within B						
			1000 grains weight, g			
HD 3059 (C)	39.17	4	38.47	1	38.82	2
PBW 771 (C)	41.63	1	38.00	2	39.82	1
HD 3428	40.73	2	35.83	3	38.28	3
DBW 173 (C)	40.57	3	32.23	5	36.40	4
JKW 261 (C)	35.63	5	34.17	4	34.90	5
Mean	39.55		35.74		37.64	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.04	0.25	0.41	
Genotype (B)	**		0.11	0.33	0.72	
B within A	**		0.16	0.47		
A within B			0.15	0.44		
Date of Sowing:	10.12.2023	02.01.2024	Date of Harvesting:		24.04.2023	26.04.2024

Table 3.2.1. North Eastern Plain Zone			**IR-TS-DOS-TAS**		**Ayodhya**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	52.95	4	48.38	4	50.67	4
HD 3249 (C)	55.43	2	49.38	2	52.41	2
DBW 187 (C)	56.82	1	51.83	1	54.33	1
DBW 222 (C)	54.98	3	49.07	3	52.03	3
PBW 826 (C)	52.23	5	47.15	5	49.69	5
Mean	54.48		49.16		51.82	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.23	1.38	1.69	
Genotype (B)	**		0.53	1.58	2.48	
B within A	N.S.		0.74	2.23		
A within B			0.70	2.11		
			Earhead/sq.m.			
DBW 386	478	5	474	3	476	5
HD 3249 (C)	479	3	474	3	477	4
DBW 187 (C)	486	1	476	2	481	1
DBW 222 (C)	480	2	474	3	477	3
PBW 826 (C)	479	3	476	1	478	2
Mean	480		475		478	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		2.33	14.15	1.89	
Genotype (B)	N.S.		1.93	5.79	0.99	
B within A	N.S.		2.73	8.19		
A within B			3.37	10.11		
			Grains/earhead			
DBW 386	29.42	3	27.41	2	28.41	4
HD 3249 (C)	29.62	2	27.21	3	28.42	3
DBW 187 (C)	29.23	4	27.95	1	28.59	1
DBW 222 (C)	29.67	1	27.19	4	28.43	2
PBW 826 (C)	28.71	5	27.03	5	27.87	5
Mean	29.33		27.36		28.34	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.40	2.46	5.52	
Genotype (B)	N.S.		0.42	1.26	3.62	
B within A	N.S.		0.59	1.78		
A within B			0.67	2.00		
			1000 grains weight, g			
DBW 386	37.67	5	37.23	4	37.45	4
HD 3249 (C)	39.10	2	38.27	2	38.68	2
DBW 187 (C)	40.03	1	39.00	1	39.52	1
DBW 222 (C)	38.67	3	38.07	3	38.37	3
PBW 826 (C)	38.00	4	36.63	5	37.32	5
Mean	38.69		37.84		38.27	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.35	2.14	3.56	
Genotype (B)	**		0.35	1.06	2.26	
B within A	N.S.		0.50	1.49		
A within B			0.57	1.70		
Date of Sowing:	16.11.2023	15.12.2023	Date of Harvesting:		14.03.2024	02.04.2024

Table 3.2.2. North Eastern Plain Zone **IR-TS-DOS-TAS** **Coochbehar** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	64.37	1	66.10	1	65.23	1
HD 3249 (C)	50.67	4	54.87	4	52.77	4
DBW 187 (C)	60.10	2	54.77	5	57.43	3
DBW 222 (C)	43.13	5	55.30	3	49.22	5
PBW 826 (C)	59.67	3	58.27	2	58.97	2
Mean	55.59		57.86		56.72	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.10	6.72	7.54	
Genotype (B)	**		1.50	4.50	6.48	
B within A	**		2.12	6.37		
A within B			2.20	6.59		
			Earhead/sq.m.			
DBW 386	350	1	358	1	354	1
HD 3249 (C)	300	4	320	5	310	4
DBW 187 (C)	318	3	333	3	325	3
DBW 222 (C)	260	5	325	4	293	5
PBW 826 (C)	345	2	337	2	341	2
Mean	315		335		325	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		3.24	19.73	3.87	
Genotype (B)	**		7.39	22.16	5.58	
B within A	*		10.45	31.35		
A within B			9.90	29.67		
			Grains/earhead			
DBW 386	47.48	2	47.14	1	47.31	1
HD 3249 (C)	43.85	5	44.37	2	44.11	3
DBW 187 (C)	48.55	1	41.78	5	45.16	2
DBW 222 (C)	43.94	4	44.24	3	44.09	4
PBW 826 (C)	44.16	3	43.82	4	43.99	5
Mean	45.60		44.27		44.93	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.55	3.36	4.77	
Genotype (B)	N.S.		1.22	3.66	6.66	
B within A	N.S.		1.73	5.18		
A within B			1.64	4.92		
			1000 grains weight, g			
DBW 386	38.87	3	39.20	3	39.03	3
HD 3249 (C)	38.50	4	38.73	4	38.62	4
DBW 187 (C)	39.10	2	39.30	2	39.20	2
DBW 222 (C)	37.77	5	38.47	5	38.12	5
PBW 826 (C)	39.27	1	39.43	1	39.35	1
Mean	38.70		39.03		38.86	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.03	0.20	0.33	
Genotype (B)	**		0.17	0.52	1.09	
B within A	N.S.		0.24	0.73		
A within B			0.22	0.66		
Date of Sowing:	13.11.2023	10.12.2023	Date of Harvesting:			

Table 3.2.3. North Eastern Plain Zone			**IR-TS-DOS-TAS**		**Kalyani**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	43.63	3	50.70	2	47.17	2
HD 3249 (C)	44.00	2	43.20	4	43.60	3
DBW 187 (C)	38.13	5	46.93	3	42.53	4
DBW 222 (C)	41.00	4	41.77	5	41.38	5
PBW 826 (C)	48.27	1	54.93	1	51.60	1
Mean	43.01		47.51		45.26	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.53	3.20	4.50	
Genotype (B)	**		0.90	2.69	4.85	
B within A	**		1.27	3.80		
A within B			1.25	3.75		
			Earhead/sq.m.			
DBW 386	337	3	379	2	358	2
HD 3249 (C)	382	1	324	5	353	3
DBW 187 (C)	308	5	385	1	347	5
DBW 222 (C)	372	2	370	4	371	1
PBW 826 (C)	322	4	376	3	349	4
Mean	344		367		355	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		9.68	58.88	10.54	
Genotype (B)	N.S.		8.63	25.87	5.95	
B within A	**		12.20	36.58		
A within B			14.59	43.73		
			Grains/earhead			
DBW 386	36.49	3	35.26	3	35.87	3
HD 3249 (C)	31.82	5	37.76	2	34.79	4
DBW 187 (C)	43.72	1	33.20	4	38.46	2
DBW 222 (C)	34.17	4	32.53	5	33.35	5
PBW 826 (C)	39.79	2	38.01	1	38.90	1
Mean	37.20		35.35		36.28	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.09	6.66	11.69	
Genotype (B)	*		1.34	4.01	9.04	
B within A	*		1.89	5.67		
A within B			2.02	6.04		
			1000 grains weight, g			
DBW 386	35.67	3	38.03	2	36.85	2
HD 3249 (C)	36.43	2	35.47	4	35.95	3
DBW 187 (C)	28.37	5	37.00	3	32.68	5
DBW 222 (C)	32.47	4	34.77	5	33.62	4
PBW 826 (C)	37.73	1	38.53	1	38.13	1
Mean	34.13		36.76		35.45	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.10	0.63	1.12	
Genotype (B)	**		0.66	1.98	4.56	
B within A	**		0.93	2.80		
A within B			0.84	2.52		
Date of Sowing:	17.11.2023	16.12.2023	Date of Harvesting:		18.03.2024	30.03.2024

Table 3.2.4. North Eastern Plain Zone **IR-TS-DOS-TAS** **Kanpur** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	62.97	1	63.70	3	63.33	2
HD 3249 (C)	54.30	4	61.20	5	57.75	4
DBW 187 (C)	52.07	5	63.10	4	57.58	5
DBW 222 (C)	59.67	3	65.43	2	62.55	3
PBW 826 (C)	61.70	2	66.27	1	63.98	1
Mean	58.14		63.94		61.04	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.40	8.51	8.87	
Genotype (B)	**		1.33	3.97	5.32	
B within A	N.S.		1.87	5.62		
A within B			2.18	6.55		
			Earhead/sq.m.			
DBW 386	432	1	417	3	425	3
HD 3249 (C)	431	2	421	2	426	1
DBW 187 (C)	427	4	425	1	426	1
DBW 222 (C)	423	5	415	5	419	5
PBW 826 (C)	429	3	417	4	423	4
Mean	428		419		424	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.38	2.29	0.34	
Genotype (B)	N.S.		2.16	6.46	1.25	
B within A	N.S.		3.05	9.14		
A within B			2.75	8.25		
			Grains/earhead			
DBW 386	26.85	3	31.78	2	29.31	2
HD 3249 (C)	24.31	5	30.12	5	27.22	5
DBW 187 (C)	27.16	2	30.85	4	29.01	3
DBW 222 (C)	27.97	1	33.13	1	30.55	1
PBW 826 (C)	26.44	4	31.21	3	28.83	4
Mean	26.55		31.42		28.98	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.74	4.53	9.94	
Genotype (B)	*		0.65	1.94	5.46	
B within A	N.S.		0.91	2.74		
A within B			1.10	3.31		
			1000 grains weight, g			
DBW 386	54.30	2	48.07	4	51.18	2
HD 3249 (C)	51.83	3	48.27	2	50.05	3
DBW 187 (C)	44.87	5	48.13	3	46.50	5
DBW 222 (C)	50.47	4	47.63	5	49.05	4
PBW 826 (C)	54.40	1	50.93	1	52.67	1
Mean	51.17		48.61		49.89	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.12	0.75	0.95	
Genotype (B)	**		0.24	0.73	1.20	
B within A	**		0.35	1.04		
A within B			0.33	1.00		
Date of Sowing:	15.11.2023	14.12.2023	Date of Harvesting:		25.03.2024	15.04.2024

Table 3.2.5. North Eastern Plain Zone			**IR-TS-DOS-TAS**		**Ranchi**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	49.03	2	39.63	3	44.33	2
HD 3249 (C)	43.30	5	37.50	4	40.40	4
DBW 187 (C)	46.03	4	33.80	5	39.92	5
DBW 222 (C)	47.10	3	40.45	1	43.78	3
PBW 826 (C)	50.63	1	40.34	2	45.49	1
Mean	47.22		38.35		42.78	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.85	5.15	7.66	
Genotype (B)	**		0.67	2.01	3.84	
B within A	*		0.95	2.85		
A within B			1.20	3.59		
			Earhead/sq.m.			
DBW 386	357	2	290	3	323	3
HD 3249 (C)	331	5	262	4	296	5
DBW 187 (C)	338	4	260	5	299	4
DBW 222 (C)	340	3	313	1	327	2
PBW 826 (C)	370	1	305	2	338	1
Mean	347		286		317	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		2.22	13.48	2.71	
Genotype (B)	*		9.45	28.35	7.32	
B within A	N.S.		13.37	40.09		
A within B			12.16	36.46		
			Grains/earhead			
DBW 386	30.38	4	32.81	2	31.59	3
HD 3249 (C)	31.05	3	34.78	1	32.91	1
DBW 187 (C)	31.78	1	32.39	3	32.09	2
DBW 222 (C)	31.63	2	29.92	5	30.77	4
PBW 826 (C)	29.33	5	31.48	4	30.40	5
Mean	30.83		32.27		31.55	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.72	4.36	8.80	
Genotype (B)	N.S.		1.27	3.81	9.86	
B within A	N.S.		1.80	5.38		
A within B			1.76	5.27		
			1000 grains weight, g			
DBW 386	45.57	2	41.67	3	43.62	3
HD 3249 (C)	42.57	5	41.27	4	41.92	4
DBW 187 (C)	42.90	4	40.33	5	41.62	5
DBW 222 (C)	43.97	3	43.60	1	43.78	2
PBW 826 (C)	46.73	1	42.07	2	44.40	1
Mean	44.35		41.79		43.07	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.19	1.14	1.68	
Genotype (B)	**		0.45	1.35	2.56	
B within A	*		0.64	1.91		
A within B			0.60	1.80		
Date of Sowing:	15.11.2023	14.12.2023	Date of Harvesting:		25.03.2024	15.04.2024

Table 3.2.6. North Eastern Plain Zone		**IR-TS-DOS-TAS**			**Sabour**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	48.36	1	38.11	2	43.24	2
HD 3249 (C)	39.52	5	33.07	3	36.30	5
DBW 187 (C)	46.39	3	33.00	4	39.70	3
DBW 222 (C)	42.73	4	32.00	5	37.37	4
PBW 826 (C)	48.19	2	38.74	1	43.47	1
Mean	45.04		34.99		40.01	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		1.36	8.27	13.16	
Genotype (B)	*		1.64	4.90	10.01	
B within A	N.S.		2.31	6.93		
A within B			2.48	7.42		
			Earhead/sq.m.			
DBW 386	349	1	283	2	316	2
HD 3249 (C)	300	5	263	3	281	5
DBW 187 (C)	334	3	260	4	297	3
DBW 222 (C)	320	4	256	5	288	4
PBW 826 (C)	343	2	291	1	317	1
Mean	329		271		300	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		9.45	57.49	12.20	
Genotype (B)	*		7.98	23.92	6.52	
B within A	N.S.		11.28	33.83		
A within B			13.82	41.45		
			Grains/earhead			
DBW 386	35.55	1	38.12	2	36.83	1
HD 3249 (C)	33.90	4	35.05	4	34.48	5
DBW 187 (C)	34.31	3	34.91	5	34.61	4
DBW 222 (C)	33.30	5	37.64	3	35.47	3
PBW 826 (C)	34.42	2	38.65	1	36.54	2
Mean	34.29		36.87		35.58	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		3.15	19.17	34.29	
Genotype (B)	N.S.		2.40	7.19	16.51	
B within A	N.S.		3.39	10.17		
A within B			4.37	13.11		
			1000 grains weight, g			
DBW 386	39.11	5	35.70	3	37.40	5
HD 3249 (C)	39.31	4	36.85	1	38.08	2
DBW 187 (C)	40.47	3	36.64	2	38.55	1
DBW 222 (C)	40.48	2	35.03	4	37.76	3
PBW 826 (C)	40.96	1	34.47	5	37.72	4
Mean	40.07		35.74		37.90	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.40	8.54	14.34	
Genotype (B)	N.S.		1.42	4.25	9.16	
B within A	N.S.		2.00	6.01		
A within B			2.28	6.82		
Date of Sowing:	6.11.2023	6.12.2023	Date of Harvesting:		10.03.2024	01.04.2024

Table 3.2.7. North Eastern Plain Zone			**IR-TS-DOS-TAS**		**Shillongani**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	48.01	4	46.17	5	47.09	5
HD 3249 (C)	45.46	5	49.88	4	47.67	4
DBW 187 (C)	49.85	2	50.86	2	50.36	2
DBW 222 (C)	54.57	1	58.66	1	56.62	1
PBW 826 (C)	49.04	3	50.77	3	49.91	3
Mean	49.39		51.27		50.33	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.89	5.39	6.82	
Genotype (B)	**		0.82	2.46	3.99	
B within A	N.S.		1.16	3.48		
A within B			1.36	4.09		
			Earhead/sq.m.			
DBW 386	293	2	333	1	313	1
HD 3249 (C)	271	4	296	4	283	4
DBW 187 (C)	286	3	271	5	279	5
DBW 222 (C)	269	5	309	3	289	3
PBW 826 (C)	295	1	322	2	308	2
Mean	283		306		294	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		4.69	28.53	6.17	
Genotype (B)	*		8.29	24.85	6.90	
B within A	N.S.		11.72	35.14		
A within B			11.48	34.43		
			Grains/earhead			
DBW 386	43.60	5	38.20	5	40.90	5
HD 3249 (C)	44.40	2	42.87	3	43.63	3
DBW 187 (C)	44.33	3	52.50	1	48.42	1
DBW 222 (C)	48.40	1	46.00	2	47.20	2
PBW 826 (C)	44.27	4	42.86	4	43.56	4
Mean	45.00		44.49		44.74	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.36	8.29	11.79	
Genotype (B)	N.S.		1.93	5.78	10.55	
B within A	N.S.		2.73	8.17		
A within B			2.79	8.37		
			1000 grains weight, g			
DBW 386	37.62	5	36.47	5	37.05	5
HD 3249 (C)	37.79	3	39.37	2	38.58	2
DBW 187 (C)	39.72	2	36.93	3	38.33	3
DBW 222 (C)	41.87	1	41.30	1	41.58	1
PBW 826 (C)	37.63	4	36.83	4	37.23	4
Mean	38.93		38.18		38.55	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.13	0.78	1.29	
Genotype (B)	**		0.19	0.56	1.18	
B within A	**		0.26	0.79		
A within B			0.27	0.80		
Date of Sowing:	06.11.2023	06.12.2023	Date of Harvesting:		10.03.2024	01.04.2024

Table 3.2.8. North Eastern Plain Zone			**IR-TS-DOS-TAS**		**Varanasi**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DBW 386	48.53	1	38.41	2	43.47	1
HD 3249 (C)	45.79	3	38.74	1	42.27	2
DBW 187 (C)	45.01	4	35.01	5	40.01	4
DBW 222 (C)	41.40	5	35.80	4	38.60	5
PBW 826 (C)	46.16	2	36.45	3	41.31	3
Mean	45.38		36.88		41.13	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.21	1.28	1.97	
Genotype (B)	N.S.		1.24	3.73	7.41	
B within A	N.S.		1.76	5.27		
A within B			1.59	4.76		
			Earhead/sq.m.			
DBW 386	402	3	401	2	401	3
HD 3249 (C)	407	2	397	3	402	2
DBW 187 (C)	382	5	377	4	380	4
DBW 222 (C)	393	4	322	5	358	5
PBW 826 (C)	421	1	405	1	413	1
Mean	401		380		391	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		2.91	17.73	2.89	
Genotype (B)	N.S.		13.09	39.26	8.21	
B within A	N.S.		18.52	55.52		
A within B			16.82	50.42		
			Grains/earhead			
DBW 386	28.95	2	26.87	4	27.91	3
HD 3249 (C)	28.11	4	29.26	2	28.68	2
DBW 187 (C)	30.14	1	25.54	5	27.84	4
DBW 222 (C)	28.86	3	32.28	1	30.57	1
PBW 826 (C)	25.76	5	27.02	3	26.39	5
Mean	28.36		28.19		28.28	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.67	4.09	9.20	
Genotype (B)	N.S.		1.26	3.78	10.91	
B within A	N.S.		1.78	5.34		
A within B			1.73	5.18		
			1000 grains weight, g			
DBW 386	42.37	2	35.69	2	39.03	1
HD 3249 (C)	40.05	3	33.40	5	36.72	4
DBW 187 (C)	39.09	4	36.63	1	37.86	3
DBW 222 (C)	36.57	5	34.65	3	35.61	5
PBW 826 (C)	42.88	1	33.49	4	38.18	2
Mean	40.19		34.77		37.48	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.50	3.05	5.17	
Genotype (B)	N.S.		1.00	2.99	6.52	
B within A	N.S.		1.41	4.23		
A within B			1.36	4.07		
Date of Sowing:	18.11.2023	14.12.2023	Date of Harvesting:		23.03.2024	04.04.2024

Table 4.2.1. Central Zone		**IR-TS-DOS-TAD**			**Bilaspur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	44.03	5	37.58	5	40.81	5
MACS 6768 (C)	48.13	3	40.54	3	44.33	3
HI 1650 (C)	46.59	4	38.14	4	42.36	4
HI 1669	48.86	2	40.74	2	44.80	2
GW 322 (C)	51.59	1	43.80	1	47.69	1
Mean	47.84		40.16		44.00	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.23	1.38	2.00	
Genotype (B)		**	0.90	2.69	5.00	
B within A		N.S.	1.27	3.80		
A within B			1.16	3.47		
			Earhead/sqm			
GW 547 (I)(C)	487	4	475	4	481	4
MACS 6768 (C)	512	3	480	2	496	3
HI 1650 (C)	473	5	432	5	452	5
HI 1669	524	2	476	3	500	2
GW 322 (C)	571	1	506	1	539	1
Mean	513		474		494	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	2.62	15.92	2.05	
Genotype (B)		**	2.93	8.78	1.45	
B within A		**	4.14	12.42		
A within B			4.54	13.60		
			Grains/Earhead			
GW 547 (I)(C)	29.43	2	28.46	2.0	28.94	2
MACS 6768 (C)	28.63	3	27.97	3.0	28.30	3
HI 1650 (C)	30.50	1	29.80	1.0	30.15	1
HI 1669	25.39	4	25.71	4.0	25.55	4
GW 322 (C)	22.71	5	23.37	5.0	23.04	5
Mean	27.33		27.06		27.20	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.63	3.86	9.03	
Genotype (B)		**	0.74	2.20	6.62	
B within A		N.S.	1.04	3.12		
A within B			1.13	3.37		
			1000 Grains Weight, g			
GW 547 (I)(C)	30.77	5	27.84	5.0	29.31	5
MACS 6768 (C)	32.91	3	30.19	3.0	31.55	3
HI 1650 (C)	32.37	4	29.71	4.0	31.04	4
HI 1669	36.86	2	33.53	2.0	35.20	2
GW 322 (C)	39.80	1	37.11	1.0	38.46	1
Mean	34.54		31.68		33.11	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.34	2.05	3.95	
Genotype (B)		**	0.59	1.78	4.39	
B within A		N.S.	0.84	2.52		
A within B			0.82	2.47		
Date of Sowing		11.11.2023		03.12.2023		
Date of Harvesting		11.03.2024		05.04.2024		

Table 4.2.2. Central Zone		**IR-TS-DOS-TAD**			**Gwalior**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	42.10	4	37.38	5	39.74	5
MACS 6768 (C)	51.46	2	41.80	3	46.63	2
HI 1650 (C)	49.52	3	42.56	2	46.04	3
HI 1669	41.71	5	39.28	4	40.49	4
GW 322 (C)	52.72	1	43.29	1	48.01	1
Mean	47.50		40.86		44.18	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.62	3.77	5.43	
Genotype (B)		**	1.27	3.81	7.04	
B within A		N.S.	1.80	5.39		
A within B			1.72	5.16		
			Earhead/sqm			
GW 547 (I)(C)	368	4	327	5	347	5
MACS 6768 (C)	380	1	349	3	365	3
HI 1650 (C)	378	3	352	2	365	2
HI 1669	359	5	345	4	352	4
GW 322 (C)	379	2	360	1	370	1
Mean	373		347		360	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	1.56	9.48	1.68	
Genotype (B)		**	2.82	8.46	1.92	
B within A		*	3.99	11.96		
A within B			3.89	11.68		
			Grains/Earhead			
GW 547 (I)(C)	29.82	5	31.95	2	30.88	4
MACS 6768 (C)	33.04	1	31.00	4	32.02	2
HI 1650 (C)	30.22	4	31.53	3	30.87	5
HI 1669	31.49	3	32.84	1	32.17	1
GW 322 (C)	32.65	2	30.66	5	31.65	3
Mean	31.45		31.59		31.52	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.43	2.59	5.23	
Genotype (B)		N.S.	1.04	3.13	8.12	
B within A		N.S.	1.48	4.43		
A within B			1.39	4.16		
			1000 Grains Weight, g			
GW 547 (I)(C)	38.40	4	35.87	4	37.13	4
MACS 6768 (C)	41.00	3	38.67	2	39.83	3
HI 1650 (C)	43.33	1	38.40	3	40.87	2
HI 1669	36.87	5	34.73	5	35.80	5
GW 322 (C)	42.60	2	39.20	1	40.90	1
Mean	40.44		37.37		38.91	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.17	1.02	1.66	
Genotype (B)		**	0.41	1.23	2.57	
B within A		N.S.	0.58	1.73		
A within B			0.54	1.63		
Date of Sowing		11.11.2023		09.12.2023		
Date of Harvesting		09.04.2024		12.04.2024		

Table 4.2.3. Central Zone		**IR-TS-DOS-TAD**			**Indore**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	46.27	3	42.43	5	44.35	5
MACS 6768 (C)	44.47	5	45.60	3	45.03	3
HI 1650 (C)	48.83	2	48.50	2	48.67	2
HI 1669	50.13	1	50.63	1	50.38	1
GW 322 (C)	46.00	4	44.00	4	45.00	4
Mean	47.14		46.23		46.69	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.53	3.25	4.42	
Genotype (B)		**	0.68	2.03	3.55	
B within A		N.S.	0.96	2.87		
A within B			1.01	3.02		
			Earhead/sqm			
GW 547 (I)(C)	291	3	327	3	309	3
MACS 6768 (C)	283	4	301	4	292	4
HI 1650 (C)	254	5	295	5	275	5
HI 1669	354	1	332	1	343	1
GW 322 (C)	301	2	329	2	315	2
Mean	296		317		307	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	7.74	47.08	9.77	
Genotype (B)		**	5.65	16.93	4.51	
B within A		**	7.98	23.94		
A within B			10.53	31.57		
			Grains/Earhead			
GW 547 (I)(C)	30.81	5	31.76	5.0	31.28	5
MACS 6768 (C)	32.49	3	39.50	3.0	35.99	4
HI 1650 (C)	36.29	1	38.83	4.0	37.56	2
HI 1669	31.47	4	44.22	1.0	37.85	1
GW 322 (C)	33.14	2	40.15	2.0	36.64	3
Mean	32.84		38.89		35.87	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.60	9.75	17.30	
Genotype (B)		**	0.84	2.51	5.72	
B within A		**	1.19	3.55		
A within B			1.92	5.76		
			1000 Grains Weight, g			
GW 547 (I)(C)	51.77	2	40.90	2	46.33	2
MACS 6768 (C)	48.60	3	38.57	3	43.58	3
HI 1650 (C)	53.17	1	42.43	1	47.80	1
HI 1669	45.10	5	34.60	4	39.85	4
GW 322 (C)	46.23	4	33.33	5	39.78	5
Mean	48.97		37.97		43.47	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.43	2.63	3.85	
Genotype (B)		**	0.37	1.10	2.08	
B within A		N.S.	0.52	1.56		
A within B			0.64	1.91		
Date of Sowing		10.11.2023		05.12.2023		
Date of Harvesting		18.03.2024		09.04.2024		

Table 4.2.4. Central Zone **IR-TS-DOS-TAD** **Jabalpur** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
Yield, q/ha						
GW 547 (I)(C)	38.17	5	34.28	3	36.23	4
MACS 6768 (C)	42.90	2	35.16	2	39.03	3
HI 1650 (C)	47.57	1	30.76	5	39.17	2
HI 1669	39.72	4	32.58	4	36.15	5
GW 322 (C)	42.31	3	36.56	1.00	39.44	1
Mean	42.13		33.87		38.00	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.35	2.12	3.55	
Genotype (B)		N.S.	1.06	3.18	6.83	
B within A		**	1.50	4.49		
A within B			1.38	4.15		
Earhead/sqm						
GW 547 (I)(C)	547	1	301	3	424	1
MACS 6768 (C)	431	2	280	4	356	3
HI 1650 (C)	402	4	262	5	332	5
HI 1669	343	5	346	2	345	4
GW 322 (C)	426	3	350	1	388	2
Mean	430		308		369	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	4.32	26.31	4.54	
Genotype (B)		**	4.81	14.43	3.20	
B within A		**	6.81	20.40		
A within B			7.47	22.38		
Grains/Earhead						
GW 547 (I)(C)	17.00	5	26.63	4	21.82	5
MACS 6768 (C)	26.65	2	36.72	1	31.69	1
HI 1650 (C)	25.98	3	26.83	3	26.40	3
HI 1669	27.45	1	25.93	5	26.69	2
GW 322 (C)	24.39	4	28.23	2	26.31	4
Mean	24.30		28.87		26.58	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.49	2.96	7.10	
Genotype (B)		**	0.66	1.98	6.08	
B within A		**	0.93	2.80		
A within B			0.97	2.90		
1000 Grains Weight, g						
GW 547 (I)(C)	41.03	3	42.73	2	41.88	2
MACS 6768 (C)	37.41	5	34.23	5	35.82	5
HI 1650 (C)	45.65	1	43.79	1	44.72	1
HI 1669	42.16	2	36.30	4	39.23	3
GW 322 (C)	40.83	4	37.05	3	38.94	4
Mean	41.42		38.82		40.12	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)	(A)	*	0.33	2.01	3.18	
Genotype (B)	(B)	**	0.58	1.73	3.53	
B within A		**	0.82	2.45		
A within B			0.80	2.41		
Date of Sowing		11.11.2023		09.12.2023		
Date of Harvesting		22.03.2024		02.04.2024		

Not included in pooled due to low mean yield

Table 4.2.5. Central Zone		**IR-TS-DOS-TAD**			**Junagarh**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	53.02	2	43.84	1	48.43	2
MACS 6768 (C)	48.80	3	39.83	5	44.31	3
HI 1650 (C)	45.23	4	40.20	4	42.71	5
HI 1669	44.24	5	41.69	3	42.96	4
GW 322 (C)	57.34	1	42.67	2.00	50.00	1
Mean	49.73		41.64		45.68	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.19	7.25	10.11	
Genotype (B)		**	1.02	3.06	5.46	
B within A		**	1.44	4.32		
A within B			1.76	5.26		
			Earhead/sqm			
GW 547 (I)(C)	366	3	309	2	337	2
MACS 6768 (C)	355	5	288	4	322	4
HI 1650 (C)	364	4	277	5	321	5
HI 1669	374	2	299	3	337	3
GW 322 (C)	385	1	324	1	355	1
Mean	369		300		334	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	5.25	31.96	6.08	
Genotype (B)		**	5.96	17.86	4.37	
B within A		N.S.	8.42	25.26		
A within B			9.18	27.54		
			Grains/Earhead			
GW 547 (I)(C)	31.15	2	36.04	2	33.60	2
MACS 6768 (C)	30.24	3	34.88	3	32.56	3
HI 1650 (C)	25.41	5	34.31	4	29.86	5
HI 1669	27.28	4	34.26	5	30.77	4
GW 322 (C)	38.06	1	38.44	1	38.25	1
Mean	30.43		35.59		33.01	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.24	7.56	14.57	
Genotype (B)		**	1.06	3.18	7.88	
B within A		N.S.	1.50	4.50		
A within B			1.83	5.49		
			1000 Grains Weight, g			
GW 547 (I)(C)	46.55	2	39.44	4	43.00	2
MACS 6768 (C)	45.67	3	39.84	3	42.75	3
HI 1650 (C)	48.97	1	42.56	1	45.77	1
HI 1669	43.28	4	40.83	2	42.05	4
GW 322 (C)	39.16	5	34.24	5	36.70	5
Mean	44.73		39.38		42.05	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.71	4.31	6.52	
Genotype (B)		**	0.56	1.67	3.24	
B within A		N.S.	0.79	2.36		
A within B			1.00	2.99		
Date of Sowing		08.11.2023		04.12.2023		
Date of Harvesting		22.02.2024		12.03.2024		

Table 4.2.6. Central Zone		**IR-TS-DOS-TAD**			**Powarkheda**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	51.82	3	37.55	5	44.68	4
MACS 6768 (C)	49.82	4	45.93	1	47.88	2
HI 1650 (C)	53.39	2	42.31	3	47.85	3
HI 1669	49.22	5	39.71	4	44.46	5
GW 322 (C)	57.03	1	44.66	2.00	50.84	1
Mean	52.26		42.03		47.14	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.22	1.37	1.85	
Genotype (B)		**	0.43	1.28	2.22	
B within A		**	0.61	1.81		
A within B			0.59	1.76		
			Earhead/sqm			
GW 547 (I)(C)	362	4	344	4	353	4
MACS 6768 (C)	424	1	366	3	395	2
HI 1650 (C)	380	3	306	5	343	5
HI 1669	332	5	399	1	366	3
GW 322 (C)	405	2	386	2	396	1
Mean	381		360		371	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	3.47	21.13	3.63	
Genotype (B)		**	4.70	14.08	3.10	
B within A		**	6.64	19.91		
A within B			6.88	20.63		
			Grains/Earhead			
GW 547 (I)(C)	31.62	3	26.80	5	29.21	5
MACS 6768 (C)	27.08	5	31.92	2	29.50	4
HI 1650 (C)	28.39	4	33.22	1	30.80	3
HI 1669	37.72	1	27.16	4	32.44	1
GW 322 (C)	34.45	2	30.32	3	32.39	2
Mean	31.85		29.88		30.87	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.45	2.75	5.67	
Genotype (B)		**	0.65	1.96	5.19	
B within A		**	0.92	2.77		
A within B			0.94	2.82		
			1000 Grains Weight, g			
GW 547 (I)(C)	45.33	2	40.73	2	43.03	2
MACS 6768 (C)	43.50	3	39.33	3	41.42	3
HI 1650 (C)	49.50	1	41.67	1	45.58	1
HI 1669	39.33	5	36.62	5	37.98	5
GW 322 (C)	41.00	4	38.17	4	39.58	4
Mean	43.73		39.30		41.52	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.08	0.50	0.77	
Genotype (B)		**	0.38	1.14	2.24	
B within A		**	0.54	1.61		
A within B			0.49	1.46		
Date of Sowing		11.11.2023		07.12.2023		
Date of Harvesting		15.04.2024		19.04.2024		

Table 4.2.7. Central Zone		**IR-TS-DOS-TAD**			**Udaipur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	44.92	5	45.44	4	45.18	5
MACS 6768 (C)	59.17	3	45.83	3	52.50	3
HI 1650 (C)	57.97	4	45.08	5	51.53	4
HI 1669	64.96	1	50.40	1	57.68	1
GW 322 (C)	61.51	2	48.18	2.00	54.84	2
Mean	57.71		46.98		52.35	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.66	10.12	12.30	
Genotype (B)		*	2.41	7.22	11.27	
B within A		N.S.	3.41	10.21		
A within B			3.47	10.41		
			Earhead/sqm			
GW 547 (I)(C)	398	3	269	4	333	5
MACS 6768 (C)	373	5	303	2	338	3
HI 1650 (C)	411	2	262	5	336	4
HI 1669	412	1	308	1	360	1
GW 322 (C)	388	4	303	2	345	2
Mean	396		289		342	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	8.06	49.08	9.12	
Genotype (B)		N.S.	11.84	35.49	8.47	
B within A		N.S.	16.74	50.19		
A within B			17.01	50.99		
			Grains/Earhead			
GW 547 (I)(C)	23.11	5	35.76	1	29.43	5
MACS 6768 (C)	31.94	2	31.33	5	31.64	4
HI 1650 (C)	28.23	4	35.55	2	31.89	3
HI 1669	31.38	3	33.21	3	32.29	2
GW 322 (C)	32.07	1	32.96	4	32.52	1
Mean	29.35		33.76		31.55	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.85	11.24	22.67	
Genotype (B)		N.S.	1.97	5.91	15.30	
B within A		N.S.	2.79	8.36		
A within B			3.10	9.30		
			1000 Grains Weight, g			
GW 547 (I)(C)	50.07	5	47.76	5	48.91	5
MACS 6768 (C)	50.27	2	48.73	2	49.50	2
HI 1650 (C)	50.20	4	48.47	3	49.33	3
HI 1669	50.36	1	49.52	1	49.94	1
GW 322 (C)	50.23	3	48.42	4	49.32	4
Mean	50.23		48.58		49.40	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.55	3.37	4.34	
Genotype (B)		N.S.	0.74	2.21	3.65	
B within A		N.S.	1.04	3.12		
A within B			1.08	3.25		
Date of Sowing		05.11.2023		03.12.2023		
Date of Harvesting		20.03.2024		06.04.2024		

Table 4.2.8. Central Zone **IR-TS-DOS-TAD** **Vijapur** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 547 (I)(C)	37.85	5	35.53	4	36.69	5
MACS 6768 (C)	47.63	1	43.47	1	45.55	1
HI 1650 (C)	39.25	3	39.52	2	39.39	2
HI 1669	38.90	4	39.45	3	39.18	3
GW 322 (C)	40.67	2	33.55	5.00	37.11	4
Mean	40.86		38.30		39.58	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.94	5.73	9.22	
Genotype (B)		*	1.95	5.85	12.06	
B within A		N.S.	2.76	8.27		
A within B			2.64	7.91		
			Earhead/sqm			
GW 547 (I)(C)	361	4	383	2	372	3
MACS 6768 (C)	412	1	407	1	410	1
HI 1650 (C)	326	5	342	5	334	5
HI 1669	368	3	365	4	367	4
GW 322 (C)	389	2	373	3	381	2
Mean	371		374		373	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	12.53	76.26	13.02	
Genotype (B)		*	15.17	45.47	9.97	
B within A		N.S.	21.45	64.31		
A within B			22.92	68.70		
			Grains/Earhead			
GW 547 (I)(C)	20.84	5	21.58	5	21.21	5
MACS 6768 (C)	23.30	3	26.73	1	25.02	1
HI 1650 (C)	24.55	1	23.69	2	24.12	2
HI 1669	21.64	4	22.99	4	22.31	4
GW 322 (C)	23.42	2	23.23	3	23.33	3
Mean	22.75		23.64		23.20	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.71	4.30	11.79	
Genotype (B)		N.S.	1.82	5.45	19.20	
B within A		N.S.	2.57	7.71		
A within B			2.41	7.21		
			1000 Grains Weight, g			
GW 547 (I)(C)	50.75	1	43.28	3	47.01	3
MACS 6768 (C)	50.15	2	41.30	4	45.73	4
HI 1650 (C)	49.19	4	49.60	1	49.40	1
HI 1669	49.54	3	47.47	2	48.50	2
GW 322 (C)	44.94	5	38.43	5	41.69	5
Mean	48.91		44.02		46.47	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.57	3.49	4.78	
Genotype (B)		**	1.38	4.14	7.28	
B within A		N.S.	1.95	5.86		
A within B			1.84	5.51		
Date of Sowing		10.11.2023		05.12.2023		
Date of Harvesting		05.03.2024		19.03.2024		

Not included in pooled due to low mean yield

Table 4.4.1. Central Zone			**IR-LS-DOS-TAS**		**Bilaspur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	40.42	4	35.31	4	37.87	4
HD 2932 (C)	41.86	3	36.75	3	39.31	3
CG 1029 (C)	44.35	1	41.25	1	42.80	1
HI 1634 (C)	42.82	2	37.71	2	40.26	2
HI 1674	39.75	5	33.97	5	36.86	5
Mean	41.84		37.00		39.42	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.44	2.67	4.31	
Genotype (B)		**	0.48	1.43	2.96	
B within A		N.S.	0.67	2.02		
A within B			0.75	2.24		
			Earhead/sqm			
MP 4010 (C)	455	4	393	5	424	4
HD 2932 (C)	459	3	406	4	432	3
CG 1029 (C)	512	1	440	1	476	1
HI 1634 (C)	461	2	406	3	434	2
HI 1674	368	5	436	2	402	5
Mean	451		416		434	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	8.74	53.18	7.81	
Genotype (B)		**	10.71	32.10	6.05	
B within A		**	15.14	45.40		
A within B			16.12	48.33		
			Grains/Earhead			
MP 4010 (C)	27.65	3	33.99	1	30.82	3
HD 2932 (C)	29.40	2	33.82	2	31.61	2
CG 1029 (C)	23.20	5	29.41	5	26.30	5
HI 1634 (C)	27.49	4	30.70	4	29.10	4
HI 1674	38.51	1	30.93	3	34.72	1
Mean	29.25		31.77		30.51	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.33	8.10	16.90	
Genotype (B)		**	1.20	3.59	9.62	
B within A		**	1.69	5.08		
A within B			2.02	6.05		
			1000 Grains Weight, g			
MP 4010 (C)	32.21	3	26.50	4	29.36	3
HD 2932 (C)	31.55	4	27.00	3	29.28	4
CG 1029 (C)	37.36	1	31.90	1	34.63	1
HI 1634 (C)	33.79	2	30.32	2	32.06	2
HI 1674	28.15	5	25.54	5	26.84	5
Mean	32.61		28.25		30.43	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.22	1.33	2.78	
Genotype (B)		**	0.59	1.76	4.72	
B within A		N.S.	0.83	2.49		
A within B			0.77	2.32		
Date of Sowing		03.12.2023		24.12.2023		
Date of Harvesting		04.04.2024		18.04.2024		

Table 4.4.2. Central Zone			**IR-LS-DOS-TAS**		**Gwalior**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	39.81	3	33.09	3	36.45	3
HD 2932 (C)	41.61	2	35.69	2	38.65	2
CG 1029 (C)	37.94	4	31.88	5	34.91	5
HI 1634 (C)	43.14	1	36.75	1	39.95	1
HI 1674	37.49	5	32.73	4	35.11	4
Mean	40.00		34.03		37.01	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.46	2.78	4.78	
Genotype (B)		**	0.91	2.72	6.00	
B within A		N.S.	1.28	3.84		
A within B			1.23	3.70		
			Earhead/sqm			
MP 4010 (C)	319	3	251	3	285	3
HD 2932 (C)	331	2	266	2	298	2
CG 1029 (C)	290	5	241	5	266	5
HI 1634 (C)	339	1	303	1	321	1
HI 1674	296	4	245	4	271	4
Mean	315		261		288	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	1.71	10.43	2.31	
Genotype (B)		**	4.07	12.20	3.46	
B within A		N.S.	5.76	17.26		
A within B			5.43	16.27		
			Grains/Earhead			
MP 4010 (C)	32.07	3	38.74	3	35.41	3
HD 2932 (C)	30.25	4	34.86	4	32.56	4
CG 1029 (C)	35.87	1	39.55	2	37.71	1
HI 1634 (C)	29.91	5	31.69	5	30.80	5
HI 1674	34.49	2	39.60	1	37.04	2
Mean	32.52		36.89		34.70	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.70	4.27	7.84	
Genotype (B)		**	1.08	3.23	7.61	
B within A		N.S.	1.52	4.57		
A within B			1.53	4.60		
			1000 Grains Weight, g			
MP 4010 (C)	38.93	3	34.20	3	36.57	3
HD 2932 (C)	41.67	2	38.60	1	40.13	2
CG 1029 (C)	36.53	5	33.40	5	34.97	5
HI 1634 (C)	42.53	1	38.33	2	40.43	1
HI 1674	36.67	4	33.80	4	35.23	4
Mean	39.27		35.67		37.47	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.08	0.52	0.88	
Genotype (B)		**	0.41	1.22	2.65	
B within A		N.S.	0.57	1.72		
A within B			0.52	1.56		
Date of Sowing		09.12.2023		31.12.2023		
Date of Harvesting		12.04.2024		17.04.2024		

Table 4.4.3. Central Zone			**IR-LS-DOS-TAS**		**Indore**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	39.80	5	27.87	4	33.83	5
HD 2932 (C)	44.50	2	24.77	5	34.63	4
CG 1029 (C)	42.07	4	29.70	3	35.88	3
HI 1634 (C)	42.17	3	38.50	1	40.33	2
HI 1674	47.93	1	34.67	2	41.30	1
Mean	43.29		31.10		37.20	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.41	2.52	4.31	
Genotype (B)		**	0.70	2.08	4.58	
B within A		**	0.98	2.95		
A within B			0.97	2.91		
			Earhead/sqm			
MP 4010 (C)	287	2	249	2	268	2
HD 2932 (C)	283	3	222	5	252	4
CG 1029 (C)	282	4	234	4	258	3
HI 1634 (C)	260	5	244	3	252	5
HI 1674	362	1	293	1	328	1
Mean	295		248		271	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	5.61	34.14	8.00	
Genotype (B)		**	5.27	15.80	4.76	
B within A		*	7.45	22.35		
A within B			8.71	26.12		
			Grains/Earhead			
MP 4010 (C)	35.73	3	30.81	3	33.27	3
HD 2932 (C)	41.26	1	38.52	2	39.89	2
CG 1029 (C)	32.44	4	29.97	4	31.21	4
HI 1634 (C)	39.89	2	44.30	1	42.10	1
HI 1674	29.11	5	27.28	5	28.19	5
Mean	35.69		34.18		34.93	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.97	5.91	10.77	
Genotype (B)		**	1.14	3.43	8.03	
B within A		N.S.	1.62	4.85		
A within B			1.74	5.23		
			1000 Grains Weight, g			
MP 4010 (C)	38.90	4	36.30	3	37.60	4
HD 2932 (C)	38.20	5	29.03	5	33.62	5
CG 1029 (C)	46.33	1	42.47	2	44.40	2
HI 1634 (C)	40.73	3	35.93	4	38.33	3
HI 1674	45.53	2	43.40	1	44.47	1
Mean	41.94		37.43		39.68	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.18	1.07	1.71	
Genotype (B)		**	0.41	1.22	2.52	
B within A		**	0.58	1.73		
A within B			0.55	1.63		
Date of Sowing		05.12.2023		27.12.2023		
Date of Harvesting		12.04.2024		18.04.2024		

Table 4.4.4. Central Zone			**IR-LS-DOS-TAS**		**Jabalpur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	35.58	3	33.10	1	34.34	2
HD 2932 (C)	34.98	4	30.39	3	32.68	3
CG 1029 (C)	34.11	5	27.10	5	30.61	5
HI 1634 (C)	42.35	1	32.58	2	37.47	1
HI 1674	36.03	2	29.27	4	32.65	4
Mean	36.61		30.49		33.55	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.30	1.82	3.45	
Genotype (B)		**	0.51	1.52	3.70	
B within A		**	0.72	2.15		
A within B			0.71	2.12		
			Earhead/sqm			
MP 4010 (C)	394	1	261	5	327	3
HD 2932 (C)	300	4	363	2	332	2
CG 1029 (C)	311	3	283	4	297	5
HI 1634 (C)	282	5	324	3	303	4
HI 1674	326	2	375	1	350	1
Mean	322		321		322	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	5.02	30.57	6.04	
Genotype (B)		**	8.53	25.57	6.49	
B within A		**	12.06	36.15		
A within B			11.90	35.67		
			Grains/Earhead			
MP 4010 (C)	26.36	4	30.57	1	28.47	2
HD 2932 (C)	28.45	3	20.07	5	24.26	4
CG 1029 (C)	24.18	5	23.30	3	23.74	5
HI 1634 (C)	35.29	1	28.38	2	31.84	1
HI 1674	28.84	2	20.29	4	24.57	3
Mean	28.62		24.52		26.57	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.49	2.96	7.09	
Genotype (B)		**	1.03	3.10	9.53	
B within A		**	1.46	4.38		
A within B			1.39	4.18		
			1000 Grains Weight, g			
MP 4010 (C)	34.46	5	41.53	2	38.00	5
HD 2932 (C)	41.20	3	41.73	1	41.47	2
CG 1029 (C)	45.68	1	41.07	3	43.37	1
HI 1634 (C)	42.87	2	35.46	5	39.16	3
HI 1674	38.41	4	38.65	4	38.53	4
Mean	40.52		39.69		40.11	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.29	1.79	2.84	
Genotype (B)		**	0.31	0.92	1.86	
B within A		**	0.43	1.29		
A within B			0.49	1.45		
Date of Sowing		08.12.2023		31.12.2023		
Date of Harvesting		10.04.2024		17.04.2024		

Table 4.4.5. Central Zone			**IR-LS-DOS-TAS**		**Junagarh**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	44.92	5	33.02	2	38.97	5
HD 2932 (C)	49.29	3	31.51	5	40.40	3
CG 1029 (C)	45.79	4	32.48	3	39.13	4
HI 1634 (C)	50.40	2	31.84	4	41.12	2
HI 1674	52.98	1	35.20	1	44.09	1
Mean	48.67		32.81		40.74	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.31	7.97	12.45	
Genotype (B)		N.S.	1.68	5.03	10.10	
B within A		N.S.	2.37	7.12		
A within B			2.50	7.48		
			Earhead/sqm			
MP 4010 (C)	373	3	297	4	335	4
HD 2932 (C)	371	4	313	2	342	2
CG 1029 (C)	363	5	277	5	320	5
HI 1634 (C)	377	2	299	3	338	3
HI 1674	392	1	318	1	355	1
Mean	375		301		338	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	7.39	44.99	8.47	
Genotype (B)		N.S.	9.64	28.91	6.99	
B within A		N.S.	13.64	40.88		
A within B			14.26	42.76		
			Grains/Earhead			
MP 4010 (C)	28.63	4	29.15	1	28.89	3
HD 2932 (C)	31.74	2	29.12	2	30.43	1
CG 1029 (C)	24.24	5	25.02	5	24.63	5
HI 1634 (C)	32.86	1	26.92	3	29.89	2
HI 1674	29.12	3	25.83	4	27.48	4
Mean	29.32		27.21		28.26	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.87	5.28	11.88	
Genotype (B)		N.S.	1.53	4.60	13.30	
B within A		N.S.	2.17	6.51		
A within B			2.13	6.37		
			1000 Grains Weight, g			
MP 4010 (C)	42.29	4	38.49	4	40.39	3
HD 2932 (C)	42.32	3	34.65	5	38.49	5
CG 1029 (C)	52.61	1	46.63	1	49.62	1
HI 1634 (C)	40.83	5	39.15	3	39.99	4
HI 1674	46.40	2	42.64	2	44.52	2
Mean	44.89		40.31		42.60	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.46	2.77	4.14	
Genotype (B)		**	0.71	2.14	4.11	
B within A		N.S.	1.01	3.03		
A within B			1.01	3.03		
Date of Sowing		04.12.2023		26.12.2023		
Date of Harvesting		12.03.2024		27.03.2024		

Table 4.4.6. Central Zone			**IR-LS-DOS-TAS**		**Powarkheda**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	35.81	5	31.05	5	33.43	5
HD 2932 (C)	46.49	1	37.82	1	42.16	1
CG 1029 (C)	42.06	2	32.88	4	37.47	3
HI 1634 (C)	39.72	3	36.52	2	38.12	2
HI 1674	38.16	4	35.22	3.00	36.69	4
Mean	40.45		34.70		37.57	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.94	5.72	9.69	
Genotype (B)		**	0.69	2.06	4.47	
B within A		*	0.97	2.91		
A within B			1.28	3.83		
			Earhead/sqm			
MP 4010 (C)	302	5	276	5	289	5
HD 2932 (C)	394	1	369	1	382	1
CG 1029 (C)	375	2	336	3	356	2
HI 1634 (C)	350	3	356	2	353	3
HI 1674	332	4	314	4	323	4
Mean	351		330		341	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	3.47	21.13	3.95	
Genotype (B)		**	4.70	14.08	3.38	
B within A		*	6.64	19.91		
A within B			6.88	20.63		
			Grains/Earhead			
MP 4010 (C)	29.41	4	29.41	3	29.41	4
HD 2932 (C)	30.69	3	28.14	4	29.42	3
CG 1029 (C)	25.21	5	23.01	5	24.11	5
HI 1634 (C)	33.05	1	31.81	2	32.43	2
HI 1674	31.97	2	33.02	1	32.49	1
Mean	30.07		29.08		29.57	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.85	5.17	11.13	
Genotype (B)		**	0.52	1.56	4.32	
B within A		N.S.	0.74	2.21		
A within B			1.08	3.22		
			1000 Grains Weight, g			
MP 4010 (C)	40.33	2	38.33	2	39.33	2
HD 2932 (C)	38.50	3	36.50	3	37.50	3
CG 1029 (C)	44.50	1	42.50	1	43.50	1
HI 1634 (C)	34.33	5	32.33	5	33.33	5
HI 1674	36.00	4	34.00	4	35.00	4
Mean	38.73		36.73		37.73	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		#DIV/0!	0.00	0.00	0.00	
Genotype (B)		**	0.49	1.47	3.19	
B within A		N.S.	0.70	2.08		
A within B			0.62	1.86		
Date of Sowing		09.12.2023		31.12.2023		
Date of Harvesting		25.04.2024		28.04.2024		

Table 4.4.7. Central Zone			**IR-LS-DOS-TAS**		**Udaipur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	37.38	5	34.88	5	36.13	5
HD 2932 (C)	38.45	4	36.15	3	37.30	4
CG 1029 (C)	45.67	3	35.24	4	40.46	3
HI 1634 (C)	56.35	1	45.40	1	50.87	1
HI 1674	52.38	2	38.10	2.00	45.24	2
Mean	46.05		37.95		42.00	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.22	7.43	11.25	
Genotype (B)		**	1.51	4.53	8.82	
B within A		*	2.14	6.41		
A within B			2.27	6.80		
			Earhead/sqm			
MP 4010 (C)	317	3	215	5	266	4
HD 2932 (C)	285	5	240	4	263	5
CG 1029 (C)	321	2	255	2	288	2
HI 1634 (C)	324	1	273	1	299	1
HI 1674	310	4	253	3	281	3
Mean	311		247		279	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	9.20	56.00	12.76	
Genotype (B)		N.S.	9.46	28.37	8.30	
B within A		N.S.	13.38	40.12		
A within B			15.10	45.26		
			Grains/Earhead			
MP 4010 (C)	28.46	5	42.59	1	35.53	3
HD 2932 (C)	32.48	4	37.09	4	34.78	4
CG 1029 (C)	33.07	3	34.18	5	33.63	5
HI 1634 (C)	40.41	1	40.99	2	40.70	1
HI 1674	39.83	2	37.37	3	38.60	2
Mean	34.85		38.44		36.65	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.17	1.01	1.75	
Genotype (B)		N.S.	1.81	5.44	12.13	
B within A		*	2.57	7.69		
A within B			2.30	6.90		
			1000 Grains Weight, g			
MP 4010 (C)	41.40	5	38.21	5	39.80	5
HD 2932 (C)	41.77	4	41.17	1	41.47	4
CG 1029 (C)	43.00	2	41.03	2	42.02	1
HI 1634 (C)	43.20	1	40.71	3	41.96	2
HI 1674	42.60	3	40.53	4	41.57	3
Mean	42.39		40.33		41.36	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.62	3.76	5.78	
Genotype (B)		N.S.	0.80	2.40	4.75	
B within A		N.S.	1.13	3.40		
A within B			1.19	3.56		
Date of Sowing		09.12.2023		26.12.2023		
Date of Harvesting		10.04.2024		19.04.2024		

Table 4.4.8. Central Zone			**IR-LS-DOS-TAS**		**Vijapur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very late	Rk		
			Yield, q/ha			
MP 4010 (C)	36.31	5	28.35	5	32.33	5
HD 2932 (C)	43.14	2	30.69	4	36.91	3
CG 1029 (C)	42.43	3	35.63	1	39.03	1
HI 1634 (C)	37.91	4	31.33	3	34.62	4
HI 1674	43.19	1	32.43	2.00	37.81	2
Mean	40.60		31.69		36.14	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.76	4.61	8.13	
Genotype (B)		*	1.48	4.43	10.02	
B within A		N.S.	2.09	6.27		
A within B			2.02	6.05		
			Earhead/sqm			
MP 4010 (C)	390	1	393	1	391	1
HD 2932 (C)	388	2	369	3	379	2
CG 1029 (C)	308	5	343	5	326	5
HI 1634 (C)	348	3	375	2	361	3
HI 1674	347	4	361	4	354	4
Mean	356		368		362	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	10.25	62.38	10.96	
Genotype (B)		N.S.	14.84	44.48	10.03	
B within A		N.S.	20.98	62.90		
A within B			21.38	64.11		
			Grains/Earhead			
MP 4010 (C)	23.49	5	22.91	2	23.20	4
HD 2932 (C)	27.11	1	25.12	1	26.11	1
CG 1029 (C)	25.35	3	21.36	4	23.36	3
HI 1634 (C)	25.00	4	20.72	5	22.86	5
HI 1674	25.61	2	22.14	3	23.87	2
Mean	25.31		22.45		23.88	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)	(A)	N.S.	0.69	4.18	11.14	
Genotype (B)	(B)	N.S.	1.18	3.54	12.13	
B within A		N.S.	1.67	5.01		
A within B			1.65	4.93		
			1000 Grains Weight, g			
MP 4010 (C)	39.57	5	31.43	5	35.50	5
HD 2932 (C)	41.50	4	33.10	4	37.30	4
CG 1029 (C)	54.67	1	48.76	1	51.72	1
HI 1634 (C)	44.32	3	40.79	2	42.56	3
HI 1674	49.09	2	40.49	3	44.79	2
Mean	45.83		38.91		42.37	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.70	4.24	6.36	
Genotype (B)		**	1.18	3.55	6.84	
B within A		N.S.	1.67	5.02		
A within B			1.65	4.95		
Date of Sowing		05.12.2023		20.12.2023		
Date of Harvesting		19.03.2024		02.04.2024		

Table 4.6.1. Central Zone			**RIR-TS-TAD**				**Bilaspur**	**2023-24**
Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
					Yield, q/ha			
DBW 110 (C)	35.19	4	36.88	4	38.24	4	36.77	4
HI 1655 (C)	36.32	3	38.02	3	39.37	3	37.90	3
DBW 441[M]	37.08	2	38.77	2	40.13	2	38.66	2
DBW 359 (I)(C)	33.80	5	35.49	5	36.85	5	35.38	5
CG 1036 (C)	38.40	1	40.09	1	41.45	1	39.98	1
Mean	36.16		37.85		39.208		37.74	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.32	0.96	3.27			
Genotype (B)		**	0.39	0.95	3.11			
B within A		N.S.	0.68	1.64				
A within B			0.68	1.66				
					Earhead/sqm			
DBW 110 (C)	362	4	384	5	406	4	384	4
HI 1655 (C)	371	3	388	3	418	3	392	3
DBW 441[M]	375	2	400	2	422	2	399	2
DBW 359 (I)(C)	354	5	385	4	393	5	377	5
CG 1036 (C)	386	1	412	1	430	1	409	1
Mean	370		394		414		392	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	1.67	5.03	1.65			
Genotype (B)		**	2.29	5.55	1.75			
B within A		N.S.	3.97	9.61				
A within B			3.92	9.50				
					Grains/Earhead			
DBW 110 (C)	35.12	1	33.58	1	29.30	1	32.7	1
HI 1655 (C)	34.21	3	33.29	2	28.96	3	32.1	2
DBW 441[M]	32.68	4	29.68	4	26.47	4	29.6	4
DBW 359 (I)(C)	34.72	2	31.68	3	29.27	2	31.9	3
CG 1036 (C)	32.66	5	28.57	5	25.69	5	29.0	5
Mean	33.88		31.36		27.94		31.1	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.19	0.58	2.38			
Genotype (B)		**	0.55	1.33	5.31			
B within A		N.S.	0.95	2.31				
A within B			0.87	2.11				
					1000 Grains Weight, g			
DBW 110 (C)	27.67	4	28.63	5	32.12	4	29.5	5
HI 1655 (C)	28.62	3	29.50	3	32.52	3	30.2	3
DBW 441[M]	30.27	2	32.67	2	35.98	2	33.0	2
DBW 359 (I)(C)	27.55	5	29.17	4	32.01	5	29.6	4
CG 1036 (C)	30.54	1	34.12	1	37.55	1	34.1	1
Mean	28.93		30.82		34.04		31.3	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.18	0.54	2.24			
Genotype (B)		**	0.32	0.78	3.09			
B within A		N.S.	0.56	1.35				
A within B			0.53	1.28				
Date of Sowing		02.11.2023						
Date of Harvesting		27.02.2024						

Table 4.6.2. Central Zone **RIR-TS-TAD** **Gwalior** **2023-24**

Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
					Yield, q/ha			
DBW 110 (C)	32.20	3	36.51	3	41.00	3	36.57	3
HI 1655 (C)	27.78	5	30.04	5	32.62	5	30.15	5
DBW 441^{M}	30.67	4	34.63	4	38.48	4	34.59	4
DBW 359 (I)(C)	34.37	2	38.79	2	41.95	2	38.37	2
CG 1036 (C)	39.01	1	43.78	1	44.65	1	42.48	1
Mean	32.81		36.75		39.74		36.43	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.23	0.70	2.46			
Genotype (B)		**	0.47	1.15	3.91			
B within A		N.S.	0.82	1.99				
A within B			0.77	1.87				
					Earhead/sqm			
DBW 110 (C)	304	3	328	3	347	3	326	3
HI 1655 (C)	263	5	307	5	327	5	299	5
DBW 441^{M}	300	4	323	4	337	4	320	4
DBW 359 (I)(C)	319	2	341	2	352	2	337	2
CG 1036 (C)	322	1	348	1	363	1	344	1
Mean	301		329		345		325	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	3.90	11.77	4.65			
Genotype (B)		**	4.07	9.85	3.75			
B within A		N.S.	7.05	17.06				
A within B			7.42	17.94				
					Grains/Earhead			
DBW 110 (C)	31.98	4	31.27	3	30.28	2	31.18	4
HI 1655 (C)	35.70	1	31.04	4	29.78	3	32.17	1
DBW 441^{M}	32.84	3	31.30	2	30.56	1	31.56	3
DBW 359 (I)(C)	30.81	5	30.04	5	29.64	4	30.16	5
CG 1036 (C)	33.40	2	32.21	1	29.31	5	31.64	2
Mean	32.95		31.17		29.91		31.34	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		*	0.58	1.74	7.11			
Genotype (B)		N.S.	0.54	1.31	5.20			
B within A		N.S.	0.94	2.28				
A within B			1.02	2.47				
					1000 Grains Weight, g			
DBW 110 (C)	33.20	3	35.60	3	39.07	3	35.96	3
HI 1655 (C)	29.60	5	31.60	5	33.53	5	31.58	5
DBW 441^{M}	31.27	4	34.27	4	37.33	4	34.29	4
DBW 359 (I)(C)	35.13	2	37.97	2	40.20	2	37.77	2
CG 1036 (C)	36.40	1	39.07	1	41.93	1	39.13	1
Mean	33.12		35.70		38.41		35.74	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.17	0.52	1.87			
Genotype (B)		**	0.34	0.82	2.84			
B within A		N.S.	0.59	1.42				
A within B			0.55	1.34				
Date of Sowing		11.11.2023						
Date of Harvesting		10.04.2024						

Table 4.6.3. Central Zone **RIR-TS-TAD** **Indore** **2023-24**

Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
				Yield, q/ha				
DBW 110 (C)	33.03	2	32.60	3	37.73	4	34.46	2
HI 1655 (C)	28.33	5	31.33	5	37.90	3	32.52	4
DBW 441^{M}	31.37	3	33.87	2	38.03	2	34.42	3
DBW 359 (I)(C)	37.63	1	36.17	1	38.63	1	37.48	1
CG 1036 (C)	30.57	4	31.83	4	32.40	5	31.60	5
Mean	32.19		33.16		36.94		34.10	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.52	1.58	5.94			
Genotype (B)		**	0.67	1.61	5.87			
B within A		*	1.16	2.80				
A within B			1.16	2.80				
				Earhead/sqm				
DBW 110 (C)	236	3	260	2	289	2	261	2
HI 1655 (C)	213	5	238	5	278	4	243	5
DBW 441^{M}	241	2	245	4	287	3	258	3
DBW 359 (I)(C)	255	1	261	1	296	1	271	1
CG 1036 (C)	232	4	252	3	263	5	249	4
Mean	235		251		283		256	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	1.12	3.37	1.69			
Genotype (B)		N.S.	9.25	22.39	10.83			
B within A		N.S.	16.03	38.78				
A within B			14.38	34.79				
				Grains/Earhead				
DBW 110 (C)	29.88	3	26.49	4	27.46	2	27.95	3
HI 1655 (C)	32.74	2	29.88	2	29.05	1	30.56	1
DBW 441^{M}	29.15	4	28.62	3	26.04	4	27.94	4
DBW 359 (I)(C)	33.30	1	31.29	1	26.50	3	30.36	2
CG 1036 (C)	28.55	5	26.12	5	24.91	5	26.52	5
Mean	30.73		28.48		26.79		28.67	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		*	0.66	1.99	8.90			
Genotype (B)		N.S.	1.20	2.91	12.60			
B within A		N.S.	2.09	5.05				
A within B			1.98	4.79				
				1000 Grains Weight, g				
DBW 110 (C)	47.10	1	47.43	3	47.83	4	47.46	3
HI 1655 (C)	41.57	5	44.27	5	47.10	5	44.31	5
DBW 441^{M}	45.27	3	48.37	2	50.87	1	48.17	2
DBW 359 (I)(C)	45.10	4	44.50	4	49.57	3	46.39	4
CG 1036 (C)	46.77	2	48.67	1	49.73	2	48.39	1
Mean	45.16		46.65		49.02		46.94	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.18	0.54	1.47			
Genotype (B)		**	0.33	0.79	2.08			
B within A		**	0.56	1.37				
A within B			0.54	1.30				
Date of Sowing		04.11.2023						
Date of Harvesting		13.03.2024						

Table 4.6.4. Central Zone **RIR-TS-TAD** **Jabalpur** **2023-24**

Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
				Yield, q/ha				
DBW 110 (C)	37.62	3	45.89	1	46.88	4	43.46	3
HI 1655 (C)	27.75	5	38.99	4	39.67	5	35.47	5
DBW 441^{M}	34.33	4	35.87	5	48.71	2	39.64	4
DBW 359 (I)(C)	40.68	2	43.59	2	47.03	3	43.77	2
CG 1036 (C)	41.04	1	42.31	3.00	49.83	1.00	44.40	1
Mean	36.29		41.33		46.42		41.35	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.43	1.30	4.05			
Genotype (B)		**	0.58	1.41	4.22			
B within A		**	1.01	2.44				
A within B			1.00	2.42				
				Earhead/sqm				
DBW 110 (C)	310	4	300	4	330	4	313	4
HI 1655 (C)	298	5	288	5	318	5	301	5
DBW 441^{M}	496	1	486	2	516	2	499	2
DBW 359 (I)(C)	494	2	504	1	524	1	508	1
CG 1036 (C)	418	3	408	3	438	3	421	3
Mean	403		397		425		409	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		#DIV/0!	0.00	0.00	0.00			
Genotype (B)		**	2.01	4.87	1.48			
B within A		N.S.	3.48	8.43				
A within B			3.11	7.54				
				Grains/Earhead				
DBW 110 (C)	27.62	1	37.24	1	34.52	2	33.13	1
HI 1655 (C)	23.54	2	34.42	2	35.41	1	31.12	2
DBW 441^{M}	16.53	5	16.76	5	22.33	4	18.54	5
DBW 359 (I)(C)	19.68	4	21.00	4	21.10	5	20.59	4
CG 1036 (C)	21.61	3	22.25	3	26.91	3	23.59	3
Mean	21.80		26.33		28.06		25.39	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.34	1.01	5.11			
Genotype (B)		**	0.47	1.13	5.51			
B within A		**	0.81	1.96				
A within B			0.80	1.93				
				1000 Grains Weight, g				
DBW 110 (C)	43.91	2	41.08	4	41.17	4	42.05	3
HI 1655 (C)	39.68	5	39.42	5	35.30	5	38.14	5
DBW 441^{M}	41.88	3	44.05	2	42.41	2	42.78	2
DBW 359 (I)(C)	41.80	4	41.17	3	42.51	1	41.83	4
CG 1036 (C)	45.47	1	46.69	1	42.31	3	44.82	1
Mean	42.55		42.48		40.74		41.92	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.22	0.65	1.99			
Genotype (B)		**	0.38	0.92	2.72			
B within A		**	0.66	1.59				
A within B			0.63	1.52				
Date of Sowing		05.11.2023						
Date of Harvesting		13.03.2024						

Table 4.6.5. Central Zone **RIR-TS-TAD** **Powarkheda** **2023-24**

Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
				Yield, q/ha				
DBW 110 (C)	20.28	4	34.52	1	37.47	2	30.76	3
HI 1655 (C)	22.62	3	30.36	4	33.66	4	28.88	4
DBW 441^{M}	25.00	2	31.55	3	38.86	1	31.80	2
DBW 359 (I)(C)	27.90	1	33.21	2	34.69	3	31.93	1
CG 1036 (C)	19.33	5	29.17	5.00	32.31	5.00	26.93	5
Mean	23.02		31.76		35.40		30.06	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.32	0.96	4.09			
Genotype (B)		**	0.22	0.53	2.17			
B within A		**	0.38	0.91				
A within B			0.46	1.12				
				Earhead/sqm				
DBW 110 (C)	222	5	282	2	269	5	258	5
HI 1655 (C)	255	4	279	3	288	2	274	3
DBW 441^{M}	288	1	270	4	282	3	280	2
DBW 359 (I)(C)	265	3	264	5	274	4	268	4
CG 1036 (C)	281	2	300	1	307	1	296	1
Mean	262		279		284		275	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		N.S.	5.15	15.51	7.25			
Genotype (B)		**	2.44	5.91	2.67			
B within A		**	4.23	10.24				
A within B			6.39	15.46				
				Grains/Earhead				
DBW 110 (C)	31.14	3	36.31	1	39.62	1	35.69	1
HI 1655 (C)	32.20	2	32.80	3	32.76	3	32.59	3
DBW 441^{M}	27.27	4	31.77	4	36.87	2	31.97	4
DBW 359 (I)(C)	34.96	1	34.72	2	32.64	4	34.11	2
CG 1036 (C)	21.37	5	27.79	5	28.83	5	26.00	5
Mean	29.39		32.68		34.15		32.07	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.56	1.69	6.76			
Genotype (B)		**	0.39	0.96	3.69			
B within A		**	0.68	1.65				
A within B			0.83	2.01				
				1000 Grains Weight, g				
DBW 110 (C)	29.47	4	33.75	4	35.17	5	32.79	4
HI 1655 (C)	27.67	5	33.25	5	35.75	4	32.22	5
DBW 441^{M}	31.80	2	36.77	1	37.42	2	35.33	1
DBW 359 (I)(C)	30.17	3	36.30	2	38.83	1	35.10	2
CG 1036 (C)	32.23	1	35.00	3	36.52	3	34.58	3
Mean	30.27		35.01		36.74		34.01	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.19	0.56	2.12			
Genotype (B)		**	0.13	0.33	1.19			
B within A		**	0.23	0.56				
A within B			0.28	0.68				
Date of Sowing		05.11.2023						
Date of Harvesting		31.03.2024						

Table 4.6.6. Central Zone **RIR-TS-TAD** **Udaipur** **2023-24**

Genotype	Number of Irrigation						Mean	Rk
	No	Rk	One	Rk	Two	Rk		
				Yield, q/ha				
DBW 110 (C)	26.47	4	33.06	4	38.57	4	32.70	4
HI 1655 (C)	31.86	1	42.66	1	49.60	1	41.37	1
DBW 441^{M}	22.66	5	30.59	5	35.68	5	29.64	5
DBW 359 (I)(C)	29.37	2	37.50	2	46.75	2	37.87	2
CG 1036 (C)	27.94	3	33.73	3.00	39.76	3.00	33.81	3
Mean	27.66		35.51		42.07		35.08	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.98	2.95	10.81			
Genotype (B)		**	1.48	3.59	12.68			
B within A		N.S.	2.57	6.21				
A within B			2.50	6.04				
				Earhead/sqm				
DBW 110 (C)	257	4	293	4	309	4	286	4
HI 1655 (C)	324	1	348	1	347	1	340	1
DBW 441^{M}	249	5	291	5	298	5	279	5
DBW 359 (I)(C)	303	2	329	2	332	2	321	2
CG 1036 (C)	298	3	314	3	323	3	312	3
Mean	286		315		322		308	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		*	6.89	20.76	8.67			
Genotype (B)		**	8.43	20.39	8.22			
B within A		N.S.	14.60	35.32				
A within B			14.76	35.72				
				Grains/Earhead				
DBW 110 (C)	27.26	1	25.97	2	27.57	3	26.93	1
HI 1655 (C)	23.73	5	26.27	1	28.65	2	26.22	3
DBW 441^{M}	24.01	3	24.93	5	25.71	5	24.88	5
DBW 359 (I)(C)	24.17	2	24.96	4	29.81	1	26.32	2
CG 1036 (C)	23.84	4	25.69	3	27.30	4	25.61	4
Mean	24.60		25.57		27.81		25.99	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		N.S.	1.26	3.79	18.75			
Genotype (B)		N.S.	1.51	3.66	17.47			
B within A		N.S.	2.62	6.34				
A within B			2.66	6.44				
				1000 Grains Weight, g				
DBW 110 (C)	38.15	5	43.68	3	45.93	4	42.59	4
HI 1655 (C)	41.64	1	47.03	1	49.87	1	46.18	1
DBW 441^{M}	38.33	4	42.38	5	46.79	3	42.50	5
DBW 359 (I)(C)	40.39	2	45.61	2	47.46	2	44.49	2
CG 1036 (C)	39.72	3	42.97	4	45.39	5	42.69	3
Mean	39.65		44.34		47.09		43.69	
		F. Test	SEm	CD (0.05)	CV (%)			
Irrigation (A)		**	0.53	1.59	4.67			
Genotype (B)		**	0.66	1.60	4.55			
B within A		N.S.	1.15	2.77				
A within B			1.15	2.79				
Date of Sowing		05.11.2023						
Date of Harvesting		08.03.2024						

Table 4.8.1. Central Zone			**SPL-IR-ES-HYPT**		**BISA Jabalpur**	**2023-24**
Genotype	Nutrients Management				Mean	Rk
	100% RFD	Rk	150% RFD+FYM	Rk		
			Yield, q/ha			
CG 1044	62.10	6	66.38	5	64.24	5
DBW 377 (I)(C)	72.47	1	75.41	1	73.94	1
DBW 187 (C)	64.32	4	69.76	4	67.04	4
GW 543	64.88	3	72.66	3	68.77	3
GW 322 (C)	62.47	5	65.32	6	63.90	6
DBW 303 (C)	67.35	2	74.59	2	70.97	2
Mean	65.60		70.69		68.14	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	0.55	2.28	3.44	
Genotype (B)		**	1.53	3.73	5.50	
B within A		N.S.	2.16	5.27		
A within B			2.05	5.00		
			Earhead/sqm			
CG 1044	442	3	432	4	437	3
DBW 377 (I)(C)	457	2	440	2	448	2
DBW 187 (C)	480	1	448	1	464	1
GW 543	402	5	440	2	421	5
GW 322 (C)	422	4	427	6	424	4
DBW 303 (C)	365	6	432	4	398	6
Mean	428		436		432	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	7.32	30.21	7.18	
Genotype (B)		N.S.	19.23	46.92	10.90	
B within A		N.S.	27.20	66.36		
A within B			25.89	63.15		
			Grains/Earhead			
CG 1044	30.61	5	37.75	3	34.18	3
DBW 377 (I)(C)	32.34	4	35.28	4	33.81	4
DBW 187 (C)	26.97	6	33.06	6	30.01	6
GW 543	32.69	3	33.60	5	33.14	5
GW 322 (C)	35.28	2	38.51	2	36.89	2
DBW 303 (C)	41.97	1	40.93	1	41.45	1
Mean	33.31		36.52		34.91	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	1.09	4.51	13.26	
Genotype (B)		**	1.87	4.55	13.09	
B within A		N.S.	2.64	6.44		
A within B			2.64	6.45		

1000 Grains Weight, g						
CG 1044	46.13	4	41.33	5	43.73	4
DBW 377 (I)(C)	49.13	3	49.93	1	49.53	2
DBW 187 (C)	49.87	1	49.27	3	49.57	1
GW 543	49.47	2	49.60	2	49.53	2
GW 322 (C)	42.47	6	39.80	6	41.13	6
DBW 303 (C)	44.60	5	42.27	4	43.43	5
Mean	46.94		45.37		46.16	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.86	3.56	7.93	
Genotype (B)		**	1.24	3.02	6.57	
B within A		N.S.	1.75	4.27		
A within B			1.82	4.43		
Plant Height, cm						
CG 1044	107.51	1	97.47	1	102.49	1
DBW 377 (I)(C)	98.14	5	90.44	3	94.29	3
DBW 187 (C)	99.89	3	95.48	2	97.68	2
GW 543	96.56	6	89.16	5	92.86	5
GW 322 (C)	98.76	4	89.78	4	94.27	4
DBW 303 (C)	100.38	2	83.74	6	92.06	6
Mean	100.21		91.01		95.61	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	1.18	4.86	5.22	
Genotype (B)		*	2.04	4.97	5.22	
B within A		N.S.	2.88	7.03		
A within B			2.88	7.03		
Date of Sowing		04.11.2023				
Date of Harvesting		07.04.2024				

Table 4.8.2. Central Zone **SPL-IR-ES-HYPT** **Jabalpur** **2023-24**

Genotype	Nutrients Management				Mean	Rk
	100% RFD	Rk	150% RFD+FYM	Rk		
Yield, q/ha						
CG 1044	49.96	5	52.25	5	51.11	5
DBW 377 (I)(C)	65.29	1	70.21	2	67.75	1
DBW 187 (C)	54.00	4	49.66	6	51.83	4
GW 543	62.66	2	69.34	3	66.00	2
GW 322 (C)	40.63	6	52.54	4	46.59	6
DBW 303 (C)	54.64	3	71.34	1	62.99	3
Mean	54.53		60.89		57.71	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	0.52	2.16	3.85	
Genotype (B)		**	1.36	3.32	5.77	
B within A		**	1.92	4.69		
A within B			1.83	4.47		

			Earhead/sqm			
CG 1044	517	2	457	5	487	5
DBW 377 (I)(C)	475	4	543	2	509	1
DBW 187 (C)	494	3	518	4	506	2
GW 543	459	5	553	1	506	3
GW 322 (C)	539	1	406	6	472	6
DBW 303 (C)	457	6	524	3	491	4
Mean	490		500		495	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	4.84	19.98	4.15	
Genotype (B)		N.S.	9.43	23.01	4.67	
B within A		**	13.34	32.54		
A within B			13.10	31.97		
			Grains/Earhead			
CG 1044	23.85	5	28.93	5	26.39	5
DBW 377 (I)(C)	32.67	1	31.66	3	32.16	2
DBW 187 (C)	26.36	4	21.59	6	23.97	6
GW 543	32.13	2	29.66	4	30.90	3
GW 322 (C)	18.33	6	35.74	1	27.04	4
DBW 303 (C)	31.76	3	32.62	2	32.19	1
Mean	27.52		30.03		28.78	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.54	2.25	8.02	
Genotype (B)		**	1.08	2.63	9.17	
B within A		**	1.52	3.71		
A within B			1.49	3.64		
			1000 Grains Weight, g			
CG 1044	40.59	5	39.56	5	40.07	4
DBW 377 (I)(C)	42.36	2	40.90	4	41.63	3
DBW 187 (C)	41.48	3	44.91	1	43.20	1
GW 543	42.50	1	42.29	2	42.40	2
GW 322 (C)	41.14	4	36.26	6	38.70	6
DBW 303 (C)	37.82	6	41.88	3	39.85	5
Mean	40.98		40.97		40.97	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.19	0.78	1.95	
Genotype (B)		**	0.51	1.25	3.06	
B within A		**	0.72	1.76		
A within B			0.69	1.67		

Plant Height, cm						
CG 1044	104.93	1	105.67	1	105.30	1
DBW 377 (I)(C)	94.80	4	96.53	3	95.67	3
DBW 187 (C)	100.80	2	100.73	2	100.77	2
GW 543	93.20	5	93.73	5	93.47	5
GW 322 (C)	91.40	6	91.73	6	91.57	6
DBW 303 (C)	95.13	3	96.07	4	95.60	4
Mean	96.71		97.41		97.06	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.66	2.73	2.88	
Genotype (B)		**	1.07	2.62	2.71	
B within A		N.S.	1.52	3.70		
A within B			1.53	3.74		
Date of Sowing		14.11.2023				
Date of Harvesting		07.04.2024				

Table 4.8.3. Central Zone **SPL-IR-ES-HYPT** **Powarkheda** **2023-24**

Genotype	Nutrients Management				Mean	Rk
	100% RFD	Rk	150% RFD+FYM	Rk		
Yield, q/ha						
CG 1044	52.06	2	61.14	3	56.60	2
DBW 377 (I)(C)	51.57	4	58.16	6	54.86	5
DBW 187 (C)	51.72	3	60.61	4	56.16	3
GW 543	46.03	6	64.96	1	55.50	4
GW 322 (C)	47.84	5	59.70	5	53.77	6
DBW 303 (C)	54.95	1	62.40	2	58.67	1
Mean	50.70		61.16		55.93	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		**	0.20	0.82	1.50	
Genotype (B)		**	0.75	1.84	3.30	
B within A		**	1.07	2.60		
A within B			0.99	2.42		
Earhead/sqm						
CG 1044	367	3	397	3	382	3
DBW 377 (I)(C)	346	5	436	2	391	2
DBW 187 (C)	359	4	351	5	355	5
GW 543	334	6	339	6	336	6
GW 322 (C)	385	1	526	1	456	1
DBW 303 (C)	372	2	370	4	371	4
Mean	360		403		382	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	5.46	22.54	6.06	
Genotype (B)		**	5.81	14.18	3.73	
B within A		**	8.22	20.05		
A within B			9.28	22.63		

			Grains/Earhead			
CG 1044	31.65	3	31.80	4	31.73	4
DBW 377 (I)(C)	31.90	2	28.31	5	30.10	5
DBW 187 (C)	31.23	4	32.70	3	31.96	3
GW 543	28.78	6	38.06	1	33.42	2
GW 322 (C)	30.33	5	25.37	6	27.85	6
DBW 303 (C)	34.76	1	36.31	2	35.54	1
Mean	31.44		32.09		31.77	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.43	1.76	5.70	
Genotype (B)		**	0.59	1.44	4.55	
B within A		**	0.84	2.04		
A within B			0.87	2.13		
			1000 Grains Weight, g			
CG 1044	44.83	4	48.50	3	46.67	4
DBW 377 (I)(C)	46.77	2	47.25	4	47.01	3
DBW 187 (C)	46.22	3	52.83	1	49.53	1
GW 543	48.00	1	50.33	2	49.17	2
GW 322 (C)	41.00	6	44.83	6	42.92	6
DBW 303 (C)	42.50	5	46.50	5	44.50	5
Mean	44.89		48.38		46.63	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		**	0.22	0.90	1.97	
Genotype (B)		**	0.19	0.47	1.00	
B within A		**	0.27	0.66		
A within B			0.33	0.80		
			Plant Height, cm			
CG 1044	104.00	1	99.00	1	101.50	1
DBW 377 (I)(C)	87.67	3	77.67	3	82.67	2
DBW 187 (C)	86.00	5	77.67	3	81.83	5
GW 543	87.00	4	78.00	2	82.50	3
GW 322 (C)	85.33	6	76.33	5	80.83	6
DBW 303 (C)	88.67	2	76.00	6	82.33	4
Mean	89.78		80.78		85.28	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	0.83	3.42	4.12	
Genotype (B)		**	1.41	3.44	4.05	
B within A		N.S.	1.99	4.86		
A within B			2.00	4.88		
Date of Sowing		05.11.2023				
Date of Harvesting		01.04.2024				

Table 4.8.4. Central Zone	**SPL-IR-ES-HYPT**				**Udaipur**	**2023-24**
Genotype	Nutrients Management				Mean	Rk
	100% RFD	Rk	150% RFD+FYM	Rk		
			Yield, q/ha			
CG 1044	55.64	5	76.39	4	66.01	4
DBW 377 (I)(C)	56.03	3	81.47	3	68.75	3
DBW 187 (C)	71.47	1	84.21	1	77.84	1
GW 543	55.67	4	75.00	5	65.34	5
GW 322 (C)	67.14	2	83.37	2	75.26	2
DBW 303 (C)	52.94	6	72.82	6	62.88	6
Mean	59.81		78.88		69.35	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		**	0.75	3.11	4.61	
Genotype (B)		**	2.78	6.78	9.82	
B within A		N.S.	3.93	9.59		
A within B			3.67	8.94		
			Earhead/sqm			
CG 1044	378	5	439	4	408	4
DBW 377 (I)(C)	408	3	473	3	440	3
DBW 187 (C)	421	1	489	1	455	1
GW 543	379	4	428	5	403	5
GW 322 (C)	411	2	487	2	449	2
DBW 303 (C)	331	6	358	6	344	6
Mean	388		445		417	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	13.79	56.95	14.04	
Genotype (B)		*	21.34	52.05	12.55	
B within A		N.S.	30.18	73.61		
A within B			30.81	75.15		
			Grains/Earhead			
CG 1044	28.25	5	33.50	4	30.87	5
DBW 377 (I)(C)	29.99	4	34.18	3	32.08	3
DBW 187 (C)	31.05	3	32.41	5	31.73	4
GW 543	25.68	6	31.79	6	28.74	6
GW 322 (C)	38.92	1	34.74	2	36.83	1
DBW 303 (C)	33.71	2	37.11	1	35.41	2
Mean	31.27		33.95		32.61	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.85	3.53	11.11	
Genotype (B)		*	1.74	4.24	13.04	
B within A		N.S.	2.46	5.99		
A within B			2.40	5.85		

			1000 Grains Weight, g			
CG 1044	52.24	3	52.18	4	52.21	3
DBW 377 (I)(C)	45.74	5	51.46	5	48.60	5
DBW 187 (C)	54.90	2	54.06	3	54.48	2
GW 543	57.52	1	56.49	1	57.01	1
GW 322 (C)	43.39	6	49.40	6	46.40	6
DBW 303 (C)	48.35	4	55.05	2	51.70	4
Mean	50.36		53.11		51.73	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.45	1.88	3.73	
Genotype (B)		**	0.68	1.66	3.22	
B within A		**	0.96	2.35		
A within B			0.99	2.41		
			Plant Height, cm			
CG 1044	93.67	1	98.27	1	95.97	1
DBW 377 (I)(C)	84.67	5	90.53	3	87.60	4
DBW 187 (C)	90.87	3	90.93	2	90.90	2
GW 543	84.13	6	88.33	5	86.23	5
GW 322 (C)	85.33	4	85.67	6	85.50	6
DBW 303 (C)	91.13	2	89.00	4	90.07	3
Mean	88.30		90.46		89.38	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	1.62	6.71	7.71	
Genotype (B)		N.S.	3.04	7.42	8.34	
B within A		N.S.	4.30	10.50		
A within B			4.25	10.37		
Date of Sowing		10.11.2023				
Date of Harvesting		25.03.2024				

Table 4.8.5. Central Zone **SPL-IR-ES-HYPT** **Vijapur** **2023-24**

Genotype	Nutrients Management				Mean	Rk
	100% RFD	Rk	150% RFD+FYM	Rk		
			Yield, q/ha			
CG 1044	51.91	3	58.40	6	55.15	4
DBW 377 (I)(C)	49.18	5	61.13	2	55.15	4
DBW 187 (C)	55.44	1	59.74	4	57.59	2
GW 543	53.90	2	61.37	1	57.63	1
GW 322 (C)	48.50	6	59.71	5	54.10	6
DBW 303 (C)	51.61	4	60.56	3	56.09	3
Mean	51.76		60.15		55.95	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	1.33	5.50	10.10	
Genotype (B)		N.S.	1.49	3.64	6.54	
B within A		N.S.	2.11	5.15		
A within B			2.34	5.72		

			Earhead/sqm			
CG 1044	348	5	328	5	338	5
DBW 377 (I)(C)	345	6	321	6	333	6
DBW 187 (C)	364	3	352	3	358	4
GW 543	359	4	405	1	382	2
GW 322 (C)	366	2	401	2	384	1
DBW 303 (C)	391	1	351	4	371	3
Mean	362		360		361	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	12.55	51.81	14.75	
Genotype (B)		N.S.	14.59	35.59	9.90	
B within A		N.S.	20.63	50.33		
A within B			22.63	55.21		
			Grains/Earhead			
CG 1044	27.69	5	35.35	2	31.52	2
DBW 377 (I)(C)	26.91	6	33.84	3	30.38	5
DBW 187 (C)	29.94	1	31.72	5	30.83	4
GW 543	28.03	4	30.53	6	29.28	6
GW 322 (C)	29.90	2	32.21	4	31.05	3
DBW 303 (C)	28.34	3	38.77	1	33.55	1
Mean	28.47		33.74		31.10	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		*	0.51	2.10	6.94	
Genotype (B)		N.S.	1.49	3.64	11.75	
B within A		N.S.	2.11	5.15		
A within B			1.99	4.86		

1000 Grains Weight, g						
CG 1044	54.46	1	50.47	3	52.46	3
DBW 377 (I)(C)	52.97	3	56.67	1	54.82	1
DBW 187 (C)	52.03	4	53.85	2	52.94	2
GW 543	53.50	2	49.75	4	51.63	4
GW 322 (C)	44.24	6	46.45	5	45.34	6
DBW 303 (C)	46.69	5	45.25	6	45.97	5
Mean	50.65		50.41		50.53	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	0.43	1.77	3.60	
Genotype (B)		**	0.99	2.42	4.80	
B within A		*	1.40	3.42		
A within B			1.35	3.29		
Plant Height, cm						
CG 1044	89.60	1	84.67	1	87.13	1
DBW 377 (I)(C)	79.47	6	75.80	4	77.63	5
DBW 187 (C)	86.20	2	74.40	5	80.30	3
GW 543	85.40	3	78.20	3	81.80	2
GW 322 (C)	81.27	5	78.53	2	79.90	4
DBW 303 (C)	82.00	4	70.80	6	76.40	6
Mean	83.99		77.07		80.53	
		F. Test	SEm	CD (0.05)	CV (%)	
NM (A)		N.S.	1.87	7.73	9.86	
Genotype (B)		**	1.52	3.70	4.62	
B within A		N.S.	2.15	5.24		
A within B			2.71	6.61		
Date of Sowing		04.11.2023				
Date of Harvesting		06.03.2024				

Table 5.2.1. Peninsular Zone		**IR-TS-DOS-TAD**			**Akola**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 322 (C)	68.17	5	64.14	2	66.15	4
WH 1306	70.90	4	57.14	7	64.02	6
MP 1378 (I)(C)	66.83	6	54.88	8	60.86	7
MACS 6222 (C)	63.63	7	64.98	1	64.31	5
NWS 2222	74.77	1	60.93	5	67.85	1
DBW 443	72.29	3	62.35	3	67.32	3
PBW 891	73.33	2	62.02	4	67.68	2
AKAW 5100	62.34	8	57.24	6	59.79	8
Mean	69.03		60.46		64.75	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	3.51	14.49	26.54	
Genotype (B)		*	1.71	4.11	6.47	
B within A		*	2.42	5.82		
A within B			4.17	10.04		
			Earhead/sqm			
GW 322 (C)	568	2	543	1	556	1
WH 1306	473	5	527	2	500	4
MP 1378 (I)(C)	453	7	523	3	488	5
MACS 6222 (C)	433	8	430	8	432	8
NWS 2222	580	1	457	5	518	2
DBW 443	462	6	442	6	452	7
PBW 891	480	4	433	7	457	6
AKAW 5100	518	3	490	4	504	3
Mean	496		481		488	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	9.17	37.85	9.19	
Genotype (B)		N.S.	33.78	81.25	16.94	
B within A		N.S.	47.77	114.91		
A within B			45.61	109.72		
			Grains/Earhead			
GW 322 (C)	27.90	7.00	30.44	6.0	29.17	7
WH 1306	33.41	4.00	24.89	8.0	29.15	8
MP 1378 (I)(C)	36.98	1.00	28.83	7.0	32.91	4
MACS 6222 (C)	32.82	5.00	33.14	2.0	32.98	3
NWS 2222	27.55	8.00	31.59	4.0	29.57	6
DBW 443	35.65	2.00	32.16	3.0	33.90	1
PBW 891	33.64	3.00	33.75	1.0	33.69	2
AKAW 5100	32.80	6.00	31.39	5.0	32.09	5
Mean	32.59		30.77		31.68	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.65	6.83	25.57	
Genotype (B)		N.S.	2.67	6.42	20.65	
B within A		N.S.	3.78	9.08		
A within B			3.90	9.38		

			1000 Grains Weight, g			
GW 322 (C)	43.05	6.00	39.00	6.0	41.03	6
WH 1306	45.50	5.00	43.45	4.0	44.48	5
MP 1378 (I)(C)	40.71	7.00	36.46	8.0	38.59	7
MACS 6222 (C)	46.23	4.00	46.28	1.0	46.26	1
NWS 2222	47.24	1.00	43.19	5.0	45.22	3
DBW 443	46.53	2.00	45.12	2.0	45.83	2
PBW 891	46.33	3.00	44.03	3.0	45.18	4
AKAW 5100	38.52	8.00	37.28	7.0	37.90	8
Mean	44.27		41.85		43.06	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.07	0.27	0.75	
Genotype (B)		**	0.15	0.37	0.88	
B within A		**	0.22	0.52		
A within B			0.21	0.52		
Date of Sowing		11.11.2023		02.12.2023		
Date of Harvesting		09.03.2024		22.03.2024		

Table 5.2.2. Peninsular Zone **IR-TS-DOS-TAD** **Dharwad** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 322 (C)	43.23	6	44.02	2	43.62	6
WH 1306	51.89	1	39.76	6	45.83	2
MP 1378 (I)(C)	45.61	5	42.17	4	43.89	4
MACS 6222 (C)	42.53	8	43.41	3	42.97	7
NWS 2222	46.40	4	48.06	1	47.23	1
DBW 443	50.38	2	37.32	8	43.85	5
PBW 891	47.39	3	42.00	5	44.69	3
AKAW 5100	42.90	7	38.53	7	40.71	8
Mean	46.29		41.91		44.10	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.19	4.91	13.22	
Genotype (B)		N.S.	1.69	4.07	9.40	
B within A		*	2.39	5.76		
A within B			2.54	6.10		
			Earhead/sqm			
GW 322 (C)	446	3	383	7	415	5
WH 1306	409	8	403	5	406	6
MP 1378 (I)(C)	426	5	425	1	426	3
MACS 6222 (C)	429	4	353	8	391	8
NWS 2222	449	2	405	4	427	2
DBW 443	409	7	383	6	396	7
PBW 891	421	6	413	3	417	4
AKAW 5100	456	1	421	2	438	1
Mean	431		398		415	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	5.66	23.38	6.69	
Genotype (B)		N.S.	11.01	26.49	6.51	
B within A		N.S.	15.57	37.46		
A within B			15.63	37.60		

			Grains/Earhead			
GW 322 (C)	23.75	7	31.04	1	27.39	2
WH 1306	25.96	2	27.41	6	26.68	5
MP 1378 (I)(C)	26.74	1	28.43	4	27.58	1
MACS 6222 (C)	21.67	8	30.76	2	26.21	6
NWS 2222	24.64	6	30.14	3	27.39	3
DBW 443	25.27	4	24.55	8	24.91	8
PBW 891	25.68	3	27.75	5	26.71	4
AKAW 5100	24.94	5	25.15	7	25.04	7
Mean	24.83		28.15		26.49	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.03	4.27	19.13	
Genotype (B)		N.S.	1.22	2.93	11.28	
B within A		N.S.	1.73	4.15		
A within B			1.92	4.61		
			1000 Grains Weight, g			
GW 322 (C)	40.86	6	37.25	4	39.05	6
WH 1306	49.00	1	36.45	7	42.73	3
MP 1378 (I)(C)	39.77	7	35.09	8	37.43	7
MACS 6222 (C)	45.77	3	40.27	1	43.02	2
NWS 2222	42.02	5	39.39	3	40.70	4
DBW 443	48.84	2	39.68	2	44.26	1
PBW 891	43.97	4	36.71	5	40.34	5
AKAW 5100	37.68	8	36.69	6	37.19	8
Mean	43.49		37.69		40.59	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.11	0.45	1.31	
Genotype (B)		**	0.22	0.53	1.32	
B within A		**	0.31	0.75		
A within B			0.31	0.75		
Date of Sowing		10.11.2023		25.11.2023		
Date of Harvesting		15.03.2024		28.03.2024		

Table 5.2.3. Peninsular Zone **IR-TS-DOS-TAD** **Niphad** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 322 (C)	46.12	6	39.09	6	42.60	6
WH 1306	45.82	7	38.30	7	42.06	7
MP 1378 (I)(C)	49.72	3	42.14	3	45.93	3
MACS 6222 (C)	50.39	2	43.03	2	46.71	2
NWS 2222	51.12	1	44.69	1	47.90	1
DBW 443	46.51	5	39.20	5	42.85	5
PBW 891	46.62	4	39.76	4	43.19	4
AKAW 5100	39.49	8	31.51	8	35.50	8
Mean	46.97		39.71		43.34	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.01	4.16	11.40	
Genotype (B)		**	1.71	4.10	9.64	
B within A		N.S.	2.41	5.80		
A within B			2.47	5.95		

			Earhead/sqm			
GW 322 (C)	366	6	306	6	336	6
WH 1306	362	7	297	7	330	7
MP 1378 (I)(C)	387	3	337	3	362	3
MACS 6222 (C)	392	2	347	2	370	2
NWS 2222	419	1	359	1	389	1
DBW 443	376	5	321	5	349	5
PBW 891	380	4	323	4	352	4
AKAW 5100	358	8	256	8	307	8
Mean	380		318		349	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	3.68	15.21	5.17	
Genotype (B)		**	8.52	20.49	5.98	
B within A		N.S.	12.05	28.98		
A within B			11.86	28.52		
			Grains/Earhead			
GW 322 (C)	28.94	2	31.82	3.0	30.38	2
WH 1306	29.14	1	32.58	2.0	30.86	1
MP 1378 (I)(C)	27.93	3	29.39	6.0	28.66	5
MACS 6222 (C)	27.87	4	28.86	8.0	28.37	7
NWS 2222	25.89	7	28.98	7.0	27.44	8
DBW 443	27.55	5	30.14	4.0	28.84	4
PBW 891	27.32	6	29.63	5.0	28.48	6
AKAW 5100	25.12	8	33.51	1.0	29.31	3
Mean	27.47		30.61		29.04	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.44	1.82	7.43	
Genotype (B)		N.S.	1.43	3.45	12.08	
B within A		N.S.	2.03	4.87		
A within B			1.95	4.68		
			1000 Grains Weight, g			
GW 322 (C)	43.97	6	40.20	6	42.09	6
WH 1306	43.63	8	39.82	7	41.72	7
MP 1378 (I)(C)	46.19	3	42.57	3	44.38	3
MACS 6222 (C)	46.22	2	42.90	2	44.56	2
NWS 2222	47.06	1	43.21	1	45.13	1
DBW 443	44.93	5	40.44	5	42.69	5
PBW 891	45.27	4	41.83	4	43.55	4
AKAW 5100	43.94	7	36.80	8	40.37	8
Mean	45.15		40.97		43.06	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.21	0.87	2.38	
Genotype (B)		**	0.77	1.85	4.37	
B within A		N.S.	1.09	2.61		
A within B			1.04	2.49		
Date of Sowing		09.11.2023		02.12.2023		
Date of Harvesting		10.03.2024		01.03.2024		

Table 5.2.4. Peninsular Zone **IR-TS-DOS-TAD** **Pune** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
GW 322 (C)	48.43	6	49.32	1	48.88	5
WH 1306	50.88	4	48.65	2	49.77	4
MP 1378 (I)(C)	54.46	2	45.58	6	50.02	3
MACS 6222 (C)	57.44	1	45.45	7	51.44	1
NWS 2222	49.22	5	44.30	8.00	46.76	7
DBW 443	52.96	3	47.99	3.00	50.47	2
PBW 891	48.06	7	46.36	4.00	47.21	6
AKAW 5100	45.70	8	46.09	5	45.89	8
Mean	50.89		46.72		48.81	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.80	7.41	18.02	
Genotype (B)		N.S.	1.66	3.99	8.33	
B within A		N.S.	2.35	5.65		
A within B			2.84	6.82		
			Earhead/sqm			
GW 322 (C)	357	3	285	7	321	4
WH 1306	387	1	307	4	347	2
MP 1378 (I)(C)	348	4	323	2	336	3
MACS 6222 (C)	337	6	305	5	321	4
NWS 2222	368	2	338	1	353	1
DBW 443	338	5	257	8	298	7
PBW 891	300	8	287	6	293	8
AKAW 5100	323	7	317	3	320	6
Mean	345		302		324	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	20.53	84.79	31.09	
Genotype (B)		N.S.	21.27	51.17	16.10	
B within A		N.S.	30.08	72.37		
A within B			34.83	83.80		

			Grains/Earhead			
GW 322 (C)	46.04	2	46.51	2	46.28	2
WH 1306	31.70	8	43.45	4	37.57	8
MP 1378 (I)(C)	50.29	1	42.55	5	46.42	1
MACS 6222 (C)	41.80	4	41.76	6	41.78	6
NWS 2222	38.17	7	37.37	8	37.77	7
DBW 443	39.45	6	48.95	1	44.20	3
PBW 891	39.65	5	45.18	3	42.41	4
AKAW 5100	43.03	3	41.72	7	42.37	5
Mean	41.27		43.43		42.35	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	1.76	7.26	20.33	
Genotype (B)		N.S.	3.26	7.84	18.85	
B within A		N.S.	4.61	11.09		
A within B			4.66	11.20		
			1000 Grains Weight, g			
GW 322 (C)	30.07	8	37.43	4	33.75	7
WH 1306	42.00	2	38.27	2	40.13	2
MP 1378 (I)(C)	31.87	7	34.40	8	33.13	8
MACS 6222 (C)	44.33	1	36.20	5	40.27	1
NWS 2222	35.93	5	35.93	6	35.93	5
DBW 443	40.77	4	38.60	1	39.68	3
PBW 891	40.90	3	38.17	3	39.53	4
AKAW 5100	33.00	6	34.93	7	33.97	6
Mean	37.36		36.74		37.05	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	2.83	11.69	37.43	
Genotype (B)		*	1.98	4.76	13.09	
B within A		N.S.	2.80	6.73		
A within B			3.86	9.28		
Date of Sowing		07.11.2023		28.11.2023		
Date of Harvesting		15.03.2024		28.03.2024		

Table 5.4.1. Peninsular Zone		**IR-LS-DOS-TAS**		**Akola**	**2023-24**
Genotype	Date of Sowing			Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HI 1674	73.27	2	35.74	6	54.50	4
LOK 79	68.02	6	36.54	4	52.28	8
HI 1633 (C)	72.06	3	43.79	2	57.92	1
NIAW 4114	73.53	1	36.28	5	54.90	3
RAJ 4083 (C)	70.91	5	35.21	7	53.06	6
HD 3090 (C)	67.54	8	44.10	1	55.82	2
HD 2932 (C)	67.87	7	39.06	3	53.46	5
NIAW 4120	70.92	4	34.15	8	52.53	7
Mean	70.51		38.11		54.31	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	2.95	12.20	26.65	
Genotype (B)		N.S.	1.68	4.03	7.56	
B within A		*	2.37	5.70		
A within B			3.69	8.89		
			Earhead/sqm			
HI 1674	502	4	527	1	514	2
LOK 79	508	3	463	6	486	5
HI 1633 (C)	475	6	525	2	500	3
NIAW 4114	478	5	470	5	474	6
RAJ 4083 (C)	462	8	515	3	488	4
HD 3090 (C)	517	2	412	7	464	7
HD 2932 (C)	575	1	477	4	526	1
NIAW 4120	473	7	370	8	422	8
Mean	499		470		484	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	13.40	55.34	13.56	
Genotype (B)		N.S.	35.70	85.87	18.06	
B within A		N.S.	50.48	121.44		
A within B			49.09	118.09		
			Grains/Earhead			
HI 1674	32.78	4	14.34	8	23.56	7
LOK 79	31.67	5	18.99	4	25.33	5
HI 1633 (C)	34.65	2	19.78	3	27.22	2
NIAW 4114	35.63	1	17.89	6	26.76	3
RAJ 4083 (C)	33.91	3	16.76	7	25.34	4
HD 3090 (C)	31.36	6	27.08	1	29.22	1
HD 2932 (C)	25.13	8	20.12	2	22.63	8
NIAW 4120	30.80	7	18.20	5	24.50	6
Mean	31.99		19.14		25.57	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.05	4.32	20.05	
Genotype (B)		N.S.	2.41	5.80	23.09	
B within A		N.S.	3.41	8.20		
A within B			3.36	8.07		

			1000 Grains Weight, g			
HI 1674	45.07	5	47.48	2	46.28	2
LOK 79	43.12	8	43.17	3	43.14	7
HI 1633 (C)	44.97	6	42.33	6	43.65	6
NIAW 4114	45.08	4	42.93	4	44.01	4
RAJ 4083 (C)	45.38	3	42.37	5	43.88	5
HD 3090 (C)	44.08	7	39.67	8	41.88	8
HD 2932 (C)	47.27	2	41.63	7	44.45	3
NIAW 4120	51.27	1	52.52	1	51.89	1
Mean	45.78		44.01		44.90	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.10	0.39	1.04	
Genotype (B)		**	0.25	0.60	1.35	
B within A		**	0.35	0.84		
A within B			0.34	0.82		
Date of Sowing		07.12.2023		23.12.2023		
Date of Harvesting		29.03.2024		05.04.2024		

Table 5.4.2. Peninsular Zone **IR-LS-DOS-TAS** **Dharwad** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HI 1674	30.00	8	30.04	4	30.02	8
LOK 79	35.09	6	28.59	6	31.84	6
HI 1633 (C)	35.48	5	34.54	2	35.01	3
NIAW 4114	36.63	4	35.72	1	36.18	2
RAJ 4083 (C)	31.29	7	29.72	5	30.51	7
HD 3090 (C)	40.39	2	32.32	3	36.35	1
HD 2932 (C)	37.77	3	26.81	7	32.29	5
NIAW 4120	41.78	1	24.92	8	33.35	4
Mean	36.05		30.33		33.19	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.26	1.07	3.81	
Genotype (B)		*	1.39	3.35	10.29	
B within A		**	1.97	4.74		
A within B			1.86	4.48		
			Earhead/sqm			
HI 1674	434	8	326	4	380	7
LOK 79	471	6	294	6	382	6
HI 1633 (C)	484	5	356	2	420	2
NIAW 4114	485	4	364	1	425	1
RAJ 4083 (C)	441	7	309	5	375	8
HD 3090 (C)	490	2	335	3	412	4
HD 2932 (C)	488	3	293	7	391	5
NIAW 4120	578	1	253	8	416	3
Mean	484		316		400	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	3.13	12.91	3.83	
Genotype (B)		**	10.69	25.71	6.54	
B within A		**	15.11	36.36		
A within B			14.48	34.83		

			Grains/Earhead			
HI 1674	19.15	7	25.00	8	22.07	8
LOK 79	20.88	4	27.47	3	24.18	3
HI 1633 (C)	20.20	5	26.91	5	23.55	4
NIAW 4114	22.08	2	29.24	1	25.66	2
RAJ 4083 (C)	18.72	8	25.66	6	22.19	7
HD 3090 (C)	23.52	1	28.27	2	25.89	1
HD 2932 (C)	21.19	3	25.53	7	23.36	6
NIAW 4120	19.77	6	27.24	4	23.50	5
Mean	20.69		26.91		23.80	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.49	2.02	10.07	
Genotype (B)		N.S.	1.06	2.55	10.93	
B within A		N.S.	1.50	3.61		
A within B			1.49	3.58		
			1000 Grains Weight, g			
HI 1674	36.33	4	36.92	2	36.63	2
LOK 79	35.70	6	35.51	6	35.61	6
HI 1633 (C)	36.33	4	36.08	4	36.21	5
NIAW 4114	34.67	8	33.40	8	34.04	8
RAJ 4083 (C)	37.87	1	37.61	1	37.74	1
HD 3090 (C)	35.13	7	34.37	7	34.75	7
HD 2932 (C)	36.56	3	36.03	5	36.30	4
NIAW 4120	36.57	2	36.17	3	36.37	3
Mean	36.15		35.76		35.95	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.29	1.18	3.90	
Genotype (B)		**	0.38	0.91	2.57	
B within A		N.S.	0.53	1.28		
A within B			0.58	1.38		
Date of Sowing		25.11.2023		22.12.2023		
Date of Harvesting		22.03.2024		15.04.2024		

Table 5.4.3. Peninsular Zone **IR-LS-DOS-TAS** **Niphad** **2023-24**

Genotype	Date of Sowing				Mean	Rk
	Late	Rk	Very Late	Rk		
			Yield, q/ha			
HI 1674	38.28	6	25.84	7	32.06	6
LOK 79	50.71	1	40.52	1	45.62	1
HI 1633 (C)	37.94	7	26.18	6	32.06	7
NIAW 4114	43.40	3	39.30	3	41.35	3
RAJ 4083 (C)	38.28	5	33.41	5	35.85	5
HD 3090 (C)	38.72	4	34.74	4	36.73	4
HD 2932 (C)	35.64	8	25.07	8	30.35	8
NIAW 4120	44.79	2	39.36	2	42.08	2
Mean	40.97		33.05		37.01	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.72	2.98	9.56	
Genotype (B)		**	1.44	3.47	9.54	
B within A		N.S.	2.04	4.90		
A within B			2.04	4.91		

			Earhead/sqm			
HI 1674	365	7	267	7	316	7
LOK 79	431	1	318	1	375	1
HI 1633 (C)	385	6	282	6	334	6
NIAW 4114	420	2	304	2	362	2
RAJ 4083 (C)	389	5	294	5	341	5
HD 3090 (C)	399	4	299	3	349	4
HD 2932 (C)	356	8	259	8	307	8
NIAW 4120	411	3	294	4	353	3
Mean	395		290		342	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	10.38	42.85	14.86	
Genotype (B)		*	14.00	33.68	10.02	
B within A		N.S.	19.80	47.63		
A within B			21.23	51.07		
			Grains/Earhead			
HI 1674	23.60	2	24.90	7	24.25	5
LOK 79	25.38	1	28.90	2	27.14	1
HI 1633 (C)	21.99	5	22.83	8	22.41	8
NIAW 4114	22.44	4	29.45	1	25.95	2
RAJ 4083 (C)	21.74	6	26.81	4	24.27	4
HD 3090 (C)	21.42	7	26.54	5	23.98	6
HD 2932 (C)	23.59	3	27.88	3	25.73	3
NIAW 4120	21.06	8	26.29	6	23.68	7
Mean	22.65		26.70		24.68	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.45	1.86	8.93	
Genotype (B)		N.S.	1.36	3.27	13.48	
B within A		N.S.	1.92	4.62		
A within B			1.85	4.46		
			1000 Grains Weight, g			
HI 1674	44.69	7	39.82	7	42.26	7
LOK 79	46.54	2	44.54	2	45.54	2
HI 1633 (C)	44.89	6	40.65	6	42.77	6
NIAW 4114	46.24	3	44.14	3	45.19	3
RAJ 4083 (C)	45.95	4	42.37	5	44.16	5
HD 3090 (C)	45.91	5	43.91	4	44.91	4
HD 2932 (C)	42.80	8	34.90	8	38.85	8
NIAW 4120	52.23	1	51.06	1	51.64	1
Mean	46.16		42.67		44.41	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.28	1.16	3.10	
Genotype (B)		**	0.73	1.76	4.04	
B within A		N.S.	1.04	2.49		
A within B			1.01	2.43		
Date of Sowing		02.12.2023		19.12.2023		
Date of Harvesting		29.03.2024		22.04.2024		

Table 5.4.4. Peninsular Zone		**IR-LS-DOS-TAS**		**Pune**	**2023-24**
Genotype	Date of Sowing			Mean	Rk
	Late	Rk	Very Late	Rk	
			Yield, q/ha		
HI 1674	48.40	3	39.65	7	44.02	3
LOK 79	44.01	6	41.28	5	42.65	7
HI 1633 (C)	47.73	4	45.05	2	46.39	2
NIAW 4114	42.18	7	43.54	3	42.86	6
RAJ 4083 (C)	41.90	8	40.99	6	41.45	8
HD 3090 (C)	48.83	2	37.82	8	43.33	5
HD 2932 (C)	45.55	5	41.59	4	43.57	4
NIAW 4120	55.04	1	46.33	1	50.69	1
Mean	46.71		42.03		44.37	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	4.87	20.12	53.81	
Genotype (B)		N.S.	1.96	4.71	10.81	
B within A		N.S.	2.77	6.66		
A within B			5.52	13.28		
			Earhead/sqm			
HI 1674	393	1	402	1	398	1
LOK 79	382	2	357	4	369	3
HI 1633 (C)	373	5	297	7	335	5
NIAW 4114	382	2	288	8	335	5
RAJ 4083 (C)	327	7	325	5	326	7
HD 3090 (C)	258	8	303	6	281	8
HD 2932 (C)	378	4	380	3	379	2
NIAW 4120	335	6	388	2	362	4
Mean	354		343		348	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	18.12	74.83	25.51	
Genotype (B)		N.S.	24.04	57.82	16.92	
B within A		N.S.	33.99	81.78		
A within B			36.60	88.04		

			Grains/Earhead			
HI 1674	34.43	5	29.46	8	31.94	7
LOK 79	32.22	7	37.43	5	34.83	6
HI 1633 (C)	35.33	4	40.62	2	37.97	5
NIAW 4114	33.52	6	42.67	1	38.09	4
RAJ 4083 (C)	38.55	3	38.82	4	38.68	3
HD 3090 (C)	57.30	1	40.18	3	48.74	1
HD 2932 (C)	30.93	8	30.08	7	30.50	8
NIAW 4120	45.91	2	33.41	6	39.66	2
Mean	38.52		36.58		37.55	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.37	1.53	4.82	
Genotype (B)		*	3.36	8.09	21.93	
B within A		N.S.	4.76	11.44		
A within B			4.46	10.74		
			1000 Grains Weight, g			
HI 1674	35.87	5	34.43	5	35.15	4
LOK 79	37.03	2	32.63	7	34.83	6
HI 1633 (C)	36.17	4	37.70	2	36.93	2
NIAW 4114	34.63	7	35.57	4	35.10	5
RAJ 4083 (C)	34.67	6	32.60	8	33.63	7
HD 3090 (C)	32.77	8	32.67	6	32.72	8
HD 2932 (C)	38.23	1	37.73	1	37.98	1
NIAW 4120	36.33	3	36.10	3	36.22	3
Mean	35.71		34.93		35.32	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	2.17	8.96	30.08	
Genotype (B)		N.S.	1.36	3.28	9.46	
B within A		N.S.	1.93	4.64		
A within B			2.82	6.79		
Date of Sowing		28.11.2023		17.12.2023		
Date of Harvesting		25.03.2024		31.03.2024		

Table 6.1.1. North Western Plain Zone	**SPL-1**		**Karnal**		**2023-24**			
Residue management	Tillage						Mean	Rk
	ZT	Rk	ST	Rk	CT	Rk		
			Yield, q/ha					
No residue	39.31	3	43.60	3	42.17	3	41.69	3
Full residue (FR)	40.21	2	47.46	1	42.38	2	43.35	2
FR + microbial consortia	40.53	1	47.14	2	44.50	1	44.06	1
Mean	40.02		46.07		43.02		43.03	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		1.55		4.69		10.84	
Residue management (B)	N.S.		1.58		3.97		10.99	
B within A	N.S.		2.73		6.88			
A within B			2.72		6.85			
			Earhead/sq.m.					
No residue	324	2	312	3	288	3	308	3
Full residue (FR)	307	3	415	1	337	2	353	2
FR + microbial consortia	333	1	385	2	348	1	355	1
Mean	321		371		324		339	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	*		8.00		24.11		7.08	
Residue management (B)	N.S.		14.37		36.21		12.73	
B within A	N.S.		24.89		62.72			
A within B			21.84		55.03			
			1000 grains weight, g					
No residue	42.02	1	41.13	1	42.05	2	41.73	1
Full residue (FR)	41.59	2	40.60	2	41.23	3	41.14	2
FR + microbial consortia	40.95	3	39.69	3	42.31	1	40.98	3
Mean	41.52		40.47		41.86		41.29	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		0.29		0.86		2.07	
Residue management (B)	N.S.		0.35		0.87		2.51	
B within A	N.S.		0.60		1.51			
A within B			0.57		1.42			
			Grains/earhead					
No residue	28.92	3	34.13	1	35.08	1	32.71	1
Full residue (FR)	31.99	1	28.24	3	31.08	2	30.44	3
FR + microbial consortia	29.77	2	31.17	2	30.39	3	30.45	2
Mean	30.23		31.18		32.19		31.20	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		0.86		2.59		8.26	
Residue management (B)	N.S.		1.78		4.47		17.07	
B within A	N.S.		3.07		7.75			
A within B			2.65		6.69			
			Biomass, q/ha					
No residue	109.52	3	119.58	3	112.96	3	114.02	3
Full residue (FR)	119.18	1	144.97	1	118.52	2	127.56	1
FR + microbial consortia	117.20	2	141.80	2	120.37	1	126.46	2
Mean	115.30		135.45		117.28		122.68	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	**		2.58		7.78		6.31	
Residue management (B)	N.S.		6.06		15.27		14.82	
B within A	N.S.		10.50		26.45			
A within B			8.95		22.55			

Table 6.1.2. North Western Plain Zone	**SPL-1**				**Ludhiana**		**2023-24**	
Residue management	Tillage						Mean	Rk
	ZT	Rk	ST	Rk	CT	Rk		
			Yield, q/ha					
No residue	53.48	2	53.67	2	55.24	1	54.13	2
Full residue (FR)	53.00	3	53.24	3	54.91	2	53.72	3
FR + microbial consortia	58.15	1	54.94	1	54.80	3	55.96	1
Mean	54.88		53.95		54.98		54.60	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		0.74		2.23		4.06	
Residue management (B)	N.S.		1.55		3.92		8.54	
B within A	N.S.		2.69		6.78			
A within B			2.32		5.84			
			Earhead/sq.m.					
No residue	325	2	324	2	315	2	321	1
Full residue (FR)	301	3	329	1	322	1	317	3
FR + microbial consortia	334	1	307	3	312	3	318	2
Mean	320		320		316		319	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		9.47		28.55		8.91	
Residue management (B)	N.S.		7.41		18.67		6.97	
B within A	N.S.		12.83		32.34			
A within B			14.12		35.59			
			1000 grains weight, g					
No residue	56.73	1	59.76	1	54.24	2	56.91	1
Full residue (FR)	51.67	3	54.75	3	54.14	3	53.52	3
FR + microbial consortia	52.38	2	59.57	2	54.87	1	55.61	2
Mean	53.59		58.03		54.42		55.35	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		1.41		4.26		7.66	
Residue management (B)	N.S.		1.43		3.60		7.75	
B within A	N.S.		2.48		6.24			
A within B			2.47		6.22			
			Grains/earhead					
No residue	29.20	3	28.19	3	32.34	1	29.91	3
Full residue (FR)	35.22	1	29.54	2	32.15	2	32.30	1
FR + microbial consortia	33.55	2	30.52	1	32.11	3	32.06	2
Mean	32.65		29.42		32.20		31.42	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		1.54		4.65		14.74	
Residue management (B)	N.S.		1.78		4.49		16.99	
B within A	N.S.		3.08		7.77			
A within B			2.95		7.44			
			Biomass, q/ha					
No residue	118.18	3	118.18	3	139.39	1	125.25	3
Full residue (FR)	133.33	2	127.27	1	136.36	3	132.32	1
FR + microbial consortia	136.36	1	121.21	2	139.39	1	132.32	2
Mean	129.29		122.22		138.38		129.97	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		4.44		13.39		10.25	
Residue management (B)	N.S.		3.11		7.85		7.19	
B within A	N.S.		5.39		13.59			
A within B			6.25		15.76			

Table 6.1.3. North Western Plain Zone	**SPL-1**		**BISA, Ludhiana**		**2023-24**			
Residue management	Tillage						Mean	Rk
	ZT	Rk	ST	Rk	CT	Rk		
			Yield, q/ha					
No residue	60.23	3	67.86	3	77.03	2	68.37	3
Full residue (FR)	74.39	1	80.17	1	77.39	1	77.32	1
FR + microbial consortia	68.54	2	69.70	2	68.33	3	68.86	2
Mean	67.72		72.58		74.25		71.52	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		5.54		16.71		23.25	
Residue management (B)	*		2.25		5.66		9.43	
B within A	N.S.		3.89		9.81			
A within B			6.39		16.10			
			Earhead/sq.m.					
No residue								
Full residue (FR)								
FR + microbial consortia								
Mean								
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)								
Residue management (B)								
B within A								
A within B								
			1000 grains weight, g					
No residue	49.33	3	49.42	1	50.43	2	49.72	1
Full residue (FR)	49.81	2	46.70	3	51.72	1	49.41	2
FR + microbial consortia	49.93	1	48.44	2	49.48	3	49.29	3
Mean	49.69		48.19		50.54		49.47	
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)	N.S.		0.98		2.97		5.97	
Residue management (B)	N.S.		0.57		1.44		3.46	
B within A	N.S.		0.99		2.49			
A within B			1.27		3.21			
			Grains/earhead					
No residue								
Full residue (FR)								
FR + microbial consortia								
Mean								
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)								
Residue management (B)								
B within A								
A within B								
			Biomass, q/ha					
No residue								
Full residue (FR)								
FR + microbial consortia								
Mean								
	F. Test		SEm		CD (0.05)		CV (%)	
Tillage (A)								
Residue management (B)								
B within A								
A within B								

Table 6.4.1. North Western Plain Zone			**SPL-2**		**Agra**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	40.66	5	43.41	5	45.69	5	43.25	5
Drum rolling (30 and 45 DAS)	43.52	4	46.73	4	48.68	4	46.31	4
TIBA spray at tillering @100 ppm	51.47	1	55.60	1	59.78	1	55.62	1
Cytokinin spray at tillering @100 ppm	47.78	2	50.52	2	52.80	2	50.37	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	45.20	3	48.10	3	50.75	3	48.02	3
Mean	45.73		48.87		51.54		48.71	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.57		1.72		4.54	
Growth regulator (B)	**		0.93		2.26		5.75	
B within A	N.S.		1.62		3.92			
A within B			1.56		3.76			
Earhead/sq.m.								
Control	229	5	231	5	234	5	231	5
Drum rolling-30 & 45 DAS	231	4	234	4	236	4	233	4
TIBA-100 ppm	241	1	248	1	253	1	247	1
6-benzyl amino purine-100 ppm	237	2	240	2	252	2	243	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	233	3	239	3	243	3	238	3
Mean	234		238		244		239	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.82		2.46		1.33	
Growth regulator (B)	**		2.33		5.64		2.93	
B within A	N.S.		4.04		9.77			
A within B			3.70		8.96			
1000 grains weight, g								
Control	39.50	5	40.78	5	41.38	5	40.55	5
Drum rolling-30 & 45 DAS	40.72	4	41.00	4	41.41	4	41.04	4
TIBA-100 ppm	43.30	1	44.00	1	45.00	1	44.10	1
6-benzyl amino purine-100 ppm	42.12	2	43.13	2	44.00	2	43.08	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	41.21	3	42.33	3	43.30	3	42.28	3
Mean	41.37		42.25		43.02		42.21	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.17		0.51		1.56	
Growth regulator (B)	**		0.62		1.51		4.43	
B within A	N.S.		1.08		2.61			
A within B			0.98		2.37			

Grains per ear head								
Control	45.00	5	46.22	5	47.18	5	46.13	5
Drum rolling-30 & 45 DAS	46.27	4	48.76	2	49.87	2	48.30	2
TIBA-100 ppm	49.41	1	51.00	1	52.51	1	50.97	1
6-benzyl amino purine-100 ppm	47.97	2	48.75	3	47.70	4	48.14	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	47.16	3	47.66	4	48.15	3	47.66	4
Mean	47.16		48.48		49.08		48.24	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.55		1.65		4.39	
Growth regulator (B)	**		0.56		1.37		3.51	
B within A	N.S.		0.98		2.37			
A within B			1.03		2.50			
Plant height, cm								
Control								
Drum rolling-30 & 45 DAS								
TIBA-100 ppm								
6-benzyl amino purine-100 ppm								
CCC + tebuconazole- 0.2% +0.1%- 2 sprays								
Mean								
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)								
Growth regulator (B)								
B within A								
A within B								
Biomass, q/ha								
Control	104.09	5	107.25	5	112.23	5	107.85	5
Drum rolling-30 & 45 DAS	108.15	4	112.00	4	116.29	4	112.15	4
TIBA-100 ppm	123.00	1	128.00	1	133.11	1	128.04	1
6-benzyl amino purine-100 ppm	114.00	2	119.02	2	122.12	2	118.38	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	110.00	3	114.16	3	120.00	3	114.72	3
Mean	111.85		116.09		120.75		116.23	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.58		1.76		1.94	
Growth regulator (B)	**		1.31		3.17		3.39	
B within A	N.S.		2.27		5.50			
A within B			2.11		5.12			

Table 6.4.2. North Western Plain Zone			**SPL-2**		**Durgapura**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control	32.80	5	45.73	5	55.23	5	44.59	5
Drum rolling-30 & 45 DAS	39.90	2	50.33	2	59.33	2	49.86	2
TIBA-100 ppm	40.27	1	52.83	1	62.00	1	51.70	1
6-benzyl amino purine-100 ppm	37.17	4	48.07	4	57.84	4	47.69	4
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	39.13	3	50.20	3	58.57	3	49.30	3
Mean	37.85		49.43		58.60		48.63	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.49		1.49		3.92	
Growth regulator (B)	**		1.21		2.93		7.48	
B within A	N.S.		2.10		5.08			
A within B			1.94		4.70			
Earhead/sq.m.								
Control	306	4	323	5	354	5	328	5
Drum rolling-30 & 45 DAS	307	3	342	2	404	2	351	2
TIBA-100 ppm	311	2	347	1	409	1	356	1
6-benzyl amino purine-100 ppm	305	5	335	4	381	4	340	4
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	318	1	339	3	391	3	349	3
Mean	309		337		388		345	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		3.74		11.28		4.20	
Growth regulator (B)	*		6.48		15.68		5.64	
B within A	N.S.		11.23		27.17			
A within B			10.72		25.93			
1000 grains weight, g								
Control	40.40	5	39.70	5	39.80	3	39.97	5
Drum rolling-30 & 45 DAS	41.97	2	41.27	3	38.70	5	40.64	4
TIBA-100 ppm	43.27	1	41.90	2	39.67	4	41.61	1
6-benzyl amino purine-100 ppm	41.57	3	40.07	4	40.50	2	40.71	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	40.50	4	42.37	1	40.67	1	41.18	2
Mean	41.54		41.06		39.87		40.82	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.37		1.13		3.55	
Growth regulator (B)	N.S.		0.53		1.28		3.90	
B within A	N.S.		0.92		2.23			
A within B			0.90		2.19			

Grains per ear head								
Control	26.44	5	35.64	4	39.25	1	33.78	5
Drum rolling-30 & 45 DAS	30.92	1	35.75	3	37.99	3	34.89	2
TIBA-100 ppm	30.13	3	36.35	1	38.24	2	34.91	1
6-benzyl amino purine-100 ppm	29.58	4	35.98	2	37.51	4	34.35	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	30.49	2	34.99	5	36.93	5	34.14	4
Mean	29.51		35.74		37.98		34.41	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.35		1.06		3.96	
Growth regulator (B)	N.S.		0.94		2.29		8.24	
B within A	N.S.		1.64		3.96			
A within B			1.51		3.64			
Plant height, cm								
Control	85.67	4	88.63	4	86.80	5	87.03	5
Drum rolling-30 & 45 DAS	95.27	1	97.43	1	96.87	1	96.52	1
TIBA-100 ppm	91.60	3	96.20	2	93.00	3	93.60	3
6-benzyl amino purine-100 ppm	94.07	2	91.87	3	94.93	2	93.62	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	85.00	5	87.53	5	91.53	4	88.02	4
Mean	90.32		92.33		92.63		91.76	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.02		3.09		4.33	
Growth regulator (B)	**		1.24		3.01		4.06	
B within A	N.S.		2.15		5.21			
A within B			2.18		5.28			
Biomass, q/ha								
Control	77.35	5	101.07	5	122.61	5	100.34	5
Drum rolling-30 & 45 DAS	88.34	2	112.14	2	128.52	2	109.67	2
TIBA-100 ppm	89.15	1	116.66	1	141.36	1	115.72	1
6-benzyl amino purine-100 ppm	79.67	4	107.57	4	128.07	3	105.10	4
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	87.85	3	110.37	3	125.68	4	107.97	3
Mean	84.47		109.56		129.24		107.76	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		1.24		3.75		4.47	
Growth regulator (B)	**		2.52		6.10		7.02	
B within A	N.S.		4.37		10.56			
A within B			4.10		9.92			

Table 6.4.3. North Western Plain Zone			**SPL-2**		**Gurdaspur**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control	50.90	5	59.98	5	66.55	5	59.14	5
Drum rolling-30 & 45 DAS	53.36	4	60.42	4	67.41	4	60.39	4
TIBA-100 ppm	55.69	2	67.20	2	72.04	1	64.98	2
6-benzyl amino purine-100 ppm	56.88	1	67.31	1	71.02	2	65.07	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	55.16	3	64.35	3	69.79	3	63.10	3
Mean	54.40		63.85		69.36		62.54	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		1.90		5.72		11.74	
Growth regulator (B)	*		1.54		3.72		7.38	
B within A	N.S.		2.66		6.45			
A within B			3.05		7.37			
Earhead/sq.m.								
Control	332	4	351	5	366	5	350	5
Drum rolling-30 & 45 DAS	340	2	363	3	367	4	357	3
TIBA-100 ppm	339	3	378	1	376	1	364	1
6-benzyl amino purine-100 ppm	331	5	367	2	372	3	357	4
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	344	1	357	4	373	2	358	2
Mean	337		363		371		357	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		2.27		6.84		2.46	
Growth regulator (B)	N.S.		6.02		14.57		5.06	
B within A	N.S.		10.43		25.23			
A within B			9.60		23.22			
1000 grains weight, g								
Control	39.92	5	40.05	5	40.11	5	40.03	5
Drum rolling-30 & 45 DAS	40.18	4	40.23	3	40.59	4	40.33	4
TIBA-100 ppm	40.67	1	40.95	1	40.87	2	40.83	1
6-benzyl amino purine-100 ppm	40.38	2	40.56	2	40.91	1	40.62	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	40.24	3	40.13	4	40.66	3	40.34	3
Mean	40.28		40.38		40.63		40.43	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.40		1.19		3.79	
Growth regulator (B)	N.S.		0.22		0.53		1.63	
B within A	N.S.		0.38		0.92			
A within B			0.52		1.26			

Grains per ear head								
Control	38.28	5	42.70	4	45.47	4	42.15	4
Drum rolling-30 & 45 DAS	38.99	4	41.45	5	45.24	5	41.89	5
TIBA-100 ppm	40.45	2	43.38	3	47.09	1	43.64	2
6-benzyl amino purine-100 ppm	42.67	1	45.24	1	46.77	2	44.89	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	39.86	3	44.90	2	46.10	3	43.62	3
Mean	40.05		43.53		46.13		43.24	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		1.02		3.06		9.11	
Growth regulator (B)	N.S.		1.16		2.80		8.04	
B within A	N.S.		2.01		4.85			
A within B			2.06		4.99			
Plant height, cm								
Control	89.13	4	90.27	4	91.47	1	90.29	3
Drum rolling-30 & 45 DAS	90.13	1	89.97	5	90.27	4	90.12	4
TIBA-100 ppm	89.80	2	91.93	1	90.37	3	90.70	1
6-benzyl amino purine-100 ppm	89.63	3	90.67	3	90.60	2	90.30	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	89.13	4	90.97	2	90.20	5	90.10	5
Mean	89.57		90.76		90.58		90.30	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.46		1.38		1.97	
Growth regulator (B)	N.S.		0.68		1.63		2.24	
B within A	N.S.		1.17		2.83			
A within B			1.14		2.76			
Biomass, q/ha								
Control	118.31	5	124.28	5	139.47	5	127.35	5
Drum rolling-30 & 45 DAS	125.53	4	135.76	4	147.43	4	136.24	4
TIBA-100 ppm	132.04	2	148.75	1	161.85	2	147.55	1
6-benzyl amino purine-100 ppm	132.27	1	147.27	2	162.27	1	147.27	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	131.62	3	144.93	3	157.78	3	144.78	3
Mean	127.95		140.20		153.76		140.64	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		2.38		7.18		6.56	
Growth regulator (B)	**		3.08		7.45		6.57	
B within A	N.S.		5.33		12.90			
A within B			5.33		12.90			

Table 6.4.4. North Western Plain Zone			**SPL-2**		**Hisar**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control	50.92	4	55.37	5	58.13	4	54.81	4
Drum rolling-30 & 45 DAS	50.85	5	55.51	4	57.93	5	54.76	5
TIBA-100 ppm	52.18	3	57.31	2	60.27	3	56.59	3
6-benzyl amino purine-100 ppm	52.76	2	57.24	3	61.05	2	57.02	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	54.01	1	58.20	1	62.41	1	58.21	1
Mean	52.14		56.73		59.96		56.28	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.67		2.03		4.64	
Growth regulator (B)	*		0.86		2.07		4.56	
B within A	N.S.		1.48		3.58			
A within B			1.49		3.60			
Earhead/sq.m.								
Control	376	4	396	5	417	5	396	5
Drum rolling-30 & 45 DAS	375	5	400	4	424	4	400	4
TIBA-100 ppm	395	2	428	1	452	2	425	2
6-benzyl amino purine-100 ppm	400	1	425	2	460	1	428	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	395	2	419	3	447	3	420	3
Mean	388		414		440		414	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		6.02		18.15		5.63	
Growth regulator (B)	*		8.17		19.76		5.92	
B within A	N.S.		14.14		34.23			
A within B			14.01		33.90			
1000 grains weight, g								
Control	45.45	4	43.84	5	42.93	3	44.08	4
Drum rolling-30 & 45 DAS	45.40	5	44.20	3	42.56	5	44.06	5
TIBA-100 ppm	45.86	3	44.12	4	42.61	4	44.20	3
6-benzyl amino purine-100 ppm	46.00	2	44.80	2	43.59	2	44.80	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	46.27	1	45.03	1	44.07	1	45.12	1
Mean	45.80		44.40		43.15		44.45	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.33		0.99		2.87	
Growth regulator (B)	N.S.		0.45		1.09		3.04	
B within A	N.S.		0.78		1.89			
A within B			0.77		1.87			

Grains per ear head								
Control	30.03	1	31.94	1	32.49	1	31.49	1
Drum rolling-30 & 45 DAS	29.95	2	31.51	2	32.21	2	31.23	2
TIBA-100 ppm	28.86	4	30.48	4	31.42	4	30.25	4
6-benzyl amino purine-100 ppm	28.83	5	30.17	5	30.50	5	29.83	5
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	29.62	3	30.98	3	31.71	3	30.77	3
Mean	29.46		31.02		31.67		30.71	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.45		1.34		5.62	
Growth regulator (B)	N.S.		0.85		2.06		8.33	
B within A	N.S.		1.48		3.58			
A within B			1.39		3.37			
Plant height, cm								
Control	102.00	3	102.33	4	105.00	2	103.11	3
Drum rolling-30 & 45 DAS	100.00	4	103.00	3	104.00	4	102.33	4
TIBA-100 ppm	104.00	1	104.33	2	105.00	2	104.44	2
6-benzyl amino purine-100 ppm	102.67	2	106.33	1	107.67	1	105.56	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	84.33	5	87.67	5	90.33	5	87.44	5
Mean	98.60		100.73		102.40		100.58	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.35		1.04		1.33	
Growth regulator (B)	**		0.89		2.14		2.64	
B within A	N.S.		1.53		3.71			
A within B			1.41		3.42			
Biomass, q/ha								
Control	140.50	5	153.10	4	160.57	4	151.39	5
Drum rolling-30 & 45 DAS	141.87	3	153.77	3	159.53	5	151.72	4
TIBA-100 ppm	142.53	2	154.80	1	163.30	2	153.54	2
6-benzyl amino purine-100 ppm	143.23	1	154.10	2	164.30	1	153.88	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	141.20	4	153.10	4	161.93	3	152.08	3
Mean	141.87		153.77		161.93		152.52	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		1.77		5.33		4.49	
Growth regulator (B)	N.S.		1.88		4.55		3.70	
B within A	N.S.		3.26		7.88			
A within B			3.41		8.25			

Table 6.4.5. North Western Plain Zone			**SPL-2**		**Karnal**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control	47.86	5	54.29	5	52.06	5	51.40	5
Drum rolling-30 & 45 DAS	50.24	3	55.48	3	53.18	3	52.96	3
TIBA-100 ppm	49.60	4	54.60	4	53.18	3	52.46	4
6-benzyl amino purine-100 ppm	51.03	2	57.54	2	56.03	2	54.87	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	55.32	1	57.94	1	56.67	1	56.64	1
Mean	50.81		55.97		54.22		53.67	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		2.14		6.45		15.43	
Growth regulator (B)	**		0.92		2.22		5.13	
B within A	N.S.		1.59		3.84			
A within B			2.57		6.21			
Earhead/sq.m.								
Control	358	5	374	5	379	5	371	5
Drum rolling-30 & 45 DAS	366	3	390	3	405	3	387	3
TIBA-100 ppm	365	4	382	4	382	4	377	4
6-benzyl amino purine-100 ppm	370	2	403	2	408	2	394	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	402	1	410	1	424	1	412	1
Mean	372		392		400		388	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		6.48		19.55		6.47	
Growth regulator (B)	*		9.44		22.85		7.30	
B within A	N.S.		16.36		39.58			
A within B			16.00		38.72			
1000 grains weight, g								
Control	43.91	5	43.49	5	42.26	5	43.22	5
Drum rolling-30 & 45 DAS	45.85	3	45.72	3	44.77	3	45.45	3
TIBA-100 ppm	45.07	4	44.71	4	44.30	4	44.69	4
6-benzyl amino purine-100 ppm	46.47	2	46.35	1	45.31	2	46.04	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	47.81	1	46.33	2	46.70	1	46.95	1
Mean	45.82		45.32		44.67		45.27	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.64		1.94		5.51	
Growth regulator (B)	**		0.31		0.74		2.03	
B within A	N.S.		0.53		1.29			
A within B			0.80		1.94			

Grains per ear head								
Control	30.45	1	33.44	1	32.56	1	32.15	1
Drum rolling-30 & 45 DAS	30.03	4	31.12	3	29.48	4	30.21	4
TIBA-100 ppm	30.13	2	32.02	2	31.44	2	31.19	2
6-benzyl amino purine-100 ppm	30.06	3	30.80	4	30.46	3	30.44	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	28.85	5	30.55	5	28.62	5	29.34	5
Mean	29.90		31.58		30.51		30.67	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.90		2.71		11.35	
Growth regulator (B)	N.S.		0.96		2.33		9.43	
B within A	N.S.		1.67		4.04			
A within B			1.74		4.22			
Plant height, cm								
Control	91.07	4	92.67	3	90.33	3	91.36	4
Drum rolling-30 & 45 DAS	95.43	2	94.81	1	90.27	4	93.50	2
TIBA-100 ppm	96.63	1	93.90	2	96.57	1	95.70	1
6-benzyl amino purine-100 ppm	92.20	3	90.87	4	94.13	2	92.40	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	83.90	5	80.51	5	79.83	5	81.42	5
Mean	91.85		90.55		90.23		90.87	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.01		3.04		4.29	
Growth regulator (B)	**		0.94		2.28		3.11	
B within A	N.S.		1.63		3.95			
A within B			1.77		4.29			
Biomass, q/ha								
Control	119.56	5	135.05	5	129.70	5	128.10	5
Drum rolling-30 & 45 DAS	126.37	3	138.33	3	132.94	3	132.55	3
TIBA-100 ppm	123.89	4	136.15	4	132.94	4	130.99	4
6-benzyl amino purine-100 ppm	127.23	2	143.48	2	140.45	2	137.05	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	137.02	1	143.98	1	141.73	1	140.91	1
Mean	126.82		139.40		135.55		133.92	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		5.12		15.42		14.79	
Growth regulator (B)	**		2.10		5.08		4.71	
B within A	N.S.		3.64		8.80			
A within B			6.06		14.67			

Table 6.4.6. North Western Plain Zone			**SPL-2**		**Ludhiana**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control	53.75	5	56.69	5	60.24	4	56.89	5
Drum rolling-30 & 45 DAS	57.38	3	59.39	3	59.78	5	58.85	4
TIBA-100 ppm	58.13	2	59.46	1	61.49	1	59.69	2
6-benzyl amino purine-100 ppm	60.16	1	58.86	4	60.79	3	59.94	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	57.08	4	59.39	2	61.43	2	59.30	3
Mean	57.30		58.76		60.74		58.93	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.62		1.88		4.10	
Growth regulator (B)	*		0.69		1.66		3.50	
B within A	N.S.		1.19		2.88			
A within B			1.23		2.99			
Earhead/sq.m.								
Control	313	5	334	5	351	5	333	5
Drum rolling-30 & 45 DAS	320	3	337	4	361	4	339	4
TIBA-100 ppm	320	2	353	2	367	3	347	2
6-benzyl amino purine-100 ppm	322	1	355	1	383	1	353	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	319	4	350	3	371	2	346	3
Mean	319		346		367		344	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		2.52		7.60		2.84	
Growth regulator (B)	N.S.		5.56		13.46		4.85	
B within A	N.S.		9.63		23.31			
A within B			8.98		21.72			
1000 grains weight, g								
Control	54.41	2	50.50	5	51.03	5	51.98	5
Drum rolling-30 & 45 DAS	51.54	4	52.79	1	52.34	4	52.22	4
TIBA-100 ppm	54.05	3	50.72	4	55.24	1	53.34	2
6-benzyl amino purine-100 ppm	55.99	1	51.88	3	53.26	3	53.71	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	49.12	5	52.46	2	55.17	2	52.25	3
Mean	53.02		51.67		53.41		52.70	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.87		2.62		6.39	
Growth regulator (B)	N.S.		1.17		2.83		6.66	
B within A	N.S.		2.03		4.90			
A within B			2.01		4.86			

Grains per ear head								
Control	31.53	5	33.74	1	33.81	1	33.03	3
Drum rolling-30 & 45 DAS	34.94	2	33.49	2	31.96	2	33.46	1
TIBA-100 ppm	33.60	3	33.24	3	30.66	3	32.50	4
6-benzyl amino purine-100 ppm	33.53	4	31.97	5	29.91	5	31.81	5
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	36.62	1	32.38	4	30.24	4	33.08	2
Mean	34.04		32.96		31.32		32.77	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.72		2.16		8.47	
Growth regulator (B)	N.S.		0.92		2.23		8.44	
B within A	N.S.		1.60		3.86			
A within B			1.60		3.87			
Plant height, cm								
Control	75.00	5	76.00	4	82.33	2	77.78	3
Drum rolling-30 & 45 DAS	77.33	3	78.00	3	77.00	4	77.44	4
TIBA-100 ppm	79.00	1	79.00	1	84.67	1	80.89	1
6-benzyl amino purine-100 ppm	78.67	2	78.33	2	80.33	3	79.11	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	77.00	4	74.00	5	76.33	5	75.78	5
Mean	77.40		77.07		80.13		78.20	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.87		2.63		4.32	
Growth regulator (B)	N.S.		1.25		3.02		4.79	
B within A	N.S.		2.16		5.23			
A within B			2.12		5.14			
Biomass, q/ha								
Control	113.33	5	118.33	5	126.17	5	119.28	5
Drum rolling-30 & 45 DAS	129.63	4	134.26	2	131.94	3	131.94	3
TIBA-100 ppm	131.94	2	134.26	2	132.96	2	133.06	2
6-benzyl amino purine-100 ppm	134.26	1	140.81	1	143.24	1	139.44	1
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	131.94	3	129.63	4	127.31	4	129.63	4
Mean	128.22		131.46		132.33		130.67	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.59		4.80		4.72	
Growth regulator (B)	**		2.64		6.38		6.05	
B within A	N.S.		4.57		11.05			
A within B			4.38		10.60			

Table 6.4.7. North Western Plain Zone			**SPL-2**		**Pantnagar**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control	56.92	3	59.44	2	59.43	3	58.60	2
Drum rolling-30 & 45 DAS	55.99	4	57.37	4	56.80	5	56.72	5
TIBA-100 ppm	58.42	2	56.66	5	58.83	4	57.97	3
6-benzyl amino purine-100 ppm	53.42	5	58.73	3	61.41	1	57.85	4
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	59.45	1	61.11	1	61.30	2	60.62	1
Mean	56.84		58.66		59.55		58.35	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.71		5.15		11.33	
Growth regulator (B)	N.S.		0.96		2.33		4.96	
B within A	N.S.		1.67		4.04			
A within B			2.27		5.49			
Earhead/sq.m.								
Control	376	5	431	4	452	3	420	4
Drum rolling-30 & 45 DAS	433	1	448	2	454	2	445	1
TIBA-100 ppm	429	2	448	2	452	4	443	3
6-benzyl amino purine-100 ppm	380	4	405	5	440	5	408	5
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	390	3	458	1	482	1	443	2
Mean	402		438		456		432	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		8.59		25.90		7.70	
Growth regulator (B)	N.S.		10.66		25.79		7.41	
B within A	N.S.		18.46		44.67			
A within B			18.61		45.04			
1000 grains weight, g								
Control	53.24	3	50.00	4	50.80	3	51.35	4
Drum rolling-30 & 45 DAS	50.94	4	52.09	2	55.06	2	52.70	2
TIBA-100 ppm	53.58	1	55.94	1	55.20	1	54.91	1
6-benzyl amino purine-100 ppm	53.54	2	51.46	3	50.12	4	51.70	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	48.00	5	46.98	5	46.66	5	47.21	5
Mean	51.86		51.29		51.57		51.57	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.92		2.78		6.94	
Growth regulator (B)	**		0.77		1.87		4.50	
B within A	N.S.		1.34		3.25			
A within B			1.51		3.66			

Grains per ear head								
Control	28.49	2	27.82	3	25.88	3	27.40	3
Drum rolling-30 & 45 DAS	25.47	5	24.84	4	22.79	5	24.37	4
TIBA-100 ppm	25.48	4	22.74	5	23.58	4	23.93	5
6-benzyl amino purine-100 ppm	26.39	3	28.21	2	27.94	1	27.51	2
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	32.05	1	28.70	1	27.59	2	29.45	1
Mean	27.57		26.46		25.56		26.53	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.84		2.52		12.19	
Growth regulator (B)	**		0.97		2.34		10.93	
B within A	N.S.		1.67		4.05			
A within B			1.71		4.15			
Plant height, cm								
Control	98.20	4	101.33	1	97.87	3	99.13	3
Drum rolling-30 & 45 DAS	99.13	2	100.60	2	101.53	1	100.42	1
TIBA-100 ppm	102.33	1	98.07	4	98.27	2	99.56	2
6-benzyl amino purine-100 ppm	98.67	3	100.47	3	96.60	4	98.58	4
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	88.27	5	86.20	5	87.53	5	87.33	5
Mean	97.32		97.33		96.36		97.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.46		4.40		5.83	
Growth regulator (B)	**		1.23		2.98		3.81	
B within A	N.S.		2.13		5.16			
A within B			2.40		5.81			
Biomass, q/ha								
Control	136.90	5	144.40	3	142.56	5	141.29	5
Drum rolling-30 & 45 DAS	151.35	1	148.77	1	151.38	2	150.50	1
TIBA-100 ppm	146.50	2	142.04	4	147.93	4	145.49	2
6-benzyl amino purine-100 ppm	139.14	3	139.73	5	157.25	1	145.37	3
CCC + tebuconazole- 0.2% +0.1%- 2 sprays	138.53	4	147.77	2	149.63	3	145.31	4
Mean	142.48		144.54		149.75		145.59	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		3.05		9.19		8.11	
Growth regulator (B)	N.S.		2.41		5.84		4.97	
B within A	N.S.		4.18		10.12			
A within B			4.82		11.67			

Table 6.6.1. North Western Plains Zone **SPL-3** **Agra** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	41.80	282	36.99	40.10	107.68	–
50-50-50 N	0.00	62.80	318	42.05	46.94	147.48	–
75-75-GS	0.00	60.30	313	41.82	46.03	142.54	–
0-75-GS	32.00	48.35	293	37.90	43.57	118.77	–
25-25-GS	25.00	45.70	289	37.15	42.62	112.90	–
50-50-GS	35.00	53.52	300	39.67	45.00	128.40	–
25-50-GS	40.00	50.80	296	38.10	45.09	123.54	–
60-60-GS	40.00	56.40	305	39.97	46.20	134.56	–
70-70-70 N	0.00	58.23	310	40.45	46.47	137.95	–
CD (0.05)		3.23	4.49	2.08	0.94	3.23	–
Date of Sowing: 10.11.2023			Date of Harvesting:		02.04.2024		

Table 6.6.2. North Western Plains Zone **SPL-3** **Gurdaspur** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	44.12	293	40.02	37.54	119.56	92.50
50-50-50 N	0.00	62.64	372	40.83	41.22	141.50	93.00
75-75-GS	30.00	61.18	356	40.35	42.58	138.80	93.40
0-75-GS	60.00	58.59	358	40.61	40.30	136.11	92.47
25-25-GS	60.00	66.67	386	40.89	42.23	144.91	93.00
50-50-GS	60.00	66.11	384	40.96	42.13	144.61	93.70
25-50-GS	60.00	61.48	363	40.45	42.14	139.56	92.80
60-60-GS	30.00	62.82	352	40.61	44.02	139.93	92.87
70-70-70 N	0.00	62.78	382	40.62	40.54	141.57	93.47
CD (0.05)		5.78	17.95	1.59	3.72	11.70	3.83
Date of Sowing: 09.11.2023			Date of Harvesting:		02.05.2024		

Table 6.6.3. North Western Plains Zone **SPL-3** **Hisar** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	15.61	243	44.93	14.25	46.94	81.00
50-50-50 N	0.00	51.22	407	44.68	28.19	137.08	110.00
75-75-GS	0.00	52.86	413	44.25	29.00	147.96	111.67
0-75-GS	17.00	43.95	362	45.13	26.96	119.05	104.33
25-25-GS	63.00	45.03	355	45.57	27.86	124.83	105.33
50-50-GS	33.00	49.15	390	44.75	28.18	137.76	110.00
25-50-GS	50.00	47.01	370	45.41	28.04	128.91	108.00
60-60-GS	20.00	50.21	407	43.25	28.60	137.76	110.33
70-70-70 N	0.00	53.13	410	42.49	30.68	147.62	111.33
CD (0.05)		3.32	29.6	1.36	2.94	8.31	4.95
Date of Sowing: 15.11.2023			Date of Harvesting:		15.04.2024		

Table 6.6.4. North Western Plains Zone **SPL-3** **Karnal** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	17.73	248	40.86	17.59	–	76.79
50-50-50 N	0.00	62.97	405	41.30	37.67	–	110.39
75-75-GS	0.00	60.61	385	42.11	37.80	–	107.87
0-75-GS	30.00	60.46	357	41.69	40.58	–	108.07
25-25-GS	60.00	57.38	353	41.69	39.04	–	105.97
50-50-GS	30.00	59.20	387	42.25	36.93	–	108.47
25-50-GS	30.00	56.64	417	43.59	33.18	–	106.53
60-60-GS	0.00	50.07	388	42.21	30.67	–	105.89
70-70-70 N	0.00	61.34	468	40.19	32.80	–	108.55
CD (0.05)		7.17	72.81	1.73	7.74	–	4.66
Date of Sowing: 13.11.2023			Date of Harvesting:		25.04.2024		

Table 6.6.5. North Eastern Plains Zone **SPL-3** **Ludhiana** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	35.51	237	49.60	30.29	67.13	74.00
50-50-50 N	0.00	49.33	272	51.33	35.32	104.18	79.00
75-75-GS	30.00	55.28	319	53.39	32.46	121.41	83.33
0-75-GS	60.00	49.40	283	50.67	34.52	110.44	78.00
25-25-GS	60.00	46.81	270	49.84	34.86	101.85	81.33
50-50-GS	60.00	51.63	296	52.65	33.16	110.80	80.00
25-50-GS	60.00	48.93	274	50.26	35.56	96.89	79.67
60-60-GS	30.00	51.57	283	52.62	34.60	115.74	80.67
70-70-70 N	0.00	55.72	320	58.56	29.78	123.39	83.00
CD (0.05)		3.13	10.05	2.26	2.50	4.40	1.61
Date of Sowing: 31.10.2023			Date of Harvesting:		19.04.2024		

Table 6.6.6. North Eastern Plains Zone **SPL-3** **Pantnagar** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ Earhead	Biomass, q/ha	Plant Ht., cm
Zero N	0.00	41.80	282	36.99	40.10	107.68	–
50-50-50 N	0.00	62.80	318	42.05	46.94	147.48	–
75-75-GS	0.00	60.30	313	41.82	46.03	142.54	–
0-75-GS	0.00	48.35	293	37.90	43.57	118.77	–
25-25-GS	30.00	45.70	289	37.15	42.62	112.90	–
50-50-GS	30.00	53.52	300	39.67	45.00	128.40	–
25-50-GS	30.00	50.80	296	38.10	45.09	123.54	–
60-60-GS	30.00	56.40	305	39.97	46.20	134.56	–
70-70-70 N	0.00	58.23	310	40.45	46.47	137.95	–
CD (0.05)		3.23	4.49	2.08	0.94	3.23	–
Date of Sowing: 10.11.2023			Date of Harvesting:		02.04.2024		

Table 6.7.1. North Eastern Plains Zone **SPL-3** **Coochbehar** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/sq.m.	1000 grains weight, g	Grains/Earhead
Zero N	0.00	20.97	188	32.23	35.12
50-50-50 N	0.00	64.47	313	40.63	50.82
75-75-GS	0.00	59.87	310	40.57	47.78
0-75-GS	60.00	45.50	250	39.80	46.14
25-25-GS	90.00	45.73	253	39.80	45.41
50-50-GS	30.00	52.60	302	40.17	43.28
25-50-GS	60.00	52.60	308	40.00	42.95
60-60-GS	30.00	66.73	323	39.77	52.03
70-70-70 N	0.00	54.27	327	40.40	41.18
CD (0.05)		7.25	30	0.54	8.16
Date of Sowing:	15.11.2023			Date of Harvesting:	28.03.2024

Table 6.7.2. North Eastern Plains Zone **SPL-3** **Sabour** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/sq.m.	1000 grains weight, g	Grains/Earhead
Zero N	0.00	28.06	241	38.00	30.58
50-50-50 N	0.00	45.75	332	41.07	33.82
75-75-GS	0.00	46.66	357	40.09	33.16
0-75-GS	30.00	44.09	316	42.36	33.23
25-25-GS	30.00	39.18	323	45.79	26.97
50-50-GS	0.00	39.82	319	45.11	27.91
25-50-GS	0.00	38.78	317	43.82	28.28
60-60-GS	0.00	44.39	330	42.46	32.00
70-70-70 N	0.00	46.31	356	41.90	32.81
CD (0.05)		8.81	62	4.77	9.70
Date of Sowing:	30.11.2023			Date of Harvesting:	19.04.2024

Table 6.7.3. North Eastern Plains Zone **SPL-3** **Varanasi** **2023-24**

Treatments	GS based N application, kg/ha	Yield, q/ha	Earhead/sq.m.	1000 grains weight, g	Grains/Earhead
Zero N	0.00	30.66	204	33.55	44.95
50-50-50 N	0.00	36.60	302	36.23	33.50
75-75-GS	43.40	40.57	328	38.76	31.87
0-75-GS	24.80	34.45	279	34.23	36.06
25-25-GS	39.10	33.21	277	34.73	34.54
50-50-GS	21.80	35.93	304	37.55	31.45
25-50-GS	27.80	35.57	285	36.30	34.35
60-60-GS	12.20	39.00	315	39.45	31.42
70-70-70 N	0.00	41.26	335	40.51	30.35
CD (0.05)		4.49	8	0.35	4.72
Date of Sowing:	09.12.2023			Date of Harvesting:	21.04.2024

Table 6.10.1. North Eastern Plains Zone	**SPL-4**	**Ayodhya**	**2023-24**
Treatments	Main crop yield, q/ha	Intercrop yield, q/ha	Wheat equivalent yield, q/ha
Wheat + Toria (8:2)	51.37	4.8	62.87
Wheat + Lentil (4:2)	51.63	6.5	70.09
Wheat + Linseed (4:2)	51.13	5.2	64.31
Barley + Toria (8:2)	36.50	4.8	40.94
Barley + Lentil (4:2)	35.70	6.6	47.42
Barley + Linseed (4:2)	35.60	5.2	42.18
Wheat (Sole)	54.47	0	54.47
Barley (Sole)	36.63	0	29.79
Toria (Sole)	14.90	0	35.76
Lentil (Sole)	26.35	0	74.31
Linseed (Sole)	22.58	0	57.59
CD (0.05)			2.59
Date of Sowing:	14.11.2023	Date of Harvesting:	

Table 6.10.2. North Eastern Plains Zone	**SPL-4**	**Burdwan**	**2023-24**
Treatments	Main crop yield, q/ha	Intercrop yield, q/ha	Wheat equivalent yield, q/ha
Wheat + Toria (8:2)	17.92	7.92	36.92
Wheat + Lentil (4:2)	20.40	4.63	33.44
Wheat + Linseed (4:2)	19.38	8.50	41.06
Barley + Toria (8:2)	15.45	7.43	30.35
Barley + Lentil (4:2)	18.00	4.25	26.57
Barley + Linseed (4:2)	16.38	9.29	36.97
Wheat (Sole)	27.60	0	27.60
Barley (Sole)	23.63	0	19.14
Toria (Sole)	9.76	0	23.43
Lentil (Sole)	6.06	0	17.08
Linseed (Sole)	11.90	0	30.35
CD (0.05)			3.20
Date of Sowing:	07.11.2023	Date of Harvesting:	07.03.2024

Table 6.10.3. North Eastern Plains Zone	**SPL-4**	**Kanpur**	**2023-24**
Treatments	Main crop yield, q/ha	Intercrop yield, q/ha	Wheat equivalent yield, q/ha
Wheat + Toria (8:2)	40.52	4.20	50.59
Wheat + Lentil (4:2)	41.04	3.72	51.54
Wheat + Linseed (4:2)	37.12	4.37	48.26
Barley + Toria (8:2)	38.78	3.93	40.84
Barley + Lentil (4:2)	35.96	3.89	40.11
Barley + Linseed (4:2)	38.71	3.18	39.47
Wheat (Sole)	44.23	0	44.23
Barley (Sole)	44.93	0	36.40
Toria (Sole)	5.83	0	14.00
Lentil (Sole)	7.70	0	21.71
Linseed (Sole)	5.23	0	13.35
CD (0.05)			2.96
Date of Sowing:	08.12.2023	Date of Harvesting:	15.04.2024

Table 6.10.4. North Eastern Plains Zone	**SPL-4**	**Shillongani**	**2023-24**
Treatments	Main crop yield, q/ha	Intercrop yield, q/ha	Wheat equivalent yield, q/ha
Wheat + Toria (8:2)	51.25	7.77	69.88
Wheat + Lentil (4:2)	49.85	2.20	56.08
Wheat + Linseed (4:2)	48.82	2.33	54.77
Barley + Toria (8:2)	37.30	6.34	45.53
Barley + Lentil (4:2)	27.61	2.27	28.87
Barley + Linseed (4:2)	27.11	2.45	28.29
Wheat (Sole)	45.80	0	45.80
Barley (Sole)	39.99	0	32.52
Toria (Sole)	5.09	0	12.19
Lentil (Sole)	11.94	0	33.73
Linseed (Sole)	5.40	0	13.77
CD (0.05)			3.71
Date of Sowing:	19.11.2023	Date of Harvesting:	04.04.2024

Table 6.10.5. North Eastern Plains Zone	**SPL-4**	**Varanasi**	**2023-24**
Treatments	Main crop yield, q/ha	Intercrop yield, q/ha	Wheat equivalent yield, q/ha
Wheat + Toria (8:2)	33.73	1.33	36.93
Wheat + Lentil (4:2)	39.65	6.71	58.58
Wheat + Linseed (4:2)	34.65	8.10	55.31
Barley + Toria (8:2)	9.44	1.23	10.59
Barley + Lentil (4:2)	19.27	3.75	26.17
Barley + Linseed (4:2)	15.64	7.64	32.15
Wheat (Sole)	39.56	0	39.56
Barley (Sole)	14.80	0	11.99
Toria (Sole)	7.97	0	19.13
Lentil (Sole)	10.11	0	28.51
Linseed (Sole)	7.59	0	19.34
CD (0.05)			6.92
Date of Sowing:	21.12.2023	Date of Harvesting:	09.04.2024

Table 7.2.1. North Western Plain Zone			**IR-TS-HL-DOS**		**Durgapura**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	43.47	4	25.30	2	34.38	4
PL 891 (C)	52.39	3	22.77	3	37.58	3
Karan 16 (C)	64.33	1	26.94	1	45.63	1
NDB 943 (C)	58.70	2	20.20	4	39.45	2
Mean	54.72		23.80		39.26	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.37	1.51	3.23	
Genotype (B)	**		1.26	3.19	7.89	
B within A	**		1.79	4.50		
A within B			1.59	4.01		
			Earhead/sq.m.			
DWRB 223	335	4	199	2	267	4
PL 891 (C)	361	3	183	3	272	3
Karan 16 (C)	422	1	210	1	316	1
NDB 943 (C)	396	2	167	4	282	2
Mean	379		190		284	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		2.37	9.77	2.88	
Genotype (B)	**		6.69	16.87	5.77	
B within A	**		9.46	23.85		
A within B			8.53	21.50		
			Grains/earhead			
DWRB 223	28.97	4	29.32	1	29.14	3
PL 891 (C)	30.25	3	24.91	4	27.58	4
Karan 16 (C)	33.40	1	29.31	2	31.36	1
NDB 943 (C)	31.32	2	27.53	3	29.42	2
Mean	30.98		27.77		29.38	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.50	2.08	5.93	
Genotype (B)	*		0.84	2.12	7.03	
B within A	N.S.		1.19	3.00		
A within B			1.15	2.89		
			1000 grains weight, g			
DWRB 223	44.86	4	43.56	4	44.21	4
PL 891 (C)	48.19	1	50.14	1	49.17	1
Karan 16 (C)	45.75	3	43.96	2	44.86	3
NDB 943 (C)	47.35	2	43.95	3	45.65	2
Mean	46.54		45.40		45.97	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.10	4.52	8.25	
Genotype (B)	*		1.12	2.83	5.99	
B within A	N.S.		1.59	4.00		
A within B			1.76	4.43		
Date of Sowing:	9.11.2023	7.12.2023	Date of Harvesting:		4.03.2024	18.03.2024

Table 7.2.2. North Western Plain Zone		**IR-TS-HL-DOS**			**Karnal**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	37.82	3	34.38	2	36.10	2
PL 891 (C)	37.87	2	34.14	3	36.01	3
Karan 16 (C)	39.34	1	35.43	1	37.38	1
NDB 943 (C)	32.07	4	29.50	4	30.79	4
Mean	36.77		33.36		35.07	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.20	0.81	1.94	
Genotype (B)	**		0.62	1.57	4.34	
B within A	N.S.		0.88	2.22		
A within B			0.79	1.98		
			Earhead/sq.m.			
DWRB 223	343	2	343	3	343	2
PL 891 (C)	340	3	344	2	342	3
Karan 16 (C)	367	1	354	1	360	1
NDB 943 (C)	328	4	329	4	328	4
Mean	344		343		344	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		3.93	16.22	3.96	
Genotype (B)	N.S.		7.89	19.90	5.63	
B within A	N.S.		11.16	28.14		
A within B			10.44	26.30		
			Grains/earhead			
DWRB 223	28.75	1	26.65	2	27.70	2
PL 891 (C)	27.97	3	24.73	3	26.35	3
Karan 16 (C)	28.20	2	27.29	1	27.75	1
NDB 943 (C)	26.26	4	24.42	4	25.34	4
Mean	27.79		25.78		26.78	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.52	2.14	6.71	
Genotype (B)	N.S.		0.96	2.42	8.79	
B within A	N.S.		1.36	3.43		
A within B			1.29	3.24		
			1000 grains weight, g			
DWRB 223	38.48	2	37.77	2	38.13	2
PL 891 (C)	40.07	1	40.17	1	40.12	1
Karan 16 (C)	38.17	3	36.68	4	37.43	3
NDB 943 (C)	37.40	4	36.71	3	37.05	4
Mean	38.53		37.83		38.18	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.25	1.02	2.25	
Genotype (B)	**		0.45	1.13	2.88	
B within A	N.S.		0.63	1.60		
A within B			0.60	1.52		
Date of Sowing:	12.11.2023	10.12.2023	Date of Harvesting:		15.04.2024	22.04.2024

Table 7.2.3. North Western Plain Zone			**IR-TS-HL-DOS**		**Ludhiana**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	43.50	4	27.17	3	35.33	3
PL 891 (C)	44.30	3	23.71	4	34.00	4
Karan 16 (C)	57.75	1	38.04	1	47.90	1
NDB 943 (C)	49.83	2	31.92	2	40.87	2
Mean	48.84		30.21		39.53	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.48	1.98	4.20	
Genotype (B)	**		1.22	3.08	7.58	
B within A	N.S.		1.73	4.36		
A within B			1.57	3.96		
			Earhead/sq.m.			
DWRB 223	297	3	256	3	276	3
PL 891 (C)	305	2	285	1	295	2
Karan 16 (C)	315	1	283	2	299	1
NDB 943 (C)	291	4	252	4	272	4
Mean	302		269		286	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		2.34	9.65	2.84	
Genotype (B)	**		2.49	6.27	2.13	
B within A	*		3.52	8.86		
A within B			3.84	9.67		
			Grains/earhead			
DWRB 223	38.02	3	32.14	3	35.08	3
PL 891 (C)	30.48	4	21.56	4	26.02	4
Karan 16 (C)	55.60	1	38.16	2	46.88	1
NDB 943 (C)	43.53	2	40.56	1	42.04	2
Mean	41.91		33.10		37.51	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		1.24	5.10	11.42	
Genotype (B)	**		1.88	4.74	12.28	
B within A	N.S.		2.66	6.70		
A within B			2.61	6.58		
			1000 grains weight, g			
DWRB 223	38.66	3	33.35	3	36.01	2
PL 891 (C)	47.69	1	38.58	1	43.13	1
Karan 16 (C)	32.98	4	35.24	2	34.11	4
NDB 943 (C)	39.81	2	31.38	4	35.59	3
Mean	39.78		34.64		37.21	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.99	4.09	9.23	
Genotype (B)	**		0.75	1.90	4.96	
B within A	**		1.07	2.68		
A within B			1.35	3.41		
Date of Sowing:	15.11.2023	10.12.2023	Date of Harvesting:		12.04.2024	12.04.2024

Table 7.4.1. Central Zone			**IR-TS-HL-DOS**		**Gwalior**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	21.52	2	20.79	2	21.15	2
PL 891 (C)	17.45	4	16.81	3	17.13	4
Karan 16 (C)	22.97	1	16.56	4	19.77	3
NDB 943 (C)	21.18	3	21.54	1	21.36	1
Mean	20.78		18.93		19.85	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	0.25	1.04	4.38	
Genotype (B)		**	0.46	1.15	5.63	
B within A		**	0.64	1.63		
A within B			0.61	1.54		
			Earhead/sqm			
DWRB 223	267	2	256	1	262	2
PL 891 (C)	239	4	215	4	227	4
Karan 16 (C)	272	1	254	2	263	1
NDB 943 (C)	264	3	246	3	255	3
Mean	261		243		252	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		*	1.98	8.18	2.73	
Genotype (B)		**	4.30	10.85	4.19	
B within A		N.S.	6.09	15.34		
A within B			5.63	14.19		
			Grains/Earhead			
DWRB 223	21.04	3	21.94	2	21.49	2
PL 891 (C)	17.99	4	20.33	3	19.16	4
Karan 16 (C)	22.43	1	17.80	4	20.12	3
NDB 943 (C)	21.46	2	23.88	1	22.67	1
Mean	20.73		20.99		20.86	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.11	0.47	1.88	
Genotype (B)		**	0.59	1.50	6.98	
B within A		**	0.84	2.12		
A within B			0.74	1.86		
			1000 Grains Weight, g			
DWRB 223	38.27	2	36.97	2	37.62	2
PL 891 (C)	40.63	1	38.67	1	39.65	1
Karan 16 (C)	37.73	3	36.70	4	37.22	3
NDB 943 (C)	37.40	4	36.73	3	37.07	4
Mean	38.51		37.27		37.89	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.33	1.38	3.05	
Genotype (B)		**	0.48	1.22	3.13	
B within A		N.S.	0.69	1.73		
A within B			0.68	1.72		
Date of Sowing		11.11.2023		09.12.2023		
Date of Harvesting		09.04.2024		12.04.2024		

Table 7.4.2. Central Zone			**IR-TS-HL-DOS**		**Udaipur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
DWRB 223	43.12	3	37.16	4	40.14	3
PL 891 (C)	43.62	2	40.12	2	41.87	2
Karan 16 (C)	49.52	1	44.93	1	47.23	1
NDB 943 (C)	40.48	4	38.97	3	39.72	4
Mean	44.19		40.30		42.24	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		**	0.21	0.87	1.73	
Genotype (B)		**	0.82	2.08	4.78	
B within A		N.S.	1.17	2.94		
A within B			1.03	2.60		
			Earhead/sqm			
DWRB 223	389	2	343	4	366	4
PL 891 (C)	384	3	357	3	370	2
Karan 16 (C)	418	1	365	1	392	1
NDB 943 (C)	382	4	359	2	370	2
Mean	393		356		375	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	14.18	58.56	13.11	
Genotype (B)		N.S.	9.87	24.89	6.46	
B within A		N.S.	13.97	35.19		
A within B			18.64	46.97		
			Grains/Earhead			
DWRB 223	33.80	1	33.00	2	33.40	2
PL 891 (C)	32.41	3	32.95	3	32.68	3
Karan 16 (C)	33.69	2	38.59	1	36.14	1
NDB 943 (C)	29.95	4	32.26	4	31.10	4
Mean	32.46		34.20		33.33	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.81	3.34	8.39	
Genotype (B)		*	1.11	2.81	8.19	
B within A		N.S.	1.58	3.97		
A within B			1.59	4.00		
			1000 Grains Weight, g			
DWRB 223	33.50	4	32.80	3	33.15	4
PL 891 (C)	35.13	3	34.20	1	34.67	1
Karan 16 (C)	35.27	2	32.10	4	33.68	3
NDB 943 (C)	35.45	1	33.70	2	34.58	2
Mean	34.84		33.20		34.02	
		F. Test	SEm	CD (0.05)	CV (%)	
Sowing (A)		N.S.	0.82	3.39	8.36	
Genotype (B)		N.S.	0.82	2.06	5.87	
B within A		N.S.	1.15	2.91		
A within B			1.29	3.26		
Date of Sowing		06.11.2023		01.12.2023		
Date of Harvesting		05.03.2024		18.03.2024		

Table 7.6.1. North Western Plain Zone **IR-SL-LON** **Hisar (CCS HAU)** **2023-24**

Genotype	Nitrogen level, kg/ha						Mean	Rk
	60	Rk	75	Rk	90	Rk		
				Yield, q/ha				
RD 2794 (C)	31.08	4	34.29	4	36.79	3	34.05	4
RD 2907 (C)	32.63	3	35.18	3	36.65	4	34.82	3
NDB 1173 (C)	36.17	1	37.85	1	40.08	1	38.03	1
KB 2031	34.35	2	35.94	2	37.29	2	35.86	2
Mean	33.56		35.81		37.70		35.69	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	*		0.76		2.97		7.34	
Genotype (B)	*		0.89		2.65		7.51	
B within A	N.S.		1.55		4.60			
A within B			1.54		4.57			
				Earhead/sq.m.				
RD 2794 (C)	371	4	387	4	404	4	387	4
RD 2907 (C)	376	3	401	2	405	3	394	3
NDB 1173 (C)	405	1	428	1	432	1	422	1
KB 2031	384	2	392	3	413	2	396	2
Mean	384		402		414		400	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	*		3.55		13.93		3.07	
Genotype (B)	*		7.79		23.15		5.85	
B within A	N.S.		13.50		40.10			
A within B			12.22		36.30			
				Grains/earhead				
RD 2794 (C)	19.88	2	20.60	2	20.87	2	20.45	2
RD 2907 (C)	18.13	4	17.76	4	18.22	4	18.04	4
NDB 1173 (C)	21.87	1	20.98	1	21.77	1	21.54	1
KB 2031	19.41	3	19.44	3	18.29	3	19.04	3
Mean	19.82		19.70		19.79		19.77	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		0.52		2.04		9.09	
Genotype (B)	**		0.47		1.40		7.16	
B within A	N.S.		0.82		2.43			
A within B			0.88		2.61			
				1000 grains weight, g				
RD 2794 (C)	42.40	3	43.13	3	43.70	3	43.08	3
RD 2907 (C)	48.00	1	49.27	1	49.73	1	49.00	1
NDB 1173 (C)	40.77	4	42.30	4	42.80	4	41.96	4
KB 2031	46.20	2	47.37	2	49.30	2	47.62	2
Mean	44.34		45.52		46.38		45.41	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	*		0.33		1.31		2.55	
Genotype (B)	**		0.48		1.43		3.18	
B within A	N.S.		0.83		2.48			
A within B			0.80		2.36			
Date of Sowing:	15.11.2023		Date of Harvesting:				12.04.2024	

Table 7.6.2. North Western Plain Zone **IR-SL-LON** **Hisar (IIWBR)** **2023-24**

Genotype	Nitrogen level, kg/ha						Mean	Rk
	60	Rk	75	Rk	90	Rk		
				Yield, q/ha				
RD 2794 (C)	33.33	4	29.67	4	49.00	1	37.33	4
RD 2907 (C)	39.33	2	33.93	3	47.00	2	40.09	3
NDB 1173 (C)	38.00	3	39.83	1	47.00	2	41.61	1
KB 2031	44.67	1	34.00	2	46.00	4	41.56	2
Mean	38.83		34.36		47.25		40.15	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	**		1.22		4.79		10.52	
Genotype (B)	N.S.		1.91		5.68		14.28	
B within A	N.S.		3.31		9.83			
A within B			3.11		9.25			
				Earhead/sq.m.				
RD 2794 (C)	390	4	446	1	483	1	439	1
RD 2907 (C)	415	2	429	2	462	2	435	2
NDB 1173 (C)	450	1	417	3	389	4	419	3
KB 2031	407	3	374	4	452	3	411	4
Mean	416		416		446		426	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		9.95		39.05		8.09	
Genotype (B)	N.S.		10.69		31.77		7.53	
B within A	*		18.52		55.02			
A within B			18.87		56.07			
				Grains/earhead				
RD 2794 (C)	22.01	2	16.90	4	20.63	4	19.85	4
RD 2907 (C)	21.68	3	18.76	3	23.61	2	21.35	3
NDB 1173 (C)	17.85	4	24.94	1	27.74	1	23.51	1
KB 2031	22.41	1	20.08	2	22.01	3	21.50	2
Mean	20.99		20.17		23.50		21.55	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		0.81		3.19		13.05	
Genotype (B)	N.S.		1.27		3.76		17.64	
B within A	N.S.		2.19		6.52			
A within B			2.07		6.14			
				1000 grains weight, g				
RD 2794 (C)	39.19	4	39.24	3	49.05	1	42.49	4
RD 2907 (C)	44.16	3	42.53	2	43.60	4	43.43	2
NDB 1173 (C)	47.22	2	38.44	4	43.74	3	43.13	3
KB 2031	48.81	1	46.19	1	47.07	2	47.36	1
Mean	44.85		41.60		45.86		44.10	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		1.22		4.80		9.61	
Genotype (B)	N.S.		1.24		3.69		8.45	
B within A	N.S.		2.15		6.39			
A within B			2.23		6.62			
Date of Sowing:	24.11.2023		Date of Harvesting:				27.04.2024	

Table 7.8.1. North Eastern Plain Zone **IR-SL-LON** **Ayodhya** **2023-24**

Genotype	Nitrogen Levels						Mean	Rk
	60 kg/ha	Rk	75 kg/ha	Rk	90 kg/ha	Rk		
				Yield, q/ha				
RD 2794 (C)	31.10	4	32.87	4	34.00	4	32.66	4
RD 2907 (C)	32.45	3	34.12	3	35.12	3	33.89	3
NDB 1173 (C)	35.07	1	37.30	1	37.65	1	36.67	1
KB 2031	33.80	2	35.75	2	35.50	2	35.02	2
Mean	33.10		35.01		35.57		34.56	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	**		0.19		0.74		1.90	
Genotype (B)	**		0.39		1.15		3.35	
B within A	N.S.		0.67		1.98			
A within B			0.61		1.81			
				Earhead/sq.m.				
RD 2794 (C)	385	4	390	4	390	4	388	4
RD 2907 (C)	388	3	394	3	411	1	398	3
NDB 1173 (C)	398	1	421	1	405	2	408	1
KB 2031	392	2	409	2	403	3	401	2
Mean	391		403		402		399	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		3.33		13.09		2.90	
Genotype (B)	N.S.		4.90		14.54		3.68	
B within A	N.S.		8.48		25.19			
A within B			8.06		23.96			
				Grains/earhead				
RD 2794 (C)	22.07	4	22.41	2	23.33	2	22.60	2
RD 2907 (C)	22.62	2	22.26	3	21.89	4	22.26	4
NDB 1173 (C)	22.48	3	22.17	4	23.63	1	22.76	1
KB 2031	22.71	1	22.56	1	22.28	3	22.52	3
Mean	22.47		22.35		22.79		22.54	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		0.21		0.84		3.29	
Genotype (B)	N.S.		0.40		1.18		5.30	
B within A	N.S.		0.69		2.05			
A within B			0.63		1.88			
				1000 grains weight, g				
RD 2794 (C)	36.57	4	37.63	4	37.33	4	37.18	4
RD 2907 (C)	37.03	3	38.90	2	39.03	3	38.32	3
NDB 1173 (C)	39.23	1	39.97	1	39.70	1	39.63	1
KB 2031	38.00	2	38.77	3	39.53	2	38.77	2
Mean	37.71		38.82		38.90		38.48	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	*		0.16		0.63		1.43	
Genotype (B)	**		0.09		0.27		0.72	
B within A	**		0.16		0.47			
A within B			0.21		0.63			

Date of Sowing: 13.11.2023 Date of Harvesting: 01.03.2024

Table 7.8.2. North Eastern Plain Zone **IR-SL-LON** **Kanpur** **2023-24**

Genotype	Nitrogen Levels						Mean	Rk
	60 kg/ha	Rk	75 kg/ha	Rk	90 kg/ha	Rk		
				Yield, q/ha				
RD 2794 (C)	26.80	4	28.40	4	31.20	4	28.80	4
RD 2907 (C)	28.30	3	30.80	3	32.40	3	30.50	3
NDB 1173 (C)	29.80	2	31.20	2	33.50	2	31.50	2
KB 2031	32.60	1	34.40	1	36.50	1	34.50	1
Mean	29.38		31.20		33.40		31.33	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	*		0.66		2.60		7.33	
Genotype (B)	**		0.37		1.10		3.55	
B within A	N.S.		0.64		1.91			
A within B			0.87		2.57			
				Earhead/sq.m.				
RD 2794 (C)	373	2	369	3	372	1	371	2
RD 2907 (C)	376	1	377	1	369	3	374	1
NDB 1173 (C)	373	3	338	4	364	4	358	4
KB 2031	369	4	370	2	370	2	369	3
Mean	373		364		369		368	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		7.21		28.29		6.78	
Genotype (B)	N.S.		6.35		18.87		5.17	
B within A	N.S.		11.00		32.69			
A within B			11.95		35.50			
				Grains/earhead				
RD 2794 (C)	18.79	3	16.32	4	17.86	4	17.66	4
RD 2907 (C)	17.03	4	17.80	3	18.94	3	17.92	3
NDB 1173 (C)	22.14	2	20.96	2	19.42	2	20.84	2
KB 2031	24.48	1	25.46	1	23.61	1	24.52	1
Mean	20.61		20.14		19.96		20.23	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	N.S.		0.65		2.56		11.17	
Genotype (B)	**		0.56		1.66		8.29	
B within A	N.S.		0.97		2.88			
A within B			1.06		3.16			
				1000 grains weight, g				
RD 2794 (C)	38.30	2	47.13	1	47.00	2	44.14	2
RD 2907 (C)	44.17	1	45.90	2	46.43	3	45.50	1
NDB 1173 (C)	36.13	4	45.27	3	47.43	1	42.94	3
KB 2031	36.17	3	36.57	4	41.80	4	38.18	4
Mean	38.69		43.72		45.67		42.69	
	F. Test		SEm		CD (0.05)		CV (%)	
Nitrogen (A)	**		0.10		0.40		0.83	
Genotype (B)	**		0.18		0.54		1.28	
B within A	**		0.32		0.94			
A within B			0.29		0.87			
Date of Sowing:	20.12.2023		Date of Harvesting:		10.04.2024			

Table 7.10.1. North Eastern Plain Zone			**IR-TS-FB-DOS**		**Ayodhya**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HUB 113 (C)	29.33	4	23.78	4	26.56	4
BH 946 (C)	31.53	3	25.35	3	28.44	3
DWRB 137 (C)	34.33	1	28.53	1	31.43	1
UPB 1106	33.07	2	27.08	2	30.08	2
Mean	32.07		26.19		29.13	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.18	0.76	2.20	
Genotype (B)	**		0.46	1.17	3.89	
B within A	N.S.		0.65	1.65		
A within B			0.60	1.50		
			Earhead/sq.m.			
HUB 113 (C)	421	4	403	4	412	4
BH 946 (C)	428	3	406	3	417	3
DWRB 137 (C)	440	1	416	1	428	1
UPB 1106	434	2	411	2	423	2
Mean	431		409		420	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.85	3.51	0.70	
Genotype (B)	**		1.52	3.82	0.88	
B within A	N.S.		2.14	5.40		
A within B			2.04	5.14		
			Grains/earhead			
HUB 113 (C)	18.45	4	17.03	4	17.74	4
BH 946 (C)	19.18	2	17.85	3	18.51	3
DWRB 137 (C)	19.11	3	18.77	1	18.94	1
UPB 1106	19.22	1	18.42	2	18.82	2
Mean	18.99		18.02		18.50	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.16	0.65	2.96	
Genotype (B)	N.S.		0.36	0.91	4.79	
B within A	N.S.		0.51	1.29		
A within B			0.47	1.19		
			1000 grains weight, g			
HUB 113 (C)	37.77	4	34.70	4	36.23	4
BH 946 (C)	38.47	3	35.00	3	36.73	3
DWRB 137 (C)	40.83	1	36.60	1	38.72	1
UPB 1106	39.63	2	35.80	2	37.72	2
Mean	39.18		35.53		37.35	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.49	2.04	4.59	
Genotype (B)	**		0.32	0.80	2.09	
B within A	N.S.		0.45	1.14		
A within B			0.63	1.59		
Date of Sowing:	16.11.2023	12.12.2023	Date of Harvesting:		03.03.2024	29.03.2024

Table 7.10.2. North Eastern Plain Zone			**IR-TS-FB-DOS**		**Kanpur**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HUB 113 (C)	34.69	2	40.60	2	37.65	2
BH 946 (C)	26.31	4	29.65	4	27.98	4
DWRB 137 (C)	28.28	3	36.77	3	32.52	3
UPB 1106	34.86	1	41.24	1	38.05	1
Mean	31.04		37.07		34.05	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.51	2.09	5.14	
Genotype (B)	**		0.84	2.11	6.02	
B within A	N.S.		1.18	2.98		
A within B			1.14	2.88		
			Earhead/sq.m.			
HUB 113 (C)	413	4	414	3	414	4
BH 946 (C)	415	3	412	4	414	3
DWRB 137 (C)	417	1	416	2	417	2
UPB 1106	417	2	418	1	418	1
Mean	416		415		415	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.10	4.55	0.92	
Genotype (B)	N.S.		1.56	3.92	0.92	
B within A	N.S.		2.20	5.54		
A within B			2.20	5.54		
			Grains/earhead			
HUB 113 (C)	22.95	1	22.50	1	22.72	1
BH 946 (C)	17.21	4	18.99	3	18.10	4
DWRB 137 (C)	22.51	2	17.49	4	20.00	3
UPB 1106	20.27	3	21.52	2	20.89	2
Mean	20.73		20.13		20.43	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		0.49	2.04	8.39	
Genotype (B)	**		0.65	1.63	7.75	
B within A	**		0.91	2.30		
A within B			0.93	2.35		
			1000 grains weight, g			
HUB 113 (C)	36.63	3	43.63	3	40.13	3
BH 946 (C)	36.83	2	37.83	4	37.33	4
DWRB 137 (C)	30.23	4	50.60	1	40.42	2
UPB 1106	41.30	1	45.83	2	43.57	1
Mean	36.25		44.48		40.36	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.36	1.47	3.05	
Genotype (B)	**		0.45	1.14	2.76	
B within A	**		0.64	1.62		
A within B			0.66	1.66		
Date of Sowing:	11.11.2023	06.12.2023	Date of Harvesting:		01.04.2024	10.04.2024

Table 7.10.3. North Eastern Plain Zone			**IR-TS-FB-DOS**		**Ranchi**	**2023-24**
Genotype	Date of Sowing				Mean	Rk
	Timely	Rk	Late	Rk		
			Yield, q/ha			
HUB 113 (C)	52.00	1	29.93	3	40.97	1
BH 946 (C)	47.75	2	26.07	4	36.91	3
DWRB 137 (C)	45.90	3	31.50	2	38.70	2
UPB 1106	39.40	4	31.93	1	35.67	4
Mean	46.26		29.86		38.06	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	**		0.63	2.61	5.75	
Genotype (B)	**		0.96	2.41	6.16	
B within A	**		1.35	3.41		
A within B			0.70	2.11		
			Earhead/sq.m.			
HUB 113 (C)	363	1	253	3	308	1
BH 946 (C)	345	2	242	4	294	2
DWRB 137 (C)	314	3	263	2	289	3
UPB 1106	273	4	280	1	277	4
Mean	324		260		292	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		8.34	34.43	9.90	
Genotype (B)	N.S.		8.80	22.17	7.38	
B within A	**		12.44	31.35		
A within B			13.62	34.33		
			Grains/earhead			
HUB 113 (C)	34.15	1	29.53	1	31.84	1
BH 946 (C)	30.95	4	27.41	4	29.18	4
DWRB 137 (C)	32.72	2	28.48	2	30.60	2
UPB 1106	32.12	3	27.43	3	29.77	3
Mean	32.49		28.21		30.35	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	N.S.		1.37	5.67	15.66	
Genotype (B)	N.S.		1.33	3.35	10.73	
B within A	N.S.		1.88	4.74		
A within B			2.13	5.37		
			1000 grains weight, g			
HUB 113 (C)	41.96	4	40.04	3	41.00	4
BH 946 (C)	45.25	1	39.40	4	42.33	3
DWRB 137 (C)	45.00	2	42.20	1	43.60	1
UPB 1106	45.00	2	41.73	2	43.37	2
Mean	44.30		40.84		42.57	
	F. Test		SEm	CD (0.05)	CV (%)	
Sowing (A)	*		0.47	1.96	3.86	
Genotype (B)	*		0.57	1.44	3.28	
B within A	N.S.		0.81	2.03		
A within B			0.84	2.13		
Date of Sowing:	15.11.2023	14.12.2023	Date of Harvesting:		25.03.2024	15.04.2024

Table 7.11.1(a). Northern Hills Zone		**SPL-5**		**Khudwani**		**2023-24**
Treatments	Yield, q/ha	Earheads/ sqm	1000 GW, g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	13.85	112	43.59	29.63	102.47	28.60
Metsulfuron methyl + S at 4 g/ha+ 0.2%	28.88	176	49.82	36.52	110.67	52.65
Carfentrazone 20 g/ha	19.54	145	46.35	29.71	105.23	38.61
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	19.83	152	48.04	27.44	109.33	42.14
2,4-D-Na 500 g/ha	14.53	121	45.72	27.30	103.60	32.51
2,4-D-Na + Carfentrazone 500 + 20 g/ha	16.02	135	44.21	28.94	102.73	34.86
2,4-D-E 500 g/ha	15.93	123	45.01	29.47	102.61	33.76
2,4-D-E + Carfentrazone 500 + 20 g/ha	25.52	168	49.64	30.73	71.15	48.43
Weedy check	11.73	88	40.39	35.10	89.63	24.66
Weed free	31.94	184	49.55	49.55	107.47	57.84
CD (0.05)	2.93	32.59	3.64	9.34	32.45	5.74
Date of Sowing :	02.11.2023		Date of Harvesting:		21.06.2024	

Table 7.11.1(b). Northern Hills Zone	**SPL-5**		**Khudwani**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	8.53 (72.00)	9.32 (86.67)	2.32 (4.63)	2.48 (5.42)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	6.76 (45.33)	7.57 (57.33)	1.75 (2.17)	1.85 (2.54)
Carfentrazone 20 g/ha	8.16 (66.67)	9.43 (90.67)	2.16 (3.67)	2.30 (4.29)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	7.13 (52.00)	8.49 (74.67)	1.97 (2.90)	2.09 (3.40)
2,4-D-Na 500 g/ha	9.01 (81.33)	9.83 (100.00)	2.27 (4.50)	2.42 (5.26)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	5.89 (34.67)	7.16 (50.67)	2.09 (3.90)	2.22 (4.57)
2,4-D-E 500 g/ha	6.27 (38.67)	7.29 (53.33)	2.20 (4.03)	2.20 (4.05)
2,4-D-E + Carfentrazone 500 + 20 g/ha	6.37 (40.00)	8.27 (68.00)	1.92 (2.77)	2.04 (3.24)
Weedy check	10.96 (120.00)	12.08 (146.67)	3.12 (9.40)	3.35 (11.00)
Weed free	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)
CD (0.05)	1.90	2.14	0.77	0.83
Date of Sowing :	02.11.2023	Date of Harvesting:		21.06.2024

Table 7.11.2(a). Northern Hills Zone		**SPL-5**		**Malan**		**2023-24**
Treatments	Yield, q/ha	Earheads/ sqm	1000 GW, g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	35.57	273	34.62	37.64	98.00	104.05
Metsulfuron methyl + S at 4 g/ha+ 0.2%	33.58	271	35.48	34.87	96.33	98.54
Carfentrazone 20 g/ha	31.74	264	34.52	34.90	92.00	91.79
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	32.36	274	35.08	33.66	94.67	94.68
2,4-D-Na 500 g/ha	29.29	269	33.76	32.21	91.67	90.78
2,4-D-Na + Carfentrazone 500 + 20 g/ha	30.74	272	34.80	32.59	92.33	92.38
2,4-D-E 500 g/ha	30.49	261	34.14	34.22	91.67	91.24
2,4-D-E + Carfentrazone 500 + 20 g/ha	33.50	272	35.13	35.13	90.67	95.37
Weedy check	23.99	253	31.14	30.43	89.67	74.59
Weed free	37.39	279	36.60	36.62	100.67	106.96
CD (0.05)	3.41	6.07	1.32	4.11	4.24	7.38
Date of Sowing :	15.11.2023		Date of Harvesting:		01.05.02024	

Table 7.11.2(b). Northern Hills Zone	**SPL-5**	**Malan**		**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	6.42 (40.33)	6.78 (45.00)	2.83 (7.04)	2.48 (5.18)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	7.19 (50.67)	6.95 (47.33)	3.05 (8.32)	2.96 (7.79)
Carfentrazone 20 g/ha	7.70 (58.33)	7.19 (50.67)	3.57 (11.84)	3.25 (9.55)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	7.16 (50.33)	5.34 (32.33)	3.15 (8.93)	2.81 (6.92)
2,4-D-Na 500 g/ha	7.42 (54.00)	7.35 (53.00)	3.53 (11.46)	3.53 (11.47)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	7.14 (50.00)	7.12 (49.67)	3.22 (9.35)	3.12 (8.75)
2,4-D-E 500 g/ha	7.32 (52.67)	7.42 (54.00)	3.68 (12.56)	3.56 (11.68)
2,4-D-E + Carfentrazone 500 + 20 g/ha	7.14 (50.00)	7.07 (49.00)	3.32 (10.05)	3.27 (9.71)
Weedy check	7.70 (58.33)	7.72 (58.67)	3.97 (14.79)	4.86 (22.71)
Weed free	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)
CD (0.05)	0.35	1.47	0.28	0.31
Date of Sowing :	15.11.2023	Date of Harvesting:		01.05.02024

Table 7.12.1(a). North Western Plains Zone		**SPL-5**		**Agra**	**2023-24**	
Treatments	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ earhead	Biomass, q/ha	Plant Ht., cm
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	52.42	305.2	44.25	38.83	125.80	–
Metsulfuron methyl + S at 4 g/ha+ 0.2%	46.66	295.2	42.23	37.44	113.38	–
Carfentrazone 20 g/ha	42.89	275.3	41.90	37.20	102.93	–
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	50.74	301.3	43.86	38.42	122.79	–
2,4-D-Na 500 g/ha	41.01	274.3	41.29	36.22	102.52	–
2,4-D-Na + Carfentrazone 500 + 20 g/ha	50.13	300.1	43.30	38.61	121.31	–
2,4-D-E 500 g/ha	48.51	297.2	42.83	38.15	117.39	–
2,4-D-E + Carfentrazone 500 + 20 g/ha	51.35	302.3	44.13	38.49	123.75	–
Weedy check	38.33	260.1	39.37	37.45	95.55	–
Weed free	55.27	310.3	45.30	39.34	132.64	–
CD (0.05)	1.75	8.86	1.68	1.27	1.80	–
Date of Sowing:	05.11.2023		Date of Harvesting:	23.03.2024		

Table 7.12.1(b). North Western Plains Zone		**SPL-5**	**Agra**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	2.72(6.4)	3.08(8.5)	3.82(13.6)	4.19(16.6)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	4.4(18.4)	4.85(22.6)	4.46(19)	4.85(22.5)
Carfentrazone 20 g/ha	4.38(18.2)	4.67(20.8)	4.55(19.8)	4.94(23.5)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	3.9(14.2)	4.2(16.6)	4.17(16.4)	4.54(19.7)
2,4-D-Na 500 g/ha	5.09(24.9)	5.31(27.2)	4.69(21)	5(24.1)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	4.2(16.7)	4.38(18.2)	4.36(18.1)	4.75(21.6)
2,4-D-E 500 g/ha	4.38(18.2)	4.66(20.7)	4.42(18.6)	4.84(22.4)
2,4-D-E + Carfentrazone 500 + 20 g/ha	3.13(8.9)	3.51(11.3)	4.1(15.8)	4.49(19.2)
Weedy check	5.53(29.6)	6.3(38.7)	9.66(92.3)	11.52(131.7)
Weed free	1(0)	1(0)	1(0)	1(0)
CD (0.05)	0.36	0.28	0.33	0.34
Date of Sowing:	05.11.2023	Date of Harvesting:	23.03.2024	

Table 7.12.2(a). North Western Plains Zone		SPL-5		Durgapura	2023-24	
Treatments	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ earhead	Biomass, q/ha	Plant Ht., cm
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	57.10	399.7	39.90	35.82	129.78	87.3
Metsulfuron methyl + S at 4 g/ha+ 0.2%	59.62	411.3	39.27	36.96	135.73	95.2
Carfentrazone 20 g/ha	52.19	374.0	38.23	36.50	118.86	83.1
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	55.29	395.7	39.53	35.35	124.60	84.2
2,4-D-Na 500 g/ha	48.05	352.7	39.23	34.71	108.92	89.5
2,4-D-Na + Carfentrazone 500 + 20 g/ha	53.10	380.7	38.27	36.46	122.78	83.6
2,4-D-E 500 g/ha	47.86	349.3	39.73	34.47	107.82	91.2
2,4-D-E + Carfentrazone 500 + 20 g/ha	53.59	389.0	38.40	35.89	123.25	84.9
Weedy check	39.17	290.7	35.19	38.31	86.72	88.8
Weed free	62.89	422.0	37.38	40.36	144.13	93.4
CD(0.05)	4.61	19.09	NS	NS	12.59	7.83
Date of Sowing:	9.11.2023		Date of Harvesting:	10.3.2024		

Table 7.12.2(b). North Western Plains Zone		SPL-5		Durgapura	2023-24
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2		Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	4.63(21)	5.25(27.3)	3.8(13.5)		5.28(27)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	2.96(8.7)	3.33(11.3)	3.42(10.9)		3.85(14.1)
Carfentrazone 20 g/ha	8.36(69)	9.52(89.8)	4.58(20.2)		6.45(40.7)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	6.03(35.7)	6.86(46.4)	4.18(16.5)		5.35(27.9)
2,4-D-Na 500 g/ha	8.86(77.7)	10.1(101.1)	4.96(23.7)		7.07(49)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	7.52(55.7)	8.57(72.5)	4.41(18.5)		6.26(38.3)
2,4-D-E 500 g/ha	9.43(88)	10.74(114.6)	5.67(31.2)		7.77(59.5)
2,4-D-E + Carfentrazone 500 + 20 g/ha	7.11(49.7)	8.09(64.7)	4.28(17.4)		6.16(37.2)
Weedy check	9.65(92.3)	11(120.2)	6.3(38.9)		8.73(75.3)
Weed free	1(0)	1(0)	1(0)		1(0)
CD (0.05)	1.11	1.27	0.69		0.84
Date of Sowing:	9.11.2023	Date of Harvesting:		10.3.2024	

Table 7.12.3(a). North Western Plains Zone	SPL-5			Hisar	2023-24	
Treatments	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ earhead	Biomass, q/ha	Plant Ht., cm
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	53.51	360.0	48.49	30.75	133.93	83.3
Metsulfuron methyl + S at 4 g/ha+ 0.2%	48.69	338.7	47.04	30.62	125.89	80.7
Carfentrazone 20 g/ha	48.72	341.3	46.77	30.55	125.60	81.3
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	54.17	366.7	48.82	30.27	136.90	87.3
2,4-D-Na 500 g/ha	49.02	342.7	47.30	30.33	125.89	82.0
2,4-D-Na + Carfentrazone 500 + 20 g/ha	52.26	352.0	48.47	30.68	130.95	84.3
2,4-D-E 500 g/ha	49.67	341.3	47.17	31.03	126.49	82.3
2,4-D-E + Carfentrazone 500 + 20 g/ha	53.75	360.0	48.82	30.62	133.93	85.7
Weedy check	44.11	305.3	45.78	31.60	114.58	78.3
Weed free	55.24	373.3	48.85	30.30	136.90	86.3
CD (0.05)	4.48	28.15	2.04	NS	9.44	5.17
Date of Sowing:	11.11.2022		Date of Harvesting:	16.04.2023		

Table 7.12.3(b). North Western Plains Zone	SPL-5		Hisar	2023-24
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	2.95(8)	2.75(6.7)	3.47(11.2)	4.01(15.6)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	3.58(12)	3.58(12)	3.76(13.5)	4.36(18.3)
Carfentrazone 20 g/ha	3.53(12)	3.37(10.7)	4.29(17.5)	4.6(20.6)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	3.2(9.3)	2.95(8)	2.93(7.7)	3.92(15)
2,4-D-Na 500 g/ha	4.1(16)	3.58(12)	4.7(21.3)	5.38(28.5)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	3(8)	2.49(5.3)	3.34(10.4)	3.36(10.6)
2,4-D-E 500 g/ha	3.93(14.7)	4.1(16)	4.67(20.8)	5.08(26.2)
2,4-D-E + Carfentrazone 500 + 20 g/ha	2.49(5.3)	2.49(5.3)	2.94(8.1)	3.37(10.5)
Weedy check	11.48(132)	10.73(114.7)	7.61(57.3)	15.9(253.9)
Weed free	1(0)	1(0)	1(0)	1(0)
CD (0.05)	1.14	1.02	0.91	1.66
Date of Sowing:	05.11.2023	Date of Harvesting:		23.03.2024

Table 7.12.4(a). North Western Plains Zone	SPL-5			Karnal	2023-24	
Treatments	Yield, q/ha	Earhead/ sq.m.	1000 grains weight, g	Grains/ earhead	Biomass, q/ha	Plant Ht., cm
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	43.77	311.7	47.79	29.51	109.40	–
Metsulfuron methyl + S at 4 g/ha+ 0.2%	39.33	280.0	48.35	29.40	99.33	–
Carfentrazone 20 g/ha	39.71	287.5	48.69	28.37	103.29	–
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	43.88	304.8	48.07	30.00	111.83	–
2,4-D-Na 500 g/ha	41.43	291.7	48.02	29.67	107.58	–
2,4-D-Na + Carfentrazone 500 + 20 g/ha	42.27	310.7	48.72	27.97	108.67	–
2,4-D-E 500 g/ha	41.28	308.3	47.12	28.30	105.60	–
2,4-D-E + Carfentrazone 500 + 20 g/ha	42.40	308.3	48.27	28.49	106.90	–
Weedy check	28.74	240.8	48.09	24.93	71.93	–
Weed free	43.91	317.5	48.25	28.76	113.53	–
CD (0.05)	6.90	33.10	NS	NS	16.20	–
Date of Sowing:	24.11.2022		Date of Harvesting:	30.04.2023		

Table 7.12.4(b). North Western Plains Zone	SPL-5		Karnal	2023-24
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	–	2.02(4)	–	1.21(0.5)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	–	10.49(114)	–	3.73(13.1)
Carfentrazone 20 g/ha	–	7.56(57.3)	–	4.26(17.3)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	–	2.83(8.7)	–	1.24(0.6)
2,4-D-Na 500 g/ha	–	5.81(35.3)	–	3.66(12.7)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	–	3.97(15.3)	–	2.59(5.8)
2,4-D-E 500 g/ha	–	6.07(36.7)	–	2.92(7.6)
2,4-D-E + Carfentrazone 500 + 20 g/ha	–	3.28(10)	–	1.78(2.2)
Weedy check	–	15.03(236)	–	9.44(88.1)
Weed free	–	1(0)	–	1(0)
CD (0.05)	–	3.41	–	0.63
Date of Sowing:	05.11.2023	Date of Harvesting:		23.03.2024

Table 7.13.1(a). North Eastern Plains Zone		**SPL-5**	**Ayodhya**	**2023-24**
Treatments	Yield, q/ha	Earhead/sq.m.	1000 grains weight, g	Grains/earhead
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	30.00	436	38.40	17.92
Metsulfuron methyl + S at 4 g/ha+ 0.2%	29.80	470	38.50	16.47
Carfentrazone 20 g/ha	28.63	458	38.93	16.06
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	30.97	492	38.93	16.17
2,4-D-Na 500 g/ha	28.22	477	38.67	15.30
2,4-D-Na + Carfentrazone 500 + 20 g/ha	29.50	422	38.37	18.20
2,4-D-E 500 g/ha	28.18	429	37.87	17.35
2,4-D-E + Carfentrazone 500 + 20 g/ha	29.80	410	38.07	19.10
Weedy check	23.50	398	36.63	16.14
Weed free	32.15	498	39.70	16.27
CD (0.05)	1.39	9.07	0.70	0.93
Date of Sowing:	15.11.2023	Date of Harvesting:	02.3.2024	

Table 7.13.1(b). North Eastern Plains Zone		**SPL-5**	**Ayodhya**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	4.34(17.9)	3.61(12.0)	5.69(31.3)	4.51(19.3)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	4.15(16.2)	3.59(11.9)	5.55(29.8)	4.37(18.1)
Carfentrazone 20 g/ha	4.21(16.7)	3.52(11.4)	5.71(31.6)	4.48(19.1)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	4.11(15.9)	3.41(10.6)	5.58(30.1)	4.11(15.9)
2,4-D-Na 500 g/ha	4.24(17.0)	3.44(10.8)	5.57(30.0)	4.13(16.1)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	4.40(18.4)	3.72(12.8)	5.82(32.9)	4.53(19.6)
2,4-D-E 500 g/ha	4.29(17.4)	3.63(12.2)	5.79(32.5)	4.55(19.7)
2,4-D-E + Carfentrazone 500 + 20 g/ha	4.70(21.1)	3.92(14.3)	5.89(33.7)	4.98(23.8)
Weedy check	5.21(26.1)	4.49(19.2)	6.65(43.2)	5.84(33.1)
Weed free	1.00(0.0)	1.00(0.0)	1.00(0.0)	1.00(0.0)
CD (0.05)	0.10	0.15	0.08	0.12
Date of Sowing:	15.11.2023	Date of Harvesting:	02.3.2024	

Table 7.13.2(a). North Eastern Plains Zone		**SPL-5**	**Ranchi**	**2023-24**
Treatments	Yield, q/ha	Earhead/sq.m.	1000 grains weight, g	Grains/earhead
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	30.53	287	36.90	28.98
Metsulfuron methyl + S at 4 g/ha+ 0.2%	26.26	262	36.33	27.66
Carfentrazone 20 g/ha	23.87	255	36.30	26.00
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	29.22	274	37.13	29.27
2,4-D-Na 500 g/ha	26.91	260	36.50	28.44
2,4-D-Na + Carfentrazone 500 + 20 g/ha	29.24	283	36.13	29.25
2,4-D-E 500 g/ha	28.18	276	36.30	28.69
2,4-D-E + Carfentrazone 500 + 20 g/ha	34.28	300	38.03	30.39
Weedy check	17.95	237	35.73	21.18
Weed free	36.87	311	38.53	30.82
CD (0.05)	4.20	43	3.52	6.02
Date of Sowing:	24.11.2023	Date of Harvesting:	12.04.2024	

Table 7.13.2(b). North Eastern Plains Zone		**SPL-5**	**Ranchi**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	2.44(4.95)	2.36(4.57)	2.09(3.39)	1.89(2.60)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	2.53(5.39)	2.51(5.30)	2.17(3.69)	2.08(3.36)
Carfentrazone 20 g/ha	2.58(5.67)	2.52(5.34)	2.20(3.82)	1.87(2.50)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	2.48(5.17)	2.48(5.16)	2.10(3.41)	1.84(2.38)
2,4-D-Na 500 g/ha	2.60(5.75)	2.52(5.33)	2.15(3.63)	1.87(2.48)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	2.50(5.25)	2.26(4.10)	2.13(3.52)	1.88(2.53)
2,4-D-E 500 g/ha	2.56(5.53)	2.34(4.53)	2.19(3.81)	1.94(2.77)
2,4-D-E + Carfentrazone 500 + 20 g/ha	2.34(4.53)	2.27(4.17)	2.02(3.08)	1.83(2.37)
Weedy check	2.97(7.84)	2.95(7.21)	2.43(4.90)	1.78(2.17)
Weed free	1.00(0.00)	1.00(0.00)	1.00(0.00)	1.00(0.00)
CD (0.05)	0.16	0.21	0.14	0.15
Date of Sowing:	24.11.2023	Date of Harvesting:	12.04.2024	

Table 7.14.1(a). Central Zone		**SPL-5**		**Gwalior**		**2023-24**
Treatments	Yield, q/ha	Earheads/ sqm	1000 Grains wt., g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	44.58	351	44.80	28.42	80.60	103.89
Metsulfuron methyl + S at 4 g/ha+ 0.2%	40.97	327	43.40	28.92	76.93	102.00
Carfentrazone 20 g/ha	41.02	334	44.20	27.80	78.00	104.35
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	43.61	345	44.53	28.36	80.80	104.69
2,4-D-Na 500 g/ha	41.52	309	43.67	30.73	78.27	101.65
2,4-D-Na + Carfentrazone 500 + 20 g/ha	43.13	353	44.33	27.57	80.00	104.66
2,4-D-E 500 g/ha	41.19	300	43.80	31.40	77.40	101.32
2,4-D-E + Carfentrazone 500 + 20 g/ha	43.06	340	44.27	28.67	79.00	104.82
Weedy check	37.76	285	44.00	30.14	76.53	96.35
Weed free	46.22	359	44.00	29.28	80.40	107.76
CD (0.05)	3.11	16.35	1.60	2.69	4.17	10.65
Date of Sowing :	15.11.2023		Date of Harvesting:		12.04.2024	

Table 7.14.1(b). Central Zone	**SPL-5**		**Gwalior**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	5.86 (33.5)	6.06 (35.9)	6.68 (43.7)	9.61 (91.3)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	7.17 (50.8)	7.27 (52.0)	7.89 (61.3)	11.30 (126.7)
Carfentrazone 20 g/ha	6.78 (45.1)	7.16 (50.3)	7.63 (57.3)	11.25 (125.8)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	6.53 (41.7)	6.92 (47.3)	6.76 (44.8)	10.53 (110.0)
2,4-D-Na 500 g/ha	6.89 (46.7)	7.01 (48.3)	7.34 (52.9)	11.04 (120.8)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	6.47 (40.9)	6.37 (40.0)	6.50 (41.3)	10.04 (100.0)
2,4-D-E 500 g/ha	7.33 (53.0)	7.56 (56.3)	8.32 (68.3)	11.67 (135.2)
2,4-D-E + Carfentrazone 500 + 20 g/ha	6.67 (44.0)	6.77 (45.0)	7.06 (49.0)	10.96 (119.2)
Weedy check	8.17 (66.0)	8.9 (78.3)	10.08 (100.7)	11.91 (140.8)
Weed free	4.80 (22.3)	5.4 (28.3)	5.54 (29.7)	8.47 (70.8)
CD (0.05)	1.02	0.93	0.58	0.75
Date of Sowing :	15.11.2023	Date of Harvesting:		12.04.2024

Table 7.14.2(a). Central Zone		**SPL-5**		**Jabalpur**		**2023-24**
Treatments	Yield, q/ha	Earheads/ sqm	1000 Grains wt., g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	27.52	438	30.21	20.92	90.11	81.63
Metsulfuron methyl + S at 4 g/ha+ 0.2%	16.66	419	36.15	11.54	88.00	68.03
Carfentrazone 20 g/ha	24.53	428	34.45	16.59	86.33	85.03
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	13.91	420	33.27	10.16	88.44	61.22
2,4-D-Na 500 g/ha	18.54	428	42.35	10.24	85.44	78.23
2,4-D-Na + Carfentrazone 500 + 20 g/ha	13.93	416	33.33	11.01	90.11	64.63
2,4-D-E 500 g/ha	18.98	433	29.87	14.67	86.44	71.43
2,4-D-E + Carfentrazone 500 + 20 g/ha	19.27	447	34.38	12.72	83.11	71.43
Weedy check	12.44	439	36.43	7.79	89.55	61.22
Weed free	32.75	429	31.07	24.64	89.22	90.14
CD (0.05)	3.33	32.60	10.83	3.75	5.31	27.06
Date of Sowing :	15.11.2023		Date of Harvesting:		04.05.2024	

Table 7.14.2(b). Central Zone	**SPL-5**		**Jabalpur**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	8.31 (68.2)	NA	4.40 (18.4)	NA
Metsulfuron methyl + S at 4 g/ha+ 0.2%	10.55 (110.3)	NA	6.32 (39.0)	NA
Carfentrazone 20 g/ha	12.5 (155.5)	NA	8.55 (72.4)	NA
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	12.82 (163.6)	NA	8.11 (64.9)	NA
2,4-D-Na 500 g/ha	11.20(124.7)	NA	4.71 (21.4)	NA
2,4-D-Na + Carfentrazone 500 + 20 g/ha	11.04 (120.9)	NA	5.78 (32.4)	NA
2,4-D-E 500 g/ha	9.28 (85.2)	NA	4.50 (19.5)	NA
2,4-D-E + Carfentrazone 500 + 20 g/ha	9.08 (81.6)	NA	5.03 (24.3)	NA
Weedy check	17.32 (299.3)	NA	9.60 (91.2)	NA
Weed free	3.69 (12.7)	NA	2.31 (4.4)	NA
CD (0.05)	0.81	NA	0.68	NA
Date of Sowing :	15.11.2023	Date of Harvesting:		04.05.2024

Not included in pooled due to incomplete weed data

Table 7.14.3(a). Central Zone	**SPL-5**		**Udaipur**			**2023-24**
Treatments	Yield, q/ha	Earheads/ sqm	1000 Grains wt., g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	51.87	518	49.33	20.47	89.37	129.25
Metsulfuron methyl + S at 4 g/ha+ 0.2%	43.30	458	48.98	19.42	84.40	108.84
Carfentrazone 20 g/ha	45.71	453	49.22	20.46	85.93	108.84
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	49.22	517	49.26	19.37	86.47	120.75
2,4-D-Na 500 g/ha	46.26	498	49.09	18.97	85.80	117.35
2,4-D-Na + Carfentrazone 500 + 20 g/ha	50.24	519	49.40	19.80	88.07	122.45
2,4-D-E 500 g/ha	48.20	504	48.85	19.60	85.93	120.75
2,4-D-E + Carfentrazone 500 + 20 g/ha	51.05	518	48.58	20.29	90.47	125.85
Weedy check	31.80	399	47.28	16.91	82.87	88.44
Weed free	52.72	532	50.28	19.75	92.67	130.95
CD (0.05)	7.38	56.72	2.90	3.83	6.65	18.63
Date of Sowing :	05.11.2023		Date of Harvesting:		04.03.2024	

Table 7.14.3(b). Central Zone	**SPL-5**		**Udaipur**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	3.36 (10.3)	4.23 (17.0)	3.61 (12.1)	4.73 (21.4)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	4.20 (16.7)	6.6 (42.7)	4.19 (16.6)	5.00 (24.0)
Carfentrazone 20 g/ha	4.79 (22.0)	6.19 (37.3)	4.36 (18.1)	5.08 (24.8)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	3.56 (11.7)	6.11 (36.3)	3.82 (13.6)	4.74 (21.5)
2,4-D-Na 500 g/ha	5.06 (24.7)	5.94 (34.3)	4.40 (18.4)	5.45 (28.7)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	3.74 (13.0)	6.16 (37.0)	4.12 (15.9)	5.16 (25.6)
2,4-D-E 500 g/ha	4.16 (16.3)	6.37 (39.7)	4.21 (16.7)	5.05 (24.5)
2,4-D-E + Carfentrazone 500 + 20 g/ha	3.56 (11.7)	4.79 (22.0)	3.81 (13.5)	4.73 (21.3)
Weedy check	6.45 (40.7)	7.57 (56.3)	6.70 (43.9)	8.01 (63.1)
Weed free	1.00 (0.0)	1.00 (0.0)	1.00 (0.0)	1.00 (0.0)
CD (0.05)	0.29	0.41	0.09	0.11
Date of Sowing :	05.11.2023	Date of Harvesting:		04.03.2024

Table 7.14.4(a). Central Zone		**SPL-5**		**Vijapur**		**2023-24**
Treatments	Yield, q/ha	Earheads/ sqm	1000 Grains wt., g	Grains/ Earhead	Plant Ht, cm	Biomass, q/ha
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	38.79	349	44.93	25.39	88.73	98.17
Metsulfuron methyl + S at 4 g/ha+ 0.2%	35.46	373	44.26	21.73	84.87	92.42
Carfentrazone 20 g/ha	36.88	380	44.18	23.01	88.27	91.92
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	37.18	416	46.05	19.39	88.00	93.58
2,4-D-Na 500 g/ha	35.98	377	45.02	21.84	88.73	94.00
2,4-D-Na + Carfentrazone 500 + 20 g/ha	38.84	386	41.84	24.17	84.27	96.75
2,4-D-E 500 g/ha	35.37	400	44.83	19.86	88.73	92.75
2,4-D-E + Carfentrazone 500 + 20 g/ha	38.37	386	47.63	20.98	86.73	95.17
Weedy check	30.32	384	48.87	16.33	89.07	81.42
Weed free	44.24	388	45.87	24.91	86.80	102.75
CD (0.05)	6.52	84.35	5.51	6.56	9.04	8.59
Date of Sowing :	19.11.2023		Date of Harvesting:		02.04.2024	

Table 7.14.4(b). Central Zone	**SPL-5**		**Vijapur**	**2023-24**
Treatments	Weed Count 60 DAS, No./m^2	Weed Count 90 DAS, No./m^2	Weed dry wt. 60 DAS, g/m^2	Weed dry wt. 90 DAS, g/m^2
Halauxifen-methyl + Fluroxypyr at 200.6 (6.1+194.5) g/ha	6.57 (42.3)	6.07 (36.0)	7.85 (62.3)	6.57 (42.3)
Metsulfuron methyl + S at 4 g/ha+ 0.2%	7.73 (59.0)	7.21 (52.0)	9.49 (89.3)	7.73 (59.3)
Carfentrazone 20 g/ha	6.83 (54.3)	6.8 (47.7)	8.99 (8)	7.12 (50.0)
Metsulfuron + Carfentrazone + S at 25 (5+20) g/ha + 0.2% S	8.14 (66.3)	6.68 (44.7)	8.29 (67.7)	6.21 (37.7)
2,4-D-Na 500 g/ha	7.01 (51.3)	6.45 (41.7)	8.80 (77.3)	6.83 (47.3)
2,4-D-Na + Carfentrazone 500 + 20 g/ha	5.24 (26.7)	5.88 (34.0)	8.36 (69.0)	6.30 (39.0)
2,4-D-E 500 g/ha	6.53 (42.0)	6.63 (44.0)	7.65 (57.7)	5.34 (27.7)
2,4-D-E + Carfentrazone 500 + 20 g/ha	4.77 (22.7)	5.19 (26.0)	7.94 (62.3)	5.73 (32.3)
Weedy check	11.1 (122.7)	10.33 (106.0)	10.87 (117.3)	10.44 (108.3)
Weed free	1.00 (0.0)	1.00 (0.0)	1.00 (0.0)	1.00 (0.0)
CD (0.05)	2.29	1.81	1.39	1.34
Date of Sowing :	19.11.2023	Date of Harvesting:		02.04.2024

Table 7.16.1. North Western Plain Zone			**SPL-6**		**Agra**		**2023-24**	
Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	35.49	5	38.58	5	40.20	5	38.09	5
Drum rolling (30 and 45 DAS)	42.92	4	45.10	4	47.85	4	45.29	4
TIBA spray at tillering @100 ppm	48.38	1	53.68	1	55.89	1	52.65	1
Cytokinin spray at tillering @100 ppm	46.10	2	50.95	2	53.43	2	50.16	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	44.95	3	47.23	3	49.57	3	47.25	3
Mean	43.57		47.11		49.39		46.69	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.36		1.08		2.97	
Growth regulator (B)	**		0.75		1.82		4.85	
B within A	N.S.		1.31		3.16			
A within B			1.22		2.96			
Earhead/sq.m.								
Control (water spray)	242	5	271	5	280	5	264	5
Drum rolling (30 and 45 DAS)	275	3	291	4	299	4	288	4
TIBA spray at tillering @100 ppm	280	1	310	1	316	1	302	1
Cytokinin spray at tillering @100 ppm	277	2	303	2	310	2	297	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	273	4	292	3	304	3	290	3
Mean	269		293		302		288	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.75		2.26		1.01	
Growth regulator (B)	**		2.74		6.64		2.86	
B within A	N.S.		4.75		11.50			
A within B			4.32		10.45			
1000 grains weight, g								
Control (water spray)	37.09	5	38.04	5	40.01	5	38.38	5
Drum rolling (30 and 45 DAS)	38.57	4	39.66	4	41.32	4	39.85	4
TIBA spray at tillering @100 ppm	43.25	1	44.47	1	45.11	1	44.28	1
Cytokinin spray at tillering @100 ppm	41.88	2	42.72	2	43.20	2	42.60	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	40.27	3	41.62	3	42.13	3	41.34	3
Mean	40.21		41.30		42.35		41.29	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.34		1.04		3.22	
Growth regulator (B)	**		0.69		1.66		4.98	
B within A	N.S.		1.19		2.87			
A within B			1.12		2.70			
Grains/earhead								
Control (water spray)	39.71	5	37.43	5	35.86	5	37.67	5
Drum rolling (30 and 45 DAS)	40.62	2	39.09	2	38.69	4	39.47	3
TIBA spray at tillering @100 ppm	39.94	3	38.94	3	39.28	2	39.39	4
Cytokinin spray at tillering @100 ppm	39.88	4	39.33	1	39.91	1	39.70	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	40.92	1	38.92	4	38.75	3	39.53	2
Mean	40.22		38.74		38.50		39.15	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.18		0.54		1.79	
Growth regulator (B)	N.S.		0.65		1.58		4.99	
B within A	N.S.		1.13		2.73			
A within B			1.02		2.48			

Biomass, q/ha								
Control (water spray)	109.01	5	112.58	5	115.21	5	112.27	5
Drum rolling (30 and 45 DAS)	117.23	4	121.20	4	123.58	4	120.67	4
TIBA spray at tillering @100 ppm	124.01	1	129.40	1	131.68	1	128.36	1
Cytokinin spray at tillering @100 ppm	122.35	2	125.20	2	130.56	2	126.04	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	120.10	3	123.21	3	124.21	3	122.51	3
Mean	118.54		122.32		125.05		121.97	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.63		1.91		2.01	
Growth regulator (B)	**		0.99		2.39		2.43	
B within A	N.S.		1.71		4.13			
A within B			1.65		4.00			

Table 7.16.2. North Western Plain Zone **SPL-6** **Durgapura** **2023-24**

Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	35.87	5	43.13	5	48.95	5	42.65	5
Drum rolling (30 and 45 DAS)	39.17	3	47.01	2	58.10	2	48.09	2
TIBA spray at tillering @100 ppm	40.51	1	47.51	1	61.08	1	49.70	1
Cytokinin spray at tillering @100 ppm	37.67	4	44.70	4	55.95	4	46.11	4
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	39.20	2	46.25	3	56.98	3	47.48	3
Mean	38.48		45.72		56.21		46.80	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.60		1.80		4.93	
Growth regulator (B)	**		1.08		2.62		6.95	
B within A	N.S.		1.88		4.54			
A within B			1.78		4.31			
Earhead/sq.m.								
Control (water spray)	290	5	326	5	357	5	324	5
Drum rolling (30 and 45 DAS)	307	3	347	2	403	2	353	2
TIBA spray at tillering @100 ppm	314	1	353	1	420	1	362	1
Cytokinin spray at tillering @100 ppm	297	4	337	4	393	4	342	4
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	308	2	346	3	401	3	352	3
Mean	303		342		395		347	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		3.72		11.21		4.15	
Growth regulator (B)	**		4.96		11.99		4.29	
B within A	N.S.		8.59		20.77			
A within B			8.53		20.65			
1000 grains weight, g								
Control (water spray)	35.08	5	41.90	4	43.87	1	40.28	4
Drum rolling (30 and 45 DAS)	39.36	4	42.69	3	42.98	2	41.68	1
TIBA spray at tillering @100 ppm	40.48	3	39.30	5	40.34	3	40.04	5
Cytokinin spray at tillering @100 ppm	41.19	2	43.46	2	39.72	4	41.46	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	41.63	1	43.65	1	39.41	5	41.56	2
Mean	39.55		42.20		41.26		41.00	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.80		2.40		7.53	
Growth regulator (B)	N.S.		0.65		1.56		4.73	
B within A	**		1.12		2.71			
A within B			1.28		3.10			

Grains/earhead								
Control (water spray)	35.29	1	31.78	3	31.26	5	32.77	2
Drum rolling (30 and 45 DAS)	32.43	2	31.92	2	33.59	4	32.65	3
TIBA spray at tillering @100 ppm	31.89	3	34.28	1	36.03	2	34.07	1
Cytokinin spray at tillering @100 ppm	31.00	4	30.52	5	35.87	3	32.46	5
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	30.55	5	30.73	4	36.11	1	32.46	4
Mean	32.23		31.84		34.57		32.88	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.67		2.02		7.90	
Growth regulator (B)	N.S.		0.66		1.59		6.00	
B within A	**		1.14		2.75			
A within B			1.22		2.95			
Plant height, cm								
Control (water spray)	104.67	1	102.67	3	101.85	3	103.06	3
Drum rolling (30 and 45 DAS)	97.83	4	100.39	5	100.33	4	99.52	4
TIBA spray at tillering @100 ppm	102.00	3	103.87	2	106.67	2	104.18	2
Cytokinin spray at tillering @100 ppm	103.13	2	105.93	1	107.67	1	105.58	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	93.75	5	100.68	4	100.08	5	98.17	5
Mean	100.28		102.71		103.32		102.10	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.20		3.62		4.56	
Growth regulator (B)	**		1.39		3.36		4.08	
B within A	N.S.		2.41		5.82			
A within B			2.46		5.96			
Biomass, q/ha								
Control (water spray)	84.95	5	100.65	5	114.13	5	99.91	5
Drum rolling (30 and 45 DAS)	89.91	3	109.17	1	134.46	2	111.18	2
TIBA spray at tillering @100 ppm	93.01	1	107.79	2	140.33	1	113.71	1
Cytokinin spray at tillering @100 ppm	86.54	4	103.99	4	129.37	4	106.64	4
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	90.68	2	107.43	3	133.17	3	110.42	3
Mean	89.02		105.81		130.29		108.37	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		1.48		4.46		5.29	
Growth regulator (B)	*		2.62		6.35		7.26	
B within A	N.S.		4.54		10.99			
A within B			4.32		10.46			

Table 7.16.3. North Western Plain Zone **SPL-6** **Gurdaspur** **2023-24**

Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	31.88	5	37.20	5	44.21	5	37.76	5
Drum rolling (30 and 45 DAS)	33.50	4	39.03	4	47.89	4	40.14	4
TIBA spray at tillering @100 ppm	36.00	2	43.36	1	52.34	2	43.90	2
Cytokinin spray at tillering @100 ppm	36.20	1	43.06	2	52.57	1	43.94	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	35.60	3	41.34	3	51.09	3	42.68	3
Mean	34.63		40.80		49.62		41.68	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.66		1.98		6.11	
Growth regulator (B)	**		1.07		2.58		7.67	
B within A	N.S.		1.85		4.46			
A within B			1.78		4.30			

Earhead/sq.m.								
Control (water spray)	305	5	360	5	386	5	350	5
Drum rolling (30 and 45 DAS)	321	4	379	4	421	4	374	4
TIBA spray at tillering @100 ppm	326	2	397	1	435	2	386	2
Cytokinin spray at tillering @100 ppm	334	1	397	2	439	1	390	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	321	3	390	3	426	3	379	3
Mean	321		384		421		376	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		3.62		10.91		3.73	
Growth regulator (B)	**		4.80		11.61		3.83	
B within A	N.S.		8.31		20.11			
A within B			8.27		20.01			
1000 grains weight, g								
Control (water spray)	35.32	5	35.03	5	35.21	5	35.19	5
Drum rolling (30 and 45 DAS)	35.54	2	35.33	4	35.89	1	35.59	3
TIBA spray at tillering @100 ppm	35.57	1	35.79	1	35.88	2	35.75	1
Cytokinin spray at tillering @100 ppm	35.53	3	35.54	2	35.85	3	35.64	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	35.33	4	35.40	3	35.52	4	35.42	4
Mean	35.46		35.42		35.67		35.52	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.20		0.60		2.17	
Growth regulator (B)	N.S.		0.42		1.02		3.57	
B within A	N.S.		0.73		1.77			
A within B			0.68		1.65			
Grains/earhead								
Control (water spray)	29.62	4	29.61	4	32.69	4	30.64	4
Drum rolling (30 and 45 DAS)	29.40	5	29.29	5	31.69	5	30.13	5
TIBA spray at tillering @100 ppm	31.06	2	30.54	2	33.66	2	31.76	1
Cytokinin spray at tillering @100 ppm	30.53	3	30.61	1	33.37	3	31.50	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	31.39	1	29.93	3	33.85	1	31.72	2
Mean	30.40		30.00		33.05		31.15	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.59		1.79		7.37	
Growth regulator (B)	N.S.		0.92		2.22		8.82	
B within A	N.S.		1.59		3.84			
A within B			1.54		3.72			
Plant height, cm								
Control (water spray)	92.13	3	93.47	3	93.47	4	93.02	4
Drum rolling (30 and 45 DAS)	92.00	4	93.60	2	94.40	1	93.33	1
TIBA spray at tillering @100 ppm	92.33	1	93.17	5	93.87	2	93.12	3
Cytokinin spray at tillering @100 ppm	92.20	2	93.80	1	93.73	3	93.24	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	91.60	5	93.33	4	93.00	5	92.64	5
Mean	92.05		93.47		93.69		93.07	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.32		0.96		1.32	
Growth regulator (B)	N.S.		0.48		1.16		1.55	
B within A	N.S.		0.83		2.02			
A within B			0.81		1.96			

Biomass, q/ha								
Control (water spray)	105.76	5	121.71	5	131.23	5	119.57	5
Drum rolling (30 and 45 DAS)	115.16	4	131.71	4	140.93	4	129.27	4
TIBA spray at tillering @100 ppm	125.23	2	142.34	1	151.30	1	139.62	1
Cytokinin spray at tillering @100 ppm	125.76	1	141.32	2	150.53	2	139.21	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	122.82	3	139.65	3	144.05	3	135.51	3
Mean	118.95		135.35		143.61		132.63	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.96		2.89		2.80	
Growth regulator (B)	**		2.86		6.92		6.47	
B within A	N.S.		4.96		11.99			
A within B			4.54		10.97			

Table 7.16.4. North Western Plain Zone **SPL-6** **Hisar** **2023-24**

Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	39.42	4	41.77	4	43.03	4	41.41	4
Drum rolling (30 and 45 DAS)	39.25	5	41.70	5	42.96	5	41.30	5
TIBA spray at tillering @100 ppm	40.68	2	43.43	3	44.80	3	42.97	3
Cytokinin spray at tillering @100 ppm	40.21	3	43.78	2	45.14	2	43.04	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	41.40	1	44.83	1	46.09	1	44.11	1
Mean	40.19		43.10		44.40		42.57	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.65		1.97		5.93	
Growth regulator (B)	*		0.71		1.71		4.98	
B within A	N.S.		1.22		2.96			
A within B			1.27		3.08			
Earhead/sq.m.								
Control (water spray)	324	4	340	4	333	5	332	4
Drum rolling (30 and 45 DAS)	320	5	333	5	337	4	330	5
TIBA spray at tillering @100 ppm	336	3	364	1	372	2	357	2
Cytokinin spray at tillering @100 ppm	347	1	360	2	376	1	361	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	340	2	359	3	371	3	356	3
Mean	333		351		358		347	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		3.91		11.79		4.36	
Growth regulator (B)	*		7.52		18.20		6.49	
B within A	N.S.		13.03		31.52			
A within B			12.29		29.74			
1000 grains weight, g								
Control (water spray)	46.88	4	46.46	4	45.59	5	46.31	4
Drum rolling (30 and 45 DAS)	46.73	5	46.22	5	45.86	4	46.27	5
TIBA spray at tillering @100 ppm	47.73	3	46.67	3	46.00	3	46.80	3
Cytokinin spray at tillering @100 ppm	47.87	2	46.94	2	46.42	2	47.07	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	48.28	1	47.03	1	46.72	1	47.34	1
Mean	47.50		46.66		46.12		46.76	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.26		0.77		2.11	
Growth regulator (B)	N.S.		0.46		1.11		2.95	
B within A	N.S.		0.80		1.93			
A within B			0.76		1.83			

Grains/earhead								
Control (water spray)	25.97	2	26.62	2	28.40	1	26.99	2
Drum rolling (30 and 45 DAS)	26.43	1	27.11	1	28.00	2	27.18	1
TIBA spray at tillering @100 ppm	25.41	3	25.69	5	26.26	4	25.79	4
Cytokinin spray at tillering @100 ppm	24.31	5	25.96	4	25.87	5	25.38	5
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	25.23	4	26.61	3	26.69	3	26.18	3
Mean	25.47		26.40		27.04		26.30	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.43		1.31		6.38	
Growth regulator (B)	N.S.		0.69		1.66		7.85	
B within A	N.S.		1.19		2.88			
A within B			1.15		2.78			
Plant height, cm								
Control (water spray)	87.33	3	89.67	3	91.67	3	89.56	3
Drum rolling (30 and 45 DAS)	85.00	4	88.67	4	90.67	4	88.11	4
TIBA spray at tillering @100 ppm	95.67	2	97.33	2	101.00	2	98.00	2
Cytokinin spray at tillering @100 ppm	97.00	1	100.33	1	102.67	1	100.00	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	84.00	5	85.00	5	86.67	5	85.22	5
Mean	89.80		92.20		94.53		92.18	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	**		0.52		1.57		2.19	
Growth regulator (B)	**		0.89		2.15		2.90	
B within A	N.S.		1.54		3.73			
A within B			1.47		3.57			
Biomass, q/ha								
Control (water spray)	106.43	5	113.90	5	118.00	4	112.78	5
Drum rolling (30 and 45 DAS)	107.80	3	115.60	2	119.00	3	114.13	3
TIBA spray at tillering @100 ppm	110.50	1	115.60	3	122.43	2	116.18	2
Cytokinin spray at tillering @100 ppm	108.13	2	120.73	1	124.17	1	117.68	1
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	107.47	4	114.60	4	116.97	5	113.01	4
Mean	108.07		116.09		120.11		114.76	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		1.90		5.72		6.41	
Growth regulator (B)	N.S.		1.98		4.79		5.18	
B within A	N.S.		3.43		8.30			
A within B			3.61		8.73			

Table 7.16.5. North Western Plain Zone **SPL-6** **Karnal** **2023-24**

Growth regulators	Seed rate, kg/ha						Mean	Rk
	60	Rk	80	Rk	100	Rk		
Yield, q/ha								
Control (water spray)	43.75	5	49.69	4	53.67	2	49.04	3
Drum rolling (30 and 45 DAS)	49.57	3	50.29	3	44.85	4	48.23	5
TIBA spray at tillering @100 ppm	54.99	1	49.55	5	42.96	5	49.17	2
Cytokinin spray at tillering @100 ppm	47.31	4	50.48	2	48.70	3	48.83	4
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	52.95	2	54.03	1	55.97	1	54.32	1
Mean	49.71		50.81		49.23		49.92	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		1.25		3.76		9.67	
Growth regulator (B)	**		1.01		2.45		6.09	
B within A	**		1.76		4.25			
A within B			2.00		4.85			

Earhead/sq.m.								
Control (water spray)	288	5	296	5	335	2	306	5
Drum rolling (30 and 45 DAS)	303	3	313	3	323	3	313	3
TIBA spray at tillering @100 ppm	300	4	313	3	310	5	308	4
Cytokinin spray at tillering @100 ppm	307	2	326	2	310	4	314	2
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	338	1	370	1	372	1	360	1
Mean	307		323		330		320	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		5.93		17.89		7.17	
Growth regulator (B)	**		7.67		18.55		7.18	
B within A	N.S.		13.28		32.14			
A within B			13.28		32.13			
1000 grains weight, g								
Control (water spray)	48.73	3	49.50	1	49.06	3	49.10	1
Drum rolling (30 and 45 DAS)	48.92	2	48.93	2	49.09	2	48.98	2
TIBA spray at tillering @100 ppm	48.67	4	48.67	3	49.11	1	48.82	3
Cytokinin spray at tillering @100 ppm	49.11	1	48.15	4	48.27	4	48.51	4
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	47.71	5	47.42	5	47.85	5	47.66	5
Mean	48.63		48.53		48.68		48.61	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		0.16		0.48		1.26	
Growth regulator (B)	**		0.27		0.65		1.67	
B within A	N.S.		0.47		1.13			
A within B			0.45		1.08			
Grains/earhead								
Control (water spray)	31.10	5	34.01	1	32.83	1	32.65	2
Drum rolling (30 and 45 DAS)	33.82	2	32.91	2	28.39	4	31.71	5
TIBA spray at tillering @100 ppm	37.83	1	32.64	3	28.29	5	32.92	1
Cytokinin spray at tillering @100 ppm	31.47	4	32.60	4	32.66	2	32.24	3
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	32.87	3	30.84	5	31.42	3	31.71	4
Mean	33.42		32.60		30.72		32.25	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	*		0.34		1.01		4.03	
Growth regulator (B)	N.S.		1.01		2.43		9.35	
B within A	N.S.		1.74		4.21			
A within B			1.59		3.85			
Biomass, q/ha								
Control (water spray)	114.94	4	111.92	4	125.60	2	117.49	4
Drum rolling (30 and 45 DAS)	129.63	2	113.53	3	111.51	5	118.22	3
TIBA spray at tillering @100 ppm	130.03	1	111.51	5	116.75	3	119.43	2
Cytokinin spray at tillering @100 ppm	110.71	5	114.33	2	112.72	4	112.59	5
CCC+ tebuconazole (0.2%+0.1%) - 2 sprays	117.95	3	121.98	1	126.41	1	122.11	1
Mean	120.65		114.65		118.60		117.97	
	F. Test		SEm		CD (0.05)		CV (%)	
Seed rate (A)	N.S.		3.11		9.37		10.20	
Growth regulator (B)	N.S.		2.74		6.62		6.96	
B within A	*		4.74		11.47			
A within B			5.26		12.72			

METEOROLOGICAL INFORMATION: 2023-2024

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
NORTHERN HILLS ZONE								
ALMORA	**Latitude 29^{0}36' N**		**Longitude 79^{0}40' E**			**Height above MSL 1250 m**		
40 (01-07 Oct)	31.4	16.6	95.3	47.9	3.5	3.3	-	7.9
41 (08-14 Oct)	30.0	12.6	97.7	36.8	0.0	3.0	-	8.0
42 (15-21 Oct)	26.1	9.1	100.0	49.4	18.5	2.1	-	6.6
43 (22-28 Oct)	27.1	5.6	96.0	31.3	0.0	2.2	-	8.7
44 (29-04 Nov)	27.5	5.4	94.0	37.6	0.0	1.9	-	8.1
45 (05-11 Nov)	25.9	4.3	94.8	41.2	3.0	1.6	-	7.5
46 (12-18 Nov)	25.5	7.2	98.3	43.6	0.0	1.3	-	7.0
47 (19-25 Nov)	25.4	2.6	91.3	32.9	0.0	1.8	-	8.8
48 (26-02 Dec)	23.0	4.3	92.6	42.7	0.0	1.2	-	5.8
49 (03-09 Dec)	22.6	3.4	95.9	47.3	0.0	1.1	-	7.3
50 (10-16 Dec)	21.7	-0.6	100.0	39.4	0.0	1.1	-	7.3
51 (17-23 Dec)	22.2	-1.8	100.0	40.0	0.0	1.3	-	7.8
52 (24-31 Dec)	22.4	0.3	100.0	42.3	0.0	1.2	-	6.8
1 (01-07 Jan)	22.5	-2.3	100.0	29.0	0.0	1.2	-	7.5
2 (08-14 Jan)	22.3	-1.9	100.0	38.1	0.0	1.1	-	5.7
3 (15-21 Jan)	21.4	-1.9	100.0	40.8	0.0	1.1	-	5.6
4 (22-28 Jan)	19.9	-2.3	100.0	33.4	0.0	0.9	-	6.7
5 (29-04 Feb)	17.1	2.0	53.6	97.9	13.5	0.7	-	4.4
6 (05-11 Feb)	20.3	2.2	99.0	39.9	1.5	1.1	-	7.0
7 (12-18 Feb)	22.6	2.1	96.1	33.7	0.0	1.2	-	5.6
8 (19-25 Feb)	21.1	1.4	97.8	50.7	5.0	1.1	-	5.7
9 (26-04 Mar)	22.4	4.7	95.1	53.3	35.0	1.2	-	5.3
10 (05-11 Mar)	24.7	5.0	92.8	29.7	0.0	1.5	-	9.0
11 (12-18 Mar)	26.1	6.1	87.7	31.6	0.0	2.3	-	8.5
12 (19-25 Mar)	26.6	6.6	83.3	33.9	0.0	2.9	-	7.6
13 (26-01 Apr)	29.5	9.4	86.4	30.7	4.5	3.0	-	7.4
14 (02-08 Apr)	30.2	7.1	90.4	28.5	0.0	3.4	-	8.9
15 (09-15 Apr)	29.7	7.9	86.1	30.6	3.5	3.3	-	6.1
16 (16-22 Apr)	33.0	12.3	76.0	30.2	0.0	4.4	-	10.0
17 (23-29 Apr)	32.9	9.1	77.6	31.3	0.0	4.2	-	9.4
18 (30-06 May)	33.1	11.6	78.4	33.9	1.0	4.4	-	8.6
19 (7-13 May)	31.1	14.4	83.9	41.3	18.5	3.8	-	6.9
20 (14-20 May)	33.9	14.6	71.5	42.6	7.5	5.1	-	9.8
21 (21-27 May)	33.2	17.6	86.4	39.5	2.5	5.6	-	9.1
22 (28-03 June)	36.2	16.4	69.1	35.6	1.5	5.5	-	9.7
KHUDWANI	**Latitude 34^0 N**		**Longitude 74^0 E**			**Height above MSL 1560 m**		
40 (01-07 Oct)	28.78	7.21	90.71	60.42	2.34	-	-	-
41 (08-14 Oct)	18.92	7.08	90.85	68.57	6.14	-	-	-
42 (15-21 Oct)	20.22	2.78	89.57	70.28	0.00	-	-	-
43 (22-28 Oct)	21.45	2.55	91.57	73.00	0.00	-	-	-
44 (29-04 Nov)	18.14	0.65	90.85	77.28	0.14	-	-	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
45 (05-11 Nov)	13.57	1.65	91.71	80.14	4.14	-	-	-
46 (12-18 Nov)	14.00	-1.38	93.14	77.00	0.00	-	-	-
47 (19-25 Nov)	13.14	0.21	93.85	77.57	0.21	-	-	-
48 (26-02 Dec)	11.78	5.50	91.57	75.57	2.77	-	-	-
49 (03-09 Dec)	10.92	-4.50	91.57	81.42	0.00	-	-	-
50 (10-16 Dec)	9.92	-4.14	94.71	79.14	0.51	-	-	-
51 (17-23 Dec)	9.14	-4.08	89.00	86.71	0.00	-	-	-
52 (24-31 Dec)	9.94	-4.87	91.00	72.85	0.00	-	-	-
1 (01-07 Jan)	12.28	-5.71	90.85	62.85	0.00	-	-	-
2 (08-14 Jan)	13.07	-5.05	93.28	73.14	0.00	-	-	-
3 (15-21 Jan)	12.14	-6.22	92.28	62.85	0.00	-	-	-
4 (22-28 Jan)	9.01	-0.17	91.14	76.85	10.32	-	-	-
5 (29-04 Feb)	6.44	-3.22	90.57	80.14	3.31	-	-	-
6 (05-11 Feb)	13.71	-4.68	91.85	70.28	0.00	-	-	-
7 (12-18 Feb)	9.88	-0.05	89.00	75.85	11.20	-	-	-
8 (19-25 Feb)	9.70	-1.57	92.71	76.14	0.91	-	-	-
9 (26-04 Mar)	10.50	-0.72	92.57	72.57	8.77	-	-	-
10 (05-11 Mar)	15.07	1.42	84.57	78.42	2.52	-	-	-
11 (12-18 Mar)	19.00	1.50	80.42	49.42	0.00	-	-	-
12 (19-25 Mar)	19.50	5.98	87.00	50.42	0.00	-	-	-
13 (26-01 Apr)	17.12	5.20	89.00	62.57	12.65	-	-	-
14 (02-08 Apr)	22.14	3.42	81.28	44.57	0.00	-	-	-
15 (09-15 Apr)	17.21	7.12	85.00	64.42	13.54	-	-	-
16 (16-22 Apr)	20.64	5.50	88.71	66.28	6.62	-	-	-
17 (23-29 Apr)	15.80	5.24	88.71	74.28	19.82	-	-	-
18 (30-06 May)	18.67	5.45	90.33	61.5	3.60	-	-	-
19 (7-13 May)	25.86	8.76	79.86	50.14	2.60	-	-	-
20 (14-20 May)	26.93	8.46	79.71	51.71	1.90	-	-	-
21 (21-27 May)	31.00	10.57	72.71	38.29	2.90	-	-	-
MALAN	**Latitude $32^0$1' N**		**Longitude $76^0$2' E**			**Height above MSL 950 m**		
40 (01-07 Oct)	30.7	12.9	76.6	71.6	-	-	-	-
41 (08-14 Oct)	30.3	13.5	75.0	69.7	-	-	-	-
42 (15-21 Oct)	29.5	12.1	74.7	70.9	29.6	-	-	-
43 (22-28 Oct)	29.7	12.5	78.3	73.4	-	-	-	-
44 (29-04 Nov)	29.8	12.2	78.0	73.9	-	-	-	-
45 (05-11 Nov)	26.8	12.6	73.8	69.9	15.4	-	-	-
46 (12-18 Nov)	29.5	13.0	73.9	68.3	-	-	-	-
47 (19-25 Nov)	29.2	11.5	73.9	69.0	-	-	-	-
48 (26-02 Dec)	29.4	10.6	74.6	70.3	-	-	-	-
49 (03-09 Dec)	27.4	8.2	67.9	64.7	-	-	-	-
50 (10-16 Dec)	26.3	8.1	72.3	66.0	-	-	-	-
51 (17-23 Dec)	26.4	6.6	69.6	64.9	-	-	-	-
52 (24-31 Dec)	24.2	6.2	68.6	64.9	-	-	-	-
1 (01-07 Jan)	23.3	6.9	67.6	63.7	-	-	-	-
2 (08-14 Jan)	23.0	6.7	68.0	63.9	-	-	-	-
3 (15-21 Jan)	23.8	6.7	67.7	63.7	-	-	-	-
4 (22-28 Jan)	23.0	6.5	69.7	65.4	-	-	-	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
5 (29-04 Feb)	23.8	6.5	76.0	71.7	55.0	-	-	-
6 (05-11 Feb)	24.1	6.5	77.1	72.3	36.0	-	-	-
7 (12-18 Feb)	24.2	6.6	78.9	74.3	-	-	-	-
8 (19-25 Feb)	23.5	7.4	78.3	73.7	13.8	-	-	-
9 (26-04 Mar)	24.3	9.1	80.3	75.1	4.4	-	-	-
10 (05-11 Mar)	23.9	9.7	78.6	74.0	77.8	-	-	-
11 (12-18 Mar)	23.5	10.3	79.7	75.1	9.2	-	-	-
12 (19-25 Mar)	24.4	12.0	82.0	76.3	-	-	-	-
13 (26-01 Apr)	25.1	13.3	83.1	77.7	-	-	-	-
14 (02-08 Apr)	24.5	13.2	81.4	76.4	22.0	-	-	-
15 (09-15 Apr)	24.9	14.1	80.6	75.4	-	-	-	-
16 (16-22 Apr)	24.4	13.5	79.7	75.5	12.6	-	-	-
17 (23-29 Apr)	25.8	16.0	82.9	77.7	12.6	-	-	-
18 (30-06 May)	26.7	18.0	86.0	80.0	22.2	-	-	-
19 (7-13 May)	29.7	19.1	86.0	81.7	-	-	-	-
20 (14-20 May)	30.6	15.4	83.7	78.6	3.5	-	-	-
21 (21-27 May)	34.5	18.7	86.6	83.4	23.8	-	-	-
NORTH WESTERN PLAINS ZONE								
AGRA	**Latitude 27^0 2' N**			**Longitude 77^0 9' E**			**Height above MSL 163.4 m**	
44(29-04 Nov)	33.71	16.77	42.28	22.00	0.0	2.40	-	-
45(05-11 Nov)	33.04	16.87	57.00	34.28	0.0	1.30	-	-
46(12-18 Nov)	29.05	14.25	54.28	37.14	8.0	1.20	-	-
47(19-25 Nov)	27.80	12.70	56.58	38.71	0.0	1.60	-	-
48(26-02 Dec)	23.10	12.37	76.71	55.71	6.0	0.80	-	-
49(03-09 Dec)	21.81	11.98	48.57	31.71	9.0	0.95	-	-
50(10-16 Dec)	25.58	10.14	37.85	24.57	0.0	0.90	-	-
51(17-23 Dec)	24.74	8.97	55.14	35.57	0.0	1.00	-	-
52(24-31 Dec)	21.07	9.57	64.57	42.00	0.0	0.60	-	-
1(01-07 Jan)	21.28	7.70	66.28	53.71	0.0	0.00	-	-
2(08-14 Jan)	17.24	7.07	66.00	45.00	8.0	0.40	-	-
3(15-21 Jan)	18.20	5.84	74.85	51.28	0.0	0.40	-	-
4(22-28 Jan)	17.60	5.61	80.42	61.42	0.0	0.60	-	-
5(29-04 Feb)	21.51	8.75	87.28	58.42	5.0	2.60	-	-
6(05-11 Feb)	20.97	10.31	87.57	66.71	36.0	1.60	-	-
7(12-18 Feb)	28.57	11.00	75.71	53.00	0.0	1.40	-	-
8(19-25 Feb)	29.42	11.00	82.42	51.28	23.0	2.00	-	-
9(26-04 Mar)	28.85	12.28	72.00	44.57	10.0	1.80	-	-
10(05-11 Mar)	29.46	12.58	70.36	40.39	60.0	9.00	-	-
11(12-18 Mar)	30.55	12.71	65.45	36.74	0.0	29.00	-	-
12(19-25 Mar)	32.34	14.28	62.32	32.85	0.0	28.00	-	-
13(26-01 Apr)	35.42	19.14	57.42	28.32	0.0	35.00	-	-
14(02-08 Apr)	35.89	19.71	54.37	24.36	0.0	40.00	-	-
15(09-15 Apr)	38.25	16.71	48.14	22.42	4.0	35.00	-	-
16(16-22 Apr)	38.85	17.20	45.39	20.37	17.0	53.00	-	-
DELHI	**Latitude 28^{0}38' N**			**Longitude 77^{0}09' E**			**Height above MSL 228.6 m**	
40(01-07 Oct)	34.9	19.4	81.1	41.7	0.0	4.8	0.5	9.2

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
41(08-14 Oct)	35.6	20.7	80.7	44.6	0.0	4.8	0.3	8.4
42(15-21 Oct)	30.7	18.4	86.3	53.7	0.0	3.7	0.3	6.5
43(22-28 Oct)	31.3	15.0	85.3	46.3	0.0	3.2	1.2	7.7
44(29-04 Nov)	31.6	15.9	88.6	50.9	0.0	2.4	1.3	3.0
45(05-11 Nov)	29.3	14.9	90.4	56.6	7.4	1.6	1.5	0.0
46(12-18 Nov)	26.7	11.6	87.0	55.6	0.0	1.6	1.9	3.7
47(19-25 Nov)	26.4	10.8	89.6	48.6	0.0	1.5	1.8	1.4
48(26-02 Dec)	24.7	11.8	89.9	62.9	5.0	1.5	1.5	0.4
49(03-09 Dec)	24.6	8.2	89.1	44.4	0.0	1.8	2.0	4.7
50(10-16 Dec)	23.9	5.3	92.4	38.4	0.0	1.9	2.2	6.7
51(17-23 Dec)	22.4	5.8	86.9	43.3	0.0	2.2	2.8	5.2
52(24-31 Dec)	21.5	8.4	88.9	61.5	0.0	1.7	2.3	2.1
1(01-07 Jan)	15.1	8.1	89.3	74.9	0.0	1.4	2.9	0.5
2(08-14 Jan)	15.8	6.6	91.3	68.3	0.0	2.5	3.5	1.4
3(15-21 Jan)	18.4	-	95.7	60.6	0.0	1.8	1.7	3.3
4(22-28 Jan)	18.2	-	91.1	57.3	0.0	1.7	1.9	2.0
5(29-04 Feb)	18.8	-	92.7	75.6	24.6	1.5	2.7	1.0
6(05-11 Feb)	20.8	7.2	87.6	47.6	0.0	2.3	4.5	6.6
7(12-18 Feb)	23.7	6.1	89.8	43.0	0.0	2.7	1.5	5.7
8(19-25 Feb)	25.6	10.5	85.9	44.3	3.4	2.8	3.9	6.5
9(26-04 Mar)	24.9	11.1	82.0	44.8	12.0	2.6	4.2	5.8
10(05-11 Mar)	24.7	9.8	77.0	40.0	0.0	4.0	3.9	8.1
11(12-18 Mar)	29.7	12.5	66.3	34.4	0.0	4.5	3.5	8.6
12(19-25 Mar)	31.0	13.5	82.1	38.3	0.0	4.8	3.1	7.5
13(26-01 Apr)	35.0	17.5	72.7	31.0	0.0	4.9	3.2	7.3
14(02-08 Apr)	34.7	16.8	68.6	23.4	0.0	4.6	4.2	8.6
15(09-15 Apr)	37.2	18.5	73.6	32.1	9.6	5.0	2.4	7.0
16(16-22 Apr)	37.1	22.1	68.3	34.6	4.4	5.0	4.1	8.4
17(23-29 Apr)	38.3	20.3	77.6	29.7	1.7	6.1	2.5	8.5
18(30-06 May)	37.7	21.3	69.3	30.7	0.0	6.3	4.5	8.5
19(7-13 May)	39.0	26.0	70.9	40.6	0.0	7.5	7.2	4.1
20(14-20 May)	42.5	26.4	63.1	24.9	0.0	8.0	8.2	1.2
21(21-27 May)	42.3	29.8	60.6	35.6	0.0	7.8	9.3	3.9
DURGAPURA	**Latitude 26^{0}51' N**			**Longitude 75^{0}47' E**			**Height above MSL 390 m**	
40(01-07 Oct)	36.0	18.7	72.7	45.1	0.0	-	4.2	-
41(08-14 Oct)	34.4	19.9	76.2	54.7	0.0	-	4.3	-
42(15-21 Oct)	32.6	16.7	4.1	69.7	0.0	-	46.5	-
43(22-28 Oct)	32.0	16.2	68.7	45.4	0.0	-	2.3	-
44(29-04 Nov)	32.9	17.0	74.7	45.8	0.0	-	2.1	-
45(05-11 Nov)	31.7	16.2	77.7	49.8	0.0	-	3.4	-
46(12-18 Nov)	27.3	12.7	69.0	57.4	0.0	-	2.9	-
47(19-25 Nov)	26.6	10.0	78.7	66.0	0.0	-	1.8	-
48(26-02 Dec)	21.7	10.5	83.4	69.1	1.7	-	3.7	-
49(03-09 Dec)	25.0	11.2	79.0	62.8	0.0	-	5.3	-
50(10-16 Dec)	24.9	7.8	79.0	52.0	0.0	-	1.6	-
51(17-23 Dec)	23.6	7.4	82.5	41.5	0.0	-	1.8	-
52(24-31 Dec)	23.4	8.7	91.0	61.4	0.0	-	3.2	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
1(01-07 Jan)	17.9	4.6	90.8	73.5	0.0	-	2.7	-
2(08-14 Jan)	20.9	5.5	89.5	55.7	0.0	-	2.4	-
3(15-21 Jan)	21.1	4.5	78.1	45.1	0.0	-	3.4	-
4(22-28 Jan)	22.4	5.1	86.8	48.4	0.0	-	2.5	-
5(29-04 Feb)	23.9	9.5	79.7	53.4	0.0	-	3.8	-
6(05-11 Feb)	21.9	7.0	76.2	44.0	18.2	-	3.3	-
7(12-18 Feb)	25.4	7.2	79.4	51.4	0.0	-	2.5	-
8(19-25 Feb)	26.1	8.5	72.5	41.5	4.2	-	5.0	-
9(26-04 Mar)	25.4	12.0	64.0	45.4	1.5	-	6.1	-
10(05-11 Mar)	26.3	8.3	62.4	43.4	0.0	-	3.8	-
11(12-18 Mar)	30.7	17.0	55.7	32.0	0.0	-	5.2	-
12(19-25 Mar)	34.0	15.6	60.1	33.8	0.0	-	4.0	-
13(26-01 Apr)	37.9	22.3	64.0	28.4	0.0	-	5.0	-
14(02-08 Apr)	35.9	19.9	52.3	32.3	0.0	-	4.7	-
15(09-15 Apr)	38.7	23.4	59.7	27.4	0.0	-	6.0	-
16(16-22 Apr)	36.3	22.4	50.9	42.7	0.0	-	7.1	-
17(23-29 Apr)	38.8	23.1	46.4	26.1	0.0	-	4.7	-
GURDASPUR	**Latitude $32^0$03' N**		**Longitude $75^0$24' E**			**Height Above MSL 260 m**		
40(01-07 Oct)	32.4	19.3	88	52	0.0	28.4	2.5	8.6
41(08-14 Oct)	32.1	19.2	90	60	12.5	26.2	4.4	6.5
42(15-21 Oct)	30.8	15.6	93	62	48.6	21.6	3.5	6.4
43(22-28 Oct)	30.9	16.2	88	64	0.0	25.5	2.7	5.7
44(29-04 Nov)	30.5	16	87	65	0.0	26.0	2.7	5.5
45(05-11 Nov)	27.3	14.2	91	76	43.8	21.9	3.8	2.8
46(12-18 Nov)	26.5	11.3	91	70	0.0	21.1	3.2	6.9
47(19-25 Nov)	24.4	9.8	94	60	0.0	21.5	1.3	6.3
48(26-02 Dec)	22.5	11.6	91	66	14.8	18.5	1.5	2.9
49(03-09 Dec)	22.4	8.7	94	61	3.1	20.0	1.4	5.0
50(10-16 Dec)	21.3	6.1	95	56	0.0	21.2	1.5	5.7
51(17-23 Dec)	20.4	5.4	94	57	0.0	21.5	1.3	5.6
52(24-31 Dec)	15.6	6.8	97	79	0.0	19.0	1.4	0.8
1(01-07 Jan)	10.6	5.7	96	90	0.0	7.4	1.4	0.0
2(08-14 Jan)	8.9	4.7	95	90	0.0	5.7	2.1	0.0
3(15-21 Jan)	14.1	4.7	96	74	0.0	11.8	2.1	2.4
4(22-28 Jan)	12.5	4.6	95	82	0.0	8.3	2.2	2.8
5(29-04 Feb)	17.2	8.7	91	76	33.6	10.8	4.5	1.8
6(05-11 Feb)	19.9	5.0	94	67	1.5	15.7	2.1	7.1
7(12-18 Feb)	22.1	7.2	92	52	0.0	16.6	2.0	4.1
8(19-25 Feb)	22.1	8.3	90	58	1.5	13.6	3.1	5.8
9(26-04 Mar)	20.6	9.7	86	62	40.8	15.8	4.4	3.3
10(05-11 Mar)	22.6	7.8	84	56	0.0	18.3	2.3	5.2
11(12-18 Mar)	26.3	11.1	79	50	0.1	18.3	1.9	5.4
12(19-25 Mar)	28.1	14.3	78	50	0.0	22.6	2.2	6.1
13(26-01 Apr)	29.7	17.1	74	53	22.8	17.3	2.8	1.5
14(02-08 Apr)	31.7	15.8	73	38	0.0	23.4	2.4	8.3
15(09-15 Apr)	32.9	18.2	66	38	0.0	25.3	4.0	4.4
16(16-22 Apr)	33.4	19.5	61	33	12.9	22.7	4.3	5.4

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
17(23-29 Apr)	35.1	20.5	57	29	3.2	25.1	4.5	5.8
18(30-06 May)	32.6	19.8	64	38	3.8	24.5	4.7	5.1
19(07-13 May)	38.6	24.2	54	27	2.3	25.6	4.6	5.4
20(14-20 May)	41.3	24.3	47	20	1.1	29.1	3.5	9.4
21(21-27 May)	41.6	27.4	45	21	5.2	37.1	5.0	8.8
HISAR	**Latitude 29º10' N**		**Longitude 75º 46' E**				**Height above MSL 215.2 m**	
40(01-07 Oct)	36	17.8	83	33	0.0	5.0	3.3	8.2
41(08-14 Oct)	36.3	20.3	84	38	0.0	5.0	4.6	7.9
42(15-21 Oct)	30.5	17.4	87	50	0.0	3.3	4.9	7.5
43(22-28 Oct)	30.9	15.6	89	37	0.0	2.7	2.0	7.3
44(29-04 Nov)	32.1	17.1	90	45	0.0	2.3	1.8	3.9
45(05-11 Nov)	29.1	15.0	90	49	0.0	1.6	2.0	0.5
46(12-18 Nov)	26.2	10.9	94	45	0.0	1.5	1.3	3.7
47(19-25 Nov)	26.1	10.0	95	42	0.0	1.5	1.5	2.9
48(26-02 Dec)	24.1	12.6	92	59	5.5	1.2	2.6	1.3
49(03-09 Dec)	24.3	8.1	95	44	0.0	1.3	1.3	6.3
50(10-16 Dec)	23.7	5.9	94	42	0.0	1.4	2.1	5.9
51(17-23 Dec)	22.8	5.3	95	49	0.0	1.5	2.1	6.1
52(24-31 Dec)	19.4	7.8	98	73	0.0	1.5	2.7	2.8
1(01-07 Jan)	11.7	7.0	97	84	0.0	0.8	3.0	0.0
2(08-14 Jan)	13.9	5.8	98	76	0.0	1.1	3.1	2.0
3(15-21 Jan)	14.0	4.8	100	80	0.0	1.0	3.8	2.2
4(22-28 Jan)	15.8	4.9	99	66	0.0	0.7	3.5	3.3
5(29-04 Feb)	17.8	9.7	98	81	10.0	0.8	4.8	0.9
6(05-11 Feb)	20.8	5.6	94	46	0.0	1.6	3.4	6.5
7(12-18 Feb)	23.2	5.4	97	44	0.0	1.5	1.7	6.0
8(19-25 Feb)	24.8	9.1	88	45	2.5	3.0	5.8	7.3
9(26-04 Mar)	23.8	10.1	88	42	43.8	2.6	4.6	5.7
10(05-11 Mar)	23.4	7.7	88	36	0.0	2.4	3.0	7.3
11(12-18 Mar)	27.7	10.5	88	42	0.0	3.7	3.5	7.1
12(19-25 Mar)	30.1	14.1	87	38	0.0	3.9	4.3	7.0
13(26-01 Apr)	33.8	17.1	85	31	0.0	4.7	4.9	7.2
14(02-08 Apr)	33.5	15.3	72	22	0.9	5.4	3.9	7.7
15(09-15 Apr)	36.3	18.0	60	23	0.5	5.9	4.2	6.4
16(16-22 Apr)	35.9	19.0	68	22	0.0	6.4	4.9	7.7
17(23-29 Apr)	37.5	19.7	55	24	5.4	6.7	4.6	8.9
18(30-06 May)	32.2	15.6	82	14	0.0	7.3	6.5	9.2
JAMMU	**Latitude 32º44' N**			**Longitude 74º54' E**			**Height Above MSL - 356 m**	
40(01-07 Oct)	33.6	19.1	89	45	0.0	-	-	8.3
41(08-14 Oct)	31.6	17.9	85	45	10.8	-	-	7.2
42(15-21 Oct)	26.5	14.6	89	63	89.2	-	-	6.5
43(22-28 Oct)	29.8	14.3	87	50	0.0	-	-	8.3
44(29-04 Nov)	29.9	14.2	93	47	0.0	-	-	7.8
45(05-11 Nov)	26.5	12.1	93	52	54.6	-	-	5.2
46(12-18 Nov)	27.2	10.2	90	49	0.0	-	-	8.0
47(19-25 Nov)	25.3	9.0	90	48	0.0	-	-	6.8
48(26-02 Dec)	23.5	10.1	93	61	18.0	-	-	3.3

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
49(03-09 Dec)	23.8	7.2	96	47	0.0	-	-	7.5
50(10-16 Dec)	21.3	4.8	96	49	0.0	-	-	5.8
51(17-23 Dec)	21.8	4.6	95	49	3.2	-	-	6.2
52(24-31 Dec)	18.0	6.4	96	70	0.0	-	-	3.1
1(01-07 Jan)	11.5	6.0	94	84	0.0	-	-	0.7
2(08-14 Jan)	9.1	4.4	97	89	0.0	-	-	0.0
3(15-21 Jan)	13.7	3.3	97	72	0.0	-	-	2.5
4(22-28 Jan)	15.5	4.9	95	65	0.0	-	-	2.0
5(29-04 Feb)	17.5	7.2	92	68	28.8	-	-	2.5
6(05-11 Feb)	21.1	2.8	95	45	2.6	-	-	8.4
7(12-18 Feb)	22.8	5.9	94	51	0.0	-	-	5.4
8(19-25 Feb)	21.4	6.4	91	47	10.4	-	-	6.0
9(26-04 Mar)	21.2	7.8	91	52	57.4	-	-	4.1
10(05-11 Mar)	23.8	7.2	92	43	0.0	-	-	5.8
11(12-18 Mar)	26.3	9.0	91	41	2.4	-	-	6.8
12(19-25 Mar)	29.2	13.2	84	44	0.0	-	-	7.1
13(26-01 Apr)	29.4	14.9	86	63	12.6	-	-	5.4
14(02-08 Apr)	32.0	12.3	85	41	0.0	-	-	9.2
15(09-15 Apr)	32.7	15.9	76	37	0.0	-	-	4.6
16(16-22 Apr)	32.0	16.3	87	43	62.0	-	-	8.3
17(23-29 Apr)	32.4	17.4	65	36	7.6	-	-	7.5
18(30-06 May)	34.3	16.1	71	28	20.0	-	-	8.4
19(07-13 May)	36.7	20.1	72	35	4.0	-	-	5.7
20 (14-20 May)	40.7	20.6	55	24	0.0	-	-	9.9
KARNAL	**Latitude $29^0$43' N**		**Longitude $76^0$58 'E**			**Height above MSL 245 m**		
44(29-04 Nov)	30.5	16.3	95.1	45.3	0.0	2.0	0.0	5.9
45(05-11 Nov)	29.2	14.5	91.1	42.3	0.0	2.1	0.1	4.2
46(12-18 Nov)	28.6	12.2	95.6	38.7	0.0	1.4	0.1	7.4
47(19-25 Nov)	26.7	11.3	94.9	43.3	0.0	1.6	0.3	6.0
48(26-02 Dec)	25.0	12.6	95.9	57.6	0.0	0.8	0.3	2.5
49(03-09 Dec)	24.0	9.7	98.0	53.1	0.0	1.1	0.1	6.3
50(10-16 Dec)	22.5	6.4	95.9	46.7	0.0	1.5	0.3	6.7
51(17-23 Dec)	21.5	6.1	96.7	50.9	0.0	1.2	0.2	6.8
52(24-31 Dec)	18.1	8.6	99.3	82.9	0.0	0.6	0.1	2.1
1(01-07 Jan)	11.5	7.5	99.6	91.0	0.0	0.4	0.1	0.2
2(08-14 Jan)	11.5	5.9	97.9	83.4	0.0	0.5	0.4	0.0
3(15-21 Jan)	14.9	5.0	98.9	81.3	0.0	0.4	0.1	1.8
4(22-28 Jan)	14.2	4.9	98.3	76.9	0.0	0.6	0.3	1.9
5(29-04 Feb)	17.5	8.8	95.6	72.7	22.6	1.8	1.4	1.7
6(05-11 Feb)	20.0	6.4	92.4	55.7	0.0	1.8	1.1	6.6
7(12-18 Feb)	23.5	6.9	94.9	49.0	0.0	1.7	0.3	6.6
8(19-25 Feb)	23.4	9.1	88.7	49.3	03.2	1.8	2.0	6.9
9(26-04 Mar)	22.9	9.9	86.9	51.1	43.4	2.3	1.9	5.6
10(05-11 Mar)	23.2	7.9	85.0	43.0	0.0	3.1	0.5	7.9
11(12-18 Mar)	27.4	10.5	85.3	41.9	0.0	3.7	0.4	7.3
12(19-25 Mar)	29.2	14.0	85.9	44.7	0.0	3.6	1.1	7.2
13(26-01 Apr)	33.4	17.1	82.7	38.4	0.0	4.8	1.0	7.5

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
14(02-08 Apr)	34.3	14.5	61.4	17.1	0.0	6.2	0.7	8.4
15(09-15 Apr)	36.1	17.5	55.3	25.0	0.0	5.9	0.9	6.1
16(16-22 Apr)	36.7	20.0	56.0	21.7	0.0	7.7	1.4	8.5
17(23-29 Apr)	37.0	19.7	47.4	27.0	8.4	8.1	1.4	9.6
18(30-06 May)	36.1	19.2	46.4	17.7	0.0	9.1	1.7	9.8
19(07-13 May)	37.6	23.8	64.7	36.4	10.4	7.6	4.4	8.5
20(14-20 May)	41.6	23.9	54.4	23.3	0.0	7.9	0.6	10.1
LUDHIANA	**Latitude 30^{0}54' N**		**Longitude 75^{0}52' E**				**Height above MSL 247 m**	
40(01-07 Oct)	33.20	19.41	88.57	39.71	0.00	3.86	2.11	9.83
41(08-14 Oct)	32.40	20.21	87.43	47.71	22.60	3.17	2.54	8.66
42(15-21 Oct)	27.83	16.20	89.86	45.71	11.40	2.57	2.66	8.60
43(22-28 Oct)	29.91	15.89	90.14	37.29	0.00	2.77	2.07	8.50
44(29-04 Nov)	29.69	16.37	91.71	42.57	0.00	1.74	0.89	5.89
45(05-11 Nov)	26.83	20.77	89.29	46.57	0.00	2.03	2.09	4.51
46(12-18 Nov)	26.57	12.14	93.14	39.57	0.00	1.89	1.61	8.79
47(19-25 Nov)	25.91	11.07	93.29	37.71	0.00	1.81	1.53	5.94
48(26-02 Dec)	22.91	12.21	91.57	59.14	12.60	1.26	1.24	3.50
49(03-09 Dec)	22.90	8.91	94.71	47.86	0.00	1.20	1.46	7.27
50(10-16 Dec)	21.86	6.56	94.71	41.43	0.00	1.14	1.41	6.80
51(17-23 Dec)	21.31	6.23	95.00	44.14	0.00	1.34	1.71	6.59
52(24-31 Dec)	15.91	9.03	92.86	77.14	0.00	0.80	2.26	1.89
1(01-07 Jan)	11.43	7.00	93.00	80.43	0.00	0.53	3.49	0.09
2(08-14 Jan)	11.69	5.59	94.86	75.71	0.00	0.56	3.73	0.16
3(15-21 Jan)	13.57	5.07	94.71	73.71	0.00	0.56	2.84	1.84
4(22-28 Jan)	14.94	5.36	94.86	64.86	0.00	0.83	3.20	2.76
5(29-04 Feb)	17.63	9.51	90.71	70.29	36.40	1.20	3.40	1.94
6(05-11 Feb)	19.73	5.96	94.43	46.57	0.00	1.83	3.07	8.80
7(12-18 Feb)	23.29	7.74	93.57	43.43	0.00	1.89	3.16	6.66
8(19-25 Feb)	22.71	10.00	83.14	35.29	0.00	3.43	5.33	8.99
9(26-04 Mar)	22.54	10.77	81.86	44.00	40.80	2.93	5.83	6.41
10(05-11 Mar)	23.11	12.07	84.57	38.29	0.00	2.91	3.20	7.74
11(12-18 Mar)	26.51	11.33	86.14	39.57	0.00	3.03	3.46	8.91
12(19-25 Mar)	29.34	16.03	76.43	42.43	0.00	3.37	4.27	9.87
13(26-01 Apr)	30.23	17.07	80.29	42.57	21.30	3.19	4.91	6.64
14(02-08 Apr)	32.00	15.27	79.00	26.14	0.00	5.40	3.23	10.86
15(09-15 Apr)	33.80	18.66	66.14	29.29	0.80	5.54	3.27	7.06
16(16-22 Apr)	34.63	19.91	63.14	26.57	0.00	6.77	4.60	10.06
17(23-29 Apr)	34.60	20.66	56.29	32.71	4.20	6.29	4.17	8.26
18(30-06 May)	35.81	18.51	57.00	26.00	0.00	8.31	5.01	10.43
19(7-13 May)	38.01	24.09	52.43	26.86	0.00	8.94	6.24	9.37
20(14-20 May)	42.09	24.84	40.00	14.57	0.00	9.37	3.70	10.17
21(21-27 May)	37.13	23.20	61.71	34.57	10.00	8.97	4.93	8.47
PANTNAGAR	**Latitude 29^0 N**		**Longitude 79^0 30' E**				**Height above MSL 243.84 m**	
40(01-07 Oct)	33.6	22.8	88.7	51.7	0.0	3.7	0.3	9.2
41(08-14 Oct)	33	19.3	79.6	46.7	0.0	3.2	0.4	8.8
42(15-21 Oct)	30.2	16.3	84.1	48.6	7.4	3.2	0.8	7.1
43(22-28 Oct)	30.9	14.3	88.9	36.9	0.0	2.9	0.2	9.7

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
44(29-04 Nov)	30.4	15.2	86.4	40.7	0.0	2.6	0.5	8.2
45(05-11 Nov)	28.7	13.8	89.6	41.7	0.0	2.2	0.9	6.3
46(12-18 Nov)	28.5	12.7	87.1	40.7	0.0	2.0	0.4	7.2
47(19-25 Nov)	27.4	11.3	91.6	42.3	0.0	2.4	0.8	8.1
48(26-02 Dec)	26.2	13	84.7	49.6	0.0	1.8	1.1	4.4
49(03-09 Dec)	26.5	10.9	85.3	42.4	1.0	2.0	2.7	7.8
50(10-16 Dec)	22.8	5.9	93.6	47.0	0.0	1.8	1.6	6.5
51(17-23 Dec)	22.9	6.0	92.0	41.6	0.0	1.8	1.6	6.5
52(24-31 Dec)	22.0	8.4	93.1	59.3	0.0	2.3	1.9	5.5
1(01-07 Jan)	17.5	7.9	94.7	69.7	0.0	1.5	2.7	2.2
2(08-14 Jan)	14.1	7.7	93.7	79.4	0.0	1.2	3.9	0.2
3(15-21 Jan)	13.4	6.8	95.7	85.7	0.0	0.8	2.5	1.2
4(22-28 Jan)	13.6	4.6	96.0	77.4	0.0	0.7	2.5	1.4
5(29-04 Feb)	20.3	7.4	94.3	55.7	10.0	2.1	4.2	3.8
6(05-11 Feb)	20.9	6.9	93.6	51.9	1.6	3.1	4.8	5.8
7(12-18 Feb)	25.4	8.0	92.1	38.1	0.0	3.2	2.1	7.4
8(19-25 Feb)	25.4	8.7	86.6	31.3	2.6	4.9	4.1	7.3
9(26-04 Mar)	24.2	10.4	88.5	52.8	60.8	4.1	4.7	5.3
10(05-11 Mar)	24.5	9.3	92.3	44.7	0.0	3.9	5.0	9.2
11(12-18 Mar)	29.0	11.3	87.1	32.6	0.0	3.8	2.8	9.5
12(19-25 Mar)	29.1	12.2	85.7	41.6	0.0	3.7	3.9	7.9
13(26-01 Apr)	33.3	16.9	76.9	40.6	0.0	4.6	3.2	8.6
14(02-08 Apr)	34.5	13.2	71.6	16.1	0.0	5.3	4.2	9.3
15(09-15 Apr)	35.5	16.2	58.4	22.1	0.0	4.6	1.9	8.3
16(16-22 Apr)	37.0	18.7	57.4	18.4	0.0	6.1	6.2	9.0
17(23-29 Apr)	38.4	18.2	61.4	14.1	0.0	7.9	4.8	10.3
NORTH EASTERN PLAINS ZONE								
Ayodhya	**Latitude 26.470 N**			**Longitude 82.120 E**			**Height above MSL 113 m**	
40(01-07 Oct)	31.9	23.0	92.0	66.2	11.0	22.8	1.7	4.0
41(08-14 Oct)	34.1	21.1	87.5	54.8	0.0	20.3	1.7	4.2
42(15-21 Oct)	31.8	17.2	87.0	54.2	0.0	16.7	2.3	3.8
43(22-28 Oct)	30.6	15.1	86.7	55.8	0.0	15.6	1.2	3.6
44(29-04 Nov)	30.6	15.9	85.5	56.5	0.0	16.2	0.8	3.2
45(05-11 Nov)	29.6	15.5	87.1	56.5	0.0	15.0	1.4	3.2
46(12-18 Nov)	28.7	14.1	86.8	54.8	0.0	13.6	1.1	3.0
47(19-25 Nov)	27.1	12.6	87.7	53.4	0.0	13.0	1.5	2.9
48(26-02 Dec)	26.3	12.6	88.5	55.2	2.4	12.5	1.1	2.6
49(03-09 Dec)	25.9	14.2	88.7	55.0	2.0	12.8	1.9	3.0
50(10-16 Dec)	23.9	7.0	85.0	54.5	0.0	9.6	2.8	3.0
51(17-23 Dec)	23.2	6.0	88.0	54.7	0.0	9.1	1.8	2.5
52(24-31 Dec)	20.7	9.6	91.0	60.7	0.0	9.9	1.8	2.2
1(01-07 Jan)	18.2	9.7	93.8	65.2	5.0	9.7	1.6	2.1
2(08-14 Jan)	16.7	7.5	87.2	67.7	0.0	8.4	2.8	2.4
3(15-21 Jan)	13.2	6.5	88.5	70.1	0.0	7.8	2.3	1.7
4(22-28 Jan)	15.2	5.3	86.8	62.2	0.0	7.3	2.1	2.0
5(29-04 Feb)	22.0	8.0	88.8	59.1	0.0	9.7	3.0	2.9

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
6(05-11 Feb)	20.5	7.4	89.0	59.0	0.0	9.5	3.9	3.2
7(12-18 Feb)	24.7	10.8	88.0	57.0	2.4	11.7	1.8	3.5
8(19-25 Feb)	26.2	10.7	87.0	53.1	3.8	11.5	2.7	3.7
9(26-04 Mar)	25.7	11.7	88.2	53.0	7.8	11.6	3.0	4.2
10(05-11 Mar)	30.3	9.6	87.6	51.5	0.0	11.3	4.1	4.7
11(12-18 Mar)	31.0	12.1	87.1	51.0	0.0	14.1	2.1	5.4
12(19-25 Mar)	30.2	13.2	87.4	52.1	0.0	14.1	2.3	4.9
13(26-01 Apr)	35.0	18.0	87.0	52.1	0.0	19.0	2.6	6.5
14(02-08 Apr)	36.7	17.5	87.1	50.0	0.0	19.1	5.1	7.5
15(09-15 Apr)	38.8	19.1	83.1	46.1	0.0	20.0	2.8	8.7
16(16-22 Apr)	39.5	21.9	79.1	43.1	0.0	21.5	8.2	8.8
17(23-29 Apr)	40.9	21.7	77.8	38.5	0.0	21.0	7.0	9.3
BURDWAN	**Latitude 23^{0}15' N**			**Longitude 87^{0}52' E**			**Height above MSL 32 m**	
40(01-07 Oct)	30.8	25.72	-	-	96.6	-	-	-
41(08-14 Oct)	33.67	25.25	-	-	0.0	-	-	-
42(15-21 Oct)	32.28	23.18	-	-	0.0	-	-	-
43(22-28 Oct)	30.38	22.2	-	-	5.8	-	-	-
44 (29-04 Nov)	31.25	20.87	-	-	0.0	-	-	-
45 (05-11 Nov)	30.28	19.67	-	-	0.0	-	-	-
46 (12-18 Nov)	29.84	19.51	-	-	0.0	-	-	-
47 (19-25 Nov)	29.41	17.25	-	-	0.0	-	-	-
48 (26-02 Dec)	29.94	17.62	-	-	0.0	-	-	-
49 (03-09 Dec)	26.17	18.8	-	-	97.4	-	-	-
50 (10-16 Dec)	25.42	12.88	-	-	0.0	-	-	-
51 (17-23 Dec)	25.41	12.91	-	-	0.0	-	-	-
52 (24-31 Dec)	30.11	17.00	-	-	0.0	-	-	-
1 (01-07 Jan)	24.71	12.38	-	-	0.0	-	-	-
2 (08-14 Jan)	24.32	11.90	-	-	0.0	-	-	-
3 (15-21 Jan)	19.77	12.27	-	-	39.6	-	-	-
4 (22-28 Jan)	22.01	10.84	-	-	1.2	-	-	-
5 (29-04 Feb)	24.88	14.44	-	-	12.6	-	-	-
6 (05-11 Feb)	25.78	13.87	-	-	0.0	-	-	-
7 (12-18 Feb)	26.84	16.11	-	-	8.8	-	-	-
8 (19-25 Feb)	28.41	18.98	-	-	29.6	-	-	-
9 (26-04 Mar)	28.53	17.35	-	-	2.2	-	-	-
10 (05-11 Mar)	29.34	16.67	-	-	15.8	-	-	-
11 (12-18 Mar)	32.57	21.58	-	-	14.0	-	-	-
12 (19-25 Mar)	28.95	20.65	-	-	13.1	-	-	-
13 (26-01 Apr)	34.01	25.24	-	-	0.0	-	-	-
14 (02-08 Apr)	36.87	25.64	-	-	0.0	-	-	-
15 (09-15 Apr)	34.21	23.07	-	-	0.0	-	-	-
16 (16-22 Apr)	39.54	26.22	-	-	0.0	-	-	-
COOCHBEHAR	**Latitude 26^{0}19'86" N**			**Longitude 89^{0}23'53" E**			**Height above MSL 43 m**	
45(05-11 Nov)	31.3	16.2	76.7	54.1	0			7.1
46(12-18 Nov)	31.6	15.7	69.4	50.7	0			6.7
47(19-25 Nov)	30.7	15.7	79.0	53.1	0.0	-	-	6.8
48(26-02 Dec)	30.7	13.9	69.9	50.0	0.0	-	-	6.3

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
49(03-09 Dec)	27.9	15.0	86.1	59.1	0.0	-	-	4.5
50(10-16 Dec)	26.1	13.0	86.7	65.9	0.0	-	-	3.9
51(17-23 Dec)	27.8	10.4	73.4	48.6	0.0	-	-	6.3
52(24-31 Dec)	28.4	12.0	86.3	48.6	0.0	-	-	6.0
1(01-07 Jan)	25.6	10.2	88.7	51.3	0.0	-	-	5.6
2(08-14 Jan)	18.6	11.6	96.0	83.0	0.0	-	-	1.5
3(15-21 Jan)	19.9	10.3	93.1	69.6	0.0	-	-	3.2
4(22-28 Jan)	22.6	7.6	95.1	55.0	0.0	-	-	4.2
5(29-04 Feb)	24.4	10.1	83.0	53.1	0.0	-	-	5.8
6(05-11 Feb)	24.0	9.3	84.1	51.6	0.0	-	-	3.2
7(12-18 Feb)	26.8	11.5	86.0	45.7	0.0	-	-	2.8
8(19-25 Feb)	25.8	14.0	84.9	51.7	0.0	-	-	1.9
9(26-04 Mar)	28.3	12.9	75.4	39.6	0.0	-	-	6.1
10(05-11 Mar)	29.1	12.9	73.3	38.7	0.0	-	-	5.1
11(12-18 Mar)	32.2	14.9	69.9	34.6	0.0	-	-	5.5
12(19-25 Mar)	27.2	17.2	79.4	63.1	43.4	-	-	1.2
13(26-01 Apr)	29.5	19.5	80.4	59.0	9.6	-	-	0.3
KALYANI	**Latitude $22^0$57' N**		**Longitude $88^0$20' E**		**Height above MSL 9.75 m**			
40 (01-07 Oct)	25.07	29.61	91.29	99.71	185.60	-	-	0.86
41 (08-14 Oct)	24.90	34.60	60.67	93.43	0.20	-	-	8.65
42 (15-21 Oct)	22.30	32.56	60.00	92.57	0.00	-	-	7.44
43 (22-28 Oct)	22.07	31.08	67.67	91.33	4.20	-	-	4.90
44 (29-04 Nov)	20.13	31.93	54.67	94.29	0.00	-	-	7.97
45 (05-11 Nov)	19.27	30.73	53.67	95.57	0.00	-	-	5.68
46 (12-18 Nov)	18.66	29.56	57.71	94.14	3.10	-	-	5.43
47 (19-25 Nov)	16.61	29.38	50.17	94.57	0.00	-	-	6.82
48 (26-02 Dec)	15.94	29.45	51.50	93.71	0.00	-	-	6.58
49 (03-09 Dec)	18.29	24.82	74.33	94.57	77.10	-	-	0.88
50 (10-16 Dec)	12.49	25.07	48.17	95.71	0.00	-	-	7.60
51 (17-23 Dec)	10.86	24.72	51.33	93.57	0.00	-	-	7.18
52 (24-31 Dec)	13.55	26.27	59.50	95.17	0.00	-	-	6.08
1 (01-07 Jan)	11.67	24.25	56.50	97.29	0.00	-	-	6.42
2 (08-14 Jan)	11.91	23.71	59.14	97.86	0.00	-	-	3.51
3 (15-21 Jan)	10.81	18.90	74.57	95.86	8.60	-	-	1.64
4 (22-28 Jan)	10.31	21.13	59.67	95.71	0.80	-	-	4.32
5 (29-04 Feb)	12.67	25.03	64.33	96.86	65.20	-	-	3.72
6 (05-11 Feb)	13.10	25.35	53.67	96.14	0.00	-	-	6.67
7 (12-18 Feb)	13.41	27.03	52.50	95.00	0.50	-	-	5.33
8 (19-25 Feb)	17.04	29.22	59.17	95.71	20.20	-	-	5.50
9 (26-04 Mar)	15.97	29.43	47.00	90.86	0.00	-	-	8.50
10 (05-11 Mar)	16.24	29.94	40.29	86.43	0.00	-	-	8.19
11 (12-18 Mar)	20.13	33.44	49.00	93.00	2.20	-	-	6.36
12 (19-25 Mar)	18.84	28.70	60.50	95.57	35.70	-	-	6.13
13 (26-01 Apr)	23.10	34.07	58.17	92.86	13.00	-	-	7.07
14 (02-08 Apr)	25.08	37.74	40.20	89.50	0.00	-	-	8.50
15 (09-15 Apr)	22.27	32.79	57.00	88.14	5.00	-	-	3.69
16 (16-22 Apr)	25.53	40.18	31.00	80.33	0.00	-	-	9.84

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
17 (23-29 Apr)	25.63	40.63	34.17	76.86	0.00	-	-	9.82
KANPUR	**Latitude 26^{0}29'N**		**Longitude 80^{0}18'E**			**Height above MSL 125.9 m**		
41 (08-14 Oct)	35.2	20.6	76.0	42.4	0.0	-	-	-
42 (15-21 Oct)	32.9	18	84.2	42.4	3.4	-	-	-
43 (22-28 Oct)	31.2	14.4	82.4	36.5	0.0	-	-	-
44 (29-04 Nov)	31.6	14.9	91.4	39.0	0.0	-	-	-
45 (05-11 Nov)	31.1	14,5	94.0	43.7	0.0	-	-	-
46 (12-18 Nov)	27.6	13.3	91.7	63.5	0.0	-	-	-
47 (19-25 Nov)	27.2	11.7	93.0	53.2	0.0	-	-	-
48 (26-02 Dec)	25.2	11.9	94.5	59.4	6.6	-	-	-
49 (03-09 Dec)	25.4	13.6	92.4	67.4	12.6	-	-	-
50 (10-16 Dec)	24.7	10.1	93.2	45.5	0.0	-	-	-
51 (17-23 Dec)	23.1	7.4	90.4	44.7	0.0	-	-	-
52 (24-31 Dec)	22.1	8.2	95.0	66.2	0.0	-	-	-
1 (01-07 Jan)	16.4	9.1	95.2	83	11.2	-	-	-
2 (08-14 Jan)	16.9	7.8	95.2	71.5	0.0	-	-	-
3 (15-21 Jan)	14.6	4.2	93.2	74.6	0.0	-	-	-
4 (22-28 Jan)	14.4	5.6	93.8	69.8	0.0	-	-	-
5 (29-04 Feb)	21.5	7.3	95.2	57.8	0.0	-	-	-
6 (05-11 Feb)	21.4	10.1	86.1	55.7	0.0	-	-	-
7 (12-18 Feb)	24.2	9.8	92.5	50.8	0.0	-	-	-
8 (19-25 Feb)	26.9	10.2	88.5	43.8	0.6	-	-	-
9 (26-04 Mar)	25.0	11.6	81.6	37.7	0.5	-	-	-
10 (05-11 Mar)	24.9	12.0	78.1	45.5	32.7	-	-	-
11 (12-18 Mar)	32.4	12.0	73.4	38.5	0.0	-	-	-
12 (19-25 Mar)	29.2	12.5	77.7	38.1	0.0	-	-	-
13 (26-01 Apr)	35.8	20.0	67.0	31.0	0.0	-	-	-
14 (02-08 Apr)	37.0	16.8	50.0	20.0	0.0	-	-	-
15 (09-15 Apr)	38.4	20.6	52.0	28.0	0.0	-	-	-
16 (16-22 Apr)	39.0	23.0	41.0	21.0	0.0	-	-	-
17 (23-29 Apr)	40.1	20.9	42.0	18.0	0.0	-	-	-
18(30-06 May)	39.8	21.2	36.0	16.0	0.0	-	-	-
19(7-13 May)	36.6	25.7	65.2	39.7	0.0	-	-	-
RANCHI	**Latitude 23^{0}21'N**		**Longitude 85^{0}20'E**			**Height above MSL 629 m**		
40 (01-07 Oct)	28.80	19.50	87	70	221.7	19.8	2.1	55.9
41 (08-14 Oct)	28.80	19.50	86	70	0.0	25.1	2.3	61.8
42 (15-21 Oct)	30.10	20.00	87	70	2.0	16.6	2.6	35.0
43 (22-28 Oct)	29.00	18.90	87	69	0.0	19.0	2.3	55.9
44 (29-04 Nov)	28.80	18.10	85	70	2.0	19.6	2.1	53.0
45 (05-11 Nov)	28.20	16.70	87	70	0.0	16.2	2.3	55.7
46 (12-18 Nov)	27.10	15.80	86	70	0.0	16.9	2.0	25.8
47 (19-25 Nov)	26.50	14.50	87	70	0.0	23.0	2.6	54.9
48 (26-02 Dec)	25.10	13.20	86	70	0.0	24.0	2.1	54.8
49 (03-09 Dec)	24.50	12.80	86	70	38.8	20.6	2.2	54.2
50 (10-16 Dec)	25.00	15.60	85	70	0.0	20.0	2.2	61.6
51 (17-23 Dec)	22.50	5.90	85	70	0.0	17.6	2.2	60.1
52 (24-31 Dec)	21.70	3.90	85	70	0.0	18.7	2.5	34.0

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
1 (01-07 Jan)	24.00	4.90	85	70	3.0	11.5	2.1	39.4
2 (08-14 Jan)	24.20	5.30	88	69	0.0	0.0	2.1	11.8
3 (15-21 Jan)	23.60	5.10	84	70	0.0	16.6	2.3	61.6
4 (22-28 Jan)	21.40	4.40	84	70	0.0	20.7	2.7	54.9
5 (29-04 Feb)	21.40	4.40	86	69	10.4	19.9	2.5	62.9
6 (05-11 Feb)	21.60	4.00	86	70	0.0	21.4	2.3	60.6
7 (12-18 Feb)	25.60	8.80	84	70	30.6	23.2	2.4	47.3
8 (19-25 Feb)	25.00	8.40	86	70	0.0	25.6	2.8	65.2
9 (26-04 Mar)	26.00	11.60	87	70	20.6	23.7	2.4	66.3
10 (05-11 Mar)	27.80	13.20	85	70	2.0	24.7	2.3	65.2
11 (12-18 Mar)	25.90	13.60	87	70	0.0	23.7	2.3	60.5
12 (19-25 Mar)	25.30	13.40	88	70	0.0	25.6	2.3	66.4
13 (26-01 Apr)	28.50	14.80	86	69	0.0	26.6	2.6	67.0
14 (02-08 Apr)	26.00	14.10	87	70	0.0	29.7	2.6	66.1
15 (09-15 Apr)	31.00	16.60	87	70	0.0	28.2	2.4	66.9
SABOUR	**Latitude 25^0 23' N**		**Longitude 87^0 07' E**			**Height above MSL 37.1m**		
44 (29-04 Nov)	31.4	17.8	93.4	55.6	0.0	2.5	1.2	7.5
45 (05-11 Nov)	29.9	16.5	92.9	65.9	0.0	2.4	1.1	2.2
46 (12-18 Nov)	29.8	15.9	94.1	64.3	0.0	1.6	1.9	6.7
47 (19-25 Nov)	30.1	14.2	94.4	63.6	0.0	1.9	2.6	3.1
48 (26-02 Dec)	29.0	14.6	93.4	70.0	0.0	1.8	2.4	4.2
49 (03-09 Dec)	25.8	15.3	94.4	77.7	1.1	1.4	2.3	1.7
50 (10-16 Dec)	24.8	8.1	95.4	80.1	0.0	1.4	2.8	6.6
51 (17-23 Dec)	23.9	7.4	93.7	77.7	0.0	1.1	2.5	5.2
52 (24-31 Dec)	24.9	11.4	92.4	74.8	0.0	1.3	3.1	3.6
1 (01-07 Jan)	22.0	8.1	95.7	74.3	0.0	1.2	2.9	2.6
2 (08-14 Jan)	20.7	7.8	96.6	73.4	0.0	1.1	4.3	1.4
3 (15-21 Jan)	16.8	8.4	96.1	76.6	0.0	0.9	3.8	0.6
4 (22-28 Jan)	18.7	5.8	97.9	73.9	0.0	1.6	4.2	3.5
5 (29-04 Feb)	23.9	7.6	93.3	60.1	0.0	1.6	2.7	1.9
6 (05-11 Feb)	23.9	9.0	89.3	52.7	0.0	2.0	2.8	2.4
7 (12-18 Feb)	26.6	12.0	79.8	52.6	3.3	1.9	2.7	3.0
8 (19-25 Feb)	25.6	13.9	88.0	68.0	0.4	2.5	4.3	2.5
9 (26-04 Mar)	26.9	13.4	80.3	59.9	0.0	2.5	5.1	4.1
10 (05-11 Mar)	26.9	13.9	53.9	66.4	0.0	2.8	11.4	4.9
11 (12-18 Mar)	32.5	15.0	63.0	47.6	2.1	4.0	5.6	5.8
12 (19-25 Mar)	27.5	16.7	82.5	70.2	4.4	1.9	4.5	6.3
13 (26-01 Apr)	33.0	18.7	75.4	58.7	0.0	3.5	6.5	7.4
14 (02-08 Apr)	36.7	19.6	44.6	42.0	0.0	4.2	5.8	6.9
15 (09-15 Apr)	35.5	19.5	58.14	47.3	0.00	3.6	4.0	6.0
16 (16-22 Apr)	38.9	23.1	48.9	41.9	0.00	5.3	4.6	7.2
SHILLONGANI	**Latitude 26^0 21' N**		**Longitude 90^{0}45' E**			**Height above MSL 50.2 m**		
40 (01-07 Oct)	31.5	25.1	95	79	119.0	22.4	2.7	-
41 (08-14 Oct)	31.5	24.6	91	78	15.6	22.4	2.8	-
42 (15-21 Oct)	32.0	22.9	91	74	0.0	21.7	2.3	-
43 (22-28 Oct)	31.7	22.0	90	71	0.0	18.1	2.7	-
44 (29-04 Nov)	31.1	20.6	87	70	0.0	18.1	2.1	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
45 (05-11 Nov)	29.9	18.8	92	64	0.0	17.0	1.9	-
46 (12-18 Nov)	28.8	18.3	89	69	4.8	16.9	2.1	-
47 (19-25 Nov)	28.8	18.6	94	69	0.0	17.1	2.0	-
48 (26-02 Dec)	28.1	15.6	91	63	0.0	17.8	2.1	-
49 (03-09 Dec)	26.2	17.1	93	67	4.6	16.9	2.1	-
50 (10-16 Dec)	25.8	14.9	92	67	0.0	16.3	2.2	-
51 (17-23 Dec)	25.1	12.3	92	62	0.0	16.4	2.1	-
52 (24-31 Dec)	26.6	13.2	91	68	0.0	14.3	2.0	-
1 (01-07 Jan)	26.1	12.5	92	67	0.0	15.9	2.1	-
2 (08-14 Jan)	23.1	12.4	93	69	0.0	15	2.2	-
3 (15-21 Jan)	21.8	11.6	92	71	0.0	14.2	2.8	-
4 (22-28 Jan)	22.9	12.1	93	61	0.0	15.2	2.7	-
5 (29-04 Feb)	22.9	11.6	91	56	7.0	15.6	2.4	-
6 (05-11 Feb)	23.4	12.3	89	60	0.0	15.2	2.1	-
7 (12-18 Feb)	26.9	12.0	89	54	0.0	16.3	1.9	-
8 (19-25 Feb)	24.8	15.9	89	68	0.0	15.5	2.1	-
9 (26-04 Mar)	26.4	14.0	90	65	0.0	16.0	2.2	-
10 (05-11 Mar)	28.2	15.9	82	53	0.0	18.1	1.8	-
11 (12-18 Mar)	29.9	16.9	83	54	0.0	18.6	1.6	-
12 (19-25 Mar)	27.3	18.6	89	70	24.5	15.0	1.6	-
13 (26-01 Apr)	28.1	19.6	90	68	10.2	15.0	2.0	-
14 (02-08 Apr)	30.3	20.3	85	67	14.0	15.9	1.8	-
15 (09-15 Apr)	33.1	21.1	84	61	0.0	17.8	2.4	-
16 (16-22 Apr)	30.4	21.2	87	69	42.2	14.1	2.0	-
17 (23-29 Apr)	31.9	21.3	85	67	9.0	15.7	2.0	-
18 (30-06 May)	31.4	21.7	89	61	0.0	22.1	1.7	-
VARANASI	**Latitude 25^0 20' N**		**Longitude 83^0 03' E**			**Height above MSL 128.93 m**		
40 (01-07 Oct)	-	-	-	-	-	-	-	-
41 (08-14 Oct)	-	-	-	-	-	-	-	-
42 (15-21 Oct)	-	-	-	-	-	-	-	-
43 (22-28 Oct)	-	-	-	-	-	-	-	-
44 (29-04 Nov)	-	-	-	-	-	-	-	-
45 (05-11 Nov)	-	-	-	-	-	-	-	-
46 (12-18 Nov)	-	-	-	-	-	-	-	-
47 (19-25 Nov)	-	-	-	-	-	-	-	-
48 (26-02 Dec)	-	-	-	-	8.3	-	-	-
49 (03-09 Dec)	-	-	-	-	3.6	-	-	-
50 (10-16 Dec)	-	-	-	-	-	-	-	-
51 (17-23 Dec)	-	-	-	-	-	-	-	-
52 (24-31 Dec)	-	-	-	-	-	-	-	-
1 (01-07 Jan)	-	-	-	-	7.6	-	-	-
2 (08-14 Jan)	-	-	-	-	-	-	-	-
3 (15-21 Jan)	-	-	-	-	-	-	-	-
4 (22-28 Jan)	-	-	-	-	-	-	-	-
5 (29-04 Feb)	-	-	-	-	-	-	-	-
6 (05-11 Feb)	-	-	-	-	12.3	-	-	-
7 (12-18 Feb)	-	-	-	-	11.6	-	-	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
8 (19-25 Feb)	-	-	-	-	12.5	-	-	-
9 (26-04 Mar)	-	-	-	-	8.8	-	-	-
10 (05-11 Mar)	-	-	-	-	-	-	-	-
11 (12-18 Mar)	-	-	-	-	-	-	-	-
12 (19-25 Mar)	-	-	-	-	5.6	-	-	-
13 (26-01 Apr)	-	-	-	-	-	-	-	-
14 (02-08 Apr)	-	-	-	-	-	-	-	-
15 (09-15 Apr)	-	-	-	-	-	-	-	-
16 (16-22 Apr)	-	-	-	-	-	-	-	-
CENTRAL ZONE								
BILASPUR	**Latitude 22^0 9' N**		**Longitude 82^0 12' E**			**Height above MSL 292.3 m**		
40 (01-07 Oct)	32.7	21.5	93.0	66.0	1.0	3.1	0.1	6.0
41 (08-14 Oct)	34.4	20.6	93.0	51.0	0.0	4.1	0.0	8.8
42 (15-21 Oct)	32.5	18.3	93.0	47.0	0.0	4.0	0.0	8.9
43 (22-28 Oct)	31.4	14.5	86.0	41.0	0.0	3.8	0.0	9.5
44 (29-04 Nov)	31.0	16.5	91.0	59.0	0.0	3.1	0.0	6.7
45 (05-11 Nov)	31.9	14.4	91.0	47.0	0.0	3.3	0.1	7.8
46 (12-18 Nov)	31.0	15.5	94.0	65.0	0.0	2.9	0.1	6.4
47 (19-25 Nov)	30.4	14.4	93.0	82.0	0.0	3.2	0.1	6.3
48 (26-02 Dec)	28.1	14.7	89.0	82.0	6.2	2.4	0.1	3.6
49 (03-09 Dec)	25.6	15.6	95.0	91.0	52.2	2.0	0.1	2.6
50 (10-16 Dec)	27.0	10.4	90.0	78.0	0.0	2.4	0.0	7.8
51 (17-23 Dec)	25.8	8.5	91.0	80.0	0.0	2.4	0.0	7.8
52 (24-31 Dec)	28.0	10.5	92.0	68.0	0.0	2.0	0.0	4.8
1 (01-07 Jan)	27.2	11.9	95.0	55.0	0.0	3.0	-	5.4
2 (08-14 Jan)	28.5	11.9	89.0	53.0	0.0	3.9	-	6.3
3 (15-21 Jan)	25.3	10.3	92.0	63.0	20.6	2.1	-	3.5
4 (22-28 Jan)	24.4	8.1	75.0	50.0	0.0	3.2	-	6.2
5 (29-04 Feb)	28.4	11.2	88.0	42.0	0.0	3.9	-	6.2
6 (05-11 Feb)	29.5	11.8	79.0	39.0	0.0	6.0	-	8.0
7 (12-18 Feb)	29.8	14.7	91.0	53.0	54.0	2.8	-	6.1
8 (19-25 Feb)	31.1	15.5	83.0	47.0	0.0	5.0	-	6.1
9 (26-04 Mar)	31.3	15.2	91.0	43.0	26.2	3.7	-	8.1
10 (05-11 Mar)	32.5	15.3	73.0	39.0	0.0	4.3	-	9.3
11 (12-18 Mar)	35.3	16.8	79.0	44.0	10.4	4.3	-	8.7
12 (19-25 Mar)	31.5	15.0	91.0	56.0	41.6	4.3	-	7.7
13 (26-01 Apr)	36.5	19.1	83.0	57.0	0.0	5.4	-	8.0
14 (02-08 Apr)	37.8	18.8	73.0	39.0	0.0	5.9	-	7.3
15 (09-15 Apr)	33.1	17.2	81.0	56.0	8.2	4.5	-	5.8
16 (16-22 Apr)	40.4	20.4	66.0	33.0	0.0	7.7	-	8.2
GWALIOR	**Latitude 26^0 13' N**		**Longitude 78^0 14' E**			**Height above MSL 211.52 m**		
40 (01-07 Oct)	33.6	15.4	89.5	60.5	0.0	-	-	-
41 (08-14 Oct)	29.3	11.0	90.0	69.7	0.0	-	-	-
42 (15-21 Oct)	29.1	10.6	93.0	69.2	0.0	-	-	-
43 (22-28 Oct)	26.9	13.7	91.0	75.4	2.0	-	-	-
44 (29-04 Nov)	25.3	13.4	94.0	65.7	0.0	-	-	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
45 (05-11 Nov)	27.8	8.0	94.4	59.4	0.0	-	-	-
46 (12-18 Nov)	24.6	6.0	94.2	63.8	0.0	-	-	-
47 (19-25 Nov)	22.3	7.0	95.0	75.7	0.0	-	-	-
48 (26-02 Dec)	15.6	8.7	94.0	67.0	36.0	-	-	-
49 (03-09 Dec)	21.0	5.7	93.0	61.6	0.0	-	-	-
50 (10-16 Dec)	17.2	5.3	94.0	66.6	0.0	-	-	-
51 (17-23 Dec)	20.6	5.3	87.0	63.0	0.0	-	-	-
52 (24-31 Dec)	25.7	9.6	89.0	60.0	0.0	-	-	-
1 (01-07 Jan)	23.0	7.2	88.0	67.6	6.2	-	-	-
2 (08-14 Jan)	26.7	7.2	91.0	57.0	0.0	-	-	-
3 (15-21 Jan)	29.4	10.2	83.0	56.3	0.0	-	-	-
4 (22-28 Jan)	27.2	10.7	85.0	63.3	20.6	-	-	-
5 (29-04 Feb)	28.0	8.1	79.9	48.6	0.0	-	-	-
6 (05-11 Feb)	32.2	11.6	75.3	39.7	0.0	-	-	-
7 (12-18 Feb)	34.3	13.9	70.1	34.7	0.0	-	-	-
8 (19-25 Feb)	38.6	17.7	70.6	31.3	0.0	-	-	-
9 (26-04 Mar)	38.2	16.6	61.2	35.1	0.0	-	-	-
10 (05-11 Mar)	40.1	19.8	65.4	34.4	0.0	-	-	-
11 (12-18 Mar)	43.3	21.9	56.0	30.0	0.0	-	-	-
12 (19-25 Mar)	42.2	20.7	54.5	26.5	0.0	-	-	-
13 (26-01 Apr)	33.6	15.4	89.5	60.5	0.0	-	-	-
14 (02-08 Apr)	29.3	11.0	90.0	69.7	0.0	-	-	-
15 (09-15 Apr)	29.1	10.6	93.0	69.2	0.0	-	-	-
16 (16-22 Apr)	26.9	13.7	91.0	75.4	2.0	-	-	-
17 (23-29 Apr)	25.3	13.4	94.0	65.7	0.0	-	-	-
INDORE	**Latitude 22^0 37'N**		**Longitude $75^0$50' N**			**Height above MSL 557 m**		
40 (01-07 Oct)	32.70	20.00	85.90	83.60	0.00	0.00	0.04	-
41 (08-14 Oct)	33.30	19.60	88.40	84.20	0.00	0.00	0.04	-
42 (15-21 Oct)	32.10	18.00	91.10	79.40	0.00	0.00	0.04	-
43 (22-28 Oct)	31.90	15.70	83.40	76.60	0.00	0.00	0.04	-
44 (29-04 Nov)	30.70	14.30	89.60	78.00	0.00	0.00	0.04	-
45 (05-11 Nov)	30.60	15.00	90.30	77.00	0.00	0.00	0.15	-
46 (12-18 Nov)	28.60	12.70	89.20	82.20	0.00	0.00	0.15	-
47 (19-25 Nov)	29.10	13.70	86.50	81.60	0.00	0.00	0.50	-
48 (26-02 Dec)	22.90	15.30	90.00	79.30	60.40	0.00	0.04	-
49 (03-09 Dec)	24.00	16.00	90.50	86.20	0.00	0.00	0.05	-
50 (10-16 Dec)	24.40	10.90	88.80	78.50	0.00	0.00	0.14	-
51 (17-23 Dec)	22.00	8.60	83.00	79.70	0.00	0.00	0.04	-
52 (24-31 Dec)	24.10	9.60	84.00	81.70	0.00	0.00	0.05	-
1 (01-07 Jan)	22.30	14.00	90.20	87.30	11.00	0.00	0.04	-
2 (08-14 Jan)	23.90	13.60	91.00	86.80	0.00	0.00	0.04	-
3 (15-21 Jan)	24.50	9.10	89.00	80.10	0.00	0.00	0.04	-
4 (22-28 Jan)	23.00	5.60	85.50	84.30	0.00	0.00	0.04	-
5 (29-04 Feb)	25.70	8.30	83.70	81.80	0.00	0.00	0.21	-
6 (05-11 Feb)	26.60	9.90	84.90	77.00	0.00	0.00	0.13	-
7 (12-18 Feb)	28.60	12.70	89.00	65.00	0.00	0.00	0.07	-
8 (19-25 Feb)	31.40	13.00	85.90	72.40	0.00	0.00	0.10	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
9 (26-04 Mar)	32.40	12.10	85.90	66.50	0.00	0.00	0.15	-
10 (05-11 Mar)	31.70	11.10	70.50	69.70	0.00	0.00	0.38	-
11 (12-18 Mar)	33.30	14.90	83.30	75.20	0.00	0.00	0.31	-
12 (19-25 Mar)	35.60	17.60	84.80	82.50	0.00	0.00	0.30	-
13 (26-01 Apr)	39.20	20.50	89.20	72.80	0.00	0.00	0.32	-
14 (02-08 Apr)	37.10	21.10	82.80	67.00	0.00	0.00	0.41	-
15 (09-15 Apr)	36.40	21.60	88.00	73.90	6.20	0.00	0.41	-
16 (16-22 Apr)	39.60	24.30	82.20	71.60	0.00	0.00	0.41	-
17 (23-29 Apr)	38.20	23.40	82.90	71.00	0.00	0.00	0.41	-
JABALPUR	**Latitude 23^0 09' N**		**Longitude 79^0 58' E**				**Height above MSL 411 m**	
40 (01-07 Oct)	31.9	20.6	83.0	56.6	0.6	3.3	3.0	6.8
41 (08-14 Oct)	33.9	20.6	80.6	43.3	0.0	3.7	2.1	8.5
42 (15-21 Oct)	31.9	18.4	84.3	47.7	0.0	3.2	2.2	7.7
43 (22-28 Oct)	30.0	13.9	73.4	40.6	0.0	2.8	1.7	9.0
44 (29-04 Nov)	30.5	14.0	79.0	42.0	0.0	2.4	1.5	7.9
45 (05-11 Nov)	31.6	14.1	76.9	36.0	0.0	2.2	1.2	7.3
46 (12-18 Nov)	29.3	12.3	81.7	42.3	0.0	2.0	1.7	5.7
47 (19-25 Nov)	29.4	12.6	88.6	44.6	0.0	1.9	1.2	5.0
48 (26-02 Dec)	24.7	15.1	93.3	69.3	39.2	1.5	2.4	2.4
49 (03-09 Dec)	24.8	16.5	96.1	69.6	10.8	1.0	3.6	2.6
50 (10-16 Dec)	25.4	9.1	91.7	42.7	0.0	1.8	1.3	7.7
51 (17-23 Dec)	22.9	6.4	84.0	41.4	0.0	1.5	1.9	7.4
52 (24-31 Dec)	25.7	7.8	90.5	50.4	0.0	1.5	1.3	7.4
1 (01-07 Jan)	24.7	13.8	92.7	65.7	13.3	1.3	3.0	2.9
2 (08-14 Jan)	23.1	12.0	93.3	63.6	0.0	1.6	2.9	4.3
3 (15-21 Jan)	22.0	8.1	90.9	55.4	1.6	1.6	3.2	5.8
4 (22-28 Jan)	22.9	5.8	79.1	41.4	0.0	1.9	2.4	7.6
5 (29-04 Feb)	27.0	10.3	90.7	49.0	0.0	1.9	1.7	6.1
6 (05-11 Feb)	25.2	10.2	80.4	50.9	11.3	2.5	3.2	7.1
7 (12-18 Feb)	25.9	14.3	93.1	62.0	8.8	1.7	2.2	3.9
8 (19-25 Feb)	29.3	13.7	76.1	37.6	0.0	3.4	3.9	9.0
9 (26-04 Mar)	28.3	14.4	81.4	49.1	10.3	2.7	3.5	6.5
10 (05-11 Mar)	29.2	10.9	74.3	34.4	0.0	3.6	2.9	9.8
11 (12-18 Mar)	32.9	14.8	71.6	35.9	7.2	4.6	3.4	8.9
12 (19-25 Mar)	34.0	14.5	78.6	25.7	0.0	4.2	2.2	8.2
13 (26-01 Apr)	38.0	18.8	70.1	24.6	0.0	5.1	2.7	8.3
14 (02-08 Apr)	36.9	18.6	64.0	29.0	0.0	6.2	3.3	6.7
15 (09-15 Apr)	34.3	20.4	67.4	38.4	9.3	5.3	4.2	6.6
16 (16-22 Apr)	38.3	21.9	61.4	31.1	7.2	6.2	3.5	10.1
17 (23-29 Apr)	38.0	22.3	66.9	28.7	0.0	7.0	4.7	8.3
18 (30-06 May)	39.3	22.5	61.5	30.0	0.0	7.0	4.7	10.9
JUNAGARH	**Latitude 21^0 31' N**		**Longitude 70^0 33' E**				**Height above MSL 83 m**	
40 (01-07 Oct)	35.5	23.0	84.3	41.3	0.0	4.4	3.9	9.7
41 (08-14 Oct)	34.7	23.0	79.3	45.9	53.4	4.4	3.7	9.3
42 (15-21 Oct)	35.1	23.1	73.6	38.6	0.0	4.5	3.6	9.1
43 (22-28 Oct)	36.6	21.8	70.3	31.3	0.0	4.6	2.6	8.6
44 (29-04 Nov)	36.3	19.7	71.7	27.7	0.0	4.2	2.0	8.7

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
45 (05-11 Nov)	36.2	20.7	69.9	30.1	0.0	4.2	2.3	8.0
46 (12-18 Nov)	34.3	18.0	59.9	22.7	0.0	5.2	3.7	8.2
47 (19-25 Nov)	21.6	33.5	12.8	70.4	47.5	0.6	33.3	20.1
48 (26-02 Dec)	29.5	18.6	86.3	58.4	19.0	4.1	5.6	7.0
49 (03-09 Dec)	30.0	20.4	67.6	43.9	0.0	4.6	6.6	6.8
50 (10-16 Dec)	30.4	14.7	80.4	34.9	0.0	3.7	2.7	8.4
51 (17-23 Dec)	28.9	16.9	65.9	37.6	0.0	4.0	4.1	3.8
52 (24-31 Dec)	31.4	14.2	83.0	36.1	0.0	3.8	2.7	8.4
1 (01-07 Jan)	28.1	11.0	81.0	37.3	0.0	4.2	4.9	7.8
2 (08-14 Jan)	29.2	15.7	67.6	41.3	0.0	5.3	6.8	5.4
3 (15-21 Jan)	28.3	11.8	78.6	34.1	0.0	4.0	3.2	9.0
4 (22-28 Jan)	30.1	11.1	79.3	28.3	0.0	4.2	3.0	9.1
5 (29-04 Feb)	30.5	15.6	84.1	37.3	0.0	4.0	2.4	8.0
6 (05-11 Feb)	30.8	16.8	70.6	32.6	0.0	4.8	5.0	8.5
7 (12-18 Feb)	32.2	15.8	62.3	21.7	0.0	6.1	5.6	8.0
8 (19-25 Feb)	32.4	17.4	69.0	21.1	0.0	6.9	5.3	9.5
9 (26-04 Mar)	34.0	17.7	64.6	25.9	0.0	6.5	5.0	8.6
10 (05-11 Mar)	32.9	16.6	45.0	14.4	0.0	7.7	5.8	10.3
11 (12-18 Mar)	35.4	19.7	72.1	18.9	0.0	6.9	5.4	9.7
12 (19-25 Mar)	38.5	20.7	56.4	14.3	0.0	7.9	4.8	9.2
13 (26-01 Apr)	39.0	23.1	67.9	24.0	0.0	8.0	5.0	10.1
POWARKHEDA	**Latitude 22^0 44'N**			**Longitude 77^0 42' E**			**Height above MSL 299 m**	
40 (01-07 Oct)	34.7	18.5	96.0	53.0	0.0	2.8	1.3	10.2
41 (08-14 Oct)	36.4	17.9	96.0	42.0	0.0	2.7	2.2	10.1
42 (15-21 Oct)	36.0	17.4	97.0	38.0	0.0	2.0	1.9	10.3
43 (22-28 Oct)	34.0	12.9	95.0	31.0	0.0	1.5	2.6	10.2
44 (29-04 Nov)	33.4	12.7	94.0	32.0	0.0	1.7	2.5	9.6
45 (05-11 Nov)	34.9	12.6	96.0	28.0	0.0	2.2	1.7	10.5
46 (12-18 Nov)	34.5	12.0	92.0	30.0	0.0	1.3	1.6	10.5
47 (19-25 Nov)	32.7	13.6	93.0	36.0	0.0	1.7	1.6	9.6
48 (26-02 Dec)	29.5	7.8	98.0	43.0	49.7	1.0	2.2	10.5
49 (03-09 Dec)	27.6	12.4	98.0	58.0	0.0	1.2	1.4	10.1
50 (10-16 Dec)	28.5	9.7	96.0	47.0	0.0	1.9	1.9	10.1
51 (17-23 Dec)	26.6	7.6	97.0	46.0	0.0	1.6	2.5	10.3
52 (24-31 Dec)	28.4	10.2	94.0	47.0	0.0	2.1	3.7	10.2
1 (01-07 Jan)	28.8	13.1	98.0	60.0	9.3	0.8	6.1	2.3
2 (08-14 Jan)	28.8	12.0	98.0	64.0	2.2	1.0	5.5	3.2
3 (15-21 Jan)	28.6	6.0	96.0	47.0	1.1	2.0	5.9	7.2
4 (22-28 Jan)	25.4	4.2	97.0	33.0	0.0	2.0	3.5	9.0
5 (29-04 Feb)	27.9	7.8	96.0	47.0	0.0	2.3	3.9	9.5
6 (05-11 Feb)	30.4	6.4	98.0	52.0	0.0	2.4	5.8	8.5
7 (12-18 Feb)	30.9	11.7	98.0	54.0	0.0	2.4	5.0	5.8
8 (19-25 Feb)	32.1	10.0	95.0	34.0	0.0	3.4	12.5	7.5
9 (26-04 Mar)	34.5	9.5	98.0	30.0	6.5	3.0	6.0	1.2
10 (05-11 Mar)	34.0	8.7	88.0	31.0	0.0	4.3	5.9	7.2
11 (12-18 Mar)	35.9	11.9	89.0	17.0	0.0	5.3	2.4	6.8
12 (19-25 Mar)	39.0	11.6	75.0	16.0	0.0	5.4	4.6	8.8

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
13 (26-01 Apr)	41.5	16.9	72.0	17.0	0.0	5.9	4.3	8.5
14 (02-08 Apr)	40.1	17.0	96.0	16.0	0.0	6.5	3.2	9.8
15 (09-15 Apr)	37.7	17.6	84.0	18.0	48.8	5.5	3.9	10.4
16 (16-22 Apr)	40.9	21.6	85.0	25.0	2.5	6.9	3.6	9.8
17 (23-29 Apr)	39.9	21.7	86.0	22.0	3.2	7.0	2.4	9.0
UDAIPUR	**Latitude 24^0 35' N**		**Longitude 73^{0}42'E**				**Height above MSL 582 m**	
40 (01-07 Oct)	34.4	16.3	73.1	37.1	0.0	3.3	2.5	8.2
41 (08-14 Oct)	33.6	16.2	68.4	34.7	0.0	3.3	3.4	8.1
42 (15-21 Oct)	32.6	16.5	72.4	34.6	0.0	3.0	3.1	8.0
43 (22-28 Oct)	32.3	14.1	62.6	26.4	0.2	2.9	2.2	7.7
44 (29-04 Nov)	32.4	14.5	67.9	26.3	0.0	3.1	1.9	8.3
45 (05-11 Nov)	32.4	14.3	68.7	29.1	0.0	2.2	2.2	6.3
46 (12-18 Nov)	28.8	10.7	66.1	37.4	0.0	2.4	1.5	6.2
47 (19-25 Nov)	28.6	10.5	68.3	35.3	0.0	3.0	2.3	8.3
48 (26-02 Dec)	22.6	11.6	85.7	71.1	35.8	2.0	4.7	2.9
49 (03-09 Dec)	22.8	11.6	85.9	61.4	15.0	1.5	1.9	2.5
50 (10-16 Dec)	25.8	8.3	84.7	38.9	0.0	2.3	1.1	7.4
51 (17-23 Dec)	25.0	6.5	76.0	29.7	0.0	2.4	1.5	8.0
52 (24-31 Dec)	26.1	8.1	82.8	45.1	0.0	2.0	1.3	7.1
1 (01-07 Jan)	23.3	6.1	91.7	43.7	0.0	1.3	2.3	6.1
2 (08-14 Jan)	25.1	7.1	84.6	39.7	0.0	1.9	2.9	7.3
3 (15-21 Jan)	25.6	6.1	79.9	34.0	0.0	2.2	1.6	8.4
4 (22-28 Jan)	25.7	4.8	79.6	30.7	0.0	2.3	2.9	8.5
5 (29-04 Feb)	27.7	9.9	81.3	35.1	0.0	2.3	1.7	6.0
6 (05-11 Feb)	25.5	8.3	73.4	35.4	0.0	2.4	3.3	5.8
7 (12-18 Feb)	26.4	7.4	76.4	30.4	0.0	2.4	2.0	6.2
8 (19-25 Feb)	28.4	9.0	63.7	25.1	0.0	3.4	4.5	8.6
9 (26-04 Mar)	27.8	11.1	57.9	28.4	0.0	3.3	3.6	6.4
10 (05-11 Mar)	28.8	9.0	47.1	24.1	0.0	4.7	2.7	8.0
11 (12-18 Mar)	31.5	11.8	55.6	19.0	0.0	4.1	3.4	8.1
12 (19-25 Mar)	33.6	14.7	53.7	19.9	0.0	5.2	2.7	7.6
13 (26-01 Apr)	35.9	18.4	52.7	21.3	0.0	8.4	4.0	8.3
14 (02-08 Apr)	34.3	20.1	43.6	19.7	0.8	8.9	4.1	4.7
15 (09-15 Apr)	35.8	19.7	48.6	24.6	0.3	7.5	3.7	4.1
16 (16-22 Apr)	36.2	21.3	43.6	20.1	0.0	10.1	5.5	7.9
17 (23-29 Apr)	36.7	21.2	36.1	17.1	0.0	11.7	5.3	9.5
18 (30-06 May)	36.9	20.9	30.6	15.1	0.0	13.7	5.4	8.8
VIJAPUR	**Latitude 23^{0}15' N**		**Longitude 72^{0}55' E**				**Height above MSL 126 m**	
40 (01-07 Oct)	34.0	20.9	92.9	39.3	0.0	-	-	-
41 (08-14 Oct)	30.4	21.1	93.1	44.7	4.0	-	-	-
42 (15-21 Oct)	33.0	17.1	90.4	38.6	0.0	-	-	-
43 (22-28 Oct)	34.1	19.7	86.4	27.4	0.0	-	-	-
44 (29-04 Nov)	33.2	17.8	92.1	26.1	0.0	-	-	-
45 (05-11 Nov)	35.1	20.1	91.6	26.1	0.0	-	-	-
46 (12-18 Nov)	32.1	15.4	91.1	29.3	0.0	-	-	-
47 (19-25 Nov)	34.0	20.1	91.3	33.7	0.0	-	-	-
48 (26-02 Dec)	27.7	13.7	88.6	60.6	52.0	-	-	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
49 (03-09 Dec)	26.4	16.5	93.1	51.0	0.0	-	-	-
50 (10-16 Dec)	25.7	12.3	93.7	37.9	0.0	-	-	-
51 (17-23 Dec)	25.3	16.5	89.9	30.4	0.0	-	-	-
52 (24-31 Dec)	28.0	15.8	91.4	42.3	0.0	-	-	-
1 (01-07 Jan)	24.4	16.4	92.7	44.4	0.0	-	-	-
2 (08-14 Jan)	23.9	17.3	88.4	46.6	0.0	-	-	-
3 (15-21 Jan)	23.7	17.1	93.4	35.4	0.0	-	-	-
4 (22-28 Jan)	23.9	17.0	90.7	30.3	0.0	-	-	-
5 (29-04 Feb)	23.9	17.1	92.1	35.0	0.0	-	-	-
6 (05-11 Feb)	26.7	16.3	89.1	31.0	0.0	-	-	-
7 (12-18 Feb)	28.5	16.9	85.9	27.0	0.0	-	-	-
8 (19-25 Feb)	31.3	18.1	90.0	24.4	0.0	-	-	-
9 (26-04 Mar)	38.6	28.0	95.0	35.9	17.0	-	-	-
10 (05-11 Mar)	29.9	22.3	67.6	18.3	0.0	-	-	-
11 (12-18 Mar)	38.4	21.4	83.0	18.9	0.0	-	-	-
12 (19-25 Mar)	39.0	25.7	82.7	16.1	0.0	-	-	-
13 (26-01 Apr)	39.9	28.0	84.3	20.0	0.0	-	-	-
14 (02-08 Apr)	38.1	24.1	84.3	20.7	0.0	-	-	-
15 (09-15 Apr)	39.1	24.1	83.0	23.0	0.0	-	-	-
16 (16-22 Apr)	41.6	29.1	81.9	20.4	0.0	-	-	-
PENINSULAR ZONE								
AKOLA	**Latitude 20^0 70' N**		**Longitude 77^{0}03' E**			**Height above MSL 282 m**		
40(01-07 Oct)	33.40	19.80	83	45	-	5.2	2.9	-
41(08-14 Oct)	34.90	17.80	81	38	-	5.5	0.9	-
42(15-21 Oct)	34.50	17.10	81	37	-	5.5	0.6	-
43(22-28 Oct)	33.30	13.00	77	28	-	4.6	0.5	-
44(29-04 Nov)	32.70	13.00	77	31	-	4.4	0.8	-
45(05-11 Nov)	33.30	13.00	73	25	-	4.6	1.6	-
46(12-18 Nov)	32.50	11.90	77	32	-	4.0	0.8	-
47(19-25 Nov)	31.60	13.70	78	36	-	4.1	1.1	-
48(26-02 Dec)	25.50	15.20	92	76	94.0	1.9	2.7	-
49(03-09 Dec)	27.50	15.20	88	60	-	2.7	2.1	-
50(10-16 Dec)	28.30	11.00	87	44	-	2.9	0.8	-
51(17-23 Dec)	26.70	9.30	82	33	-	3.0	1.3	-
52(24-31 Dec)	29.60	9.70	86	41	-	3.1	0.5	-
1(01-07 Jan)	28.60	11.70	86	49	-	3.0	1.3	-
2(08-14 Jan)	28.90	12.30	86	43	-	3.2	1.2	-
3(15-21 Jan)	29.50	11.20	85	36	-	3.7	1.4	-
4(22-28 Jan)	28.00	8.70	75	34	-	4.2	1.1	-
5(29-04 Feb)	30.30	10.40	78	33	-	4.4	1.2	-
6(05-11 Feb)	31.80	12.80	75	34	-	5.3	1.4	-
7(12-18 Feb)	32.30	14.20	77	35	-	5.0	1.0	-
8(19-25 Feb)	33.00	13.50	68	28	-	6.2	2.9	-
9(26-04 Mar)	32.30	15.70	76	42	7.6	5.5	2.6	-
10(05-11 Mar)	34.60	13.10	61	20	-	7.1	1.7	-
11(12-18 Mar)	36.50	16.70	60	20	-	8.5	2.8	-

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
12(19-25 Mar)	37.10	16.10	67	16	-	8.5	1.9	-
13(26-01 Apr)	40.80	20.90	54	17	-	10.0	1.8	-
DHARWAD	**Latitude 15^0 26'N**		**Longitude 75^0 07' E**			**Height above MSL 678 m**		
40(01-07 Oct)	27.9	20.4	89	77	10.4	-	-	-
41(08-14 Oct)	33.1	20.6	81	52	0.0	-	-	-
42(15-21 Oct)	32.7	19.2	73	59	0.0	-	-	-
43(22-28 Oct)	32.3	16.7	59	56	0.0	-	-	-
44(29-04 Nov)	31.9	19.1	78	59	3.2	-	-	-
45(05-11 Nov)	29.3	20.3	88	69	17.8	-	-	-
46(12-18 Nov)	30.7	16.8	73	65	0.0	-	-	-
47(19-25 Nov)	30.8	18.3	82	68	0.0	-	-	-
48(26-02 Dec)	30.7	18.2	80	66	4.8	-	-	-
49(03-09 Dec)	29.5	17.2	86	64	0.0	-	-	-
50(10-16 Dec)	29.4	15.4	77	63	0.0	-	-	-
51(17-23 Dec)	29.1	15.8	79	51	0.0	-	-	-
52(24-31 Dec)	30.8	12.9	67	30	0.0	-	-	-
1(01-07 Jan)	29.8	16.6	74	46	3.6	-	-	-
2(08-14 Jan)	29.7	16.4	72	43	0.0	-	-	-
3(15-21 Jan)	30.4	15	71	35	0.0	-	-	-
4(22-28 Jan)	31.8	14.8	67	32	0.0	-	-	-
5(29-04 Feb)	31.4	14.2	69	31	0.0	-	-	-
6(05-11 Feb)	34.3	16.9	58	30	0.0	-	-	-
7(12-18 Feb)	34.1	17.2	50	24	0.0	-	-	-
8(19-25 Feb)	33.9	17.6	54	27	0.0	-	-	-
9(26-04 Mar)	34.8	19.3	65	31	0.0	-	-	-
10(05-11 Mar)	35.7	19.1	51	29	0.0	-	-	-
11(12-18 Mar)	35.8	19.8	55	36	0.0	-	-	-
12(19-25 Mar)	35.8	21.2	52	29	0.1	-	-	-
13(26-01 Apr)	37.3	21.9	75	40	0.0	-	-	-
14 (02-08 Apr)	38.6	21.9	73	32	0.3	-	-	-
15 (09-15 Apr)	36.9	21.9	67	44	35	-	-	-
16 (16-22 Apr)	35.5	21.6	81	51	3	-	-	-
17 (23-29 Apr)	37.9	22.5	76	37	0.0	-	-	-
NIPHAD	**Latitude 20.6^0 N**		**Longitude 74.6^0 E**			**Height above MSL 548.6 m**		
40(01-07 Oct)	33.1	20.9	89.1	55.3	0.0	1.4	5.5	7.8
41(08-14 Oct)	34.9	18.7	90.1	55.4	0.0	2.2	2.2	8.1
42(15-21 Oct)	34.3	19.2	93.9	55.3	9.2	1.2	2.4	7.3
43(22-28 Oct)	32.8	15.3	92.1	59.6	0.0	2.1	1.5	9.0
44(29-04 Nov)	32.4	13.8	91.3	57.0	0.0	2.7	1.9	9.1
45(05-11 Nov)	32.1	15.1	91.6	51.7	0.0	2.0	2.3	8.4
46(12-18 Nov)	31.7	13.3	91.4	52.1	0.0	1.7	1.4	8.6
47(19-25 Nov)	30.8	14.4	87.9	54.9	0.0	0.9	2.4	7.7
48(26-02 Dec)	28.4	17.9	95.7	62.1	99.6	0.1	3.6	4.8
49(03-09 Dec)	29.5	17.0	93.3	46.6	0.0	1.2	3.2	7.7
50(10-16 Dec)	29.0	12.6	94.3	47.0	0.0	0.9	1.9	8.3
51(17-23 Dec)	27.5	11.9	88.9	50.0	0.0	0.3	3.9	6.3
52(24-31 Dec)	30.2	10.9	93.5	44.6	0.0	0.9	1.6	8.3

Julian weeks	Temperature ℃		RH (%)		Rainfall	Pan-E	Wind Speed	Sunshine
	Max	Min	Max	Min	mm	mm	km/hr	hrs/day
1(01-07 Jan)	28.7	12.6	95.6	51.3	0.0	0.4	2.2	6.2
2(08-14 Jan)	28.7	14.5	93.9	50.1	0.8	1.3	3.1	8.0
3(15-21 Jan)	28.8	8.8	93.3	50.1	0.0	1.8	1.8	9.2
4(22-28 Jan)	28.6	6.7	95.7	48.1	0.0	1.5	1.7	9.0
5(29-04 Feb)	29.7	9.6	90.4	42.3	0.0	1.6	1.4	9.0
6(05-11 Feb)	31.6	10.4	91.9	39.4	0.0	1.9	2.2	9.5
7(12-18 Feb)	31.4	11.1	90.6	42.0	0.0	2.2	1.5	9.6
8(19-25 Feb)	31.4	9.8	87.1	44.4	0.0	1.7	3.5	8.8
9(26-04 Mar)	32.3	12.7	88.4	45.8	0.0	2.3	3.4	9.2
10(05-11 Mar)	33.4	9.5	92.1	39.6	0.0	2.3	3.0	9.9
11(12-18 Mar)	34.0	13.3	81.9	30.6	0.0	3.3	3.5	9.5
12(19-25 Mar)	35.0	12.2	77.6	27.9	0.0	7.3	2.6	9.5
13(26-01 Apr)	37.3	17.4	84.9	35.7	0.0	8.4	2.8	8.8
14(02-08 Apr)	37.0	16.2	78.7	48.0	0.0	9.7	4.4	9.6
15(09-15 Apr)	36.8	18.6	85.4	47.7	0.0	8.7	4.0	9.6
16(16-22 Apr)	38.6	22.7	81.3	51.4	0.0	9.8	5.3	8.6
17(23-29 Apr)	38.3	20.9	75.7	42.3	0.0	10.0	4.5	9.4
PUNE	**Latitude 18^{0}04' N**		**Longitude 74^{0}21' E**			**Height above MSL 548.6 m**		
40(01-07 Oct)	31.2	19.9	90.0	84.0	44.0	-	-	-
41(08-14 Oct)	34.1	19.7	87.0	85.0	0.0	-	-	-
42(15-21 Oct)	34.2	21.1	90.0	89.0	0.0	-	-	-
43(22-28 Oct)	32.8	16.9	88.0	85.0	0.0	-	-	-
44(29-04 Nov)	32.0	15.3	83.0	83.0	0.0	-	-	-
45(05-11 Nov)	32.1	19.9	88.0	89.0	0.0	-	-	-
46(12-18 Nov)	31.6	15.5	88.0	87.0	0.0	-	-	-
47(19-25 Nov)	32.2	17.0	90.0	91.0	0.0	-	-	-
48(26-02 Dec)	31.9	19.7	94.0	93.0	0.0	-	-	-
49(03-09 Dec)	30.3	17.3	95.0	90.0	0.0	-	-	-
50(10-16 Dec)	30.5	13.4	95.0	92.0	0.0	-	-	-
51(17-23 Dec)	29.8	13.9	86.0	63.0	0.0	-	-	-
52(24-31 Dec)	30.4	11.1	90.0	55.0	0.0	-	-	-
1(01-07 Jan)	30.3	13.8	92.0	68.0	1.8	-	-	-
2(08-14 Jan)	31.1	15.2	89.0	66.0	0.0	-	-	-
3(15-21 Jan)	31.8	11.1	90.0	53.0	0.0	-	-	-
4(22-28 Jan)	32.0	10.1	100.0	56.0	0.0	-	-	-
5(29-04 Feb)	32.0	11.9	92.0	54.0	0.0	-	-	-
6(05-11 Feb)	34.4	13.8	86.0	49.0	0.0	-	-	-
7(12-18 Feb)	33.6	13.0	82.0	43.0	0.0	-	-	-
8(19-25 Feb)	33.2	11.3	82.0	35.0	0.0	-	-	-
9(26-04 Mar)	32.6	19.5	87.0	75.0	0.0	-	-	-
10(05-11 Mar)	21.5	32.2	85.0	83.0	0.0	-	-	-
11(12-18 Mar)	36.5	14.9	87.0	91.0	0.0	-	-	-
12(19-25 Mar)	37.1	15.3	82.0	81.0	0.0	-	-	-
13(26-01 Apr)	38.9	21.0	68.0	45.0	0.0	-	-	-
14(02-08 Apr)	39.8	18.0	68.0	45.0	0.0	-	-	-
15(09-15 Apr)	39.2	18.5	56.0	37.0	0.0	-	-	-
16(16-22 Apr)	39.9	23.7	62.0	46.0	0.0	-	-	-

SOIL PHYSICO-CHEMICAL PROPERTIES

Name of Centre	Textural class	Sand %	Silt %	Clay %	Db Mg m^{-3}	FC %	PWP %	OC %	Avail. N kg/ha	Avail. P kg/ha	Avail. K kg/ha	pH	EC dsm^{-1}
NORTHERN HILLS ZONE													
Almora	-	-	-	-	1.32	-	-	1.35	-	27.5	255	6.5	-
Khudwani	Silt clay loam	16.3	46.2	37.5	1.33	NA	NA	0.68	283	20	190	7.1	0.1
Malan	-	-	-	-	1.54	31	14	0.73	329	42.2	240	5.30	-
NORTH WESTERN PLAINS ZONE													
Agra	Sandy Loam	56.80	22.32	20.88	-	17.95	9.53	0.43	176.28	26.89	273.49	8.50	1.70
Delhi	Sandy Loam	69.5	16.4	14.1	1.39	-	-	0.51	149.4	15.5	261	7.3	-
Durgapura	Loamy sand	80.77	10.4	7.82	1.53	10.4	3.15	0.28	123.64	48.4	189.2	8.04	0.14
Gurdaspur	Loam	-	-	-	-	-	-	0.24	-	16.03	93.50	7.56	0.11
Hisar	Sandy loam	72	18.5	9.5	1.4	-	-	0.33	142	16.4	264	7.9	0.21
Jammu	Sandy Loam	41.32	30.52	28.16	1.45	21.30	-	0.42	170.10	15.00	139.90	7.23	0.21
Karnal	Sandy Loam	42.5	30.8	26.7	1.46	20.5	-	0.47	189.60	16.5	171.7	8.16	0.23
Ludhiana	Sandy Loam	83.13	7.90	8.88	1.46	-	-	0.28	25.15	29.03	82.08	6.81	0.17
Pantnagar	Loam	36	47.6	16.4	1.368	22.6	8.4	0.7	223.6	41.6	145.4	7.3	0.4
Sriganganagar	Sandy Loam	-	-	-	-	-	-	-	-	-	-	-	-
NORTH EASTERN PLAINS ZONE													
Ayodhya	Silty loam	17	68.6	16.7	1.35	20	6.2	0.27	155	15.5	225.5	8.4	0.25
Burdwan	Sandy Loam	-	-	-	-	-	-	0.39	-	161	211	6.28	0.05
Coochbehar	Sandy Loam	65.5	24	10.5	1.39			0.58	135.85	38.5	141.55	5.28	-
IARI Pusa	-	-	-	-	-	-	-	-	-	-	-	-	-
Kalyani	-	-	-	-	-	-	-	-	-	-	-	-	-
Ranchi	clay loam	33.3	30.7	36	1.41	27	15.1	0.49	229	14.5	204	6.3	-
RPCAU Pusa	-	-	-	-	-	-	-	-	-	-	-	-	-
Sabour	Loamy clay	25	42.5	33.5	1.40	23	12	0.48	233	26.2	217	6.95	0.15
Shillongani	Sandy Clay Loam	51.2	22.1	26.8	1.35	42.6	7.4	1.16	257	16	272.36	5.48	0.271
Varanasi	-	-	-	-	-	-	-	-	-	-	-	-	-
CENTRAL ZONE													
Bilaspur	Sandy clay loam	41.23	23.16	34.87	1.32	22.01	8.3	0.35	279	12.8	282	7.2	0.18
Gwalior	Sandy clay loam	56.0	17.2	20.0	-	-	-	0.46	180	12.5	200	7.4	-
Indore	Vertisols	18.1	27.1	54.8	1.44	38	16	0.48	233.7	16.7	417	8.22	0.28
Jabalpur	Vertisols	25.15	18.52	55.67	1.33	39-42	28.3	0.62	288	16.66	302	7.2	0.33
Junagadh	Medium black	36.12	30.29	34.56	1.38	-	-	0.57	141	39.42	225	8.18	0.14
Powarkheda	-	26.0	24.5	47.5	1.53	-	-	0.48	0.24	95	21.72	300.26	7.42
Udaipur	Clay loam	35.13	29.7	35.06	1.35	-	-	0.66	286.5	21.6	369.7	7.75	0.89
Vijapur	Sandy loam	80.50	6.00	5.75	1.56	9.74	3.67	0.31	128.06	63.84	251.23	7.61	0.33
PENINSULAR ZONE													
Akola	-	-	-	-	-	-	-	-	-	-	-	-	-
Dharwad	Clay	21.4	31.8	46.8	1.3	34	17	0.4	252	37.6	390	7.5	0.3
Niphad	Clay	22.3	26.1	51.6	1.29	-	-	0.63	156.2	22.56	326	8.29	0.28
Pune	Clay	13.9	36.0	50.0	1.28	-	-	0.91	112	22.84	510	8.02	0.3

SOWING DATES FOR DIFFERENT ZONES UNDER IRRIGATED CONDITIONS

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

LIST OF CENTRES AND COOPERATING SCIENTISTS WORKING UNDER RESOURCE MANAGEMENT PROGRAMME OF THE AICW&BIP (2023-24)

NORTHERN HILLS ZONE

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NORTH EASTERN PLAINS ZONE

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