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Effect of Yield Attributing Characters of Wheat as Influenced by Date of Sowing and Genotypes

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Abstract

The present field experiment was conducted at Agricultural Farm of Raja Balawant Singh College, Bichpuri, Agra during Rabi season of 2013-14. The research farm is situated at about 11 km to the west of Agra city on Agra-Bharatpur road. The soil of the experimental field was gangetic alluvial with calcareous layer at the depth of 1.5 to 2.0 m and was well drained. Agricultural Research Farm Bichpuri, Agra (U.P.) is situated at latitude of 27.2^{o} east with an elevation of 163.4 m above the mean sea level. The variable involved in this study were three dates of sowing (Late 10th December, very late 25th December and extremely late 9th January) and seven genotypes (WH-1129, DBW-90, WH-1124, HD-3059, PBW-550, PBW-590 and WH-1021) thus in all twenty one treatment combinations were compared with split plot design having date of sowing is main plot and wheat genotypes in sub plats with four replication. The yield attributing characters are spike length (cm), number of fertile spike lets per spike, number of grains per spike, Grain weight per spike (gm) and 1000 grain weight (g). Length of spike (cm) was significantly reduced with obtained with very late (25 Dec) and extremely late (9th Jan.) date of sowing over 10th December (late sowing) sown crop. Total spikelets per spike and number of fertile spikelets per spike were obtained significantly higher with late (10th December) date of sowing as compared to all other dates of sowing. Number of grains per spike was obtained significantly higher with the crop sown on 10th December (Late sowing) as compared to all other dates of sowing. The crop sown on 10th December (Late sowing) had significantly higher weight of grains per spike (g) as compared to very late (25th December) and extremely late (9th Jan.) date of sowing. The weight of 1000 grain (g) was obtained with the crop sown on 10th December (late sowing) as compared to all other sowing dates. Genotype WH-1129 had significantly higher of spike length, no. of fertile spikelets per spike, no. of grains per spike, no. of total spekelets per spike, no. of grain per spike, grain weight per spike (gm) and 1000 grain weight, found as compare to all genotypes.

Crop sown on 10th December (Late sowing) as compared to all other sowing dates. Genotype WH-1129 had significantly higher of spike length, no. of fertile spikelets per spike, no. of grains per spike, no. of total spekelets per spike, no. of grain per spike, grain weight per spike (gm) and 1000 grain weight, found as compare to all genotypes.

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Introduction

India ranks the second in the world (After china) for wheat production. It is one of the most important food crop for half of the world population. It has high nutritive value with 12.8 gm moisture, 11.8 gm protein 71.2 gm carbohydrate, 1.5 gm fat, 1.2 gm crude fibre and 1.5 gm mineral matter in 100 gm grain of wheat. It is well known fact in achiving “Green revolution” in the country in 1966-67. Selection of suitable variety plays a vital role in crop production. The choice of right variety of wheat helps to augment the crop productivity by about 20-25 percent. Any variety of wheat before being recommended for general cultivation for particular region must be judged for its potential, tolerance against disease in general and rust in particular lodging and non-lodging tendencies responsiveness to add water and fertilizers and adoptability to different agro-climatic conditions.

Material and Methods

The field experiment was conducted at agricultural research farm of Raja Balwant Singh College, Bichpuri, Agra during Rabi season of 2013-14 where three dates of sowing 10th December, 25th December and 9th January and seven genotypes is WH-1129, DBW-90, WH-1124, HD-3059, PBW-550, PBW-590, WH-2021. The experimental design split plot with four replication. The soil of the experimental field was gangetic alluvial with calcareous layer at the depth of about 1.5 m to 2.0 m and was well drained. The experimental field was deficient in available nitrogen)174.40 kg/ha), low in organic carbon (0.36%), medium in available phosphorus (P_2O_5 25.80 ka/ha), and fairly rich in Potash (K_2O 220.70 kg/ha) content with slightly alkaline in reaction. The yield attributes and yield data were recorded and analysed statistically.

Result and Discussion

Reference to table showed that the yield attributing characters which have studied are spike length (cm), number of fertile spikelets per spike, number of total spikelets per spike, number of sterile spikelets per spike, number of grain per spike, weight of grains per spike (gm) and 1000 grain weight (gm).

The data summarized evinced that variations in spike length (cm) due to dates of sowing were significantly order. The maximum spike length was obtained with late sowing (D_1) and this was found significantly superior over very late sowing (D_2) and extremely late sowing (D_3). The increase in spike length with late sowing (D_1) was to the tune of 3.92 and 9.06 percent over very late sowing (D_2) and extremely late sowing (D_3) respectively. The longest length of spike was recorded with genotype WH-1129 (G_1) and this was found significantly superior as compared to all other genotypes. The variation due to genotypes G_1 in length of spike was tune of 5.61 to 36.90 percent over

Table Yield attributing characters as influenced by dates of sowing and genotypes in wheat

Treatments	**Spike length (cm)**	**Number of fertile spikelets spike^{-1}**	**Number of sterile spikelets spike^{-1}**	**Number of total spikelets spike^{-1}**	**Number of grains spike^{-1}**	**Grains weight spike^{-1} (g)**	**1000 grains weight (g)**
Dates of sowing							
Late sowing (D_1)	9.27	18.14	2.54	20.68	56.04	1.88	41.86
Very late sowing (D_2)	8.92	17.04	2.79	19.83	52.75	1.79	40.73
Extremely late sowing (D_3)	8.50	16.25	3.07	19.32	48.39	1.73	36.65
S.Em.±	0.13	0.37	0.15	0.30	1.28	0.03	0.43
CD at 5%	0.31	0.90	0.36	0.74	3.14	0.07	1.06
Genotypes							
WH-1129 (G_1)	10.35	19.67	2.50	22.17	58.42	2.13	41.58
DBW-90 (G_2)	9.80	19.08	2.50	21.58	57.33	2.02	41.20
WH-1124 (G_3)	7.56	14.50	3.42	17.92	45.75	1.55	38.11
HD-3059 (G_4)	9.39	17.83	2.75	20.58	55.00	1.87	40.21
PBW-550 (G_5)	8.31	16.33	2.83	19.16	48.00	1.66	39.18
PBW-590 (G_6)	7.99	15.33	2.83	18.16	48.75	1.62	38.20
WH-1021 (G_7)	8.88	17.25	2.83	20.08	53.50	1.75	39.74
S.Em.±	0.33	0.41	0.31	0.34	1.45	0.12	0.53
CD at 5%	0.66	0.81	0.62	0.68	2.88	0.23	1.04

other genotypes. The variation in number of length spikelets per spike due to dates of sowing were of significantly order. The maximum number of fertile spikelets per spike were obtained with D_1 (late sowing) and was significantly superior as compared to all other dates of sowing. The reduction in number of fertile spikelets per spike with D_2 and D_3 was to the tune of 6.46 and 11.63 percent respectively when compared with D_1. The variation in number of fertile spikelets per spike genotype WH-1129 (G_1) significantly superior over other genotypes.

The data on number of sterile spikelets per spike were significantly difference among dates of sowing. The maximum number of sterile spikelets per spike was obtained extremely late sowing (D_3) date. The percent increase in number of sterile spikelets per spike with D_3 over D_1 and D_2 was 20.87 and 10.04 respectively during the genotype WH-1124 was found significantly superior over G_1 and G_2 except G_5, G_6 and G_7. The number of total spikelets per spike due to dates of sowing were significantly reduced with every delay in sowing. The reduction in number of total spikelets per spike with D_2 and D_3 was to the tune of 4.28 and 7.04 percent respectively over D_1. The variations in number of total spikelets per spike due to various genotypes were found significant. Among different genotypes tested WH-1129 (G_1) showed maximum number of total spekelets per spike. The number of grains per spike was obtained with late sowing (D_1) and was found significantly as compared to all other date of sowing. The reduction in number grains per spike was to the tune of 6.24 and 15.81 percent with very late sowing (D_2) and extremely late sowing (D_3) respectively over late sowing (D_1). The genotype WH-1129 (G_1) produced significantly higher number of the grains per spike over all other genotypes. The maximum weight of grains per spike was recorded with late sown crop (D_1) which was found significantly superior over very late sowing (D_2) and extremely late sowing (D_3), the critical examination of the data revealed that the variations in weight of grains per spike due to genotypes were also found significant order. The table further indicated that maximum weight of grains per spike was obtained with G_1 (WH-1129). The variations in 1000 grains weight due to dates of sowing of significant order. Late sown (D_1) crop showed the maximum weight of 1000 grains and was found significantly superior over others. The reduction in 1000 grains weight with D_2 (very late sowing) and D_3 (extremely late sowing) was to the tune of 2.77 and 14.22 percent respectively over D_1 (late sowing, with regard of 1000 grains the variation was found noted of significant order.

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