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Performance of newly released wheat (*Triticum aestivum* L.) varieties on different sowing dates under NWPZ of U.P

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Abstract
A field experiment was conducted at Zonal Research Station, Nagina, Bijnor to assess the performance of new wheat varieties under timely sown condition. The experiment was laid out in Split Plot Design with three replications. The main plot treatments comprised of 2 dates of sowing *i.e.*, 15th November and 25th November in main plots and four wheat varieties HD 2967, HD 3086, WH 1105 and HUW 666 in sub plots. The soil of experiment site was sandy loam in nature having organic carbon 0.46, Av. P 18 kg/ha, Av. K 245 kg/ha and pH 7.4. The early sowing of wheat (15th November) produced significantly higher grains yield (55.83 q/ha) than delayed sowing (52.73 q/ha). Earliness in 10 days of sowing of wheat crop in such climatic change conditions influences wheat yield upto 5.87 per cent. Among the varieties significantly higher yield attributing traits and grain yield (54.28 q/ha) was recorded with HD3086 which was at par with HD 2967 and significantly superior over other varieties under test.

Keywords: Wheat, varieties, effective tillers, 1000 grain weight

Introduction
Wheat has a prominent position among cereals. It is high source of protein, good source of fibre and good in manganese and magnesium in unrefined state. Its area and productivity is increasing rapidly across the globe, due to its wider adaptability and sustainability under diverse agro climatic conditions (Kumar *et al*., 2014) [6]. There are various factors, which are responsible for low yield of wheat crop in the country but among these sowing time and and varietal selection are of primary importance. Wheat is the main crop of winter season and it has its own definite requirements for temperature and light for emergence, growth and flowering (Dabre *et al*., 1993) [2]. Selection of suitable crop varieties according to the agroclimatic conditions may play crucial role in realizing the optimum production of any crop commodity (Singh *et al*., 2008) [13]. Delay in sowing results in poor tillering and crop growth is generally slow due to low temperature. In late planting the wheat variety should be of short duration that may escape from high temperature at the grain filling stage (Phadnawis and Saini, 1992) [10]. Late sowing results in reduction of yield contributing characters like number of tillers and number of grains per spike (Ansary *et al*., 1989) [1]. The release of new varieties is a continuous process and different varieties perform differently under different sowing. Therefore, the present study was conducted to judge the performance of various wheat varieties under different dates of sowing.

Material and methods
The field experiment was conducted during the *Rabi* season of 2012-13 and 2013-14 at Zonal Research Station, Nagina, Bijnor of Sardar Vallabhbhai Patel University of Agriculture and Technology Meerut, to assess the performance of new wheat varieties under different dates of sowing. The experiment was laid out in split plot design with three replications. The treatment comprised of 2 dates of sowing *i.e.*, 15th and 25th November in main plots and four wheat varieties HD 2967, DBW 39, HD 2733 and PBW 502 in sub plots. The soil of experiment site was sandy loam in nature having organic carbon 0.46, Av. P 18 kg/ha, Av. K 245 kg/ha and pH 7.4. The wheat crop varieties were sown in rows at an spacing of 20cm. Full dose of P_2O_5 (60 kg/ha) and K_2O (40 kg/ha) and N (75 kg/ha) as basal and remaining half nitrogen was applied in two splits, after first and second irrigation, respectively. The sources of nutrient were urea, single super phosphate and murate of potash for N, P and K, respectively. Post emergence application of sulfosulfuron and metsulfuron methyl was given at 25-30 days after sowing for management of weeds at critical period of crop-weed competition. Other management practices were applied as per recommended of the crop under irrigated condition.

The crop was harvested on first fortnight of April during both the years. Data on growth, yield component and yield were recorded as per normal procedure. In calculation of economics, the purchase rates of input and the selling rates of outputs were assumed as per the prevailing local market rates.

Results

Growth characters

Table 1 revealed that significant differences were observed with date of sowing and varieties on growth characters. Date of sowing significantly influenced the dry matter accumulation at harvest stage but did not influence plant height. Plant height was more with 15th November than that of 25th November, though the difference was not statistically at par. Maximum dry matter was recorded with November 15 sown wheat crop and was significantly superior to the 25th sown crop. Dry matter accumulation was 15.10 per cent more over November 25th sowing crop. Decrease in plant height and dry matter in late sowing was due to shorter growing period and climate change. These results are in the line with those reported by Shahzad *et al.* (2002) [11] and Kumar *et al.* (2013) [5]. Different wheat varieties were also did not showed significant difference for plant height. But both, the date of sowing and varieties had showed its impact on total biomass production varied significantly. Higher plant dry matter accumulation was recorded with HD 3086 which was at par with HD 2967 and significantly superior over rest of the varieties under test. These results are similar to those of Mishra (2006) [7].

Yield attributes and yield

All yields attributes were significantly affected by the date of sowing (Table 1). Delayed sowing decreased grains per ear, number of effective tillers per m^2, ear length and 1000 grain weight. The number of effective tillers per m^2 and grains per ear was considered as the most important yield contributing characters varied significantly under different date of sowing. Sowing at 15th November, significantly influenced the entire yield attributing characters and significantly superior than the delayed sowing. Analysis revealed that the 10 days early sowing brought about 11.90 per cent higher number of effective tillers per m^2 and 15.78 per cent higher grains per ear as compared to delayed sowing. This might be due to favourable temperature requirement as per crop need boosting crop growth in the form of higher photosynthate accumulation and resulting higher yield parameters in early sown crop. These results are also in conformity to that of Kaur *et al.* (2010) [3]; Pandey *et al.* (2010) [9] and Mukherjee (2012) [8]. Further, data revealed that ear length and 1000 grain weight were significantly higher at early sown crop as compared to late sown condition. Decrease in test weight due to delay sowing was mainly due reduction in growth period and shriveling of grains due to high temperature prevailed during milking and grain filling stage. Sharma and Chakor (1993) [12] recorded similar results. The wheat genotype showed significant difference with all the yield attributes except the ear length. Variety HD 3086 recorded higher effective tillers (391/m^2), ear length (9.66 cm), grains/ear (37) and 1000 grain weight (43.38g) than that of recorded with other varieties.

Different date of sowing significantly influenced the grains and straw yields (Table 2). The wheat sown in early condition produced significantly higher grain yield (55.83q/ha) than delayed sowing (52.73 q/ha). Earliness in 10 days of sowing of wheat crop in such climatic change conditions influences wheat yield upto 5.87 per cent. Similar findings were also obtained by Kumar *et al.* (2005) [4] and Kumar *et al.* (2013) [5]. Among varieties HD 3086 was significantly superior over WH 1105 and HUW 666 but remained at par with HD 2967. However, WH 1105 was significantly superior over HUW 666 but remained at par with HD 2967. The straw yield of wheat also showed similar trends. Normal date of sowing produced significantly higher straw yield (60.25 q/ha) than late sown condition (56.71/ha). The different varieties failed to cause significant effect on straw yield.

Table 1: Effect of date of sowing and varieties on growth and yield attributing characters of wheat (pooled data of two years)

Treatments	Plant height (cm)	Dry matter (g/m^2)	Effective tillers/m^2 (no.)	Grains/ear (no.)	Ear length (cm)	1000-grain weight (g)
Date of sowing						
November 15	97.80	1248.15	423	44	11.6	42.48
November 25	95.78	1084.37	378	38	10.7	41.22
C.D. (P=0.05)	NS	104.36	7.12	1.88	0.07	1.02
Varieties						
HD 2967	93.52	1048.67	388	35	9.50	42.61
HD 3086	93.83	1078.55	391	37	9.66	43.38
WH 1105	92.89	1015.71	377	34	9.55	41.52
HUW 666	92.67	1011.92	363	32	8.93	41.36
C.D. (P=0.05)	NS	32.42	10.87	2.25	NS	1.45

Table 2: Effect of date of sowing and varieties on wheat yield, straw yield, harvest index and economics (pooled data of two years)

Treatments	Grain yield (q/ha)	Straw yield (q/ha)
Date of sowing		
November 15	55.83	61.25
November 25	52.73	56.71
C.D. (P=0.05)	2.57	2.98
Varieties		
HD 2967	53.36	56.67
HD 3086	54..28	58.19
WH 1105	52.17	55.53
HUW 666	48.21	54.75
C.D. (P=0.05)	1.27	NS

References

1. Ansary AH, Khushak AM, Sethar MA, Ariam NA, Emon MYM. Effect of sowing dates on growth and yield of heat cultivars. Pak. J. Sci. Ind. Res. 1998; 32:39-42.
2. Dabre WM, Lall SB, Lngole GL. Effects of sowing dates on yield, ear number, stomatal frequency and stomatal index in wheat. J. Maharashatra Agric. Univ. 1993; 18:64-66.
3. Kaur Anureet, Pannu RK, Buttar GS. Impact nitrogen application on the performance of wheat (*Triticum aestivum* L.) and nitrogen use efficiency under different dates of sowing. Indian J. Agron. 2010; 5(1):40.
4. Kumar Satish, Kadian VS, Singh RC, Malik RK. Effect of planting date on performance of wheat *Triticum aestivum* L.) genotypes. Indian J. Agric. Sci. 2005; 75(2):103.
5. Kumar Satyender, Alam Perwaiz, Ali Naiyar. Response of wheat [*Triticum aestivum* (L.) emend. Fori andPaol.] varieties to sowing dates. J. Res. (BAU). 2013; 25(1):56-59.
6. Kumar P, Sarangi A, Singh DK, Parihar SS. Wheat performance as influenced by saline irrigation regimes and cultivars. Journal of Agri Search. 2014; 1(2):66-72.
7. Mishra B. Wheat research towards national foodsecurity. Int. Agric. 2006; 2:11.
8. Mukherjee D. Effect of sowing dates on growth and yield of wheat (*Triticum aestivum* L.) cultivars under mid hill situation of West Bengal. Indian J. Agron. 2012; 57(2):152.
9. Pandey B, Pandey RK, Dwivedi DK, Singh RBS. Phenology, heat unit requirement and yield of wheat (*Triticum aestivum* L.) varieties under different crop growing environment. Indian J. Agric. Sci. 2010, 80(2):136.
10. Phadnawis BN, Saini AD. Yield models in wheat based on sowing time and phenological developments. Ann. Pl. Physio. 1992; 6:52-59.
11. Shahzad K, Bakht J, Shah WA, Shafi M, Jabeen N. Yield and yield components of various wheat cultivars as affected by different sowing dates. Asian J. Pl. Sci. 2002; 1(5):522.
12. Sharma KK, Chakor IS. Performance of wheat genotypes as influenced by dates of planting and mulching. Indian J. Agron. 1993; 34(3):1.
13. Singh AK, Manibhushan N, Chandra, Bharati RC. Suitable crop varieties for limited irrigated conditions in different agro climatic zones of India. Int. J. Trop Agr. 2008; 26(3-4):491-496.