P: ISSN No. 0976-8602 RNI No.UPENG/2012/42622 VOL.-V, ISSUE-II, April-2016
E: ISSN No. 2349-9443 Asian Resonance

Effect of Dates of Sowing and various New Genotypes on Yield attributes and Yield of Wheat (Triticum Aestivam L.)

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Abstract

A field experiment was conducted with three dates of sowing and five newly released genotypes of wheat at R.B.S. College research farm, Bichpuri, Agra. The results revealed that length of spike, no. of fertile spike lets, No. of grains per spike weight of grains per spike and 1000 grains weight decreased significantly with every delay in sowing date, while these characters dominated in case of genotype NW. DM- DOS-05 than other genotypes under study. This genotype produced significantly more grain and straw yield by 5.35 to 14.02 and 11.53 to 23.65 percent, respectively than other genotypes.

Keywords : Yield Attributes, Genotypes, Uptake, Various

Introduction

Some times the optimum time of sowing of wheat is delayed either due to late harvesting of Kharif crop or extending period of monsoon rains. The sowing in such cases may go uptake even the third week of December. The sowing of wheat when temperature is high results is a poor stand, poor tillering and early onset of flowering. In such conditions some suitable new strains of wheat may give better results than old ones. This paper contributes information on the impact of sowing dates on growth and yield of various new genotypes of wheat under irrigated conditions of Agra region.

Aims of the Study

The field experiment was conducted at Raja Balwant Singh College, Agricultural research farm, Bichpuri Agra during the winter season of 2012-2013 with the following main aims

1. To find out the suitable sowing date for different wheat varieties under irrigated condition.
2. To screen the best variety out of the varieties tested.
3. To asses the interaction effect of varieties and sowing dates, if any.

Review of Literature

1. Bishnoi and Sharma (1975) reported that delay in sowing at 15 days interval from Nov. 15th to Dec 30th decreased the gains yield of wheat varieties from 36.4 to 22.6 q ha–1
   Bishnoi, K.C. and Sharma, H.C. (1975) Relative performance of wheat (Triticum aestivum) under normal and late sown condition of North western plains (NWPZ). Haryana Agriculture University Journal 5(2):123-128.
2. Dhaka at al. (2007) reported that the significantly reduction in grains yield (49.2%) was observed when sowing was delayed from 20th November to 25th December.
   Dhaka, A.K. , Bangarwa, A.S. panny, R.K. Garg, R. and Kharab, S. (2007) partitioning efficiency of various wheat genotypes under different sowing time and irrigation conditions Enviroment and Ecology, 24 (3) : 554-558
3. Jadhav and Karanjikar (2001) reported that late bread wheat genotypes (DWR-225) produced significantly higher yield , which was 25.77 and 61.19 percent more over the check MACS 2496 and HD-2189, respectively.
   Jadhav, AG.and karanjikar, P.N. (2001) Response of new wheat genotypes to different dates of sowing under irrigated conditions. Annals of Agriculture Research, 22(2): 295-296
4. Kumar and Kumar (1996) reported that the decreased grain yield of wheat in both years, when sown under late conditions. The irricum durum CV.WH-896 and PHW-215 generally performed better than the

Triticum aestivum cultivars in terms of grain yield, but they had lower grain protein contents.

Kumar, R. and Kumar, P. (1996) Effected of sowing time on yield and quality of wheat varieties. Annuals of Biology, 12 (2) : 278-290.

Material and Methods

A field experiment was conducted with three dates of sowing as normal (22 Nov. D_1), slightly late (30 Nov. D_2) and late (11 Dec. D_3) and five genotypes of wheat as NW-DM-DOS 01 (G_1), NW-DM-DOS 02 (G_2), NW-DM-DOS 03 (G_3), NW-DM-DOS 04 (G_4) and NW-DM-DOS 05 (G_5) in split plot design with three replications during the Rabi season of 2012-13 at R.B.S. College research farm, available nitrogen 181.0 kg ha^{-1}, available phosphorus 28.60 kg ha^{-1}, available potash 292.0 kg ha^{-1}, pH 7.9 and EC 1.8 dSm^{-1}. The full dose of phosphorus (60 kg ha^{-1}) and potash (40 kg ha^{-1}) were applied through DAP and MOP, respectively as basal dose at sowing as long with one third of the recommended dose of nitrogen (150 kg N ha^{-1}) through urea and rest two- third nitrogen was applied as top dressing of urea at first made stage. In all six irrigations were given (including pre-sowing irrigation) and crop was raised to maturity to received yield data.

Result and Discussion

Yield Attributes

A critical study of the data given in table 1 reveal that spike length significantly reduced with every delay in sowing data. The magnitude of reduction in spike length with slightly (Nov. 30) and late (December, 11) dates of sowing was to the tune of 5.80 and 10.61 percent respectively, when compared with normal date (Nov. 22) of sowing. Wheat genotype DM-DOS 05 produces significantly longer spike than other genotypes. Significantly higher number of fertile spike lets $spike^{-1}$ were noted with normal date of sowing. Genotype DM-DOS 05 had significantly more fertile spikelets $spike^{-1}$ than rest of the genotypes. Delay in sowing dates significantly reduced the unfertile spike lets spike, number of grains $spike^{-1}$, weight of grains $spike^{-1}$, and 1000 grains weight as compared with normal date of sowing. These findings confirm the earlier results of Dhaka et al. (2007) and Jadhav and Karangikar (2001). Genotype NW-DM-DOS 05 proved significantly. Superior over rest of the genotypes regarding number of fertile spike lets, number of grains $spike^{-1}$, weight of grains $spike^{-1}$ and 1000 grains weight as compared with other remaining genotypes.

Yield of Wheat Genotypes

It is evident from Table 2 that significantly more dry matter production was recorded with normal date of sowing as compared with delayed dates of sowing ranged 14.14 to 30.90 percent genotypes NW-DM-DOS-05 and NW-DM-DOS-02 did not differ with each other, but both produced significantly higher dry matter than rest of the genotypes.

Normal Date of Sowing (Nov. 22)

resulted significantly higher grain yield by 18.00 and 39.66 percent, respectively over slightly late and late dates of serving. Bishnoi (1975) and Sharma and Kumar and Kumar (1996) have also mentioned that normal date of sowing should be performs for better production.

Genotypes NW-DM-DOS-05 produced significantly more grain yield by 5.35 to 14.02 per cent than rest of the genotypes. The maximum straw yield was resulted with normal date of sowing which was appreciably higher by 11.53 and 23.65 per cent respectively than slightly late and late date of sowing. Genotype NW-DM-DOS-05 and NW-DM-DOS-02 did not differ significantly with each other but NW-DM-DOS 05 resulted significantly more straw yield than rest of the genotypes and extent being 1.65 to 7.07 percent. The harvest index was significantly higher with normal date of sowing than slightly late and late sowing. Genotype NW-DM-DOS-05 resulted significantly higher harvest index than rest of the genotypes.

Table 1 : Yield Contributing Characters of Wheat as Influenced Dates of Sowing and Genotypes

Treatment	Length of spike (cm)	No. of fertile spikelet's $spike^{-1}$	No. of unfertile spikelet's $spike^{-1}$	No. of grains $spike^{-1}$	Weight of grains $spike^{-1}$ (g)	1000 grains weight (g)
Date of sowing						
Normal(Nov.22)D_1	9.14	15.82	3.28	45.60	1.92	44.28
Late (Nov.30)D_2	8.61	14.84	3.00	43.41	1.78	42.15
Verylate(Dec.11)D_3	8.17	14.04	2.90	41.34	1.67	40.50
SEM+	0.10	0.19	0.04	0.52	0.02	0.46
CDC (P=0.05)	0.41	0.74	0.17	2.03	0.08	1.80
Genotypes						
NW-DM-DOS 01	8.40	14.70	2.98	42.62	1.75	41.40
NW-DM-DOS02	8.94	15.42	3.24	44.56	1.84	42.93
NW-DM-DOS03	8.24	13.58	2.88	42.48	1.70	41.36
NW-DM-DOS04	8.28	14.65	2.92	42.54	1.73	41.38
NW-DM-DOS05	9.34	16.15	3.28	45.05	1.93	44.48
SEM+	0.12	0.23	0.05	0.62	0.03	0.52
CDC (P=0.05)	0.35	0.66	0.15	1.80	0.08	1.52

Table 2 Biomass, Grains and Straw Yields, and Harvest Index of Wheat as Influenced by Dates of Sowing and Genoty Pes

Treatment	Biological yield (q ha^{-1})	Grain yield (q ha^{-1})	Straw yield (q ha^{-1})	Harvest yield (q ha^{-1})
Date of sowing				
Normal (Nov. 22) D_1	115.89	45.74	70.15	39.47
Late (Nov. 30) D_2	101.53	38.63	62.90	38.05
Very late (Dec. 11) D_3	88.48	32.75	56.73	36.60
SEM+	1.27	0.44	0.65	0.35
CDC (P=0.05)	4.87	1.72	2.55	1.38
Genotypes				
NW-DM-DOS 01	100.08	37.80	62.28	37.77
NW-DM-DOS 02	104.89	40.21	64.68	38.34
NW-DM-DOS 03	98.56	37.15	61.41	37.69
NW-DM-DOS 04	99.86	37.68	62.18	37.73
NW-DM-DOS 05	108.11	42.36	65.75	39.18
SEM+	1.54	0.56	0.76	0.40
CDC (P=0.05)	4.50	1.64	2.22	1.16

Conclusion

Based upon the results of present invitigation it is concluded that Genotype Nwt Dos-05 (Gs) sown at normal date of sowing (November, 22) proved best, regarding growth and production of wheat.

References

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