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EVALUATION OF WHEAT (*TRITICUM AESTIVUM* L.) VARIETIES UNDER LATE SOWN IRRIGATED AGRO-ECOSYSTEM

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ABSTRACT

An experiment was conducted during 2005-06 to evaluate the suitable wheat varieties under late sown irrigated situation for SanthalPargana of Jharkhand. Among 10 varieties,PBW 373 and MahycoPrathama varieties were found at par but produced highest number of tillers (65.6 and 66), grains/spike (37.2 and 38.5) and grain yield (23.5 and 23.0 q/ha) as well as net return (Rs.10,165 and 9,770/ha), respectively.Lok-1, Kalyansona and HD 2733 produced lowest effective tillers, yields and net returns. The number of grains/spike was highest in HD 2733 (38.5) and Anuradha seed (38.5) where as the 1000-seed weight was highest in PBW 373 (34.5g) and PBW 343 (34.5g). The highest B:C ratio was obtained under PBW 373 (1.78).

Key words : *Wheat varieties, late sown, irrigated.*

The wheat stands first position in production and area among cereal crops in the world. In india its production, productivity and area is increasing year by year. Even though the wheat is the main *rabi* crop of Jharkhand the major land after rice remains vacant due to delayed harvesting of rice in the month of December.In December, the only option for farmersleftout for cultivation in fields after rice is wheat. But due to low productivity of late wheat, only a few farmers get their fields cultivated by wheat. Late December sown wheat faces low temperature in early growth stages and high temperature during reproductive stages which limits the productivity of the crop. In spite of low yield due to post anthesis heat stress, cultivation of wheat can not be avoided totally. Therefore, the experiment was palnned and conducted to find out the suitable varieties of wheat for optimizing the production potential under late sown condition in SanthalPargana of Jharkhand.

MATERIALS AND METHODS

A field experiment was conducted in rabi season (December-April) during 2005-06 at KrishiViyan Kendra farm, Pakur (Jharkhand). The soil was slight acidic, loamy with pH 6.2, organic carbon 0.69 percent, available N 351, P_20_5 8.9, K_2O 214 kg/ha. The experiment was conducted with 10 wheat varieties- T_1 : UP 262, T_2 : PBW 373, T_3 : PBW 343, T_4 : HD 2733, T_5 : Sonalika, T_6 : Chitra seed, T_7 : Anuradha seed, T_8 : MahycoPrathama, T_9 : Kalyansona and T_{10} : Lok 1 in randomized block design with 3 replications. Sowing was done after harvest of rice crop on 07.12.2005 and harvesting on 12.04.2006. N:P:K:: 120:60:40kg/ha was applied. All the phosphatic and potassic fertilizers were applied as basal where as 50 percent nitrogen as basal, 25 percent at CRI and 25 percent at tillering stage. Sowing of wheat varieties was done at 18 cm row to row distance by hand plough. The seed rate was kept 150 kg/ha. Initial and post harvest soil samples were collected from 0.25 cm depth were analyzed for bulk density, pH, OC, available N, P and K by using standard laboratory procedures.

RESULTS AND DISCUSSION

Yield attributes : The storage capacity of wheat crop depends on the weight of spike, grain weight/spike, 1000-grain weight and number of spikelets per spike. The relative magnitude of these yield attributes varied substantially with soil productivity and crop management practices but the most important factor which contributes most is the cultivar used (Kumar and Singh. 2003).

The data presented in table-1, clearly reflects that among 10 wheat varieties, PBW 373 and Mahyco Prathama were at par and produced highest number of effective tillers/m^2 (65.6 and 66.0)and grains/spike (37.5 and 38.5), respectively. The lowest effective tillers/m^2 was found under HD 2733 (48.1) which was at par with Lok 1 (50.6), Kalyansona (52.7) and Sonalika (52.9) where as the lowest number of grains/spike was found in Lok1 (28.1), Sonalika (28.6) and Kalyansona (29.2). The highest 1000-seed yield was recorded in PBW 373 (34.5g) followed by PBW 343 (34.2g), MahycoPrathama (33.6g), Chitra seed

Table-1 : Yield attributes, yield and net return of different wheat varieties under late sown irrigated situation.

Treatments (varieties)	No of effective tillers/mrl	No of grains/ spike	1000-grain wt. (g)	Grain yield (q/ha)	Straw yield (q/ha)	Net return (Rs/ha)	B : C ratio
T_1 : UP-262 (Control)	58.2	36.4	29.0	21.0	33.8	7590	1.58
T_2 : PBW-373	65.6	37.2	34.5	23.5	40.3	10165	1.78
T_3 : PBW-343	60.2	31.2	34.2	21.2	35.4	7850	1.60
T_4 : HD-2733	48.1	38.5	26.8	20.0	29.0	6490	1.50
T_5 : Sonalika	52.9	28.6	30.1	21.0	31.7	7485	1.58
T_6 : Chitra seed	63.2	32.8	33.5	22.9	36.1	6415	1.72
T_7 : Anuradha seed	60.2	38.5	33.4	22.7	34.2	9140	1.70
T_8 : Mahyco Prathama	66.0	36.4	33.6	23.0	41.4	9770	1.75
T_9 : Kaltansona	52.7	29.2	31.6	20.3	30.7	6805	1.52
T_{10} : Lok-1	50.6	28.1	32.2	19.8	29.2	6280	1.48
CD (P=0.05)	6.22	3.49	1.92	0.82	3.14	1065	-

(33.5g) and Anuradha seed (33.4g). Kumar and Singh (2002) also reported significant difference in yield attributes of different varieties. This might be due to varictal make up and genetic potential of different cultivars of wheat.

Yield : Persual of data presented in table-1, clearly reflects that PBW 373 produced highest yield of grain (23.5q/ha) and straw (40.3q/ha) which was at par with MahycoPrathama (23.0 and 41.1q/ha),Chitra seed (22.9 and 36.1q/ha) and Anuradha seed (22.7 and 34.2q/ha), respectively. The lowest was obtained by Lok 1 (19.8q grain/ha and 29.2q straw/ha), HD 2733 (20.0q grain/ha and 29.0q straw/ha) and Kalyasona (20.3q grain/ha and 30.7q straw/ha). Behra (1994),Thakur and Pandey (1995) and Kumar and Singh (2003) also recorded variable yields with different varieties.

Net return and B : C ratio : The highest net return was obtained in PBW 373 (Rs.10,165/ha) which was at par with MahycoPrathama (Rs. 9,770/ha) followed significantly at par with other 2 varieties namely Chitra seed and Anuradha seed. The lowest net return of (Rs.6,280/ha) was found in Lok 1 followed at par with HD 2733 (Rs.6,490/ha) and Kalyansona (Rs.6,805/ha). The B:C ratio was also showed the same trend as of net return. On the basis of results obtained in the trial, it may be concluded that PBW 373, MahycoPrathama, Anuradha and Chitra seeds may be considered under late sown condition in SanthalPargana of Jharkhand.

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