

IMPACT OF DRY SOWING METHODS ON THE YIELD OF LATE SOWN WHEAT

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ABSTRACT

To study the effect of late sowing on wheat yield, different methods were carried out in an experiment conducted at Agricultural Research Station, Bahawalpur during the years 1980-81 to 1982-83. Results of great economic value were obtained while getting high average yield of 3191.7 kg per hectare with the treatment 'soaked seed broadcast in standing water' as compared to the lowest yield of 2067.4 kg per hectare obtained in treatment 'sowing after soaking irrigation'. The difference being 1124.3 kg per hectare. By using soaked seed an increase of 341.8 kg per hectare as compared to dry seed broadcast in standing irrigational water was also observed.

KEYWORDS: Wheat; sowing methods; late sowing; yield.

INTRODUCTION

The ever increasing population has resulted in a changed cropping pattern. Crop rotations have been changed to eliminate or reduce the fallow. More than 60% of wheat crop is sown after cotton, rice, kharif fodder and maize in the irrigated tract of the Punjab. Any device which may result in an increase in the yield of late sown wheat is of great economic and national value.

Dhillon and Panwar (1) studied the methods of sowing in late sown wheat under field conditions. Wheat cv.273 was sown on 18th December or 4th January by three methods and Barley cv.138 was sown on the same date by two methods. The seed soaked in water for 24 hours on 18th December gave higher grain yield (1.64 ton/ha) than the dry seed (1.33 ton/ha) and transplanting seedlings (1.22 ton/ha). Barley yields were higher with the seed

soaked in water than the dry seed.

Dhingra *et al.* (2) in a field study, found that the grain yield of two late sown wheat cultivars fertilized @ 120+30+30 kg NPK per hectare increased by sowing soaked seeds and applying an extra 30 kg P₂O₅ per hectare.

Gill (3) reported that in case of an extraordinary late sowing i.e. January, transplanting proved to be the best method giving 10.40 maunds per acre followed by ungerminated seed but soaked by giving 6.63 maunds per acre when 25 lb nitrogen was applied in the form of ammonium sulphate while dry sowing had given only 5.92 maunds per acre.

Rathi (5) by transplanting wheat seedling on the late sowing date of 14th January increased grain yield by 0.7-1 ton per hectare over those obtained by sowing on the same date. Transplanting of 35 days old seedlings gave higher yield than transplanting of older or younger seedlings. Cv.Kalyan Sona was the most suitable

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for transplanting followed by cv.Sonalika. The cv.Hira was unsuitable.

In this study, different dry sowing methods were tested in an experiment conducted at Agricultural Research Station, Bahawalpur during the years 1980-81 to 1982-83. The main purpose of the trial was to see the effect of different dry sowing methods as compared to traditional method of sowing on the yield and development of late sown wheat.

MATERIALS AND METHODS

The studies were undertaken at Agricultural Research Station, Bahawalpur during the years 1980-81 to 1982-83 on wheat variety Bahawalpur-79, with the object to find out the effect of different dry sowing methods as compared to traditional method of sowing on the yield of wheat. The trial was laid out in randomized complete block design with four replications. The net plot size was 5.45 x 1.8 M. The detail of different dry sowing methods under study were as follows:

1. Dry sowing by drill and application of irrigational water just after sowing.
2. Dry seed broadcast in standing irrigational water.
3. Dry sowing by broadcasting, planking and irrigation just after sowing.
4. Soaked seed broadcast in standing irrigational water.
5. Traditional method of sowing (sowing after soaking irrigation).

The trial was sown in December and the

crop was fertilized with 168 kg of nitrogen and 84 kg of phosphorus per hectare at the time of sowing. The seed of treatment-4 was soaked for 24 hours on 14th December at room temperature before sowing. Number of fertile tillers per unit area (0.6 x 0.6 M) and grain yield in kg per hectare were recorded and analysed by the analysis of variance method and Duncan's new multiple range test at 5% probability level was applied to test the significance of treatment means (4).

RESULTS AND DISCUSSION

The data regarding number of fertile tillers per unit area (0.6 x 0.6 M) and grain yield of wheat variety Bahawalpur-79 during the years 1980-81 to 1982-83 are presented in Table-1.

It is evident from Table-1 that results are statistically significant. Soaked seed broadcast in standing water produced the maximum number (120.5) of fertile tillers per unit area followed by treatment dry sowing by broadcasting seed, planking and irrigation just after sowing (110.86 fertile tillers) and dry seed broadcast in standing irrigational water giving 104.39 fertile tillers per unit area. While minimum number of fertile tillers (80.08) was recorded in traditional method of sowing (sowing after soaking irrigation).

Data on grain yield given in Table-2 reveal that different dry sowing methods significantly affected the grain yield during all the three years of experimentation. On the basis of three years average, maximum grain yield of 3191.7 kg per hectare was obtained in the treatment 'soaked seed broadcast in standing water' followed by the treatment 'dry sowing by broadcasting

Table-1. Number of fertile tillers per unit area (0.6 x 0.6 M) as affected by different dry sowing methods in late sown wheat

S.No.	Treatments	Average number of tillers*			
		1980-81	1981-82	1982-83	Average
1.	Dry sowing by drill and application of irrigational water just after sowing	96.00 b	95.00 b	110.50 bc	100.50 b
2.	Dry seed broadcast in standing irrigational water	102.67 ab	96.00 ab	114.50 ab	104.39 ab
3.	Dry sowing by broadcasting seed, planking and irrigation just after sowing	102.58 ab	105.00 ab	125.00 ab	110.86 ab
4.	Soaked seed broadcast in standing irrigational water	113.50 a	114.00 a	134.00 a	120.50 a
5.	Traditional method of sowing (sowing after soaking irrigation)	99.25 b	44.00 c	97.00 c	80.08 c
	Cd 1	13.66	18.41	21.64	15.56
	Cd 2	19.15	25.81	30.34	21.81

*Any two means not sharing a letter differ significantly ($P < 0.05$, Duncan's new multiple range test)

seed, planking and irrigation just after sowing' by giving 2940.5 kg per hectare. The minimum yield of 2067.4 kg per hectare was obtained in the traditional method of sowing (sowing after soaking irrigation). The difference between the soaked seed broadcast in standing water and traditional method of sowing was 1124.3 kg per hectare while using soaked seed an increase of 341.8 kg per hectare was obtained as compared to dry seed broadcast in standing water.

It can be concluded from the aforementioned results that sowing of soaked seed of wheat in the standing irrigational water remained successful and produced the highest yield of wheat grains in late sown wheat crop. These findings are of great economic value and will prove to be helpful in boosting the national production. These findings are in conformity with those of Dhillon and Panwar (1), Dhingra *et al.* (2) and Gill (3).

Table-2. ^a Grain yield (kg/ha) as affected by different dry sowing methods in late sown wheat

S.No.	Treatments	Yield (kg/ha)			
		1980-81	1981-82	1982-83	Average
1.	Dry sowing by drill and application of irrigational water just after sowing	1630.9 b	2965.2 b	3113.5 bc	2569.9 c
2.	Dry seed broadcast in standing irrigational water	2075.6 a	3064.0 b	3410.0 b	2849.9 b
3.	Dry sowing by broadcasting seed, planking and irrigation just after sowing	2001.5 a	3113.5 b	3706.5 ab	2940.5 b
4.	Soaked seed broadcast in standing irrigational water	2149.8 a	3410.0 a	4015.4 a	3191.7 a
5.	Traditional method of sowing (sowing after soaking irrigation)	1630.9 b	1729.7 c	2841.7 c	2067.4 d
	Cd 1	331.88	191.75	500.72	229.90
	Cd 2	465.31	268.84	702.04	322.34

*Any two means not sharing a letter differ significantly ($P < 0.05$, Duncan's new multiple range test)

No doubt transplanting at seedling stage in wheat is possible and has been found to give higher yield than late sown crop (5), but commercially this method of wheat crop growing is not feasible under local conditions due to its laborious nature. Nevertheless this treatment was excluded from the studies under discussion.

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