

Yield Potentials of Wheat (*Triticum aestivum*) Genotypes under Different Planting Times

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Abstract: The field experiment was conducted at Tandojam, to evaluate the appropriate planting time of various wheat genotypes. It was observed that plant height, yield and yield contributing components were superior when the wheat crop was planted in Mid on November. The late planted crop in December significantly produced less yield and yield components. The optimum planting month observed was November, where most of the wheat genotypes responded for maximum values. This may be due to favourable climatic conditions for germination, growth and development. Among the tested cultivars, Sarsabz produced more grain yield as compared to Pavon and TJ-83. Thus, it is recommended that for middle part of Sindh Province, the sowing of wheat crop should be performed during the Mid of November where satisfactory yield could be achieved.

Key Words: Wheat, Genotypes, Planting Time, Yield

Introduction

Wheat (*Triticum aestivum*) is the principal cereal crop belonging to gramineae family. It has been one of the main source of food of mankind for thousand of years due to its mild and acceptable flavor and unique abilities of principal protein, starch and fat with certain vitamins like b2, b1 and minerals. Inspite of great progress achieved in various areas, the wheat yield in Pakistan is still low. The low yield is attributed to many factors, among these; sowing time and varietal potentiality are the most important factors, causing low yield production. Various researchers in their findings have reported that early planting produced maximum grains per spike and seed index (Ahmed and Khan, 1964). Zeb *et al.* (1987) reported that early sowing (25th October) provided maximum number of grains per spike and 100 grain weight. Razzaq *et al.* (1986) found that plant height decreased with delayed planting and mid November planting produced greatest number of tillers per unit area. Khan (1983) observed that spikes per square meter decreased due to delay in sowing from November to December. Blue *et al.* (1990) indicated that spikes increased with adequate sowing time. Knapp and Knapp (1978) observed that maximum tillers per square meter were with early planted wheat. Looking the economic importance of the crop in Pakistan, the study was set to evaluate the appropriate planting time and varietal potentiality of the wheat crop.

Materials and Methods

The experiment was conducted at Tandojam, during 2001 to evaluate the effect of different sowing dates on various wheat genotypes. The details of the treatments are as under:

Seeding rates=4	Varieties=3
15 th Nov.	Pavon
30 th Nov.	Sarsabz
15 th Dec.	TJ-83
30 th Dec.	

The experiment was laid-out in Split Plot Design with

four replications. The experimental plots were prepared under intensive field practices to facilitate spread of irrigation water uniformly and to eradicate weeds. The fertilizer does of 134-67 kg NP.ha⁻¹. was applied in two equal split i.e. at sowing and at 3rd irrigation. All cultural practices for area maintenance were carried-out upto harvest of crop. The collected data was analyzed through the methods of Steel and Torrie (1980).

Results and Discussion

Plant Height: Data on plant height showed that among the sowing dates, late sown crop in 30th December produced dwarf plants as compared to early sown crop of 15th to 30th November. It seems that early planted crop had a long time for the growth and hence, plant height increased. The results for varietal potentiality for plant height exhibited non-significant differences, however, Sarsabz wheat variety recorded higher numerical values. Thus, the best interaction was found with the Sarsabz planting during 30th November. Similar results were also reported by Razzaq *et al.* (1986) who observed that plant height decreased with delay in planting the crop.

Wheat Yield and Yield Components: Spike length, number of grains per spike and seed index are considered important yield components of wheat crop. The yield and yield components varied greatly in early, mid and late plantings. The data indicated that November 30th sowing produced more spike length having maximum number and weight of grains per spike and final grain yield. The early sowing of 15th November produced next higher yield and yield components. However, late planting of 30th December reduced all yield components which in turn affected yield productivity of the crop. The reason for high yield during mid November could be the availability of optimum temperature for tillering and germination in the month of November than late December planting. The effect of sowing dates on grain yield and yield components of wheat crop were also found to be significant in the tested genotypes. Among the planted wheat cultivars, Sarsabz was ranked superior followed by TJ-83.

Soomro and Oad: Yield Potentials of Wheat (*Triticum aestivum*)

Table 1: Wheat Varietal Characters as Affected by Different Planting Times

Planting Times	Varieties			Mean	Varieties			Mean
	Pavon	Sarsabz	TJ-83		Pavon	Sarsabz	TJ-83	
Plant height(cm)				Spike length (cm)				
15 th Nov.	82.54	82.71	80.53	81.93c	7.75	8.60	7.54	7.91b
30 th Nov.	83.82	85.52	85.02	84.79a	7.68	9.18	8.65	8.51a
15 th Dec.	83.50	85.51	82.06	83.69b	6.35	8.29	7.24	7.29c
30 th Dec.	79.75	83.66	79.60	81.00d	5.58	7.34	6.59	6.59d
Mean	82.40b	84.35a	81.80c		6.91c	8.35a	7.51b	
SE. Mean	0.1702	0.1817	0.3634	0.3634	0.376037	0.325686	0.651373	
Cdi	0.5448	0.5302	1.0600	1.0600	0.218	0.447	--	
Cdii	0.7827	0.7185	1.4370	1.4370	0.314	0.606	--	
Planting Times	Varieties			Mean	Varieties			Mean
	Pavon	Sarsabz	TJ-83		Pavon	Sarsabz	TJ-83	
Number of grains per spike				Seed index (1000 grain wt.g)				
15 th Nov.	31.73	35.31	33.48	33.51b	33.40	39.67	34.57	35.88b
30 th Nov.	33.16	36.92	35.65	35.25a	35.83	43.48	37.48	38.93a
15 th Dec.	31.29	35.23	33.79	33.44b	32.43	36.86	34.41	34.57c
30 th Dec.	29.61	31.98	30.89	30.83c	31.22	34.90	32.53	32.89d
Mean	31.45c	34.86a	33.45b		33.22c	38.73b	34.75a	
SE. Mean	0.473	0.277	0.554	0.554	0.254	0.228	0.456	
Cdi	1.514	0.809	--	--	0.814	0.066	1.332	
Cdii	2.175	1.097	--	--	1.170	0.902	--	
Planting Times	Varieties			Mean	Varieties			Mean
	Pavon	Sarsabz	TJ-83		Pavon	Sarsabz	TJ-83	
Grain yield in 15 Sqm plot (kg)								
15 th Nov.	6.76	7.71	6.91	7.13b				
30 th Nov.	7.22	7.95	7.185	7.45a				
15 th Dec.	6.52	7.27	6.82	6.87c				
30 th Dec.	5.78	6.48	6.16	6.14d				
Mean	6.57c	7.35a	6.77b					
SE. Mean	0.036	0.063	0.125	0.125				
Cdi	0.116	0.183	--	--				
Cdii	0.183	0.248	--	--				

The variability in yield and yield components may be genetic makeup, potentiality and favorable climatic conditions during mid and late November. The above research is in agreement with the previous findings of Razaq *et al.* (1986) who suggested that late planting of 15th December produced the lowest number of grains as compared to early and mid planting, hence November appeared to be most desirable sowing time for obtaining maximum yield. Further, they observed that decrease in yield, number of grains per spike and seed index with late planting. Similar decrease in 1000 grain weight with late planting was reported by Mcleod *et al.* (1992) and Khan *et al.* (1989). Also, Blue *et al.* (1990) reported that last week of October to middle November was the appropriate sowing time to realize maximum yield potential. Looking the results and support of previous research, it is strongly recommended that wheat crop in the Lower Sindh, Pakistan should be sown in the month of November where satisfactory target yield production could be achieved.

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