

## IMPACT OF PLANNED DEVELOPMENT ON PRODUCTIVITY OF WHEAT IN WESTERN RAJASTHAN

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### ABSTRACT

Productivity performance of wheat over various plan periods was studied in comparison with a pre-plan period using tabular and analysis of variance techniques. Significant impact of plan efforts was found in the districts bordering Punjab and Haryana States. In rest of the districts the productivity was almost stagnant.

### INTRODUCTION

Wheat is one of the most important rabi crops in arid regions of western Rajasthan. It accounts for 34% of total cultivated area in rabi cropping season and 47% of irrigated area of the arid district. Both from the points of view of resource-allocation process in production, and consumption preference, wheat is one of the most important elements of crop product-mix in arid areas.

Since the inception of first five year plan, wheat has received national attention which culminated into green revolution in the sixties in parts of the country. Constraints posed by natural resource endowments in regions other than Punjab, Haryana and parts of U.P. have resulted into variations in the inter-regional productivity performance of this crop. Studies reported in the past (Panse 1964; Saxena *et al.*, 1973; Rai and Sanp, 1980) have hardly taken any cognizance of the wheat growth potentials of arid region. This study is an attempt to assess the impact of planned development on productivity performance of wheat in arid regions of western Rajasthan. The hypothesis underlying this study is that the crop productivity in arid areas is in direct proportion to planned allocation.

### MATERIAL AND METHODS

Production estimates of wheat estimated through crop cutting experiments reported in the Agricultural situation in India, (Directorate of Economics and Statistics, Ministry of Agriculture), for a period of 29 years starting from 1950-51 formed the basis of this study. This period of 29 years comprises one year representing

Table 1. Plan-wise average yields of wheat (kg/ha) in the arid districts of western Rajasthan

District	PLAN		PERIODS					ROLLING PLANS			Av yield
	Pre-plan period	I	II	III	IV	V	I	II	III		
		5-yr plan	5-yr plan	5-yr plan	5-yr plan	5-yr plan	5-yr plan				
Barmer	703	941	916	222	1113	1092	918	999	887	943	
Bikaner	321	526	760	699	1235	1624	1083	1455	1117	980	
Churu	400	603	972	702	1240	1624	1078	1453	1128	1022	
Ganganagar	606	882	956	700	1235	1624	1077	1453	1123	1073	
Jaisalmer	330	521	870	922	1111	1092	919	1000	885	850	
Jalore	633	1187	923	1066	1189	1100	906	1122	859	998	
Jhunjhunu	1038	1019	589	992	1208	1370	1064	1113	1148	1105	
Jodhpur	1208	1147	795	839	1065	1075	1008	805	830	975	
Nagaur	1423	798	665	821	856	984	834	986	1109	942	
Pali	1015	1002	855	795	1019	1026	848	891	859	923	
Sikar	965	931	896	988	1209	1370	1064	1113	1148	1076	
Av (plan-period yield)	786	869	872	859	1009	1135	1271	982	1127	990	

the pre-plan period, 25 years of 5, five-yearly plan periods and 3 years of rolling plan period. The data were analysed using the tabular and Analysis of variance (ANOVA) methods (Panse 1959, 1964) for studying the impact of planning on the productivity performance of wheat in the arid districts of western Rajasthan. The variance component between individual years within each plan period was considered as error for testing the plan-effect on the production performance of wheat.

## RESULTS AND DISCUSSION

The average wheat yields in the 11 arid districts under each plan period (Table 1) show a trend of increase from the initial pre-plan period to the fifth 5-year plan period, barring the 1968-69, a drought year (Sastri *et al.*, 1980). The productivity in the pre-plan period was low in the districts of Barmer, Bikaner, Churu, Ganganagar, Jaisalmer and Jalore, while it was on the higher side in rest of the districts. The productivity in the districts of Barmer and Jhunjhunu remained almost stable upto the second rolling plan period and then registered substantial increase during the last two plan periods. The impact of the green revolution could be seen in the districts Bikaner, Churu and Ganganagar where a sudden jump in the productivity level was recorded from 7.0 to 14.5 q/ha in between the fourth plan period to the fifth plan period. Despite a decrease during the next two periods, the productivity again rose to 16.2 q/ha during the last plan period. An increase had also been recorded in the Jaisalmer and Sikar districts after the green revolution especially during the last two plan periods. No trend of increase was, however, discernible in the districts of Jodhpur, Nagaur and Pali.

The results of ANOVA for each of the districts are presented in the table 2 alongwith 'F' values and the relevant critical differences (CD) for comparison of any

Table 2. Analysis of variance of plan-period yields. (df for plan periods=8, Error df=20)

Districts	'F'	CD for comparison		
		Within rolling plan & pre-plan periods	5-yr plan v/s pre-plan or rolling plans	Between any two 5-yr plans
Barmer	0.88	418.70	458.67	264.81
Bikaner	7.38**	592.05	648.56	374.45
Churu	10.61**	455.27	498.73	287.94
Ganganagar	10.07**	399.82	427.98	252.87
Jaisalmer	2.89*	524.57	574.64	331.77
Jalore	1.04	519.20	568.76	328.37
Jhunjhunu	3.83**	286.99	314.38	181.51
Jodhpur	0.66	699.43	766.19	442.51
Nagore	1.21	555.77	608.82	351.50
Pali	0.80	411.86	451.17	260.48
Sikar	3.38**	368.92	404.13	233.33

\*Significant at 5% level \*\* Significant at 1% level.

two plan period yields. Evidently, the impact of plan efforts was highly significant (at 1% level of significance) in the districts adjoining the Punjab State viz., Bikaner, Churu, Ganganagar, Jhunjhunu and Sikar, and significant at 5% only in the Jaisalmer district. In Jaisalmer district, yields of first two periods only were significantly different, low from other plan periods. Barring the Barmer, Jodhpur, Nagaur and Pali districts where the yields were either reduced or remained stagnant at the level of pre-plan period, significant increase was observed in all the districts during the last fifth five-year plan period.

### CONCLUSIONS

The productivity performance of wheat over 29 years comprising 5 five-yearly plans, 3 rolling plans and a pre-plan period in the arid areas of western Rajasthan was statistically analysed. The impact of plan efforts was highly significant in the districts bordering Punjab and Haryana, the centres of green revolution. It is concluded that the effect of spread of new production technology of wheat in arid areas would be conditioned by creating more efficient energy, irrigation and extension infrastructure.

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