Resource use efficiency of wheat production in Tikamgarh district of Madhya Pradesh

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Abstract
The main objective of this study was to examine the resources use efficiency of wheat production in Tikamgarh district of Madhya Pradesh. Cobb-Douglas production function model has been fitted to work out the efficiency of various factors employed in the production process. The study covered three villages of Tikamgarh district and 75 sample farmers (25 from each village) were interviewed from three villages of Tikamgarh block of Tikamgarh district (M.P.) Data was analyzed and revealed that the average net cultivated area was found 5.45 hectare per farm and Wheat occupied 2.82 hectare area per farm in rabi season. The data portrays that on an average cost of cultivation per hectare of wheat crop was found to Rs.18817 (Cost A1), Rs.18928 (Cost B1), Rs.23928 (Cost B2) respectively and the overall gross income (main product + by product) of this crop was found to Rs.49488 per hectare.

Keywords: Resource use efficiency, cobb-douglas production function, wheat

Introduction
Madhya Pradesh is one of the important states in India producing near about 10% of total wheat production in the country. It is adaptable to different soils, climates and elevation. After the green revolution the yield per hectare of wheat in India increased from 14.1 quintal per hectare to 25.80 quintal per hectare on the farm of major wheat growing states as well as on the progressive farm of Madhya Pradesh also. The production level of Wheat in India had a quantum jump from 6.46 million tonnes from an area of 9.75 million hectare in 1950-51 to near about 95 million tonnes from an area of about 32 million hectares during 2014-15. Madhya Pradesh is an equally important wheat growing states of India. Madhya Pradesh occupied about 5002.0 thousand hectares under wheat in 2014-15. The total production of wheat was 13132.0 thousand tonnes in same year. The average yield of wheat in the State, in that year was about 26 quintal per hectare. It is well known fact that agricultural growth, among others factors, depends upon the manner of utilization of resources by the farming community and it is true also in wheat cultivation. In this respect, the agricultural economists want to know that if the farmers are already allocating their resources optimally, no additional income can result from reallocation of farm resources and we will have to look to other sources for agricultural growth. If, on the other hand, the farmers are not allocating their resources optimally, there exists an inexpensive source of agricultural growth –through reallocation of resources. Thus, a study on the resource use efficiency of wheat growers acquires special importance.

Material and methods
Tikamgarh district of Madhya Pradesh was selected for the purpose of this study. In the study, multi stage sampling technique was used for drawing the sample. At first stage, Tikamgarh block of Tikamgarh district was selected purposively because of the important area of wheat production. At second stage of selection, three villages namely Nimora, Chorpua and Nimkhera were selected randomly for the study and at the third stage of the selection a list of wheat growing cultivators of each village was prepared. From the list 25 farmers were selected from each village through random basis. thus, total 75 farmers were sampled for the study. The data on different aspects was collected through pre-tested interview schedule. The data was collected using survey method. All the collected primary data was related to the agriculture year 2015-16 rabi season.
Analytical procedure for estimation of resources use efficiency

Cobb-Douglas production functions were used for the estimation of resource use efficiency in cultivation of wheat, it is widely used by various research workers for studying resource use efficiency and they obtain precise results.

\[ Y = \alpha x_1^{b_1} \cdot x_2^{b_2} \cdot x_3^{b_3} \cdots 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References