Resource Use Efficiency in Wheat Production of Amravati Division

Harish A. Patil	Dr. Vanita K. Khobarkar
A/P- Kothali, Tal- Karveer, Dist- Kolhapur, State- Maharashtra, Pin- 416001	Assistant Professor, Quarter No. B/4, Dr. PDKV Colony, Akola., Dist - Akola State- Maharashtra, Pin- 444104

ABSTRACT This study was designed to measure resource use efficiency in wheat production of Amravati division of Vidharbha region of Maharashtra state. In present investigation we use the double log type Cobb-Douglas type of production function. The sample of 81 Wheat farmers were selected from which input-output data collected based on 2011-12 rabi cropping season. Functional analysis of wheat crop revelled that Seed rate, Human Labour, Machine Labour, Bullock labour and Nitrogen Fertilizers, had the elasticity of 0.46,0.03,0.14, 0.12, and 0.07 respectively, which is positive and statistically significant, indicated that increase in these inputs will significantly effect on wheat yield. The value of MVP in respect of Seed rate (6.88) , machine labour (2.15),bullock labour (1.87),nitrogen (1.19) were more than unity level, indicating if expenses made on these resources, then it will be gives profitable returns. The average allocative efficiency was 86 per cent.

INTRODUCTION

Agriculture and allied activities are important in state economy as about 65% population is depend on it. Within the Agriculture, cereal crops occupy the commanding position in the economy of our country and Maharashtra is no exception to it. The production of wheat was 94.88 million MT in 2011-12. The productivity of wheat which was 2602 kg/hectare in 2004-05 has increased to 3140 kg/hectare in 2011-12 (Source: FAO STAT and IGC reports). In Maharashtra in the year 2011-12 area under wheat was 84 million hectares, Production 1.31Million Tonnes and productivity 1558 Kg./Hectare.

The present investigation aims to examine resource use efficiency of various resources used in the production process of wheat. In view of above investigation entitled "Resource Use Efficiency In Wheat Production of Amravati Division" was undertaken with following objective.

To estimate the Resource use efficiency in Wheat   production.

MATERIALS AND METHODS

The present study was carried out in Amravati division of Vidarbha region of Maharashtra state where Wheat is the commonly grown as *rabi* season crop by the farmers. Amravati division comprises of five districts namely Akola, Amravati, Washim, Buldhana and Yavatmal.

The data of 81 cultivators were collected and compiled from Agriculture Price Cell scheme of the Agricultural Economics and Statistics, Dr PDKV,Akola for the year 2011-12.

The selected farmers from the Amravati division are as bellow in Table 1

Sr.no.	District	No. of Wheat growers
1	Buldhana	17
2	Akola	12
3	Amravati	13
4	Yavatmal	15
5	Washim	24
6	Total (Amravati division)	81

RESULT AND DISCUSSION

Without having the functional analysis and estimating the marginal value productivity (MVPs) the existing levels of inputs, one cannot come to the conclusion that whether the input is being overused or underused in production and also the contribution of different resources in the production of crop. For this purpose, as mention earlier, the Cobb-Douglas type of production function was fitted to the data and the estimates elasticity's of different inputs are obtained at the same are presented in Table 2

It can be observed from the above table 2 that the coefficient of Seed rate(0.46), Human Labour(0.03), Machine Labour(0.14) Bullock labour(0.12), Nitrogen Fertilizer(0.07) were positive and statistically significant, indicate that an increase in these inputs will significantly effect on wheat yield.

The coefficient of phosphorus fertilizer was (-0.26) negative elasticity and statistically significant, indicated that an increase in the phosphorus fertilizer by 1 per cent then it would not significantly affect on the total produce.

The returns to scale was less than unity (0.56) indicating decreasing returns to scale.

The coefficient of determination (R^2) gives an idea about the proportion of the total variation in yield (Y) explained by the selected variables. For wheat crop the value of R^2 was 0.54. This has indicated that the selected inputs contribute to the extent of 54 per cent of contribution in wheat yield.

Table 3 revealed that marginal value product of Seed rate (6.88), Machine labour (2.15), Bullock labour (1.87) and Nitrogen fertilizer (1.19) were found to be more than unity, which implies that the profitable economic returns on investments made on these resources.

In respect of phosphorus fertilizer the MVP was negative (-4.67). Hence, the level of use of phosphorus fertilizer would be curtailed so as to maximise the returns.

The average allocative and economic efficiencies was 86 and 74 per cent respectively.

Table 2: Coefficient of different input use in Wheat Production

Sr. No.	Inputs	Coefficient
1	Constant	- 0.68
2	Seed rate	0.46**
3	Human labour	0.03*
4	Machine labour	0.14**
5	Bullock labour	0.12**
6	Nitrogen Fertilizer	0.07**
7	Phosphorous Fertilizer	- 0.26**
8	R^2	0.54**
9	Returns to scale	0.56

** Significant at 1 per cent level

* Significant at 5 per cent level

Geometric mean level and Marginal Value Product (MVP):
The result of production function analysis in terms of Geometric mean level and Marginal Value Product are presented in table 3

Table 3: Geometric mean level and Marginal Value Product

Sr. No.	Inputs	Geometric mean level	MVP
1	Seed rate	1.99	6.88
2	Human labour	1.82	0.65
3	Machine labour	1.96	2.15
4	Bullock labour	1.93	1.87
5	Nitrogen Fertilizer	1.92	1.19
6	Phosphorous Fertilizer	1.77	- 4.67

CONCLUSIONS

1. The MVPs of the seed, machine labour, bullock labour and nitrogen fertilizer implies the profitable economic returns on investments on these resources

2. The nitrogen fertilizer utilization was at rational level in the farm of selected Wheat growers. Even though, their is a considerable scope to increase the quantity of application for maximization of profit.

3. The economic efficiency of selected Wheat growers was 74 per cent .It reveals that there is a considerable scope to increase the productivity

4. The average allocative efficiency of the selected Wheat growers was 86 percent. The study implied that the output of average farmers could be increased by adopting the allocation of resources fallowed by the best practiced farmers.

REFERENCE Ashwthareddy, K.P.; K.S. Chandrashekar And, M.V. Srinivasgowda. (1997): Resource-use efficiency in groundnut production under rainfed conditions- A study in Challakere taluk of Karnataka. Agricultural Situation in India.53(12): 829-831. | Chapke R.R.and J.S. Mishra (2011): Sorghum. Rice-fallows. Cobb-Douglas Production Function. Resource-use Efficiency .Journal of Human Ecology 34(2): 87-90. | Muralidharan, P.K. (1987): Resource use efficiency in kole lands in Trichur District Kerala. Indian Journal of Agricultural Economics. 42(4): 578-586. | Nagaraj (1995):Studied the resource-use efficiency of various crops included in each cropping system in Tungabhadra command area in Karnataka. Karnataka Journal of Agricultural Sciences, 31(1): 261.