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Research Note

Resource use efficiency in turmeric cultivation in yavatmal district of Maharashtra

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SUMMARY : The present study attempts to examine the production and marketing of turmeric in Yavatmal district in Maharashtra state, India. Primary data for the study were collected through a sample of 60 turmeric producers in the study area for year 2011-12. Data were collected by personal interview in a specially designed schedule. At overall level, bullock lobour was significant at 10 per cent level and other variables showed non-significant result. About 63 per cent of the variation was explained by the variable included in the function. At overall, small and medium level, the marginal value of product to the factor cost ratio of selected variables were less than one and negative, this indicated the excess use of these inputs. Hence there should be reduction in use of these inputs for efficient turmeric production.

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KEY WORDS :
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Turmeric is an important spice crop in India,scientifically it is known as *Curcuma longa* and belongs to family Zinziberaceae. Its native of southern Asia and cultivated in India, from very ancient times. It is called "Haridra" in Sanskit, "Haldi" in Hindi. It is versatile commodity with innumerable uses. India is one of the major turmeric producing countries, which accounts for 80 per cent of total world turmeric production. It has achieved the most important place in each household, also demand is in number of countries of the world. Turmeric is valuable cash crop for cultivators, as it is ready cash crop and contributes in national economy as one of the major exports commodities.Turmeric is utilized to enhance the flavours in cooking, as it is one of the ingredients of curry powder. As a condiment, it is widely used in vegetarian and non-vegetarian food.

The data for the study were drawn from primary source by personal interview in a specially designed schedule. This study was conducted in umarked tahsil of Yavatmal district of Maharashtra, considering the maximum area under turmeric production. The primary data were collected from a sample of 60 farmers who were producing turmeric most prominently.

Cobb-Douglas production function was estimated on per hactore basis :

$$Y = a x_1^{b1} X x_2^{b2} X_3^{b3} X x_4^{b4} X x_5^{b5} X x_6^{b6}$$

where ,

Y = Yield in quintals per ha.
a = Intercept
b_1, b_2, b_3, b_4, b_5, b_6 = Regression co-efficient of respective factor as follows.
X_1 = Human labour in days/ha.
X_2 = Bullick labour in days/ha.
X_3 = Rhizomes in qt./ha.
X_4 = Manure in qt./ha.
X_5 = Nitrogen in kg./ha.
X_6 = Phosphorus in kg./ha.

Cobb-Douglas production function as given above was estimated for input-output data to study the combination of variables and resource productivity.

The results obtained from the present study have been discussed in detail as under:

Resource productivity and resource use efficiency in turmeric production :

Cobb-Douglas production function was estimated on per hectare basis.

It is evident from Table 1 that in small size group, the selected variables were not significant in turmeric production. In Cobb-Douglas production function, the regression co-efficient directly showed the production function elasticity, hence, human labour, bullock labour, rhizomes, manure and fertilizer N,P had no influence on turmeric production significantly. But it showed that 65 per cent of variations was explained by the variables included in the function.

In medium size group, the bullock lobour was significant at 10 per cent level. And other variables were found non-significant in medium size group. Also 75 per cent of the variation was explained by the variables included in the function.In large size group, the selected variables could not show significant contribution in turmeric production. About 88 per cent variation was explained by the variables included in the function. At overall level, the bullock lobour was significant at 10 per cent level and other variables showed non-significant result. About 63 per cent of the variation was explained by the variables included in the function.

Marginal value product to factor cost ratio :

It is observed from Table 2 that at overall, small and medium level, marginal value of product to the factor cost ratio of selected variables were less than one and negative indicates the excess use of these inputs. Hence, there should be reduction in use of these inputs for efficient turmeric production.

In case of large size group of marginal value product to factor cost ratio of fertilizer N was more than one that means there is scope to increase the level of fertilizer N input in turmeric production. And other factors such as, human labour, bullock labour, rhizome, manure and fertilizer phosphorus was less than one and this indicates the excess use of these inputs. Hence, there should be reduction in use of these inputs for efficient turmeric production. Dodke *et al.* (2002) have also studied the resource use efficiency and productivity of turmeric.

Conclusion:

At overall level, bullock lobour was significant at 10 per cent level and other variables showed non-significant result. About 63 per cent of the variation was explained by the variable included in the function. At overall, small and medium level, the marginal value of product to the factor cost ratio of selected variables were less than one and negative, this indicates the excess use of these inputs. Hence, there should be reduction in use of these inputs for efficient turmeric production.

Table 1: Cobb-Douglas production function for turmeric

Sr. No.	Variable	Small	Medium	Large	Overall
1.	Constant (Intercept)	3.02 (0.93)	1.89 (1.03)	5.87 (2.01)	2.14 (0.39)
2.	Co-efficient				
A	Human labour (X_1)	-0.21 (0.21)	-0.04 (0.14)	-0.911 (0.29)	-0.11 (0.10)
B	Bullock labour (X_2)	0.08 (0.07)	0.31* (0.15)	0.29 (0.09)	0.08* (0.04)
C	Rhizomes (X_3)	-0.58 (0.30)	-0.04 (0.25)	0.02 (0.13)	-0.31 (0.12)
D	Manure (X_4)	0.01 (0.01)	-0.11 (0.13)	-0.01 (0.01)	0.01 (0.01)
E	Fertilizer N (X_5)	0.13 (0.15)	-0.06 (0.26)	0.63 (0.16)	0.12 (0.08)
F	Fertilizer P (X_6)	-0.14 (0.19)	-0.14 (0.14)	-0.21 (0.09)	0.02 (0.06)
3.	Co-effi. of determination (R2)	0.65	0.75	0.88	0.63

Note : *, ** and ** Indicate significance of value at P=0.05, 0.01 and 0.1, respectively, Figure in parenthesis indicate the standard error

Table 2 : Marginal value product to factor cost

Sr. No.	Variables	MVP to factor cost			
		Small	Medium	Large	Overall
1.	Human labour (X_1)	-1.16	-0.20	-4.68	-0.58
2.	Bullock labour (X_2))	0.02	0.06	0.05	0.01
3.	Rhizomes (X_3)	-0.25	-0.01	0.01	-0.14
4.	Manure (X_4)	0.02	-1.96	-0.09	0.01
5.	Fertilizer N (X_5)	0.62	-0.33	3.31	0.61
6.	Fertilizers P (X_6)	-0.34	-0.35	-0.53	0.05

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