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Economics

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POSSESSION OF CAPITAL ASSETS AT THE FARM LEVEL AND MAIZE PRODUCTIVITY: AN EMPIRICAL STUDY IN DAVANGERE DISTRICT, KARNATAKA

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ABSTRACT

Impact of possession of selected capital assets on the productivity of maize crop in Davangere district of Karnataka state has been assessed by using the primary data collected form the 144 randomly selected farmers. Maize yield was observed to more among the farmers who own the capital assets compared to the farmers who did not have these assets for all the selected assets except the sprayer and thresher. Possession of assets like bullock labour and tractor has reduced the share explicit cost in the total variable cost whereas it has increased the share of implicit cost. Possession of capital assets facilitated the timely operation of agronomic practices which enabled them to earn more gross as well as net income from maize per unit of land.

1. Introduction

Agriculture Capital Stock comprises of farm implements, machineries, farm buildings, irrigation structures like wells, tube-wells, pump sets, drip irrigation, sprinklers, fencing to the farm land, bullock cart, tractors, combined harvesters and etc. All these capital assets and facilities are intended to improve the productivity in agriculture. Possession of capital assets enables the farmers to perform the agronomic practices at the right time. The importance of capital in economic progress has been recognized long back (Cairncross, 1955).

There is an intense debate in the country that capital formation in Indian agriculture has been either stagnating or falling since the beginning of 1980s (Dhawan, 1998). Serious concern has been expressed by various scholars over the declining trend in public investment (Shetty, 1990). Public investment reported to be complimentary for the private investment on the capital assets at the farm level. The declining public investment on the one hand and declining size of land holding on the other hand lead to the declining capital assets at the farm level. The declining capital assets at the farm level may have serious impact on the crop productivity. Many of the farmers who don't have the capital assets at their farm were not able to perform the agronomic practices at the right time. In this backdrop this study has been under taken with the objective of analyzing the impact of possession of capital assets at the farm level on the maize productivity.

2. Methodology

This study is based on the primary data collected from sample farmers of Davangere district. Maize and Paddy are the major crops of this district and they occupy about 40 and 25 percent of the gross sown area of the district respectively. The three taluks of the district in which maize is a major crop were selected. Three villages were randomly selected from list of villages of these taluks. From each village 16 farmers were randomly selected. Thus, totally 144 farmers were randomly selected for the study. Primary data were collected from these farmers by using well-structured pre-tested schedule during the crop season 2016-17.

3. Results and Discussion

The main objective of this study is to analyse the impact of possession of capital assets at the farm level on the maize productivity. Maize productivity has been assessed through Maize yield, Gross returns as well as net returns from one acre of maize crop. The arithmetic mean value of maize yield per one acre of maize was computed separately for the farmers who own ten different capital assets separately and for those who don't own these asset and results have been summarised in table-1. The arithmetic mean value of maize yield obtained by the farmers who owned a particular capital asset has been compared with the mean value of maize yield obtained by the farmers who don't own the asset. The percentage change in the maize yield with the possession of a particular capital asset compared to those who don't own that asset is given in the column indicated by %.

Table-1: Ownership of Capital Assets and Maize Productivity

Sl No	Capital Assets	Maize Yield of Farmers who		Δ %	t Value
		Not Owned	Owned		
1	Farm Buildings	20.1	22.5	11.9	3.044*
2	Harvesting Yard	20.5	23.6	15.1	2.183**
3	Tractor	19.9	24.1	21.1	5.048*
4	Sprayer	20.3	21.4	5.4	1.565
5	Thresher	20.6	22.4	8.7	0.903
6	Tube well	19.8	23.0	16.2	4.322*
7	Bullock Pair	18.5	22.9	23.8	7.251*
8	Boffola's / Cows	19.3	22.6	17.1	4.947*
9	Bullock cart	20.2	22.3	10.4	2.748*
10	Implements	19.1	22.9	19.9	5.895*

* and ** indicate significance at 1 and 5 percent

The arithmetic mean value of maize yield was found to be more for the farmers who own the capital assets compared to the farmers who don't have the assets for all the ten capital assets given in the table. The differences in these arithmetic mean values of maize yield were found to be statistically significant for all the capital asset except for the sprayer and thresher. The difference in the mean yield of maize crop between haves and have-nots of a particular capital was found to be maximum for bullock pairs followed by Tractors, livestock and tube wells. Farmers with bullock pairs have produced 23.8 percent higher crop yield compared to the farmers did not possess the bullock pairs. Similarly farmers who own the tractors have obtained 21.1 percent higher maize yield compared to the farmers who did not have the tractors.

Possession of bullock pairs has greater influence on the timely operation of agronomic practices like land preparation, sowing and inter-cultivation. Possession of tractors also contributed for the timely operation of land preparation and sowing. Ownership of livestock population has significant influence on the usage of Farm Yard Manure. Few farmers with Tube-wells have given critical irrigation support at acute moisture deficiency. Arithmetic mean values of variables related to cost-returns have been computed separately for the farmers who have owned the selected three capital assets; Bullock pairs, Tractor and tube-well, and also for the farmers who didn't have these assets and presented in the table-2.

The total variable cost incurred by the farmers who own the bullock pair (18786) was more than the farmers who did not own the bullock pair (17782) by 6 percent and this difference was statistically significant at one percent probability level. Many of the farmers who owned the bullock pairs were also having relatively

more number of family members involved in the agriculture. Therefore, the implicit cost incurred by the farmers who owned the bullock pairs was nearly two times more than the farmers who didn't owned the bullock pairs. The explicit variable cost incurred by the farmers who own the bullock pair was lower than the corresponding expenditure incurred by the famers who didn't own the bullock pairs by 4312 which is nearly closure to the higher implicit cost incurred by the former group.

Table-2: Ownership of Bullock Pairs and Cost-Returns in Maize

Capital Asset	Cost-Returns Variable		Mean Value for Farmer Who have		Δ %	t- value
			Not-Owned	Owned		
Bullock Pairs	Variable Cost	Explicit	15060	10748	-29	15.602*
		Implicit	2721	8038	195	17.506*
		Total	17782	18786	6	2.467*
	Fixed Cost	Explicit	359	417	16	0.478
		Implicit	4967	5192	5	1.756**
		Total	5327	5611	5	7.028*
	Total Cost		23108	24397	6	3.106*
	Gross Returns		24077	29827	24	7.308*
	Net Returns over TVC		6294	11040	75	7.397*
	Net Returns over TC		967	5429	461	6.941*
Tractor	Variable Cost	Explicit	13588	10098	-26	6.919*
		Implicit	4595	8580	87	6.584*
		Total	18184	18678	3	0.930
	Fixed Cost	Explicit	417	260	-38	0.999
		Implicit	4984	5487	10	3.129*
		Total	5402	5747	6	6.556*
	Total Cost		23587	24426	4	1.542
	Gross Returns		25878	31393	21	5.069*
	Net Returns over TVC		7693	12713	65	5.766*
	Net Returns over TC		2291	6966	204	5.384*
Tube-wells	Variable Cost	Explicit	13916	10468	-25	8.342*
		Implicit	4219	8167	94	7.932*
		Total	18134	18635	3	1.090
	Fixed Cost	Explicit	435	269	-38	1.228
		Implicit	4938	5431	10	3.588*
		Total	5373	5700	6	7.390*
	Total Cost		23508	24335	4	1.760
	Gross Returns		25722	29900	16	4.349*
	Net Returns over TVC		7587	11264	48	4.729*
	Net Returns over TC		2213	5564	151	4.325*

* and ** indicate significance at one and five percent probability level respectively

Gross income earned by the farmers who own the bullock pairs was greater the gross income earned by the farmers who didn't own the bullock pairs by 24 percent and the difference was statistically significant at one percent probability level. Net income over Total Variable cost as well as the Net Income over the total cost was significantly more among the farmers who own the bullock pairs compared to those who didn't own the bullock pairs. Thus, it could be concluded that the ownership of bullock pair leads to higher maize productivity in all the productivity related variables.

Possession of capital assets increase the share of implicit cost component in total variable cost leading to decline in the share of explicit component. Though there is no significant difference in the total cost per acre of maize between these two groups of farmers with respect to the ownership of tractor and tube-well gross returns was significantly more for the farmers owning these assets compared to the farmers who were not having these assets. Farmers who owned the tractor earned 21 percent higher gross returns compared to those who did not have tractors. The corresponding figure for the Tube-well was 16 percent. Net income was significantly more for the farmers having the tractors and Tube-wells compared to the farmers who did not have these assets.

Maize productivity difference in terms of yield, gross returns and net returns between the farmers who own these asset and who did not won the asset was highest with respect to the bullock pair followed by the tractor and tube-well. It was because ownership of the bullock pairs was found to be significantly associated with the more number of family members involved in farming activities which enable them to perform the agronomic practices at the right time and with more efficiency. The ownership of the tractors was found to be associated with ownership of many other capital assets. The farmers who owned the tractor observed to be owned almost all other capital assts.

4. Conclusion

In this study an attempt has been made to empirically verify the maize yield difference between the farmers who own selected capital assets and who didn't own these assets. Mean value of maize yield was found to be significantly more among the farmers who own the capital assets compared to the farmers who did not have these assets for all the ten assets except the sprayer and thresher. Ownership of bullock pairs which is significantly associated with the more number of family members involved in agriculture led to higher maize productivity. Tractor has contributed to higher maize yield by facilitating timely operation of land preparation and sowing operation.

Reference

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