

Original Research Article

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An Economic Analysis of Sugarcane Farm Efficiency

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ABSTRACT

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India is the second largest sugarcane producers in the world, producing around 340-350 million tones of sugarcane per annum on 4.2 million ha area with a yield of 66.1 t/ha. Uttar Pradesh being one of the largest sugarcane producer has Sant Kabeer Nagar district of Basti region has an optimum fraction in sugarcane generated economy. Therefore, the district was selected for the study. Ashrafpur, Debri, Malhepur, Vishunpura and Hakimpur villages were selected randomly from Haisar block. A total of 100 Sugarcane growers were selected randomly for this study. Efficiency of the land in terms of productivity was highest for marginal farmers i.e. 138.31 per cent, Productive man work units (PMWU) was calculated and found highest for medium farms i.e. 7523.71, and the Crop acreage per man was found highest for medium farmers i.e. 57.88 ha/yr.

Introduction

An optimum fraction (nearly 60%) of population still on agriculture directly or indirectly all over the world, “Statistical Yearbook”, Food and Agriculture Organization, 2013. India is second largest producer of agricultural products. India accounts for 7.68 per cent of total global agricultural output. The importance and use of sugarcane and sugar in the country’s socio-economic milieu is deep rooted and immense.

In the current day rural economy set up on sugarcane cultivation and sugar industry has been focal point for socioeconomic development in the rural areas by mobilizing rural resources, generating employment and higher income, transport and communication facilities. Sugarcane is an important cash crop grown in India. India is the second largest sugarcane producers in the world, producing around 340-350 million tones of sugarcane per annum on 4.2 million ha area with a yield of 66.1 t/ha. (Directorate of Economics and

Statistics, DAC&FW, 2015-16). About 7 million sugarcane farmers and large number of agricultural laborers are involved in sugarcane cultivation and ancillary activities. Apart from this, the sugar industry provides employment to 5 lakh skilled and semi-skilled workers in rural areas. In Indian economy agriculture shares nearly 17.9 per cent in GDP.

The average yield of cane stalk is 60-70 tones per hectare per year. Sugarcane is the world's largest crop by production quantity, with 1.7 billion tones produced annually across 24 million ha worldwide, (*The Food and Agriculture Organization, 2012*). In spite of sufficient resources, technologies etc., a continuous and severe fall in production and land acquiring sugarcane cultivation can be seen in past years. It seems a genuine demand of time to study the economic aspects of sugarcane cultivation. The study on "an economic analysis of sugarcane farm efficiency" was undertaken with the objective to find out the various farm efficiencies on the sample farm.

Materials and Methods

Selection of district

Among the Basti division of eastern U.P., Sant Kabeer Nagar has a fertile land with good irrigation facility of gangetic plains. Moreover, the district is connected with transports very efficiently and has several sugar mills nearby. Therefore, the district was selected purposively.

Selection of blocks

A list of all nine blocks of the district was prepared along with their respective villages and thus, Haisar block was randomly chosen for the study of sugarcane crop keeping in view to avoid any operational inconvenience of the researcher.

Sampling technique

A list of all 225 villages of selected block was prepared separately along with their area under sugarcane cultivation and five villages namely Ashrafpur, Debri, Malhepur, Vishunpura and Hakimpur were selected randomly.

A separate list of sugarcane growers of selected villages was prepared along with their size of holding and further it was grouped into three categories i.e.

Marginal farmer	(below 1 ha)
Small farmer	(1-2 ha), and
Medium farmer	(2-4ha & above)

Finally, 100 Sugarcane growers were selected randomly in proportion to their number of universe in each size group. Primary data was collected through personal interview with use of pre-structured and pre-tested schedule.

Secondary data was taken from the official records available at block, tehsil, and district offices. The data were collected for the agricultural year 2018-19.

Farm efficiency

Efficiency signifies a peak level performance the uses the least amount of inputs to achieve the highest amount of output. So, at a farm level efficiency means to achieve maximum productivity with minimum wasted effort or expense.

To make efficient decisions on farm broadly three efficiency measures are overlooked; Land, Labour & Capital. Here Land and Labour are discussed as physical efficiency measures.

Measure of efficiency = Output / Input.

Land efficiency: Productivity of Land

$$\text{Production efficiency} = \frac{\text{actual crop yield on the farm}}{\text{average yield in the locality}} \times 100$$

$$\text{Cropping Intensity} = \frac{\text{Gross cropped area during the agricultural year}}{\text{Net cropped area}} \times 100$$

Labor efficiency

$$\text{PMWU per man equivalent} = \frac{\text{total productive man work units}}{\text{man equivalent year}} \times 100$$

$$\text{Crop Acreage per Man Equivalent Year} = \frac{\text{Number of acres under crop}}{\text{Man equivalent years}}$$

Results and Discussion

Farm efficiencies on sample farm

Land efficiency

Land being a scarce resource must be used efficiently so that it can be generating optimum output rewards for the farmer (Table 1).

Hence, the details of the land production efficiency for sugarcane crop was studied, computed and are presented in the (Table 2).

The (Table 2) infers that the cropping intensity was found highest for marginal farmers, 203.03 per cent followed by small and medium farmers, 195.20 per cent and 181.78 per cent.

It reveals that the optimum use of land was efficiently done and performed by the marginal farmers and the least utilization of the land was performed by the medium farmers. Similarly, the land efficiency in terms of the productivity was also studied in the (Table 2). The (Table 2) shows that the

efficiency of the land in terms of productivity was highest for marginal followed by small and medium farmers which is 138.31 per cent, 128.57 per cent and 121.63 per cent respectively.

So, marginal farmers have received highest productivity and the medium were with the lowest productivity. Therefore, we can say that proper use of each and every section of the land used in cultivation of sugarcane was efficient for the marginal farmers. Hence the farm efficiency in terms of land was maximum for the marginal farms and least for the medium farms (Fig. 1 and 2)

Labor efficiency

Profitability of any farm business is influenced by the efficiency of the labor resources employed. Hence, the details of the labor efficiency in terms of productive man work units for sugarcane crop was studied and presented in the (Table 3 and Fig. 3).

The (Table 3) infers that the PMWU was highest for medium farms 7523.71 and then 2462.87, 2323.83 for marginal and small farms. It shows that labors were efficiently used at the medium farms and the disposal of the labors at marginal and small farms were not efficiently used.

Similarly, the labor efficiency in terms of crop acreage per man is shown in (Table 4). Table 4 reveals that the crop acreage per man equivalent years was highest for medium farmers i.e. 57.88 ha/yr, 33.95 ha/yr for the small farmers and minimum for marginal farmers i.e. 3.25 ha/yr.

Therefore, it can be concluded that the medium farms of sugarcane crop is using labor resources inefficiently at the small and marginal farms and efficiently at the medium farms in the study area.

Table.1 Village wise selected farmers under different size groups

S.No.	Village	Size group of farms						Overall	
		Marginal		Small		Medium		P	S
		P	S	P	S	P	S		
1	Asrafpur	65	9	30	3	58	6	153	18
2	Debri	80	10	48	4	44	4	172	18
3	Malhepur	89	11	45	5	60	6	171	22
4	Vishunpura	72	10	28	3	52	5	116	18
5	Hakimpur	91	11	69	7	65	6	161	24
Total		397	51	220	22	279	27	719	100

Where, P = Population, S=Sample

Table.2 Per farm efficiency measures of sugarcane

S.No.	Size of Farm	Production Efficiency (%)	Cropping Intensity (%)
1.	Marginal	138.31	203.03
2.	Small	128.57	195.20
3.	Medium	121.63	181.78

Table.3 PMWU of different size of farms

S.No.	Size of farm	Average man days for sugarcane per ha	Total area of sugarcane(ha)	Man equivalent years	PMWU
1	Marginal	323	6.71	0.88	2462.87
2	Small	340	6.35	0.94	2323.83
3	Medium	356	20.50	0.97	7523.71

Table.4 Crop acreage per man (ha/yr)

S.No.	Size of farms	Total area under crop	Man equivalent year	Crop acreage per man equivalent years
1.	Marginal	6.71	0.88	3.25
2.	Small	6.35	0.94	33.95
3.	Medium	20.5	0.97	57.88

Fig.1

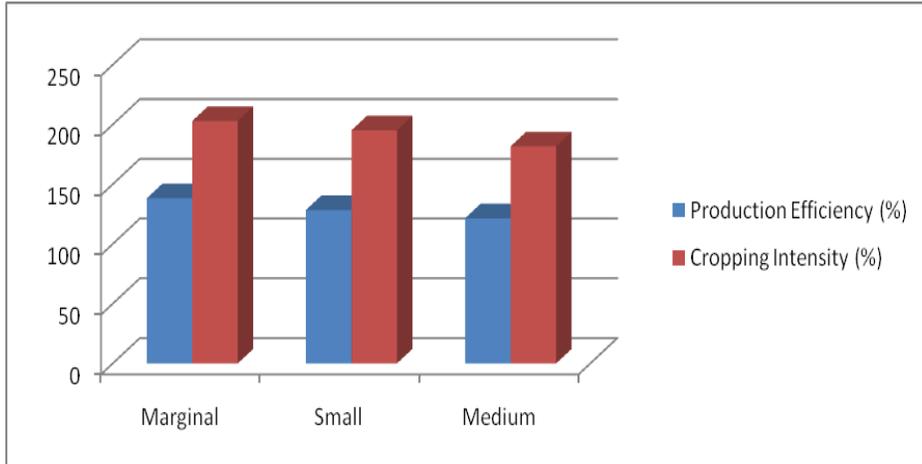


Fig.2

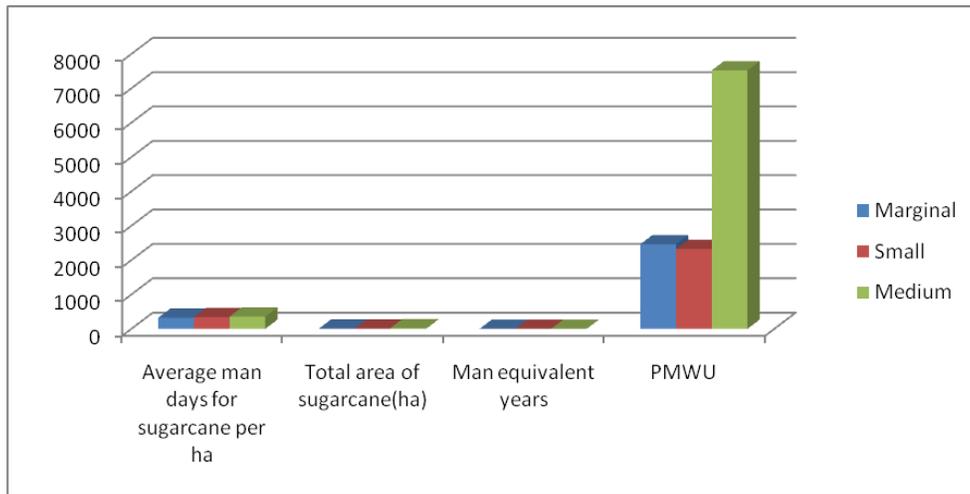
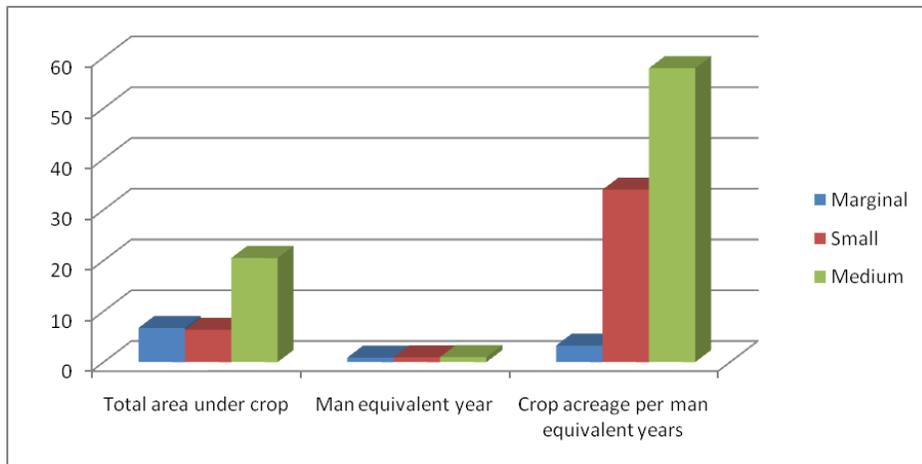


Fig.3



The work done on the farm by a worker in a day of eight hours is known as productive man work units.

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