

Original Research Article

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A Study on Socio-economic Aspects and Constraints in Sugarcane Cultivation in Sultanpur District of Eastern Uttar Pradesh

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ABSTRACT

Keywords

Socio-economic status, Literacy rate, Cropping intensity, Cropping pattern, All farm assets, Constraints

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Keeping in view the importance of Sugarcane crop as food, feed and fodder as well as industrial material this study was conducted to find out the socio-economic aspects of sugarcane cultivators and the cost incurred for cultivation. One hundred respondents were selected from Kurebhar block of Sultanpur district. The analysis of socio-economic status revealed that the average percentage of males was 51.73 percent and female was 48.26 percent. Average age of marginal farmer groups was found nearly 45.73 years, for small farmer group it was 48.92 year and for medium farmer group it was 50.40 years. In the study 77.00 percent were literate while only 23.00 percent were illiterate. Marginal household had 1.45 livestock on average while small and medium had 1.84 and 2.87 bovine, respectively. The major components of all farm assets were building, livestock and major implements, constituting 51.41 percent, 8.60 percent and 36.16 percent, respectively. The cropping intensity analysis showed that the average cropping intensity of study sample was 182.46 percent.

Introduction

Originated in tropical South Asia and south east- Asia sugarcane (*Saccharum officinarum* L.) belongs to family gramineae. It is a renewable, natural agriculture resource as it gives sugar besides biofuel, fibre, fertilizer and myriad of by-products with ecological sustainability.

Sugarcane is a vital cash crop grown in India. Sugarcane cultivation and development of sugar industry runs parallel to the growth of

human civilization and is as old as agriculture. Over 7 million sugarcane farmers and large number of agricultural labourers are involved in sugarcane cultivation apart from this the sugar industry provides employment to 5 Lakh skilled and semiskilled workers in rural area (*“Statistical yearbook”*; *Food and Agricultural Organization, 2015*).

The highest area under sugarcane cultivation in India was 50.66 lakh hectares in the year 2014-15 and the lowest area under cultivation was 41.7 lakh hectares in the year 2009-10.

The highest production of sugarcane was in the year 2018-19 i.e. 4003.69 lakh tonnes and the lowest production was in the year 2009-10 i.e. 2923 lakh tonnes. The maximum yield was obtained in the year 2018-19 which was 75.5 tonnes/ha and the minimum yield was in the year 2012-13 which was 68.25 tonnes/ha (3rd Advance Estimate Agricultural Statistics Division, June, 2019).

In Sultanpur district of eastern Uttar Pradesh area under sugarcane cultivation was recorded as 0.108 lakh hectares in the year 2013-14 and the lowest area under cultivation was 0.056 lakh hectares in the year 2009-10. The highest production of sugarcane was in the year 2018-19 i.e. 7.16 lakh tonnes and the lowest production was in the year 2009-10 i.e. 2.84 lakh tonnes. The maximum yield was obtained in the year 2018-19 which was 72.32 tonnes/ha and the minimum yield was in the year 2010-11 which was 43.97 tonnes/ha. (*District Sugarcane Office, Sultanpur District, 2019*).

Materials and Methods

Sampling technique

The purposive and random sampling techniques were used to select, village and farmers. The district Sultanpur was selected purposively.

Selection of tehsil

A list of all the 5 tehsil in Sultanpur district was arranged in ascending order according to number of sugarcane cultivators in the region and one block namely Sadar tehsil was selected purposively from the bottom.

Selection of block

All the 13 blocks of Sadartehsil were again arranged in ascending order according to

number of sugarcane cultivators in the region and one block namely Kurebhar was selected purposively from the bottom.

Selection of villages

A list of all 165 villages of selected block was prepared separately along with their area under sugarcane cultivation and five villages namely Mahilo Ashapur, Murlikapurwa, Vitthalpur, Mahmoodpur and Pratappur were selected randomly.

Selection of farmers

A separate list of farmers growing sugarcane of selected villages was prepared along with their holding size. Based on size of holding, farmers were classified into three group i.e.

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

Finally, 100 respondents were selected randomly through proportionate allocation to the population. Following proportionate random sampling technique a sample of 100 farmers viz. marginal-60, small-25, medium-15 were selected for the purpose of study.

Method of enquiry

The primary data information was collected by survey method through personal interview. The data were selected on well selected on well structure & tested schedule but secondary information were option from the tehsil/village and district level official records.

Analytical tools

Tabular analysis was used for analysis of data weighted average and cropping intensity. Weighted average was worked out for

interpretation of data with the help of following formula.

$$WA = \frac{\sum W_i X_i}{\sum W_i}$$

Where,

WA = Weighted Average

Xi = Variable

Wi = Weights of variable

While, the intensity of cropping refers to the number of crops grown on a farm during the year with land as a fixed resource. It is calculated as:

$$C.I. = \frac{\text{Total Cropped Area}}{\text{Net Cultivated Area}} \times 100$$

Where,

C. I. = cropping intensity

Results and Discussion

Average size and composition of family of different households

It is well known that most of the rural population is dependent on the agriculture sector for their livelihood and also for basic need and requirements and the people engage in that group collectively called farmers.

Farmers group are mainly classified in three groups i.e. marginal, small and medium one but marginal section constitutes maximum share among Indian farmer population. The table 1 shows that the average percentage of males in the study sample was 51.73 percent and female was 48.26 percent. In marginal household male was 52.92 percent and female was 47.07 percent. 51.32 percent male and 48.67 percent female were in small household. Marginal household comprised of 51.34 percent male and 48.65 female.

Average landholding of different categories of sample farmers

The table 2 shows information about the land holding in hectare of different groups of farmers. It was found that marginal section of farmer shares only 0.65 ha, small farmer was 1.53 ha and medium group share 2.97 ha the average land holding of all the farmers was 1.71 hectare.

Distribution of respondents of households according to literacy status

The level of literacy directly affects the level of adoption of scientific approaches and technology resource use efficiency and farm management. The table 3 shows that 77.00 percent of the study sample was literate while only 23.00 percent were illiterate. In marginal household 15 (25.00 percent) and in small 8 (32.00 percent) respondents were illiterate. Primary education holders were found in marginal household which was 10 (16.66 percent) and small household which was 2 (8.00percent). Secondary education holder was 13 (21.66percent) in marginal, 6 (24.00 percent) in small and 4 (26.66 percent) in medium. 12 (20.00 percent) marginal, 2 (8.00 percent) small and 4 (26.66 percent) medium farmers had senior secondary education. Graduation was done by 10 (16.66 percent) marginal, 2 (8.00 percent) small and 4 (26.66 percent) medium farmers.

Cropping intensity

It is evident from the table 4 that cropping intensity of marginal household was 212.31 percent. The average cropping intensity of small and medium households were 180.39 percent and 175.76 percent, respectively. The average cropping intensity of study sample was 182.46 percent. It can be concluded that the cropping intensity decreases with increasing landholding. This is due to the fact

that marginal farmers have less area under cultivation and cultivate almost all of their land in all cropping season.

Cropping pattern

It can be concluded that in kharif season Paddy, Sugarcane, Maize and Moong/ Urd were the major crops grown. Paddy on average was grown on 0.56 hectare (17.89 percent) land in the study sample while Sugarcane, Maize and Moong/Urd were grown on 0.84 hectare (26.83 percent), 0.19 (6.07 percent) and 0.12 (3.83 percent) area, respectively.

It can be concluded that in Rabi season Wheat, Mustard/ Pea and Potato were the major crops grown. Wheat on average was grown on 0.55 hectare (17.57 percent) land. Mustard/ PEA and Potato were grown on 0.17 hectare (5.43 percent) and 0.15 hectare (4.79 percent), respectively.

It can be concluded that in Zaid season Chari and Onion were the major crops grown. Chari and onion on average were grown on 0.18 hectare (5.75 percent) and 0.37 hectare (11.82 percent) area, respectively.

The total area under cultivation in a cropping year was found to be 1.36 for marginal farmers, 2.75 ha for small farmers and 5.30 ha for medium farmers. The all-farm average was found to be 3.13 ha and presented in table 5.

Investment of farm assets

The table 6 revealed that the major components of all farm assets are building, livestock and major implements, constituting 51.41 percent, 8.60 percent and 36.16 percent, respectively. In case of marginal farm percentage of investment in building was 66.68 percent, investment in livestock was 12.02 percent and investment in major implements was 14.27 percent.

Table.1 Average size and composition of family of different households

Members	Farm Groups			All Farm Average
	Marginal	Small	Medium	
Male	2.17 (52.92%)	2.32 (51.32%)	2.67 (51.34%)	2.38 (51.73)
Female	1.93 (47.07%)	2.2 (48.67%)	2.53 (48.65%)	2.22 (48.26%)
Total	4.10 (100%)	4.52 (100%)	5.20 (100%)	4.60 (100%)

Table.2 Average landholding of different households (hectare)

Farm Group	Land Holding
Marginal	0.65
Small	1.53
Medium	2.97
All Farm Average	1.71

Table.3 Distribution of respondents according to their literacy status (Numbers)

Literacy Status	Farm Groups			All Farm
	Marginal	Small	Medium	
Illiterate	15 (25.00%)	8 (32.00%)	0	23 (23.00%)
Primary	10 (16.66%)	2 (8.00%)	0	12 (12.00%)
Secondary	13 (21.66%)	6 (24%)	4 (26.66%)	23 (23.00%)
Senior Secondary	12 (20.00%)	7 (28.00%)	7 (46.66%)	26 (26.00%)
Graduation & above	10 (16.66%)	2 (8.00%)	4 (26.66%)	16 (16.00%)
Total	60 (100%)	25 (100%)	15 (100%)	100 (100%)

Table.4 Cropping intensity of different size group of sample farms

Farm Groups	No. of farms	Net cultivated area (ha)	Gross cropped area (ha)	Cropping intensity
Marginal (below 1 ha)	60	0.65	1.38	212.31
Small (1-2ha)	25	1.53	2.76	180.39
Medium (2-4ha)	15	2.97	5.22	175.76
All farms	100	1.71	3.12	182.46

Table.5 Cropping pattern under different size group of sample farms (hectare)

Crop Grown	Average size of Farm Groups			All Farm Average
	Marginal	Small	Medium	
A. Kharif				
Paddy	0.27 (19.85%)	0.44 (16.00%)	0.97 (18.30%)	0.56 (17.89%)
Sugarcane	0.33 (24.26%)	0.82 (29.81%)	1.37 (25.84%)	0.84 (26.83%)
Maize	0.03 (2.20%)	0.16 (5.81%)	0.38 (7.16%)	0.19 (6.07%)
Moong/Urd	0.02 (1.47%)	0.11 (4.00%)	0.25 (4.71%)	0.12 (3.83%)
B. Rabi				
Wheat	0.25	0.43	0.97	0.55

	(18.38%)	(15.63%)	(18.30%)	(17.57%)
Mustard/Pea	0.03 (2.20%)	0.13 (4.72%)	0.36 (6.79%)	0.17 (5.43%)
Potato	0.04 (2.94%)	0.15 (5.45%)	0.27 (5.09%)	0.15 (4.79%)
C. Zaid				
Chari	0.13 (9.55%)	0.18 (6.54%)	0.23 (4.33%)	0.18 (5.75%)
Onion	0.26 (19.11%)	0.33 (12.00%)	0.50 (9.43%)	0.37 (11.82%)
Total(A+B+C)	1.36 (100%)	2.75 (100%)	5.30 (100%)	3.13 (100%)

Table.6 Per farm investment on various assets of different size group of farms (₹)

Sl. No.	Particular	Size Group of Farms			All Farm Average
		Marginal	Small	Medium	
A.	Major Implements	37550.64 (14.27%)	105121.85 (24.06%)	418113.68 (49.29%)	186928.73 (36.16%)
1.	Tractor	16256.40 (6.12%)	64380.45 (14.74%)	227122.76 (26.78%)	102586.54 (19.85%)
2.	Trolley	5676.20 (2.14%)	17824.74 (4.08%)	37338.33 (4.41%)	20277.76 (3.93%)
3.	Harrow	872.11 (0.32%)	3824.58 (0.87%)	26385.26 (3.12%)	10360.65 (2.00%)
4.	Cultivator	2890.25 (1.09%)	4942.46 (1.14%)	31824.75 (3.76)	13019.16 (2.52%)
5.	Thresher	3425.85 (1.29%)	9566.34 (2.19%)	74052.00 (8.73%)	29014.73 (5.62%)
6.	Machine Drive Cart	2178.39 (0.82%)	-	16204.02 (1.92%)	6127.47 (1.19%)
7.	Sprayer	568.66 (0.22%)	-	224.76 (0.03%)	264.48 (0.05%)
8.	Chaff cutter	3470.35 (1.31%)	2267.19 (0.52%)	1719.47 (0.20%)	2485.67 (0.48%)
9.	Winnower	2218.43 (0.84%)	916.09 (0.20%)	3242.33 (0.39%)	2125.62 (0.42%)
B.	Irrigation Structure	16260.59 (6.12%)	23182.75 (0.53%)	17739.52 (2.09%)	19060.96 (3.67%)
1.	Electric Motor	6832.46 (2.57%)	3700.00 (0.85%)	7619.76 (0.9%)	6050.74 (1.18%)
2.	Diesel Engine	9428.13 (3.55%)	19482.75 (4.46%)	10119.76 (1.20%)	13010.22 (2.52%)
C.	Minor Implements	678.28 (0.26%)	537.63 (0.12%)	978.85 (0.12%)	731.59 (0.14%)
D.	Livestock	34078.46 (12.02%)	36409.67 (8.33%)	62942.99 (7.42%)	44477.04 (8.60%)

1.	Milch animal	34078.46 (12.02%)	36409.67 (8.33%)	62942.99 (7.42%)	44477.04 (8.60%)
E.	Buildings	177239.10 (66.68%)	271535.98 (62.17%)	348559.00 (41.09%)	265778.09 (51.41%)
1.	Residential	144614.75 (54.40%)	242352.08 (55.48%)	226616.66 (26.72%)	204527.83 (39.56%)
2.	Cattle shed	32624.35 (12.28%)	29183.90 (6.68%)	121942.34 (14.38%)	61250.20 (11.85%)
	Grand Total (A+B+C+D+E)	265807.07 (100.00%)	436787.88 (100.00%)	848334.04 (100.00%)	516976.33 (100.00%)

Table.7 Constraints of Sugarcane cultivation on different size group of sample farms

Constraints	Size group of farms			All farm	Rank
	Marginal	Small	Medium		
Availability of seeds in time	8 (13.33)	3 (12.00)	1 (6.67)	12 (12.00)	8 th
Availability of human and machinery labour in peak time	12 (80.00)	10 (40.00)	13 (86.67)	35 (35.00)	3 th
Irrigation Facility	15 (25.00)	5 (20.00)	4 (26.67)	24 (24.00)	5 th
Availability of finance facility	24 (40.00)	9 (36.00)	7 (46.67)	40 (40.00)	1 th
Availability of NPK doses	18 (30.00)	5 (20.00)	7 (46.67)	30 (30.00)	4 th
Availability of PP chemicals	11 (18.33)	4 (16.00)	2 (13.34)	17 (17.00)	6 th
Availability of quality seeds(HYV)	9 (15.00)	3 (12.00)	1 (6.67)	13 (13.00)	7 th
Problem of technical knowledge	5 (8.33)	4 (16.00)	2 (13.34)	11 (11.00)	9 th
Problem of Sugarcane receipt	20 (33.33)	13 (52.00)	4 (26.67)	37 (37.00)	2 th
Natural calamity	2 (3.33)	3 (12.00)	0.00	5 (5.00)	10 th
Total	60	25	15	100	

For small farmer percentage of building, livestock and major implements investment were found to be 62.17 percent, 8.13 percent and 24.06 percent. The percentage of investment in building in case of medium farmers was 41.09, the percentage of investment in livestock was 7.42 and percentage of investment in major implements was 49.29. It can be concluded that investment on building, livestock and major implements increased with the increasing size of household.

Constraints of Sugarcane cultivation on different size group of sample farms

The rankings depicted in the table 7 conclude that availability of finance facilities was the biggest problem faced by 40 farmers in the study sample. In availability of sugarcane receipts from sugar mills was the second constraints faced by 37 farmers in the study sample the third, fourth, fifth, sixth, seventh, eighth and ninth constraints were in availability of in availability of human and machinery labour, NPK dose, in availability

of agriculture facilities, unavailability of plant protection chemical, in availability of high yield variety of sugarcane, unavailability of seed at proper time and the problem of technical knowledge respectively which were faced by 35,30,24,17,13,12 and 11 farmers, respectively in the study sample. The last and the most minor constraint of natural calamity was faced by only 5 farmers.

Major suggestion received from the respondent side to overcome the mentioned problems were to strengthen the extension services for improvement of update criterion for farmers on upcoming methodologies to improve 9th and practice system following traditionally to get advancement for better use of machinery, to substitute labour problems, problems of unavailability of receipts from sugar mills and financial support from financial institutions. Detail knowledge about input management, crop planning and budgeting as well as disposal of farm produce along with market information should be made available by various government schemes.

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