



Employment and Earning pattern in sugarcane farming activities – Empirical evidence in Bihar

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Abstract:

The Sugar Industry in Bihar has been a focal point for socio-economic development in the rural area by mobilizing rural resources, generating employment gravity impeachment, and enhancing farm income. The study has shown that on average, cultivation for sugarcane employment generated 774.59 man-days per hectare. In all the four-farm size household harvesting was the main component with respect to employment generation followed by planting of sets earthing and weeding in sugarcane production. The net return per hectare and B: C ratio was found to be the highest Rs. 94239 and 1.58 for medium-large farms respectively. A cross the farm size categories marginal and small farmers devoted comparatively more time to operational activities, while medium-large farmers allocated more time for management of farming activities.

Introduction:

Sugarcane (*Saccharum officinarum*) is an important caste crop grown extension throughout India. It is an important source of sugar, green energy, and other biogas products at the national level. In quantities contribution - direct and indirect employment of 45 million farmers and large masses of skilled and unskilled workers, which were engaged in sugarcane cultivation like harvesting and ancillary activities.

Sugarcane is an important commercial crop, particularly in the northern part of Bihar. It has dominated the farming system in this region for a long time. In Bihar, sugarcane was cultivated on about 3.04 lakh hectares, with a production of 182.8 lakh tons with average productivity of 60.15 tons per hectare (2018-19). It generates employment opportunities for every six lakh Families and 50, thousand Workers.

Therefore, to explore the possibilities of rising production, and employment in this region through sugarcane farming. The focus of the present study is on employment and income pattern through sugarcane cultivation in the Hasanpur block of Samastipur district under Bihar. It has been computed by collecting primary data from 100 sugarcane growers by interviewing them personally with the help of a pretested schedule.

Operation wise generation of employment in Sugarcane cultivation:

Table -01, revealed that overall employment generated in sugarcane was 774.59 man-days per hectare, out of which a major portion of employment was through harvesting 622.64man-days per hectare which accounted for 80.38 percent followed by planting of Setts 42.16man-days which accounted for 5.44 percent, earthing up 36.04 man-days (4.65percent) and wedding 34.0 man-days per hectare which accounted for 4.65 percent of the total employment generated is Sugarcane cultivation.

Table 1: Operation-wise generation of employment in sugarcane production. (Man days/ha)

Activity	Sub-marginal (<0.5 ha)	Marginal (<1 ha)	Small (1-2 ha)	Medium-Large (2-4 ha)	Overall
Preparation of land	23.33 (1.40)	11.53 (1.08)	5.47 (0.63)	1.95 (0.27)	3.47 (0.45)
Manures	30.00 (1.80)	9.22 (0.86)	5.40 (0.62)	2.97 (0.41)	4.06 (0.52)
Fertilizers	43.33 (2.60)	21.36 (2.00)	11.51 (1.34)	3.53 (0.50)	6.69 (0.86)
Seed treatment	73.33 (4.39)	30.58 (2.86)	16.91 (1.96)	6.50 (0.92)	10.74 (1.39)
Planting of setts	305.00 (18.26)	131.31 (12.31)	66.57 (7.73)	24.25 (3.40)	42.16 (5.44)
Irrigation	66.67 (4.00)	28.88 (2.71)	15.70 (1.82)	5.59 (0.78)	9.69 (1.25)
Weeding	206.67 (12.37)	97.09 (9.10)	52.72 (6.12)	21.03 (2.95)	34.05 (4.39)
Earthing- up	258.33 (15.46)	104.49 (9.80)	59.29 (6.88)	20.71 (2.90)	36.04 (4.65)
Spraying of Insecticide	33.33 (2.00)	20.15 (1.90)	7.74 (0.90)	2.59 (0.36)	5.05 (0.65)
Harvesting	630.00 (37.72)	612.01 (57.38)	620.11 (72.00)	624.39 (87.57)	622.64 (80.38)
Total	1670 (100)	1066.63 (100)	861.42 (100)	713.50 (100)	774.59 (100)

Figures in the parentheses indicate the percentage value.

Farm size-wise analysis observed that it was higher in the case of sub-marginal farms (<0.5ha) 1670 man-days per hectare, followed by marginal farms (<1 ha), 1066.63 man-days, small farms (1-2ha), 861.42 man-days and medium-large farm (2-4ha), 713.50 man-days per hectare.

In all the four farm size households harvesting was the main component with respect to employment generation followed by planting of setts, earthling-up, and weeding in sugarcane production.

Costs and Returns from Sugarcane cultivation:

Productivity of Sugarcane was computed for different categories of the farm under investigation of the cost of production was also presented in table -02.

Table 2: Cost of cultivation of sugarcane (Rs. /hec)

Particulars	Farm Size Group				Overall
	Sub – marginal (<0.5ha)	Marginal (<1 ha)	Small (1-2 ha)	Medium-Large (2-4 ha)	
A. Operational Cost					
a Labor cost					
1 Human Labour	30766.36 (22.10)	28696.36 (20.02)	24826.99 (16.97)	21160.5 (13.24)	26362.56 (17.59)
a Family	14724.69 (10.53)	13587.38 (9.47)	10666.67 (7.29)	7446.15 (4.65)	11606.22 (7.74)
b Hired	16041.67 (11.47)	15108.98 (10.53)	14160.32 (9.68)	13714.40 (8.58)	14756.34 (9.84)
2. Transportation charge	17666.67 (12.64)	15263.96 (10.64)	16796.63 (11.48)	11461.45 (7.17)	15297.20 (10.20)
3. Machine Labour	4500.00 (3.21)	4873.79 (3.72)	5478.77 (3.74)	8508.73 (5.32)	5840.32 (3.89)
Sub Total	52933.03 (37.87)	48834.11 (33.06)	47102.39 (32.20)	41130.73 (25.73)	47500.06 (31.69)
b Material cost					
1. Seed	9866.67 (6.05)	10121.36 (8.21)	12023.35 (8.21)	17008.34 (10.64)	12254.93 (8.17)
2. Plant protection measure	3966.10 (2.83)	5453.21 (3.80)	6354.25 (4.34)	7315.00 (4.57)	5772.14 (3.85)
3. Manure	4350.00 (3.11)	4366.21 (3.04)	6513.32 (4.36)	8410.19 (5.26)	5909.93 (3.94)
4. Fertilizer	6060.83 (4.33)	7095.00 (4.95)	8514.21 (5.82)	9473.91 (5.92)	7785.98 (5.19)
5. Irrigation	7250.00 (5.18)	8014.56 (5.59)	8756.87 (5.98)	9184.50 (5.74)	8301.50 (5.53)

	Sub Total	31493.60 (22.53)	35050.34 (24.44)	42162.00 (28.82)	51391.94 (32.15)	40024.47 (26.70)
	Total (a+b)	84426.63 (60.40)	83884.45 (58.50)	89264.39 (61.02)	92522.67 (57.89)	87524.53 (58.40)
6	Interest on operational cost	4182.12 (2.99)	4217.82 (2.94)	4715.86 (3.22)	5104.59 (3.19)	4555.10 (3.03)
	Total operational cost	88608.75 (63.39)	88102.27 (61.44)	93980.25 (64.24)	97627.26 (61.08)	92079.63 (61.43)
B	Overhead cost					
1.	Land Revenue	274.82 (0.19)	287.50 (0.20)	292.20 (0.19)	295.30 (0.18)	287.45 (0.19)
2.	Depreciation	7732.58 (5.53)	9610.00 (6.70)	9719.44 (6.64)	17584.00 (11.00)	11161.50 (7.44)
3.	Rental Value of Land (owned land)	42350.00 (30.30)	44380.00 (30.95)	41280.00 (28.22)	44300.00 (27.72)	45180.00 (30.14)
4.	Interest on fixed capital	800.74 (0.57)	989.75 (0.69)	1001.16 (0.68)	1787.93 (1.11)	1144.89 (0.76)
	Subtotal	51158.14 (36.61)	55267.25 (38.56)	52292.88 (35.76)	62179.30 (38.92)	57773.84 (38.57)
	Total cost (A+B)	139766.89 (100)	143369.52 (100)	146273.05 (100)	159806.56 (100)	149853.47 (100)

Figures in the parentheses indicate the percentage value.

Table 3: Costs and Return from Sugarcane cultivations.

Yield and Income	Sub-marginal	Marginal	Small	Medium-large	Overall
Cost of Cultivation (Rs/ha)	141717	149373	167190	161595	154969
Yield (Q/ha)	607.0	732	725	837	726
Gross Return (Rs /ha)	185206	224024	217456	255834	220647
Net Return (Rs. /ha)	43489	74721	50266	94239	65679
Cost of production (Rs /Q)	233	204	231	194	214
Return per rupees of investment (B:C ratio)	1.31	1.50	1.30	1.58	1.43
Farm Business Income (Rs. /ha)	103315	133598	106234	147773	122780
Family labor Income (Rs. 1ha)	58214	88308	60932	101685	77285
Farm investment income (Rs. 1ha)	88590	120010	95567	140327	111124

It was observed from the table-1 that on average, the productivity of sugarcane was 726 quintals per hectare. It was higher on medium-large farms 837 quintals per hectare and lower on submarginal farms 607.0 quintals per hectare. The average cost of cultivation of the categories of the farm was Rs. 154969 per hectare. From the point of view of net return, this is intended to increase with farm size. The overall net return per hectare was observed to be Rs. 65679. The higher net return on the medium-large farm (Rs. 94239), is due to the higher yield and the higher price level of these farmers. Analysis of the cost of production revealed that on average amounted to be Rs. 213.60 per quintal for sugarcane on the Sample Farms.

The overall farm business income, family labor income, and farm investment income was worked out to Rs. 122730, Rs. 77285, and Rs. 111124 per hectare respectively.

Table 4 Returns from sugarcane cultivation in terms of cost concepts. (Rs. /hectare)

Net return over	Sub-marginal	marginal	Small	Medium-Large	Overall
Cost A ₁	111321.21	149578.47	134141.75	165652.21	140173.53
Cost A ₂	111321.21	143494.99	116244.93	165652.21	134178.44
Cost B ₁	110520.94	148588.72	133140.59	163864.28	139028.64
Cost B ₂	68170.94	104208.72	91860.59	118684.28	95731.14
Cost C ₁	95796.25	135001.34	122473.92	156418.13	127422.41
Cost C ₂	53446.25	90621.34	81193.92	111238.13	84124.91
Cost C ₃	40270.30	77274.14	67567.78	96778.61	70472.71

Conclusion:

In farm size comparison of different items of cost revealed that the cost of human labor decreased with increasing farm size while expenditure on machine labor showed the reverse trend. It was mainly because less use of human labor on large farms was compensated by the larger use of machine labor. It may be pointed out that the cost of production of sugarcane was lower on the medium-large farm (Rs. 194.04 per quintal) and it was (Rs. 233 per quintal) on sub-marginal farms.

It may be summarized from the study, that sugarcane production is more profitable and labor-intensive, therefore, it fits within the marginal and small farmers, because it is relatively more efficient in the production system in contrast to large farmers.

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