



Economic Analysis Of Gur (Jaggery) Production In Narsinghpur District of Madhya Pradesh

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ABSTRACT

The present study attempts to estimate the cost and return of Gur (jaggery) under different level of gur production in Narsinghpur district of Madhya Pradesh. A sample of 15 gur manufacturer respondents of six villages three under groups on the basis of level of gur production ie 1st group (100-300 tons) 2nd group (301-500 tons) and 3rd group (above 500 tons) were considered. From each group 5 manufacturing unit were selected randomly. The study pertains the year 2015-2016. Cost elements and net income was used to estimate the cost and return of gur production. The finding of the study reveals that the total expenses on material (Sugarcane, Okra powder, Castor oil and Hydro) was found more in 3rd group (1929.24) then 1st group (19182.28) and 2nd group (19208.05). on an average amount of Rs. 122.46, 111.3, 260.24, 97.99 and 77.0 was invested by the respondents for performing the operation of cane crushing, furnace, ghoke, gur making and packing respectively. On an average total amount of Rs. 22461 are required to manufactured per ton gur production. On an average net profit per ton was estimated to be Rs. 938.19 and more profit ie Rs. 1094.47 per ton gained by 3rd group then the 2nd and 1st group. Its shows that gur manufacturing is profitable business and lot of scope to improve the income under gur business in the study area.

Key words: Gur (Jaggery) Production, Net income, Manufacturing unit (Group)

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INTRODUCTION

Sugarcane is one of the most important agro- industrial crop in our country. Sugarcane has mainly used for the purpose of three processed products viz. Sugar, Jaggery and Khandsari. Sugarcane is a renewable natural agricultural resource. The by products of sugarcane industry are used for bagasse and molasses and bagasse is mainly used as fuel. It is also used for production of compressed fiber board, paper, plastics and furfural. Molasses is used in distilleries for the manufacture of ethyl alcohol, butyl alcohol, citric acid etc [1-4].

India is a major gur producing country in the world it contributes about 58 percent gur production in the world. Jaggery (Gur) industry is very popular in Madhya Pradesh it contributes about 6 percent gur production in India. The shape and size of gur production vary from place to place. In M.P. Gur is produced in different shapes and size like Basket, Laddoo, Panser, Khurpa and Rascutt. Gur is mostly manufactured by sugarcane farmers on a small scale using 3 to 4 roller cane crusher and open pan juice concentration furnace. These crushers extracted only 50-60 percent juice. The rest 20-25 percent lost due to poor extraction and is burn with bagasse as fuel. Jaggery/gur production is about 7-10 million per annum, while its per capita consumption is about 5 kg [5]. In Narsinghpur district mostly farmers are involved in gur production along with farming. With the consideration of importance of Gur production, and one of the major source of income with this backdrop, Present study has been carried out with to estimate the cost and return (profitability) of Gur (Jaggery) under different level of Gur production in the study area.

MATERIAL AND METHODS

Gotegaon and Narsinghpur block of Narsinghpur district of M.P. was selected purposively. Six gur producing villages namely Khobi, Shimariya (Gotegaon), Imaliya, Nanhegaon, Supla and Gurdwara (Narsinghpur) were selected. After selection of villages a list of gur manufacturer unit were

prepared and further divided in to three group on the basis of level of gur production ie. Ist group(100-300tons) IInd group(301-500tons) and IIIrd group (above 500tons) from each group 5 manufacturing unit were selected randomly.

The period of study pertains to the year 2015-2016. For estimation of cost and return of Gur (jaggery) under different level of production, the following cost elements were used :-

Fixed cost

Fixed cost included cost items like taxes, insurance, depreciation on machinery, implements and buildings etc.

Variable cost

Variable cost include cost of raw material, labour charges, repairs, maintenance charges of machinery and other actual cost incurred during gur production.

Total cost

Total cost included total fixed cost as well as total variable cost.

$$(TC = TFC + TVC)$$

Estimation of profitability

Net income (per quintal of gur) = Gross income – Gross expenses.

Cost of production per quintal of gur (jaggery).

RESULTS AND DISCUSSION

For estimation of cost and return of gur production under different level of gur production basic information of gur production is required and details are given in Table 1.

Table 1. Basic information of Gur production.

Group	No. Of respondents	Level of Gur Production (tons)	No. of functioning days	Average No. Of furnace	Average No. of pan
I	5	100-300	96	1.6 (8)	5.2 (26)
II	5	301-500	96	2.8 (14)	8.8 (44)
III	5	Above 500	98	8.2 (41)	24.6 (123)

(Fig in bracket shows total number of furnace and pan in particular group.)

Under basic information of Gur production, level of gur production, number of furnace, number of pan and number of operating/functioning day's were covered. The respondents were divided into 3 groups on the basis of level of Gur production and each group 5 respondents were considered. In gur production, furnace and pan are the basic assets. It was observed that the number of furnace and pan were increase as level of gur production increased.

Overall the average number of furnace and pan were observed 4.2 and 12.8 respectively, although it was very from group to group. The average number of functioning days of gur production was 96.6 days and among the group the number of operating / functioning days was atpar.

Assets under Gur (jaggery) production

The numbers of assets are needed to manufacture the gur. The respondents having number of assets related to gur manufacturing unit and details are given in the Table 2.

Table 2. Assets related to Gur production of sample respondents.

Group	Roller(No.)			Furnace (No.)				Engine power(HP)			Store tank capacity (liter)			
	3	6	9	1	2	3	Above 4	20-25	45-80	100-210	1000	2000	3000	4000
I	4	1	-	2	3	-	-	5	-	-	2	3	-	-
II	-	3	2	-	1	4	-	-	5	-	-	3	2	-
III	-	1	4	-	-	-	5	-	1	4	-	1	3	1

Under 1st group, 4 respondents were maintaining 4 rollers with 3 roll capacity and only 1 respondent having one roller with 6 roll capacity. In 2nd group,3 and 2 roller with 6 and 9 roll capacity were maintained while in 3rd group, 1 and 4 roller with 6 and 9 roll capacity was maintained to manufacture the Gur in the study area. Regarding furnace, 40 percent respondents were used 1 furnace and 60 percent

respondent used 2 furnaces under 1st group. In 2nd group 80 percent respondent were used 3 furnaces and 20 percent respondent used only 2 furnace. In 3rd group, all the respondents were used more than 4 furnaces. All the respondent were used 20-25 Hp engine, in 3rd group while in 2nd group, 100 percent respondent used 45-80 Hp engine and in 3rd group, 80 percent respondent used 100-210 Hp engine power capacity and 20 percent used 45-80 hp engine. As far as Store tank capacity was concerned, 60 percent respondent having 3000 L capacity of store tank, 40 percent having 2000 L and 4000 L capacity of store tank under 3rd group. The 60 percent respondents of 2nd group were used 2000 L capacity of store tank and remaining 40 percent used 3000 L capacity of store tank. In 1st group 60 percent respondents were used 2000 L capacity of store tank, remaining 40 percent used 1000 L capacity of store tank. Thus it could be concluded that respondents of each group having sufficient number of assets for gur production.

Total expenses of gur production.

Group wise material cost under gur production are provided in Table 3.

Table-3. Group wise total expenses (material) under Gur production (per ton)

Group	Sugarcane (quintal)		Okra powder (kg)		Castor oil (liter)		Hydro (kg)		Total material expenses (Rs)
	Qty	Value (Rs)	Qty	Value (Rs)	Qty	Value (Rs)	Qty	Value (Rs)	
I	112.9	18967.2	4.57	60.32	1.46	154.76	-	-	19182.28
II	111.8	19006	5.25	72.455	1.2	129.6	-	-	19208.05
III	107.0	19046	4.93	57.18	0.9	92.7	0.79	96.36	19292.24

Sugarcane, okra powder, castor oil and hydro are the important items which required for gur production. It revealed from the table that more sugarcane quantity was used under 1st group (112.9 qt) then the 2nd (111.8 qt) and 3rd group (107 qt) although there is vary less difference between 1st and 2nd group manufactures. The value of sugarcane was also found more in 1st group then 2nd and 3rd group as its depend on quantity and price of sugarcane. Regarding okra powder, the highest quantity (5.25 kg) was used under 2nd group followed by 3rd (4.93 kg) and 1st group (4.57) and value of okra also found in same pattern as the case of quantity. In case of castor oil, the same pattern was observed as in the case of okra powder. Hydro was used only by 3rd group respondent and Rs. 96.36 per ton was invested by the respondents. The total expenses on material was found more in 3rd group (19292.24) then 1st (19182.28) and 2nd (19208.05) group but among the groups the difference in total expenses was less.

HUMAN LABOUR REQUIREMENT

In gur production human labour are required to perform and operation wise human labour requirement and its value are provided in Table 4.

Table-4. Operation wise human labour requirement and its value under gur production (per ton)

Group	Operating day's	Cane crusher		Furnace		Ghoke		Gur making		Packing		Total cost Rs.
		Av. No. of day's	Value Rs.	Av. No. of day's	Value Rs.	Av. No. of day's	Value Rs.	Av. No. of day's	Value Rs.	Av. No. of day's	Value Rs.	
I	96	0.94	132.7	0.87	140	0.77	308.33	0.80	120.3	0.80	92.2	793.53
II	96	0.83	125.40	0.63	111.0	0.51	241.6	0.56	93.6	0.55	72.6	644.2
III	98	0.68	109.3	0.45	83.15	0.46	230.8	0.43	80.09	0.45	66.25	569.59

Human labour are required to perform different operation like cane- crushing, work on furnace, ghoke, gur making, and packing in gur production. Under cane crushing, the expenses increases as size group increased. It was observed to be Rs. 132.7, 125.40 and 109.3 under 1st, 2nd and 3rd group respectively. The same pattern was observed under different operation in gur production. But the more difference (233.94) was found on investment amount of difference operation in between 1st and 3rd group. Overall an amount of Rs.699.10 was required to complete all the operation under gur production. More amounts were required to complete the operation of ghoke then the other operation of gur production in all the three groups.

On an average amount of Rs.122.46, 111.3, 260.24,97.99 and 77.0 was invested by the respondents for performing the operation of cane crushing, furnace, ghoke, gur making and packing respectively.

Total expenses of Gur production.

For gur manufacturing, total expenses (cost) are divided in to two parts i.e. direct cost (material cost, diesel and electric charges, and labour cost) and indirect cost(depreciation, tax etc.) and details are provided in Table 5.

Table 5. Total expenses of Gur production (per ton).

Group	Direct cost (Rs.)				Indirect cost (Rs.)	Total cost (Rs.)
	Total material cost	Total diesel & electric cost	Total labour cost	Total cost (Rs.)		
I	19182.28	941.08	793.53	20916.89	1650.61	22567.5
II	19208.05	735.29	644.2	20587.54	1824.76	22412.39
III	19292.24	700.9	569.59	20562.73	1842.80	22405.53

Data shows that the total expenses under gur production decreases as size group increased and the difference between 1st and 2nd group was found to be Rs. 155 and between 1st and 3rd group, it was Rs. 162. Under direct cost, on an average 91 percent amount was invested on material expenses and remaining 9 percent expenses for diesel and electric and labour cost.

Overall it could be concluded that about 92 percent cost covered by direct cost to the total cost which includes material, diesel, electric and human labour cost for different operation. On an average total amount of Rs 22461 are required to manufactured per ton gur production.

GUR PRODUCTION AND ITS VALUE

For estimation of gross income from gur production, the quantities of gur production and its price per unit are needed and details are provided in Table 6.

Table 6. Group wise Gur production and its value

Group	Average no. of operating day's	Average Gur production (ton)	Average price Rs./ Kg.	Gross income (Rs.)
I	96	192	23.3	4473600
II	96	448	23.4	10483200
III	98	920	23.5	21620000

It revealed from the table that average gur production were recorded 192, 448 and 920 ton under 1st, 2nd and 3rd group respectively. On an average gur production was found 520 ton and average operating/functioning day's of 96.66. On an average the price of gur was observed to be Rs. 2340 per quintal and among the groups difference in price of gur production was very less because the production period of gur for all the respondent under different group was near about same.

Profit of Gur production.

For estimation of profit of gur, gross expenses and gross income are required and groupwise net profit have been provided in Table 7.

Table 7. Profit of Gur Production (per ton)(Unit: Rs.)

Group	Total expenses (Gross expenses)		Gross income		Net profit		Net profit per day	Net profit per season
	Per ton	Per quintal	Per ton	Per quintal	Per ton	Per quintal		
I	22567.5	2256.75	23300	2330.0	732.5	73.25	1465	140640
II	22412.39	2241.239	23400	2340.0	987.6	98.786	4602.28	441818.80
III	22405.5	2240.55	23500	2350.0	1094.47	109.44	10266.14	1006080.60

It revealed from the table that on an average net profit per ton was estimated to be Rs.938.19. Among the group, more profit i.e. Rs. 1094.47 per ton gained by 3rd group respondent than the 2nd (987.61) and 1st group (732.5) respondent, although the difference was not much which shows that there is less role of scale of operation in the study. As the respondents are involved in gur manufacturing, along with farming

so they are doing gur manufacturing as a one of additional business with farming. Gur manufacturing is one of the important source of income and also found that gur manufacturing is profitable business in the study area. There is lot of scope to improve the income under gur business in the study area.

It revealed from the table that per ton profit was found more under 3rd group than 1st and 2nd group respondents. The same pattern was observed in per day and per season profit as the case of per ton profit. Per season indicates one shift which includes from cane- crushing to packing operation of gur production and average operating day's was 96.66 but the difference in operating day's among the group was atpar. The level of gur production was found in increasing order with size groups it may be due different level of resources for gur production. So If respondent involved in gur production in 96 operating day with the target of 100 ton gur production then he may be gained an amount of Rs. 101829.44 as net profit in one shift or per season. It is also mention that respondents involved in gur manufacturing along with farming which shows that they are depend on only gur production business in the study area. Accordingly we can estimate the net profit with level of gur production. Overall it could be concluded that business of gur production is the profitable business and there is chance of enhancing the profit with the level of gur production involved from 100 ton with in operating day's (96) in the study area. So there is lot of scope to increase the profit from gur production in the study area.

CONCLUSIONS AND RECOMMENDATION

- It revealed that the total expenses on material was found more in IIIrd group (19292.24) then Ist (19208.05) group but among the groups the difference in total expenses was less.
- It could be concluded that 92 percent cost covered by direct cost which includes material, diesel, electric and human labour cost for different operation. On an average total amount of Rs. 22461 are required to manufactured per ton gur production.
- On an average net profit per ton was estimated to be Rs. 938.19. among the group, more profit i.e. Rs. 1094.47 per ton gained by IIIrd group respondents than the IInd (987.61) and Ist group (732.5) respondent, although the difference was not much which shows that there is less role of scale of operation in the study .
- It revealed that if respondent involved in gur production in 96 operating day with the target of 100 ton gur production then he may be gained an amount of Rs. 101829.44 as net profit in one shift or per season.

It could be concluded that business of gur production is the profitable business and there is chance of enhancing the profit with the level of gur production involved from 100 ton with in operating day's (96) in the study area. So there is lot of scope to increase the profit from gur production in the study area.

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