

C H A P T E R -IV
COST ANALYSIS OF JAGGERY MAKING AND MARKETING :
A CASE STUDY

**COST ANALYSIS OF JAGGERY MAKING AND MARKETING
A CASE STUDY**

4.1 INTRODUCTION

In this chapter costs analysis of production and marketing of jaggery has been elaborated. To analyse the cost structure of jaggery; (Production and marketing) five case studies have been highlighted. These cases have been selected on the basis of size of land holding (Mainly the land under sugarcane cultivation). They are from different villages in the taluka under study. While selecting the cases along- with land holdings, educational level of the farmers is also considered. Out of these five cases one each belongs to science graduate, arts graduate under graduate, matriculate and non-metric. As stated in earlier (Chapter-III) the farmers are classified into four categories i.e. marginal farmers, small farmers, medium farmers and big farmers. Out of the five cases one is selected from marginal farmers, two from small farmer's category, while one each from medium and big farmers categories.

The data of jaggery production has been collected through the questionnaire for jaggery producing farmers, selected as per above technique. The costs structure of the jaggery have been divided into three parts. The part first consists of costs incurred on cane cultivation, part second consists costs incurred on jaggery making and part third consists costs incurred on marketing of jaggery.

Before analysing the costs structure of jaggery making with the help of case studies, it would be fruitful to explain the various jaggery making process. In the forgoing part the various stages in cane cultivation have been explained.

4.2 PROCESSES OF JAGGERY MAKING :

Though the process of jaggery making starts with the extraction of cane juice, it is necessary to cut and to bring the cane at the place of jaggery making unit. Hence, sugar cane cutting and transportation are basically two steps before cane crushing. Following are the major steps in jaggery making process.

1 EXTRACTION OF JUICE FROM SUGARCANE

Sugarcane with the help of cane crusher. Now-a-days improved designs of cane crushers are run by the oil engine or by electric motor are utilized. Near about 1 1/2 to 2 tonnes of sugar cane is required for the single pan of jaggery making. It means that the requirement of cane for a pan depends upon the quality of cane and its sucrose content.

2 BOILING OF JUICE

After the extration the juice is taken for boiling. To boil the juice widde shallow poans are used. These pans are made of iron sheets and are of 210 to 270 cms in diametr and about 45 cms deep. For the production of better colour jaggery galvanised iron pans or copper pans are used. The juice is boiled in the

pan which is heated on the furnace. Generally the bagass is used as a fuel.

3 PURIFICATION OF JUICE

The removal of the impurities from the juice is necessary. Purification of juice decides colour, texture, test and durability of the jaggery. For the purification of juice the most common purificants used are lime or lime sucrate, sodium carbonate, sodium bicarbonate, sujji, super phosphate, alum, sodium hydrosulphate, etc. Generally Bhendi (ladies finger) is used with purificants, while juice is boiled at low temperature. It brings to the surface the scum. This scum is skimmed off and thus the juice is purified.

4 CONCENTRATION OF JUICE

For the concentration of juice it is boiled at the striking point of temperature that normally ranges between 118°C to 123°C . To judge the proper concentration of juice one of the following methods is applied.

- 1) By taking small quantity of concentrated juice from the pan is thrown into cold water. If it acquires a shape of ball with metallic sound, it is considered as completion of boiling of juice.
- 2) At the strikingpoint if the boiling mass is stirred, it does not stick to the pan.

- 3) At the striking point the sticking mass forms long silky threads which does not fall in drops.

By applying one of the above methods if it is found that the juice is properly concentrated the pan is removed immediately from the furnace and is stirred for some time. The boiled liquid jaggery is transferred into the cooling pan. As the temperature falls, the jaggery begins to crystallise. By stirring it slowly and intermittently to avoid the loss of granular structure the semi solid mass is put into moulds. When the jaggery solidifies, it is removed by inverting the moulds. Generally the moulds are of the weights of 30 Kg, 20 Kg, 10 Kg, or 5 Kg etc.

With the view to know the cost structure of manufacturing jaggery, five jaggery making units were selected. Five owner farmers have been interviewed. The survey work was conducted in the month of Oct. 1992. The prices prevailing in that month have been taken into consideration for estimation of cost. the details about the various costs are as follows. :



1. A PICTORAL VIEW OF Mature Sugarcane Crop (photo No.4.1)



2. A PICTORAL VIEW OF Jaggery Making Unit (Photo No. 4.2)



3. A PICTORAL VIEW OF Furnace (photo No. 4.3)



4. A PICTORAL VIEW OF Sugarcane Crushing (Extraction of Juice)
(photo No.4.4)

5. A PICTORAL VIEW OF Boiling of Juice (Photo No. 4.5)



6. A PICTORAL VIEW OF Removal of Scum (Photo No. 4.6)





7. A PICTORAL VIEW OF Testing of Jagger (photo No. 4.7)



8. A PICTORAL VIEW OF Pouring Boilled Juice (Photo No.4.8)



9. A PICTORAL VIEW OF Cooling of Jaggery (Photo No. 4.9)



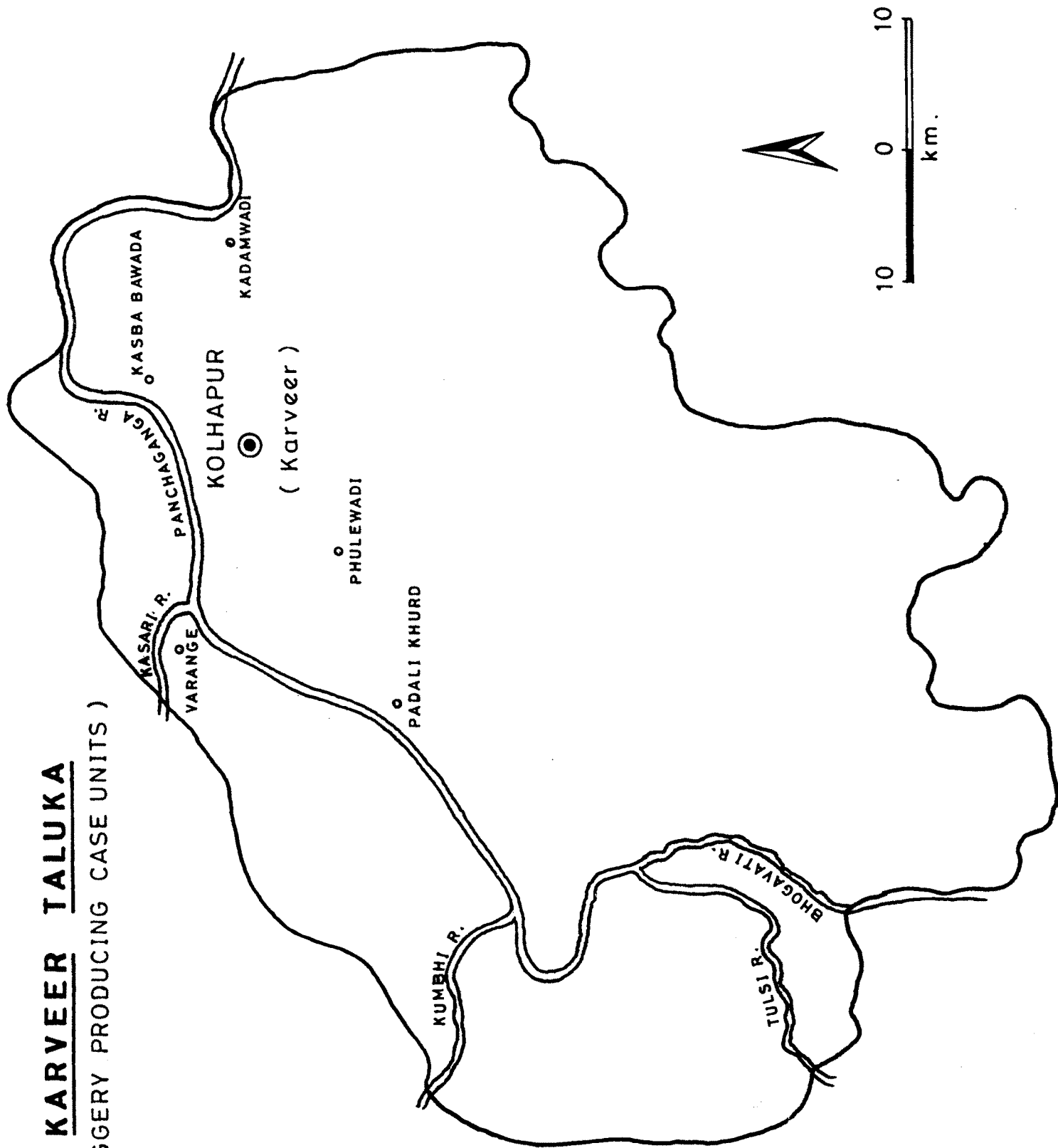
10. A PICTORAL VIEW OF Filling of Jaggery in Moulds
(Photo No.4.10)



11. A PICTORAL VIEW OF Lumps (Moulds) (photo no.4.11)

KARVEER TALUKA

(JAGGERY PRODUCING CASE UNITS)



JAGGERY UNIT CASE STUDY NO. 1

PART-I

1 GENERAL INFORMATION :

Name : **shri.Prakash Mahadeo Patil**

Caste : Maratha Education : IX std.

Address : A/P : Varange

Tal: Karveer

Dist : Kolhapur

Total Land Holding : 1 Acre

Total Land Under Cultivation :

1 Irrigated : 1 Acre (2) Non-Irrigated : Nil

Source of Irrigation : Lift from River

Total Land Under Sugarcane Cultivation : 1 Acre

Method of cane cultivation :

Suru : Nil Khodava : 1 Acre

Use of Cane : (1) For Sugar Factory : Nil

(2) For Jaggery Production : 1 Acre

Types of Cane Seeds Used : 671, 8014.

2 COSTS INCURRED (PER ACRE) :

A) Pre-Cultivation Costrrs :

1)	Ploughing	Rs.	Nil
2)	Harrowing	Rs.	Nil
3)	Furrowing	Rs.	Nil
4)	Ridging	Rs.	Nil
	Total	Rs.	Nil

B) PLANTATION COST (PER ACRE) : KHODWA

1)	Cane Seeds	Rs.	Nil
2)	Cane seed Preparation	RS.	Nil
3)	Seeds Transportation (Bullock carts/Tractor)	Rs.	Nil
4)	Chemicals	Rs.	Nil
5)	Plantation(Labour)	Rs.	Nil
6)	Watering(Labour)	Rs.	Nil
7)	Manures+Labour	Rs.	Nil
	Total	Rs.	Nil

C) INTR CULTURE COSTS :

1)	Weeding	Rs.	1275.00
2)	Manures, Fertilisers + Pesticides + Labour and Transportation	Rs	2100.00
3)	Earthing up (Tieing) (Labour)	Rs.	600.00
4)	Watering (Labour)	Rs.	260.00
5)	Cleaning (Labour)	Rs.	150.00
	Total	Rs.	4385.00

D) OTHR COSTS :

1)	Land Revenue	Rs.	100.00
2)	Education Tax	Rs.	76.00
3)	Water Bill	Rs.	800.00
4)	Intrest on working capital	Rs.	750.00
	Total	Rs.	1726.00

PART-II

E) Fixed Costs

CAPITAL COST OF INSTALLATION OF JAGGERY UNIT (FIXED ASSETS)

Sr.No.	Item	Installation cost (in 1982)	The present Installation Cost (in 1992)
1	Shed	13000 (31.71%)	30000 (31.09%)
2	Furnace	5000 (12.19%)	7500 (7.77%)
3	Big Pans	2500 (6.10%)	5000 (5.18%)
4	Utensils	3000 (7.32%)	7000 (7.25%)
5	Crusher	9000 (21.95%)	27000 (27.98%)
6	Electric Motor	7000 (17.07%)	17000 (17.62%)
7	Miscellaneous	1500 (3.66%)	3000 (3.11%)
	Total and %	41000 (100%)	96500 (100%)

F) VARIABLE COSTS

a) LABOUR (RATES PER FOUR PAN)

Sr.No.	Item	No.of workers workers	Rate	Total Expenditure
1	Harvesting (cane cutting & Transportation)	12	35+14=49X12	588.00
2	Firemen	02	35+14=49X2	98.00
3	On Crusher	05	35+14=49X5	245.00
4	Bagasse spreading	02	35+14=49X2	98.00
5	Chemist (Gulvya)	01	60+28=88X1	88.00
6	Mechanic for Crusher	01	20+0=20X1	20.00
Total workers % T.V.C		23		1137.00 (56.82%)

Note : % to total Variable cost

b) MATERIAL COSTS

Sr.No.	Item	Quantity used per pan	Price	Total cost
1	Hydrose Powder	1 1/4 Kg	115 X 4	460.00
2	Bhendi	3 Bundles	15 X 4	60.00
3	Acid	1/4 Kg	10 X 4	40.00
4	Edible oil	1/4 Kg	10 X 4	40.00
5	Wafa powder	1/4 Kg	12 X 4	48.00
6	Lime	-	4 X 4	16.00
7	Fule	-	50 X 4	200.00
Total /Total variable cost %			216	864.00 (43.18%)

c) PROCESSING COST OF JAGGERY

Sr.No.	Type of cost	Total quintles of jaggery produced (in 1 Acre)	Total cost incurred	Cost incurred per quintle
1	Fixed costs (Depreciation charges)	56	705.60	12.60
2	Variable cost(Labour + Material charges)	56	11505.20	205.45
			12210.80	218.05

PART-III

4 MARKETING COSTS OF JAGGERY

H	Transportation and other costs	Rs.		
1	Transportation of Gur (Tempo)	Rs.	184.00	
2	Taxes (Octroi)	Rs.	184.00	
3	Weighing	Rs.	46.00	
4	Hamili	Rs.	83.00	
5	Adat (Commission)	Rs.	1274.00	
	Total	Rs.	1771.00	1771.00

5-I COST OF SUGARCANE PRODUCTION IN ONE ACRE :

A)	Pre-cultivation costs	Rs.	Nil	
B)	Plantation cost	Rs.	Nil	
C)	Inter-culture costs	Rs.	4385.00	
D)	Other costs	Rs.	1728.00	
	Total cost per Acre	Rs.	6143.00	6143.00

J TOTAL COSTS OF JAGGERY PRODUCE (PER ACRE AND PER QUINTLE)

1	Production of sugarcane in 1 acre (Tonne)	40	
2	Production of jaggery in 1 acre(Quintle)	56	
3	Sugarcane required for one Quintle jaggery (Tonnes)	0.7142	
4	Cost of cultivation of sugarcane per tonne	Rs.	153.58
5	Cost of sugarcane for one quintle of jaggery	Rs.	109.68
6	Processing cost for 56 quintles of jaggery	Rs.	12201.50
7	Processing cost for Jaggery per quintle	Rs.	218.00
8	Marketing cost of jaggery in one acre	Rs.	1771.00

9	Marketing cost for one quintle of jaggery	Rs.	31.63
10	Total cost to manufacture one quintle of jaggery	Rs.	359.31
11	Income from one quintle of jaggery	Rs.	650.00
12	Net Profit per quintle jaggery produce	Rs.	290.69
13	Net profit per acre	Rs.	16278.64

or p. 63
1. 1. 1. 1. 1.**ANALYSIS OF CASE NO : 1**

Mr. Prakash Mahadeo Patil is from Varange Village, and he belongs to Maratha community. He was one of the marginal farmers having 1.25 acres of irrigated land. He was non-matrtic. The source of irrigation was lift irrigation scheme. The scheme was implemented on co-operative basis. In order to make standard quality jaggery he has used 671 type of cane seed. He has used all cane for making jaggery in 1992. In this year he has taken Khodava crop of sugarcane.

PRODUCTION OF JAGGERY

The total outturn of sugarcane in one acre was 40 tonnes. The total jaggry produced from that cane was 56 quintles. He has got Rs. 36,400 as a total income per acre in this year.

COST OF INSTALLATION OF JAGGERY UNIT

Mr. Prakash Mahadeo Patil has installed his jaggery making unit about 10 years back i.e. in the year 1982. Now it was interesting that though he was marginal farmer he has jaggery making unit. But the real fact was that about 10 years back the unit had been installed when his family was joint. But in 1992 it was seperated. The above chart shows that the total costs incurred on installation of jaggery making unit was Rs. 41000 But the replacement cost of jaggery marking unit has increased by more than two times. The jaggery making

unit of Mr. Patil was run on the rent basis. Because he has no enough sugarcane land to run it independently. Generally it runs for 3 to 4 months depending upon the availability of sugarcane.

COST OF MANUFACTURING OF JAGGERY (FIXED COST)

To install new jaggery making unit the total investment required at the price of 1992 will be Rs. 96,500. Assuming the working life of all the assets to be 10 years and actual working days of jaggery unit to be 80 days (as mentioned by owner) in a year. The depreciation cost 10% come to be

$$\text{Rs. } 96,500 \times \frac{10}{100} = \text{Rs. } 9,650$$

The depreciation charges per working day of 4 pans.

$$\therefore \frac{9650}{80} = \text{Rs. } 121 \text{ fixed cost per day.}$$

$$\frac{121}{4} \text{ Rs. } 30.25 \text{ fixed per pan}$$

$$\text{(quintle)} \frac{30.25}{2.4} = \text{Rs. } 12.60 \text{ fixed cost per quintle}$$

LABOUR FORCE IN THE UNIT

In Mr. Patils' jaggery making unit 23 labourers work and their division of work was as shown in the above chart. The cost incurred on labour is also shown in the above chart. The charges paid to workers are same along with the 2 Kgs of jaggery (in above chart the labour charges were calculated by adding up the price of jaggery which was given to the worker). But it seems that the rate of Local Chemist (Gulvya) was higher than other workers. The costs incurred

on labour for manufacturing jaggery of four pans during the night were calculated. He has incurred Rs. 1137 on labour for manufacturing four pans of jaggery which accounts for 56.82% to total variable costs per night.

CHEMICALS USED

The quantity of various chemicals used for manufacturing jaggery from one pan it is shown in the above chart and the costs incurred on manufacturing four pans during the night is calculated. He has incurred Rs. 864 on chemicals for manufacturing four pans of jaggery which accounts for 43.18% of total variable costs of four pans.

NET PROFIT

By calculating the total income derived from one acre sugarcane (jagger) and the total costs incurred for that he has got Rs. 16278.64 as a net profit.

JAGGERY UNIT CASE STUDY NO.2

PART-I

1 GENERAL INFORMATION :

Name : Shri.Babji Yashvant Patil

Caste : Maratha Education : B.A.

Address : A/P Padli(Kh)

Tal:Karveer

Dist: Kolhapur

Total Land Holding : 2 Acre

Total Land Under Cultivation : 2 Acre

1 Irrigated : 2 Acre (2) Non-Irrigated : Nil

Source of Irrigation : Lift Irrigation form Panchganga River

Total Land Under Sugarcane Cultivation : 2 Acre

Method of cane cultivation : 2 Acre

Suru : 2 Acre Khodava : Nil

Use of Cane : (1) For Sugar Factory : Nil

(2) For Jaggery Production : 2 Acre

Types of Cane Seeds Used : 8014.

2 COSTS INCURRED (PER ACRE) :

A) Pre-Cultivation Costrrs :

1) Ploughing	Rs.	1100.00	
2) Harrowing	Rs.	375.00	
3) Furrowing	Rs.	300.00	
4) Ridging	Rs	100.00	
Total	Rs.	1875.00	1875.00

B) PLANTATION COST (PER ACRE) : KHODWA

1) Cane Seeds	Rs.	2100.00	
2) Cane seed Preparation	RS.	250	
3) Seeds Transportation (Bullock carts/Tractor)	Rs.	250.00	
4) Chemicals	Rs.	150.00	
5) Plantation(Labour)	Rs.	600.00	
6) Watering(Labour)	Rs.	50.00	
7) Manures+Labour	Rs.	900.00	
Total	Rs.	4300.00	

C) INTR CULTURE COSTS :

1)	Weeding	Rs.	1050.00	
2)	Manures, Fertilisers+ Pesticides +Labour and Transportation	Rs	7740.00	
3)	Earthing up(Tieing) (Labour)	Rs.	625.00	
4)	Watering (Labour)	Rs.	250.00	
5)	Cleaning (Labour)	Rs.	180.00	
	Total	Rs.	9845.00	9845.00

D) OTHR COSTS :

1)	Land Revenue	Rs.	100.00	
2)	Education Tax	Rs.	76.00	
3)	Water Bill	Rs.	2000.00	
4)	Intrest on working capital	Rs.	1800.00	
	Total	Rs.	3976.00	3976.00

PART-II

E) Fixed Costs

CAPITAL COST OF INSTALLATION OF JAGGERY UNIT (FIXED ASSETS)

Sr.No.	Item	Installation cost in 1987	The present Installation Cost(in 1992)
1	Shed	17000 (30.91%)	35000 (32.56%)
2	Furnace	7000 (12.73%)	10000 (9.30%)
3	Big Pans	4000 (7.27%)	6000 (5.58%)
4	Utensils	4500 (8.18%)	8000 (7.44%)
5	Crusher	11000 (20.00%)	27000 (25.12%)
6	Electric Motor	9000 (16.36%)	17500 (16.28%)
7	Miscellaneous	2500 (4.55%)	4000 (3.72%)
	Total and %	55000 (100%)	107500 (100%)

F) VARIABLE COSTS

a.) LABOUR (RATES PER FOUR PAN)

Sr.No.	Item	No.of workers	Rate	Total Expenditure
1	Harvesting (cane cutting & Transportation)	12	40+14=54X12	648.00
2	Firemen	02	40+14=54X2	108.00
3	On Crusher	05	40+14=54X5	270.00
4	Bagasse spreading	02	40+14=54X2	108.00
5	Chemist (Gulvya)	01	70+28=98X1	98.00
6	Mechanic for Crusher	01	20+0=20X1	20.00
Total workers /% T.V.C.		23		1252.00 (56.29%)

Note : T.V.C.: Total Variable Cost

(b) MATERIAL COSTS

Sr.No.	Item	Quantity used per pan	Price	Total cost
1	Hydrose Powder	1 1/2 Kg	125 X 4	500.00
2	Bhendi	4 Buldle	15 X 4	60.00
3	Acid	1/4 Kg	10 X 4	40.00
4	Edible oil	1/4 Kg	10 X 4	40.00
5	Wafa powder	1/4 Kg	10 X 4	40.00
6	Lime	-	3 X 4	12.00
7	Fule	-	70 X 4	140.00
Total /Variable cost		243		972.00
% to total Variable cost				43.71%

c), PROCESSING COST OF JAGGERY

Sr.No.	Type of cost	Total quintles of jaggery produced (in 1 Acre)	Total cost incurred	Cost incurred per quintle
1	Fixed costs (Depreciation charges)	60	750	12.50
2	Variable cost (Labour + Material charges)	60	13900.20	231.67
Total			14650.20	244.17

PART-III

4 MARKETING COSTS OF JAGGERY

H	Transportation and other costs	Rs.		
1	Transportation of Gur (Tempo)	Rs.	300.00	
2	Taxes (Octroi)	Rs.	240.00	
3	Weighing	Rs.	45.00	
4	Hamili	Rs.	120.00	
5	Adat (Commission)	Rs.	1227.00	
	Total	Rs.	1932.00	1932.00

5-I COST OF SUGARCANE PRODUCTION IN ONE ACRE :

A)	Pre-cultivation costs	Rs	1875.00	
B)	Plantation cost	Rs	4300.00	
C)	Inter-culture costs	Rs.	9845.00	
D)	Other costs	Rs.	3976.00	
	Total cost per Acre	Rs.	19996.00	19996.00

J TOTAL COSTS OF JAGGERY PRODUCE (PER ACRE AND PER QUINTLE)

1	Production of sugarcane in 1 acre (Tonne)	47	
2	Production of jaggery in 1 acre(Quintle)	60	
3	Sugarcane required for one Quintle jaggery (Tonnes)	0.7833	
4	Cost of cultivation of sugarcane per tonne	Rs.	425.45
5	Cost of sugarcane for one quintle of jaggery	Rs.	333.25
6	Processing cost for 60 quintles of jaggery	Rs.	14650.20
7	Processing cost for Jaggery per quintle	Rs.	244.17
8	Marketing cost of jaggery in one acre	Rs.	1932.00

9	Marketing cost for one quintle of jaggery	Rs. 32.20
10	Total cost to manufacture one quintle of jaggery	Rs. 609.62
11	Income from one quintle of jaggery	Rs. 775.00
12	Net Profit per quintle jaggery produce	Rs. 165.38
13	Net profit per acre	Rs. 9922.80

ANALYSIS OF CASE NO.2

Mr. Babji Yashvant Patil is from Padli (Kh) village. He belongs to Maratha community. He is Arts graduate having 2 acres of irrigated land. His source of irrigation was lift irrigation from Panchganga river. He cultivated suru variety of cane. He has used 8014 type of cane seed. According to him this type of sugarcane seed is useful for jaggery production. He is member of Rajaram Sahakari Sakhar, Karkhana, Kolhapur. But he was not willing to supply his sugarcane to this sugar factory. Because the factory has not given the final bill payment of sugarcane.

PRODUCTION OF JAGGERY

Mr. Babji Patil has taken output of sugarcane upto 47 tonnes per acre. From this sugarcane he got 25 pans of juice. In terms of jaggery he got 60 quintals. By selling it he secured Rs. 46,500 as a total income.

COST OF INSTALLATION OF JAGGERY UNIT

Mr. Babji Patil has installed his jaggery making unit with his joint family about 5 years back i.e. in the year 1987. In that year he has spent Rs. 55000 on the installation of the unit. The cost of installation was Rs. 107500 in 1992. It means that the replacement cost of jaggery making unit has increased by near about two times during the span of 5 years, within 5 years duration cost of shed has increased by more than two times and the prices of crusher by more than two and half times. Price of electric motor has also increased by more than nearly two times. Mr. Babji Patil runs his unit for 4 to 5 months. Though he has no enough sugarcane land he runs it on rent basis.

COST OF MANUFACTURING OF JAGGERY (FIXED COST)

To install new jaggery making unit the total investment required at the price of 1992 will be Rs. 107500. Assuming that the working life of all assets to be 10 years and actual working days of jaggery unit to be 90 days (as mentioned by owner) in a year. The depreciation cost 10% come to be

$$\text{Rs. } 107500 \times \frac{10}{100} = \text{Rs. } 10750$$

The depreciation charges per working day of 4 pans.

$$\text{Rs. } \frac{10750}{90} = \text{Rs. } 120 \text{ Fixed cost per day}$$

$$\text{Rs. } \frac{120}{4} = \text{Rs. } 30 \text{ Fixed cost per pan}$$

$$\text{Rs. } \frac{30}{2.4 \text{ Quintle}} = \text{Rs. } 12.50 \text{ Fixed cost per quintle}$$

LABOUR FORCE IN THE UNIT

In Mr. Babji Patil's unit 23 labourers work and their division of work was as shown in the above chart. It seems that the harvesting (cane cutting) and transportation requires more than 50% labourers to total labourers followed by on crusher. The wages paid to the labourers were equal along with the 2 Kgs of jaggery per night. But being a risky job chemists get more wages than other. Mr. Babji has spent Rs. 1252 per night for manufacturing of four pans which accounts for 56.29% to total variable costs.

CHEMICALS USED

The quantity of various chemicals used for manufacturing jaggery of one pan is shown in the above chart, and the cost

incurred on manufacturing four pans during the night is calculated. Generally the use of chemicals depends upon the quality of cane and the type of soil in which the cane is cultivated. He has incurred Rs. 972 on chemicals in which Hydrose powder plays important place. The costs incurred on chemicals accounts for 43.71% to total variable costs.

NET PROFIT

By deducting the total costs incurred on jaggery production from the total income Mr. Babji Patil secured Rs. 9922.80 as a net profit.

JAGGERY UNIT CASE STUDY NO.3

PART-I

1 GENERAL INFORMATION :

Name : Shri.Balasaheb G.Bukshet

Caste : Jain Education : S.S.C.

Address : A/P : Bavada

Tal : Karveer

Dist : Kolhapur

Total Land Holding : 2.5 Acres

Total Land Under Cultivation :

1 Irrigated : 2.5 Acre (2) Non-Irrigated : Nil

2 Source of Irrigation : Borwell

Total Land Under Sugarcane Cultivation : 2.5 Acres

Method of cane cultivation :

Suru : 5 Acre Khodava : 2 Acre

Use of Cane : (1) For Sugar Factory : 1 Acre

(2) For Jaggery Production : 1.5 Acre

Types of Cane Seeds Used : 8014.

2 COSTS INCURRED (PER ACRE) :

A) Pre-Cultivation Costrrs :

1) Ploughing	Rs.	1200.00	
2) Harrowing	Rs.	500.00	
3) Furrowing	Rs.	500.00	
4) Ridging	Rs	300.00	
Total	Rs.	2500.00	2500.00

B) PLANTATION COST (PER ACRE) : KHODWA

1) Cane Seeds	Rs.	2100.00	
2) Cane seed Preparation	RS.	240.00	
3) Seeds Transportation (Bullock carts/Tractor)	Rs.	250.00	
4) Chemicals	Rs.	150.00	
5) Plantation(Labour)	Rs.	1000.00	
6) Watering(Labour)	Rs.	60.00	
7) Manures+Labour	Rs.	1000.00	
Total	Rs.	4800.00	4800.00

C) INTR CULTURE COSTS :

1)	Weeding	Rs.	855.00	
2)	Manures, Fertilisers+ Pesticides +Labour and Transportation	Rs	3986.00	
3)	Earthing up(Tieing) (Labour)	Rs.	450.0	
4)	Watering (Labour)	Rs.	325.00	
5)	Cleaning (Labour)	Rs.	150.00	
	Total	Rs.	5766.00	5766.00

D) OTHR COSTS :

1)	Land Revenue	Rs.	125.00	
2)	Education Tax	Rs.	76.00	
3)	Water Bill	Rs.	1050.00	
4)	Intrest on working capital	Rs.	1350.00	
	Total	Rs.	2601.00	2601.00

PART-II

E) Fixed Costs

CAPITAL COST OF INSTALLATION OF JAGGERY UNIT (FIXED ASSETS)

Sr.No.	Item	Installation cost in 1988	The present Installation Cost(in 1992)
1	Shed	18000(30.25%)	40000(34.93%)
2	Furnace	7500(12.61%)	11000(9.61%)
3	Big Pans	4000(6.72%)	6500(5.68%)
4	Utensils	5000(8.40%)	9000(7.86%)
5	Crusher	12000(20.17%)	25000(21.83%)
6	Electric Motor	10000(16.81%)	18000(15.72%)
7	Miscellaneous	3000(5.04%)	5000(4.37%)
	Total and %	59500(100%)	114500(100%)

F) VARIABLE COSTS

a) LABOUR (RATES PER FOUR PAN)

Sr.No.	Item	No.of workers	Rate	Total Expenditure
1	Harvesting (cane cutting & Transportation)	12	30+12=42X12	504.00
2	Firemen	02	30+12=42X2	84.00
3	On Crusher	05	30+12=42X5	210.00
4	Bagasse spreading	02	30+12=42X2	84.00
5	Chemist (Gulvya)	02	50+24=74X1	74.00
6	Mechanic for Crusher	01	18+0=18X1	18.00
Total workers		24		974.00 (54.29%)

(b) MATERIAL COSTS

Sr.No.	Item	Quantity used per pan	Price	Total cost
1	Hydrose Powder	1 1/4 Kg	110X4	440.00
2	Bhendi	3 Bundals	12 X 4	48.00
3	Acid	300 gms	12 X 4	48.00
4	Edible oil	250 gms	10 X 4	40.00
5	Wafa powder	200 gms	9 X 4	36.00
6	Lime	-	2 X 4	8.00
7	Fule	-	50 X 4	200.00
Total				820.00(45.71%)

c) PROCESSING COST OF JAGGERY

Sr.No.	Type of cost	Total quintles of jaggery produced (in 1 Acre)	Total cost incurred	Cost incurred per quintle
1	Fixed costs (Depreciation charges)	69	978.42	14.18
2	Variable cost(Labour + Material charges)	69	13006.50	188.50
Total			13984.92	202.68

PART-III

4 MARKETING COSTS OF JAGGERY

H	Transportation and other costs	Rs.		
1	Transportation of Gur (Tempo)	Rs.	232.00	
2	Taxes (Octroi)	Rs.	232.00	
3	Weighing	Rs.	58.00	
4	Hamili	Rs.	105.00	
5	Adat (Commission)	Rs.	1164.00	
	Total	Rs.	2291.00	2291.00

5-I COST OF SUGARCANE PRODUCTION IN ONE ACRE :

A)	Pre-cultivation costs	Rs	2500.00
B)	Plantation cost	Rs	4800.00
C)	Inter-culture costs	Rs.	5766.00
D)	Other costs	Rs.	2601.00
	Total cost per Acre	Rs.	15667.00

J TOTAL COSTS OF JAGGERY PRODUCE (PER ACRE AND PER QUINTLE)

1	Production of sugarcane in 1 acre (Tonne)	58
2	Production of jaggery in 1 acre(Quintle)	69
3	Sugarcane required for one Quintle jaggery (Tonnes)	0.8405
4	Cost of cultivation of sugarcane per tonne	270.12 Rs.
5	Cost of sugarcane for one quintle of jaggery	227.04 Rs.
6	Processing cost for 69 quintles of jaggery	13985.25 Rs.
7	Processing cost for Jaggery per quintle	202.68 Rs.
8	Marketing cost of jaggery in one acre	2291.00 Rs.

9	Marketing cost for one quintle of jaggery	Rs. 33.20
10	Total cost to manufacture one quintle of jaggery	Rs. 462.92
11	Income from one quintle of jaggery	Rs. 675.00
12	Net Profit per quintle jaggery produce	Rs. 212.08
13	Net profit per acre	Rs. 14633.52

ANALYSIS OF CASE No. 3

Mr. Balasaheb G. Bukshet is from Bavada village having 2.5 acre of irrigated land. His education was upto S.S.C. He belongs to jain community. The source of land irrigation was borewell. He is member of Rajaram Sahakari Sakhar Karkhana, Kolhapur. He is supplying sugarcane partially to the sugar factory, and remaining is using for jaggery production. He is using 8014 type of sugarcane. He has stated the reason behind the use of this particular seed that being a farmer on Panchganga river bank it is necessary to use such type of sugarcane seed with speedy growth to avoid the loss of crop from flooding river and 8014 cane seed is useful for this purpose.

PRODUCTION OF JAGGERY

The total output of sugarcane in one acre of Mr. Balasaheb Bukshet was 58 tonnes and total pans from this sugarcane were 29. He produced more than 69 quintles of jaggery. This jaggery brought him Rs. 46,980 as total income.

COST OF INSTALLATION OF JAGGERY UNIT

Mr. Balasaheb has installed his jaggery making unit in 1988. At that time he spent Rs. 59500 on installation of jaggery making unit in 1992 the cost of installation was Rs. 114500 which was nearly two times more than that of in 1988. It means that the replacement cost of jaggery making unit has increased by nearly two times within 4 years period. He runs his unit on rental basis.

COST OF MANUFACTURING OF JAGGERY (FIXED COSTS)

To install new jaggery making unit the total investment

required at the price of 1992 will be Rs. 114500. Assuming that the working life of all assets to be 10 years and actual working days of jaggery unit to be 85 days (as mentioned by owner) in a year. The depreciation cost 10% come to be

$$\text{Rs. } 114500 \times \frac{10}{100} = \text{Rs. } 11450$$

The depreciation charges per working day of 4 pans.

$$\text{Rs. } \frac{11450}{85} = \text{Rs. } 135 \text{ Fixed cost per day}$$

$$\text{Rs. } \frac{135}{4} = \text{Rs. } 33.75 \text{ Fixed cost per pan}$$

$$\text{Rs. } \frac{33.75}{2.38 \text{ Quintile}} = \text{Rs. } 14.18 \text{ Fixed cost per quintile}$$

LABOUR IN THE UNIT

Mr. Bukshet has 23 labours working in his jaggery making unit. As in case of other unit holders he has paid wages to the labourers alongwith 2 Kg jaggery per night and the wage rate for chemist was higher. He was paying Rs. 50 along with 4 Kgs of jaggery to the local chemist (Gulvya) per night. By adding up the price of 4 Kgs of jaggery into wages he gets Rs. 74 per night i.e. for manufacturing of four pans. Mr. Bukshet has spent Rs. 974 on labourers which accounts for 54.29% to total variable costs.

CHEMICALS USED

86

As shown in the above prescription the quality of various chemicals has used per pan. Mr. Bukshet has spent Rs. 820 for manufacturing of four pans during the night . This amount accounts for 45.71% to total variable costs. Among the cost incurred on chemicals more than 50% was spent on Hydrose powder. The amount spent on Bhendi and acid was same i.e. Rs. 48.

NET PROFIT

Calculation of the total income derived from one acre sugarcane (Jaggery) and total costs incurred for that clearly shows that he has obtained 14633.52 as a net profit.

JAGGERY UNIT CASE STUDY NO. 4

PART-I

1 GENERAL INFORMATION :

Name : **Shri.Khanderao Bhausaheb Ghatage**

Caste : Maratha Education : S.Y.B.A.

Address : A/P : Kadamwadi

Tal : Karveer

Dist : Kolhapur

Total Land Holding : 5 Acre

Total Land Under Cultivation :

1 Irrigated : 5 Acre (2) Non-Irrigated : Nil

Source of Irrigation : Well

Total Land Under Sugarcane Cultivation : 5 Acre

Method of cane cultivation :

Suru : 3.5 Acre Khodava : 1.5 Acre

Use of Cane : (1) For Sugar Factory : 3.5 Acre

(2) For Jaggery Production : 1.5 Acre

Types of Cane Seeds Used :

2 COSTS INCURRED (PER ACRE) :

A) Pre-Cultivation Costs :

1)	Ploughing	Rs.	1100.00
2)	Harrowing	Rs.	400.00
3)	Furrowing	Rs.	300.00
4)	Ridging	Rs.	100.00
	Total	Rs.	1900.00

B) PLANTATION COST (PER ACRE) : KHODWA

1)	Cane Seeds	Rs.	1800.00
2)	Cane seed Preparation	RS.	240.00
3)	Seeds Transportation (Bullock carts/Tractor)	Rs.	200.00
4)	Chemicals	Rs.	200.00
5)	Plantation(Labour)	Rs.	500.00
6)	Watering(Labour)	Rs.	40.00
7)	Manures+Labour	Rs.	890.0
	Total	Rs.	3870.00

C) INTR CULTURE COSTS :

1)	Weeding	Rs.	1400.00	
2)	Manures, Fertilisers+ Pesticides +Labour and Transportation	Rs	1462.00	
3)	Earthing up(Tieing)(Labour)	Rs.	450.00	
4)	Watering (Labour)	Rs.	200.00	
5)	Cleaning (Labour)	Rs.	200.00	
6)	Transportation of Fertilisers	Rs.	150.00	3862.00
	Total			
D)	OTHR COSTS :			
1)	Land Revenue	Rs.	100.00	
2)	Education Tax	Rs.	76.00	
3)	Water Bill	Rs.	600.00	
4)	Intrest on working capital	Rs.	1500	
	Total	Rs.		2276.00

PART-II

E) Fixed Costs

CAPITAL COST OF INSTALLATION OF JAGGERY UNIT (FIXED ASSETS)

Sr.No.	Item	Installation cost (in 1986)	The present Installation Cost(in 1992)
1	Shed	19500(28.89%)	32000(28.70%)
2	Furnace	8000(11.85%)	12000(10.76%)
3	Big Pans	4500(6.66%)	7000(6.28%)
4	Utensils	6500(9.63%)	10000(8.97%)
5	Crusher	13000(19.26%)	27000(24.22%)
6	Electric Motor	12000(17.78%)	18500(16.59%)
7	Miscellaneous	4000(5.93%)	5000(4.48%)
	Total and %	67500(100%)	111500(100%)

F) VARIABLE COSTS

a.) LABOUR (RATES PER FOUR PAN)

Sr.No.	Item	No.of workers	Rate	Total Expenditure
1	Harvesting (cane cutting & Transportation)	12	35+13=48X12	576.00
2	Firemen	02	35+13=48X2	96.00
3	On Crusher	05	35+13=48X5	240.00
4	Bagasse spreading	02	35+13=48X2	96.00
5	Chemist (Gulyya)	01	75+26=101X1	101.00
6	Mechanic for Crusher	01	25+0=25X1	25.00
Total workers /% T.V.C		23		1134.00 (53.64%)

Note : T.V.C. : Total Variable cost

(b) MATERIAL COSTS

Sr.No.	Item	Quantity used per pan	Price	Total cost
1	Hydrose Powder	1 1/2	125 X 4	500.00
2	Bhendi	4 Bundle	20X4	80.00
3	Acid	250 gms	15X4	60.00
4	Edible oil	250 gms	12x4	48.00
5	Wafa powder	250 gms	10X4	40.00
6	Lime	-	3 X 4	12.00
7	Fule	-	60X4	240.00
Total /% to Total Variable Cost				980.00 (46.36%)

c), PROCESSING COST OF JAGGERY

Sr.No.	Type of cost	Total quintles of jaggery produced (in 1 Acre)	Total cost incurred	Cost incurred per quintle
1	Fixed costs (Depreciation charges)	48	620.16	12.92
2	Variable cost (Labour + Material charges)	48	10569.60	220.20
Total			11189.76	233.12

PART-III

4 MARKETING COSTS OF JAGGERY

H	Transportation and other costs	Rs.	
1	Transportation of Gur (Tempo)	Rs.	160.00
2	Taxes (Octroi)	Rs.	160.00
3	Weighing	Rs.	40.00
4	Hamili	Rs.	105.00
5	Adat (Commission)	Rs.	1344.00
	Total	Rs.	1809.00

5-I COST OF SUGARCANE PRODUCTION IN ONE ACRE :

A)	Pre-cultivation costs	Rs	1900.00
B)	Plantation cost	Rs	3870.00
C)	Inter-culture costs	Rs.	3862.00
D)	Other costs	Rs.	2276.00
	Total cost per Acre	Rs.	11908.00

J TOTAL COSTS OF JAGGERY PRODUCE (PER ACRE AND PER QUINTLE)

1	Production of sugarcane in 1 acre (Tonne)	40
2	Production of jaggery in 1 acre(Quintle)	48
3	Sugarcane required for one Quintle jaggery (Tonnes)	0.8333
4	Cost of cultivation of sugarcane per tonne	Rs. 297.70
5	Cost of sugarcane for one quintle of jaggery	Rs. 248.07
6	Processing cost for 48 quintles of jaggery	Rs. 11190.16
7	Processing cost for Jaggery per quintle	Rs. 233.13
8	Marketing cost of jaggery in one acre	Rs. 1809.00

9	Marketing cost for one quintle of jaggery	Rs. 37.69
10	Total cost to manufacture one quintle of jaggery	Rs. 518.89
11	Income from one quintle of jaggery	Rs. 800.00
12	Net Profit per quintle jaggery produce	Rs. 281.11
13	Net profit per acre	Rs. 13493.28

ANALYSIS OF CASE NO.4 :

Mr. Khanderao Bhausahab Ghatage was from Kadamwadi village having 5 acres of irrigated land. He belongs to Maratha community. He is undergraduate. His source of for sugarcane irrigation is a well. He has used 7704, 7527, 8014 types of cane seeds. He is a member of Rajaram Sahakari Sakhar Karkhana, Kolhapur. Being a member of sugar factory he supplies major portion of sugarcane to the factory. In 1992 he supplied sugarcane crop yield from 3.5 acres to sugar factory and remaining sugarcane he used for jaggery making.

PRODUCTION OF JAGGERY

The total output of sugarcane in one acre of Mr. Khanderao was 40 tonnes and total pans from this sugarcane were 20. He has produced 48 quintiles of jaggery and obtained Rs. 38,400 as total income from its sale.

COST OF INSTALLATION OF JAGGERY UNIT

Mr. Khanderao Bhausahab Ghatage has installed his jaggery making unit in the year 1986. He has spent Rs. 67,500 on installation of the unit. The cost of installation was Rs. 111500 in 1992. It means that the replacement cost of jaggery making unit has increased by 65% during the period of 6 years. The major cost incurred on installation of unit is on shed followed by crusher. Mr. Ghatage belong to the medium farmers category. He has run his unit on rent basis. Because, though he has 5 acres of irrigated land which was under sugarcane cultivation it was not enough to run the unit through out the season. He runs his jaggery making unit for

4 to 5 months. But he would not be able to run it independently for 20 to 25 days even though he used all his sugarcane for jaggery making.

COST OF MANUFACTURING OF JAGGERY (FIXED COST)

To install new jaggery making unit the total investment required at the price of 1992 will be Rs. 111500. Assuming that the working life of all assets to be 10 years and actual working days of jaggery unit to be 90 days (as mentioned by owner) in a year. The depreciation cost 10% come to be

$$\text{Rs. } 111500 \times \frac{10}{100} = \text{Rs. } 11150$$

The depreciation charges per working day of 4 pans.

$$\text{Rs. } \frac{11150}{90} \quad \text{Rs. } 124 \quad \text{Fixed cost per day}$$

$$\text{Rs. } \frac{124}{4} \quad \text{Rs. } 31 \quad \text{Fixed cost per pan}$$

$$\text{Rs. } \frac{31}{2.4 \text{ Quintle}} = \text{Rs. } 12.92 \quad \text{Fixed cost per quintle}$$

LABOUR FORCE IN THE UNIT

In Mr. Ghatage's jaggery making unit there were 23 labourers out of which twelve were required for cane cutting and transportation activities, 5 for crushing activities. The wages paid to the labourers were equal i.e. Rs. 35 plus 2 Kgs of jaggery for manufacturing four pans. But the wage rate of chemist (Gulvya) was higher upto Rs. 75 and 4 Kgs of jaggery (total wage rate paid to the labourers was calculated by adding up the price of jaggery which was given to the labourer). Mr. Ghatage was spending Rs. 1134 on labour per night which accounts for 53.64% to total variable cost incurred in that night.

CHEMICALS USED

94

The quantity of various chemicals used for manufacturing jaggery of one pan is shown in the above chart and the cost incurred on material for four pans is calculated. Mr. Ghatage spent more than 50% on Hydrose powder to total costs of material. The costs incurred on chemicals accounts for 46.36% to total variable costs of four pans.

NET PROFIT

By deducting the costs incurred on various activities from the total income derived from sugarcane in one acre he got Rs. 11592.96 as a net profit.

JAGGERY UNIT CASE STUDY NO. 5

PART-I

1 GENERAL INFORMATION :

Name : **Shri.Krishnarao Jyoti Ingavale**

Caste : Maratha Education : B.Sc.

Address : A/P : Phulewadi

Tal : Karveer

Dist : Kolhapur

Total Land Holding : 10 Acres

Total Land Under Cultivation : 10 Acres

1 Irrigated : 10 Acres(2) Non-Irrigated : Nil

Source of Irrigation : Lift Irrigation

Total Land Under Sugarcane Cultivation : 10 Acres

Method of cane cultivation :

Suru : 5 Acres Khodava : 5 Acres

Use of Cane : (1) For Sugar Factory : 8 Acres

(2) For Jaggery Production : 2 Acres

Types of Cane Seeds Used : 671.

2 COSTS INCURRED (PER ACRE) :

A) Pre-Cultivation Costrrs :

1) Ploughing	Rs.	1800.00	
2) Harrowing	Rs.	400.00	
3) Furrowing	Rs.	1300.00	
4) Ridging	Rs	600.00	
Total	Rs.	4100.00	4100.00

B) PLANTATION COST (PER ACRE) : KHODWA

1) Cane Seeds	Rs.	4000.00	
2) Cane seed Preparation	RS.	400.00	
3) Seeds Transportation (Bullock carts/Tractor)	Rs.	200.00	
4) Chemicals	Rs.	300.00	
5) Plantation(Labour)	Rs.	1000.00	
6) Watering(Labour)	Rs.	40.00	
7) Manures+Labour	Rs.	1000.00	
Total	Rs.	6940.00	6940.00

C) INTR CULTURE COSTS :

1)	Weeding	Rs.	2400.00	
2)	Manures, Fertilisers+ Pesticides +Labour and Transportation	Rs	4172.00	
3)	Earthing up(Tieing)(Labour)	Rs.	400.00	
4)	Watering (Labour)	Rs.	200.00	
5)	Cleaning (Labour)	Rs.	200.00	
	Total	Rs.	7372.00	7372.00

D) OTHR COSTS :

1)	Land Revenue	Rs.	100.00	
2)	Education Tax	Rs.	76.00	
3)	Water Bill	Rs.	1200.00	
4)	Intrest on working capital	Rs.	2250.00	
	Total	Rs.	3626.00	3626.00

PART-II

E) Fixed Costs

CAPITAL COST OF INSTALLATION OF JAGGERY UNIT (FIXED ASSETS)

Sr.No.	Item	Installation cost (in 1982)	The present Installation Cost(in 1992)
1	Shed	1000(35.72%)	50000(39.07%)
2	Furnace	2000(7.14%)	10000(7.81%)
3	Big Pans	2000(7.14%)	6000(4.69%)
4	Utensils	2000(7.14%)	11000(8.59%)
5	Crusher	5000(17.86%)	27000(21.09%)
6	Electric Motor	6000(21.43%)	19000(14.84%)
7	Miscellaneous	1000(3.57%)	5000(3.91%)
	Total and %	28000(100%)	128000(100%)

F) VARIABLE COSTS

a) LABOUR (RATES PER FOUR PAN)

Sr.No.	Item	No.of workers	Rate	Total Expenditure
1	Harvesting (cane cutting & Transportation)	12	25+14=39X12	468.00
2	Firemen	02	25+14=39X2	78.00
3	On Crusher	05	25+14=39X5	195.00
4	Bagasse spreading	02	25+14=39X2	78.00
5	Chemist (Gulvya)	01	35+21=56X1	56.00
6	Mechanic for Crusher	01	20+0=20X1	20.00
Total workers		23		893.00 (51.18%)

b) MATERIAL COSTS

Sr.No.	Item	Quantity used per pan	Price	Total cost
1	Hydrose Powder	1 Kg	90X4	360.00
2	Bhendi	4 Bundles	20X4	80.00
3	Acid	250 gms	12X4	48.00
4	Edible oil	250 gms	10 X4	40.00
5	Wafa powder	250 gms	12X4	48.00
6	Lime	-	4X4	16.00
7	Fule	-	65X4	260.00
Total % T.V.C. (Total Variable cost)				852.00 (48.82%)

c) PROCESSING COST OF JAGGERY

Sr.No.	Type of cost	Total quintles of jaggery produced (in 1 Acre)	Total cost incurred	Cost incurred per quintle
1	Fixed costs (Depreciation charges)	79	1316.93	16.67
2	Variable cost (Labour + Material charges)	79	14396.17	182.23
Total			15713.10	198.90

PART-III

4 MARKETING COSTS OF JAGGERY

H	Transportation and other costs	Rs.	
1	Transportation of Gur (Tempo)	Rs.	264.00
2	Taxes (Octroi)	Rs.	264.00
3	Weighing	Rs.	66.00
4	Hamili	Rs.	119.00
5	Adat (Commission)	Rs.	2079.00
	Total	Rs.	2792.00 2792.00

5-I COST OF SUGARCANE PRODUCTION IN ONE ACRE :

A)	Pre-cultivation costs	Rs	4100.00
B)	Plantation cost	Rs	6940.00
C)	Inter-culture costs	Rs.	7372.00
D)	Other costs	Rs.	3626.00
	Total cost per Acre	Rs.	22038.00 22038.00

J TOTAL COSTS OF JAGGERY PRODUCE (PER ACRE AND PER QUINTLE)

1	Production of sugarcane in 1 acre (Tonne)	50
2	Production of jaggery in 1 acre(Quintle)	79
3	Sugarcane required for one Quintle jaggery (Tonnes)	0.6329
4	Cost of cultivation of sugarcane per tonne	Rs. 440.76
5	Cost of sugarcane for one quintle of jaggery	Rs. 278.96
6	Processing cost for 79 quintles of jaggery	Rs. 15713.18 15713.00
7	Processing cost for Jaggery per quintle	Rs. 198.90
8	Marketing cost of jaggery in one acre	Rs. 2792.00

9	Marketing cost for one quintle of jaggery	Rs.	35.34
10	Total cost to manufacture one quintle of jaggery	Rs.	513.20
11	Income from one quintle of jaggery	Rs.	750.00
12	Net Profit per quintle jaggery produce	Rs.	236.80
13	Net profit per acre	Rs.	18707.20

Mr. Krishnarao Jyoti Ingavale from Phulewadi village is one of the big farmers having 10 acres of irrigated land. He is science graduate and belong to Maratha community. The source of land irrigation was lift irrigation scheme from Panchganga river. He is a member of Panchganga Sahakari Sakhar Karkhana, Ganganagar, Ichalkaranji. Being a large farmer he is well settled. He has been supplying sugarcane from 8 acres to the sugar factory and has been making jaggery from the 2 acres sugarcane. In order to make standard quality jaggery he has used 671 type of cane seed along-with the other seeds such as 8014, 7704, 7527. etc.

PRODUCTION OF JAGGERY

The total output of sugarcane in one acre of Mr. Krishnarao Ingavale was 50 tonnes and total pans from this sugarcane were 33. He produced more than 79 quintals of jaggery in 1992. From this jaggery he got Rs. 59400 as total income.

COSTS OF INSTALLATION OF JAGGERY UNIT

Mr. Krishnarao Jyoti Ingavale is a big farmer of Phulewadi and he owns 10 acres of irrigated land which is under sugarcane cultivation out of 10 acres of sugarcane he supplies sugarcane from eight acres to factory and uses sugarcane from 2 acres for manufacturing of jaggery. The

installation of jaggery making plant was done about 10 years back. In the year 1982 the cost incurred on installation of plant was Rs. 28000 which has increased upto Rs. 128000 in 1992. This shows that the replacement cost has increased by more than four times in a decade. Generally the jaggery making unit of Mr. Ingavale is run for 3 to 4 months depending upon availability of sugarcane and labour. The labourers are reluctant to stay on work after 15th of March every year. Most of the labourers come from the near by villages and they come under category of marginal and small farmers.

COST OF MANUFACTURING OF JAGGERY (FIXED COST)

To install new jaggery making unit the total investment required at the price of 1992 will be Rs. 128000. According that the working life of all asset to be 10 years and actual working days of jaggery unit to be 80 day (as mentioned by owner) in a year. The depreciation cost 10% come to be

Rs. 128000 $\times \frac{10}{100}$ =Rs. 12800
the depreciation charges per working day of 4 pan.

Rs. $\frac{12800}{80}$ Rs. 160 Fixed cost per day

Rs. $\frac{160}{4}$ Rs. 40 Fixed cost per pan

Rs. $\frac{40}{2.4}$ Rs. 16.67 Fixed cost per quintle
2.4 Quintle

LABOUR FORCE IN THE UNIT

In Mr. Ingavale's unit 23 labourers work and their division of work is shown in above chart. The chemist (Gulvya) gets Rs. 25 per night as wages plus three Kgs of jaggery for manufacturing four pans during the night. Others

get Rs. 25 plus 2 Kgs of jaggery for per four pans manufactured during the night. Mr. Ingavale was spending Rs. 893 for four pans on labour which accounts for 51.18% to total variable cost.

CHEMICALS USED

The quality of chemicals used for manufacturing jaggery of one pan is shown in above chart. The total use of chemicals is calculated on the basis of 4 pans per night. Mr. Ingavale has incurred Rs. 852/- on chemicals for four pans in which hydrose powder plays an important place. The cost incurred on chemicals accounts for 48.82% to the total variable costs of four pans.

NET PROFIT

By calculating the total income derived from one acre sugarcane (jaggery) and total costs incurred for that he has got Rs. 18707.20 as a net profit.