Economics of grape wine production in Maharashtra

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ABSTRACT

Maharashtra has 58 grape winery units and grape wine production is 2.11 crore litres per annum. About 32 winery units were selected for present study. The concept of variable cost and fixed cost was used for determining production cost in the firm. Data were pertained to the year 2009-10. The results revealed that investment was found to be Rs. 13005392.75 in fermentation tank, pneumatic press with volumetric pump and insulation tank with sliding were predominant items of investment. Total cost was Rs.19103501.72 in which share of variable cost was 68.81 per cent followed by that of fixed cost (30.19 per cent). Grape wine production was 191590.63 liters. Net profit was Rs. 9017996.20 per annum. Per liter cost of production of grape wine was found to be Rs.52.11.

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INTRODUCTION

Grape wine is a health drink resulting from complete or partial alcoholic fermentation of grape, either exclusively by natural microflora of grapes or the added wine yeast culture, being a fruit based fermented and uninstalled product. In the world about 80 per cent of grape produce can be used for wine making followed by that of 10 per cent for raisin making and only 10 per cent for table purpose. In Maharashtra, there are 58 winery units. The total investment on wineries in Maharashtra is Rs. 77.75 crore. Maharashtra has 2.11 crore litres of grape wine production. Present scenario indicates that table-wine accounts for 85 per cent of market and expensive varieties of vintage wine accounts for 15 per cent. Wine production unit is capital intensive and it has capacity from 0.50 lakh litres to more than 7 lakh litres per annum. Availability of raw material is from starting of February to end of March. The produced juice can be stored for wine making. Wine production is agri-business and producer must know the costs, returns and profits from the business. By keeping in view such aspects, the present study has been undertaken.

Key words : Grape wine, Variable cost, Fixed cost, Gross return, Profit

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METHODOLOGY

Multistage sampling design was adopted for selection of districts and grape winery owners. At the first stage Pune, Nasik, and Sangli districts were selected purposely on the basis of availability of winery units. In second stage, from Pune district 8, from Northern Nasik 8 and from Southern Nasik 8 while from Sangli district 8 winery units were selected randomly. Cross sectional data were collected from grape winery owners by personal interview method with the help of pretested schedule. The data pertained to year 2009-2010. The cost concept of variable cost and fixed cost was used to analyze the data in present investigation. Variable cost included hired human labour, raw grape, potassium metabisulphate, yeast, water quantity, pectoletic enzyme, KH_2PO_4, $MgSO_4 7H_2O$ and glycol. Interest on working capital was calculated @ 11 per cent. While fixed cost included permanent human labour, license fee, depreciation on fixed assets @ 10 per cent and interest on fixed capital @ 10 per cent.

RESULTS AND DISCUSSION

The findings of the present study as well

as relevant discussions have been summarized under the following heads.

Initial investment pattern in grape wine production:

Initial investment pattern in grape wine production was estimated and is presented in Table 1. The results revealed that initial investment on fermentation tank was higher as Rs.5127180.72 (39.42 per cent) as compared to other machinery items.

The investment on pneumatic press with volumetric pump was found to be Rs. 1320706.59 (10.16 per cent) followed by insulation tank with sliding was Rs. 1178412.5 (9.06 per cent), investment on chilling plant with chiller and condenser was Rs. 870098.41 (6.69 per cent). Thus total investment on grape winery unit was found to be Rs. 13005392.75. The results are conformity with the results obtained by Moultan (1981) regarding per case investment costs.

Use of physical inputs in grape wine production:

Per firm cost was calculated and is presented in Table 2. The results revealed that use of raw grape was higher as 383181.00 kg. Use of water quantity was 21214.38 litres. Use of hired human labours was found to be 351.25 man days. It was observed that use of potassium metabisulphate, yeast, KH_2PO_4, $MgSO_4$ and glycol was found to be 33.38 kg; Rs, 45.33 kg, 319.41 kg, 319.41 kg and 108.06 litres, respectively. The results are in with the observation made by Grage (2000), Marks (2000), Augustus (2001), Karl (2006), Stone (2002) and Smith (2000).

Cost of grape wine production:

The results revealed that total cost was Rs. 10137837.51(Table 2). In regard to proportionate expenditure on various items, share of raw grape was 56.70 per cent. On the contrary proportionate expenditure on yeast was 2.78 per cent. It was clear that $MgSO_4$ was expensive which showed 1.58 per cent of expenditure. The permanent human labour and license fee were considered in fixed cost. Expense on permanent human labour was 4.43 per cent and license fee was 0.30 per cent.

Gross return in grape wine production:

Return from wine production was Rs. 19103501.72 and that of from by produce was Rs. 52332. Thus, gross return was Rs. 19155833.72. Net profit was Rs.

Table 1 : Initial investment pattern in grape wine production

Sr. No.	Particulars	Frequency (N=32)	Per cent
1.	Building	754874.68	5.80
2.	Destemmer crusher	619626.59	4.77
3.	Pnuematic press with volumetric pump	1320706.59	10.16
4.	Centrifugal soft impleer pump	205235.28	1.58
5.	Tube, tube chiller for wine	346528.94	2.67
6.	Plate-frame filter	257599.22	1.98
7.	Kiselgur filter	574821.88	4.42
8.	Cartidge filter	155425.34	1.20
9.	Centrifugal pump for transferring	64184.72	0.49
10.	Borewell, electric motor and pump	122335.81	0.94
11.	Generator set	418572.13	3.22
12.	Fermentation tank	5127180.72	39.42
13.	Chilling plant with chiller and condenser	870098.41	6.69
14.	Pipe line for glycol circulation	314998.91	2.42
15.	Water softner and heater	159212.53	1.22
16.	Weighing machine	40124.47	0.31
17.	Lab. equipments	198658.72	1.53
18.	Compressor	47557.03	0.37
19.	Insulation tank with sliding	1178412.50	9.06
20.	Office furniture	1394.53	0.47
21.	Computer	52968.75	0.41
22.	Miscellaneous	114875.00	0.88
	Total initial investment	13005392.75	100.00

Table 2 : Costs, returns and profitability of grape wine production firm

Sr. No.	Particulars	Unit	Quantity	Amount (Rs.)	Per cent
1.	Hired human labour	Man day	351.25	35125.00	0.39
2.	Raw grape material	kg	383181.00	5747718.90	56.70
3.	Potassium metabisulphate	kg	33.38	9016.59	0.09
4.	Yeast	kg	45.33	281492.69	2.78
5.	Water quantity	lit	21214.38	12728.63	0.13
6.	Pectoletic enzyme powder	kg	2.48	24590.89	0.24
7.	KH_2PO_4	kg	319.41	95823.00	0.95
8.	$MgSO_4.7H_2O$	kg	319.41	159705.00	1.58
9.	Glycol	lit	108.06	10265.70	0.10
10.	Interest on w.c. 11%	---	---	599834.78	6.92
11.	Variable cost (Σ1 to 10)	---	---	6052878.22	68.81
12.	Depreciation on assets @ 10%	---	---	1300539.28	12.83
13.	Interest on fixed capital@ 10%	---	---	1300539.28	12.83
14.	Permanent human labour	Man day	2143.94	428881.25	4.23
15.	License fee	Rs.	---	30000.00	0.30
16.	Fixed cost (Σ12 to 15)	---	---	3059959.81	30.19
17.	Total cost (Σ11 to 16)	---	---	9112838.03	100.00
	Returns				
18.	Wine production	lit	191590.63	19103501.72	99.73
19.	By product	kg	1836300.00	52332.00	0.27
20.	Gross return	Rs.	---	19155833.72	100.00
21.	Net profit (G.R. – T.C.)	Rs.	---	9017996.20	---
22.	Per liter cost of production of wine	Rs.	---	52.11	---

9017996.2. Cost of production of wine was Rs.52.11 per liter. Results are conformity with the findings Naveen *et al.* (2010) regarding per case and per liter cost of wine production, Dillon and Morris (1992) showed initial fixed investment, variable cost and gross return obtained in grape winery business, Coyel *et al.* (2003) indicated initial investment, variable cost, gross return and net profit, Kale (2001)showed variable cost, fixed cost, gross return and net profit. Jenster and Cheng (2007) showed total wine production, its sales, income and net profit.

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