

RESEARCH PAPER

Economics of processing and marketing of different value added products of grapes in north Karnataka

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ABSTRACT

The present study on economics of processing and marketing of grapes in raisin and wine making was conducted in Vijayapura and Belagavi districts of north Karnataka. Based on the higher concentration of area and production of the fruits, the objective to analyze the costs and returns in processing grapes into different value added products like raisins and wine was conducted. The results were based on primary data collected, with the sample size of eight processing units, twenty wholesaler cum commission agents and twenty retailers for each of the value added product. The results revealed that the total cost incurred by the processors in processing of grapes into one quintal of raisin and hundred lit of wine was of Rs. 5835 and Rs. 5856, respectively. The degree of value addition in the cases of grape raisin and grape wine was found to be 56.22 and 56.88 per cents, respectively. The marketing cost incurred by the retailers in marketing one quintal of grape raisin and hundred lit of grape wine was found to be Rs. 95 and Rs. 65, respectively. Since the stake holders in value chain of both the cases of value added products (raisin and wine) are not integrated, there is a great opportunity to integrate and strengthen the value chain in processing and marketing of those value added final products. The concerned statutory bodies have to give due attention for providing proper approach roads to the farms, processing units, cold storage and marketing facilities.

KEY WORDS : Value chain, Processing, Marketing, Raisin, Grape wine

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Horticulture crops being high value cash crops, provide excellent opportunity for raising income of the farmers even in dry land areas. Grapes

occupy the ninth position among all the fruits produced in the country, accounting about 1.6 per cent of total fruits production. The present worldwide production of grapes was 248 tons. During 2014-15, the production of grapes in India was 24.83 tons, with an area of 11.8 lakh hectares, respectively. Maharashtra state stands first with highest area and production in grape fruit of about 7.74 lakh thousand ton of production, respectively, contributing about 67.22 per cent of the total grapes area of the country. Karnataka being the leading producer of grapes, the area and production was 18.10 thousand hectares and 330 thousand tons, respectively.

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Development of new varieties and commercial production and its value addition processes in both these fruit crops has expanded tremendously in the present days in order to meet the growing demand of the consumers. Presently, these fruit crops are grown as major crops in wide producing areas. Even though the production is on higher side, the extent of spoilage and wastage (perishability) was also found maximum. So there is a vast market potential for processing and value added products like raisins, jams, jellies, juice, wine and squash both in the domestic and international markets which is yet to be tapped. Due to the diversity of environmental conditions in India, there is a tremendous scope for area expansion, varietal improvement and development of value addition firms and different value added products. The present study attempts to know the value addition aspects of these selected fruits and analyzing the cost and returns in value addition processes. The findings of the study would be helpful to the policy makers and researchers to draw meaningful inferences for the development in the area of horticulture in general and grapes and pomegranate in particular.

METHODOLOGY

Based on the highest area and production of grapes in the state, two districts, namely Vijayapura and Belagavi districts from north Karnataka were purposively selected

for the study. From among the districts selected, two taluks from each district were further chosen to elicit the needed information. Thus, the taluks so chosen were Vijayapura and Indi from Vijayapura district, Belagavi and Athani from Belagavi district. To elicit the required data regarding value addition processes like procurement, sorting, grading, processing, packing, storage, transportation, a total of 16 processing units, 40 wholesalers and 40 retailers were randomly selected for the study of the fruit crop from the selected regions. The study was based on the primary data which was collected from all the different value chain actors, with the help of pre-tested, comprehensive questionnaire. The respondents were interviewed personally to elicit the information required for the study. The data pertains to the agricultural year 2014-15. The data was summarized and analyzed with the help of statistical tools like averages and percentages.

ANALYSIS AND DISCUSSION

The results on the costs incurred in processing of grapes into one quintal of raisin are presented in Table 1. It can be noted from the table that the average cost of processing one quintal of raisin was worked out to be Rs. 5835, of which the total variable cost was Rs. 5805 (99.48%), formed the major component. The fixed cost being Rs. 30 accounted for only 0.52 per cent of the

Table 1: Cost of processing grapes into raisin					(Per quintal)
Sr. No.	Particulars	Unit	Rupees/ unit	Quantity	Total (Rupees)
Variable cost					
1.	Grapes procurement cost	Kg		500	4965 (85.09)
2.	Potassium bicarbonate	Grams	300	1.25	375 (6.43)
3.	Ethyl oil	Litres	200	0.75	150 (2.57)
4.	Sulphur	Grams	100	1.5	150 (2.57)
5.	Power, fuel and water	Rupees	15	-	15 (0.26)
6.	Wages on casual labour	Rupees	50	-	50 (0.86)
7.	Interest on working capital	Rupees	100	-	100 (1.71)
	Total variable cost			-	5805 (99.48)
Fixed cost					
				-	-
1.	Interest on fixed capital	Rupees	3.25	-	3.25 (0.06)
2.	Depreciation on buildings at 5%	Rupees	1.5	-	1.5 (0.03)
3.	Equipment depreciation cost	Rupees	5.5	-	5.5 (0.09)
4.	Salary to permanent employee	Rupees	15	-	15 (0.26)
5.	Insurance and license fee	Rupees	5	-	5 (0.09)
6.	Total fixed cost	Rupees		-	30.25 (0.52)
	Total processing cost	Rupees		-	5835.25(100)

total cost of processing. It can be noted from the table that, out of the total variable cost, the procurement cost of 5 quintals of grapes was maximum of Rs. 4965 (85.09%), followed by 1.25 kg of potassium bicarbonate (Rs. 375 6.43%), 0.75 lit of ethyl oil of Rs.150 (2.57%) and 1.5 kg of sulphur of Rs. 150 (2.57%). Remaining 2.83 per cent of the total cost of processing together accounted for cost of power, fuel, water, wages to casual labour and interest on working capital. The higher cost of processing was due to the total quantity of raw grapes required to convert into one quintal of raisin. It was observed from the study that nearly five quintals of raw grapes were processed to make one quintal of raisins. Hence, the cost of raw grapes and its procurement cost was found to be very high. The results were on par with the results of Patil (2011).

Out of the total fixed costs of Rs.30.25, depreciation on building and equipments accounted for 0.12 per cent, while the remaining items including interest on fixed capital, salary to the permanent employees, insurance and license fee together accounted for 0.40 per cent of the total cost of processing.

The details of cost of processing of grapes into grape wine, presented in the Table 2, revealed that the average total cost of processing of grapes into 100 lit of grape

wine was worked out to be Rs. 5856, in which the total variable cost was Rs. 5783 formed the major (98.75%) component. The total fixed cost being Rs. 73 per 100 lit of wine accounted for 1.25 per cent of the total cost of processing. Of the total variable cost, the procurement cost incurred in procuring 300 kg of ripened grapes was the maximum (Rs. 3525, 60.29%), followed by cost of sodium bi-carbonate or tartaric acid of 1.25 kg (Rs.375, 6.40%), yeast culture of 240 g (Rs. 840, 14.34%), sugar syrup of 12.5 lit (Rs.325, 5.55%) and added alcohol of 2 lit. (Rs. 360, 6.15%). The cost of power, fuel, water, wages to casual labour and interest on working capital together accounted for remaining 6.12 per cent (Rs. 358) of the total cost of processing. Nearly three quintals of grapes are processed to make hundred lit of wine which resulted in higher processing cost along with the cost of yeast culture which was found to be the costliest raw material next to raw grapes.

Out of the total fixed cost of Rs.73 per 100 lit of wine, salary to the permanent employees (Rs. 40) was found to be the major component (0.77%), followed by insurance and license fee (0.17%). Since, the capacity utilization and quantity handled was higher in the case of wine processing unit, the human resources maintained were marginally higher. The interest on fixed capital,

Table 2: Cost of processing grapes into wine					(Per 100 lit)
Sr. No.	Particulars	Unit	Rupees/ unit	Quantity	Total (Rupees)
Variable cost					
1.	Grapes procurement cost	Kg		300	3525 (60.19)
2.	Sodium bicarbonate/tartaric acid	Kg	300	1.25	375 (6.40)
3.	Citric acid/ yeast culture	Grams	3500	240	840 (14.34)
4.	Sugar syrup	Litres	26	12.5	325 (5.55)
5.	Alcohol	Litres	180	2	360 (6.15)
6.	Power, fuel and water	Rupees	75	-	75 (1.28)
7.	Wages on casual labour	Rupees	28	-	28 (0.48)
8.	Interest on working capital	Rupees	230	-	230 (3.93)
9.	Repairs and maintenance	Rupees	25	-	25 (0.43)
	Total variable cost			-	5783 (98.75)
Fixed cost					
1.	Interest on fixed capital	Rupees	4.35	-	4.35 (0.07)
2.	Depreciation on Buildings at 5%	Rupees	6.5	-	6.5 (0.11)
3.	Equipment depreciation cost	Rupees	7.5	-	7.5 (0.13)
4.	Salary to the permanent employee	Rupees	45	-	45 (0.77)
5.	Insurance and License fee	Rupees	10	-	10 (0.17)
6.	Total fixed cost	Rupees		-	73.35 (1.25)
	Total processing cost	Rupees			5856.35. (100)

depreciation on building and depreciation on equipments together accounted for remaining 0.31 per cent of the total processing cost.

Table 3 presents the total stored quantity and storage cost of raisin and wine in the processing units. The detailed analysis of results of table revealed that raisin units stored 1,800 quintals of raisin and the wine units stored around 57,600 lit of wine, with the average period of 300 days in the case of raisin and wine making unit each per annum. The storage cost incurred per quintal of product stored was Rs. 1500 in the case of raisins and Rs.1200 in the case of wine.

The average marketing cost incurred by value addition units in marketing one quintal of grape raisin and hundred lit of grape wine is depicted in Table 4. It can be noted from the table that the total marketing cost incurred in marketing one quintal of raisin and hundred liters of wine by processor, WS/CA and retailer was worked out to be Rs.244, Rs.209, Rs.137, Rs.74, Rs.95 and Rs.65, respectively. In case of processor, the major item was rent of the rack (Rs. 120 per qtl) followed by packing material of Rs.70 (28.63%), electricity of Rs.10

(4.09%), value of storage losses of Rs. 8.50 (3.48%), weighing and packing (3.48%). Other items like loading and unloading (2.04%), grading charges (3.07%) and advertisement cost (6.13%) together accounted for 14.72 per cent of the total marketing cost.

With respect to the marketing of hundred lit of wine, packing material was the major item which accounted for Rs.150 (71.51%), followed by transportation of Rs. 20, value of storage losses of Rs. 8 (5.81%). Remaining items like rent on shop/godown (3.81%), electricity (8.72%), value of storage losses (0.48%), loading and unloading (3.81%), grading charges (0.36%), weighing and packing (1.91%) and advertisement cost (2.86%) which together accounted for 21.95 per cent of the total marketing cost. The rack with the capacity of accomodating ten tons of grapes and its rent (Rs.1.2 / kg) was found to be the major item contributing to the marketing cost followed by the electricity charges. Raisins are to be compulsorily stored in cold storages in order to maintain the quality and to meet the demand for raisins throughout the year. Hence, there was a need of regular supply of electricity which costed more to raisin

Table 3: Storage costs of value added products of grapes and pomegranate

Sr. No.	Particulars	Grape raisin making unit	Grape wine making unit
1.	Quantity of value added products stored per annum	1800 qtls	57600 lit
2.	Period of storage (days)	300	300
3.	Total storage cost (Rs. per month)	1500/qtl	1200/ 100 lit

- Storage cost refers to rental value of the storage structures coupled with the maintenance costs include costs of protection measures, labour etc.
- Ambient Storage cost per kg per month=1.2 Rs.
- Cold storage cost per kg per month=1.5 Rs.

Table 4 : Marketing costs incurred in marketing different value added products of grapes

Sr. No.	Particulars	Grapes					
		Cost incurred in value addition by					
		Processor		WS/CA		Retailer	
		Raisin	Wine	Raisin	Wine	Raisin	Wine
1.	Transportation	- (00)	20.00 (9.54)	35.00 (25.44)	36.00 (40.27)	24.00 (25.07)	22.00 (33.36)
2.	Rent	120.00 (49.08)	8.00 (3.81)	2.50 (1.82)	5.00 (6.71)	5.00 (5.22)	1.50 (2.27)
3.	Electricity	10.00 (4.09)	12.00 (8.72)	3.10 (2.25)	20.00 (26.85)	6.50(6.79)	1.50 (2.27)
4.	Value of storage losses	8.50 (3.48)	1.00 (0.48)	8.00 (5.81)	2.00 (2.68)	3.00 (3.13)	2.10 (3.18)
5.	Grading	7.50 (3.07)	0.75 (0.36)	4.00 (2.91)	1.00 (1.34)	1.00 (1.04)	1.25 (1.90)
6.	Packing material	70.00 (28.63)	150.00 (71.51)	75.00 (54.51)	3.00 (4.03)	5.50 (5.74)	6.00 (9.10)
7.	Weighing and packing	8.50 (3.48)	4.00 (1.91)	2.50 (1.82)	5.50 (7.38)	6.00 (6.27)	1.60 (2.43)
8.	Loading and unloading	5.00 (2.04)	8.00 (3.81)	3.00 (2.18)	3.50 (4.70)	7.75 (8.09)	2.00 (3.03)
9.	Advertisement costs	15.00 (6.13)	6.00 (2.86)	4.50 (3.27)	4.50 (6.04)	12.00 (12.53)	3.00 (4.55)
10.	Commission	-	-	-	-	25.00 (26.11)	25.00 (37.91)
	Total	244.50	209.75	137.60	74.50	95.75	65.95

processors.

Similarly, in the case of marketing of raisin by wholesaler cum commission agents, transportation cost was the major cost item (25.44%), followed by packing material (54.51%), value of storage losses (5.81%), grading (2.91%), electricity charges (2.25%), loading and unloading (3.81%), weighing and packing (1.82%) and advertisement cost (3.27%) together constituted 20.05 per cent, with a total marketing cost of Rs.1378. In case of marketing of wine by wholesaler cum commission agents, transportation cost (40.27%), followed by electricity (26.85%) and weighing and packing (7.38%) were the major chunks of marketing costs. Other items including rent on shop/godown (6.71%), value of storage losses (2.68%), grading charges (1.34%), loading and unloading (4.70%), packing material (4.03%) and advertisement cost (6.04%) together accounted for 25.5 per cent of the total marketing cost. In case of retailer, it can be noted that the total marketing cost incurred by the retailer in marketing of one quintal of raisin and hundred lit of wine was found to be Rs.96 and Rs.66, respectively. Commission charges (Rs.25) was found to be the major item among both the products, followed by transportation cost (Rs.24 and Rs.22, respectively). Other items like packing material, grading, value of storage loss, weighing and packing, loading and unloading charges and advertisement cost, all together constituted Rs.35 and Rs.19 of the total marketing cost.

The economics of different value added products like grape raisins and grape wine in value addition process of selected fruit crop *i.e.* grape fruit is depicted in Table 5. The results revealed that, the sales realization obtained in case of one quintal of grape raisins and hundred lit of grape wine were Rs.13895 and Rs.13020, respectively. The per unit cost of production calculated in case of above mentioned value added products, in order, was Rs.7813 and Rs.7406. To arrive at the net returns, the cost of production including marketing costs of all the stake holders has been deducted from the sales realization. Thus, Rs. 6082 and Rs. 5614 were the net

returns obtained in the order for grape raisins and grape wine, with a value addition to the tune of 56.22 and 56.88 per cents, respectively. The results of Patil (2011) also revealed that the extent of value addition in raisins in case of Vijayapura district was found to be 55 per cent.

Conclusion :

As a result of availability of huge and modernized technologies along with the existence of improved and modern processing units in other states and even in South Karnataka, the pomegranate is undergoing value addition and it converted into different value added products like bottled juice, syrups and jelly and jams. But the situation in north Karnataka is totally different. Here, it is used only for table purpose and only recently in concentrates, wine, juices and squash preparations are taking place in an infantary stage, because of lack of different value adding or processing units. Based on the findings of the study, it can be inferred that, there is a need to take necessary steps in the areas of investment, production, processing, cold storage, other value addition and marketing of the grape fruits and its value added products. So there is a wide scope and opportunities in expanding this business in processing field, so that the players can accrue greater benefits of higher margins compared with present situation.

The concerned statutory bodies have to give due attention for providing proper approach roads to the farms, processing units and cold storage facilities. Vijayapura, being the largest raisin and wine processing district in the North Karnataka, it lags behind in meeting the demand and quality standards at international level because of very few number of cold storage units. The value added products of grapes especially; grape raisins and grape wine have huge export demand. Therefore the value addition processes in case of grapes and pomegranate have to be encouraged and expanded by providing subsidies and other concessions like tax concession, waiving of commission charges by removing the middlemen and commission agents. The government has

Table 5: Economics of different value added products in grapes value addition process

Sr. No.	Products	Sales realization (Rupees)	Cost of production (Rupees)			Total value addition (%)	Net returns (Rupees)
			Processing cost	Storage and marketing cost	Total cost		
1.	Raisins (per qtl)	13895.00	5835.25	1977.85	7813.10	56.22	6081.90
2.	Grape wine (per 100 lit)	13020.00	5856.35	1550.20	7406.45	56.88	5613.55

to encourage development of cold storage structures on subsidy basis, in order to ensure the availability of cold storage units in the selected areas for the benefits of farmers, processors, marketers and other value chain actors.

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