Cost of Production of Grape in Dindigul District, Tamil Nadu

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Abstract

Agricultural play an important role in Indian economy. It offers more employment, i.e., 70 percent. India has achieved the highest productivity of 20 tones per hectare in the production of grapes. Grape is a component in wine, juice, squash, syrup, jam, jelly, vinegar, pickles, chocolates, tartaric acid, oil, cattle feed, tannin, etc. However, the processed products, viz., wine, raisins and grape juice are the most popular products from grapes all over the world. The commercial production of grape commenced only after the import of varieties like Thomson seedless, Kishmish, Chorni, Beauty seedless, etc. These seedless varieties overtook the seeded varieties production tremendously.

Currently grape cultivation in India has reached to the extent of 50000 ha, with an annual production of 10-12 lac metric tons. Out of the total production, 87% of the produce is consumed as table grape while 10% is dried and produced for raisin, two percent for juice and one percent for wine. Dindigul is one of the most important grape producing districts in Tamil Nadu. The district's soil and climatic conditions are highly suitable for grape cultivation. Hence, grape cultivation has increased spontaneously with an area of 1195 hectares in 1996-97 to 1709 hectares in 2003-04 and 2684 hectares in 2009-2010. Therefore, this paper attempts to analyse determinants of grape production, factors affecting the grape cultivation and also suggests how to improve the productivity of grape in the study areas.

The study found that in the case of farmers cultivating High Yielding Varieties, r value indicated 78.41 percent of variation in yield caused by five explanatory variables. Labour cost, fertilizer, pesticides and capital flows were found to be statistically significant at 5 per cent level. The capital flows had a greater influence on the determination of yield, by the variables such as labour cost, fertilizer and pesticides.   .

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Introduction

Grape production is one of the most important commercial fruit crops of India which contributes to the maximum share of the export from India to other parts of the world. The world total grapes production is estimated at 16 per cent of total fruit production and about 78 per cent of grape is used for edible purpose; nearly 17.20 per cent is dried for raisin production while 1.5 per cent is used for juice and 0.5 per cent for manufacturing wine. Though this fruit is processed to the largest extent compared to other fruits in the country, the processing of this fruit in India is much less than the processing found in the traditional grape growing countries in the world, where more than 80 per cent of the produce is processed in the form of wine, raisin and juice. Apart from raisins, the various forms of the processed products that could be prepared from grape or may have grape as a component are wine, juice, squash, syrup, jam, jelly, vinegar, pickles, chocolates, tartaric acid, oil, cattle feed, tannin, etc. However, the processed products, viz., wine, raisins and grape juice, are the most popular products from grapes all over the world (Desai, 2007).

India has achieved self-sufficiency in food grain production and now the major concern is to achieve higher growth rate. The focus has now shifted to horticulture which, besides imparting nutritional security, offers a great potential for efficient input use, higher returns per unit area, crop diversification, foreign exchange earning and greater employment generation through post-harvest processing in agro-industries. Continuous focused attention and higher investment in horticulture during the last decade have paid rich dividends in terms of increased production, quality and productivity of horticultural crops with manifold export potential (Basic Shackleton, 1992). Horticultural crops occupy 8.5 per cent of gross cropped area of the country with a total production of 146.27 million tonnes. Horticulture contributes 29.65 per cent in GDP of agriculture and 52 per cent in earnings of the agriculture. The total export of horticulture produce was Rs. 67592.82 million in 2002-03. There has been a significant increase in area and production of fruits particularly in Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra, Gujarat, Himachal Pradesh, Jammu and Kashmir and Uttaranchal. This growth assumes more significance as agriculture sector has been able to achieve only less than 2 per cent growth during the 10th Five Year Plan. At present, India is the second largest producer of fruits (45.5 million tonnes) and vegetables (90.8 million tonnes) in the world contributing 10.23 and 14.45 per cent to the total world production of fruits and vegetables, respectively. The international trade in terms of horticulture produce has increased fivefold between 1961 and 2001, from 24 million tonnes to 125 million tonnes. The government of India has taken horticulture as a key development area (Kahlon, et.al; 2000).

Statement of the Problem

India has achieved the highest productivity of 20 tonnes per hectare in the production of grapes. The area under grape cultivation and production is lower among the grape countries. The grape cultivators face a lot of problems such as marketing. The farmers seek financial assistance from external sources such as commercial banks, land development banks, co-operatives and

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governmental agencies, besides non-institutional bodies. This institutional credit plays a key role in grape production. Since the farmers are always unorganized they do not command a strong bargaining power. They are forced to sell the produce at a very low price right after the harvest. The price of grape mainly depends on middlemen in the market. Farmers today are totally removed from the final markets and hence they have poor awareness of product specifications. This leads to sub-standard quality of the produce Price (Gittinger; 2006). Agri-business calls for strengthening of markets which makes them more competitive than at present and for protecting the interest of the growers by ensuring reasonable price for their product.

Dindigul district is selected for the present study and it is one of the most important grape producing districts in Tamil Nadu. Muscat and Thompson Seedless varieties of grape are grown widely in this district. The district is an important source of supply of grape to Chennai, Tiruchirappalli, Bangalore, Mumbai, Kolkata, throughout Kerala and various markets all over India. The district's soil and climatic conditions are highly suitable for grape cultivation. Hence, grape cultivation is increased spontaneously with an area of 1195 hectares in 1996-97 to 1709 hectares in 2003-04 and 2684 hectares in 2009-2010. Hence, the present study makes an attempt to analyse the cost of production of grape in Dindigul District.

Objectives

1. To examine the determinants of grape production in the study area.
2. To analyse the factors affecting the grape production in the study area.
3. To suggest suitable policy measures to improve productivity of grape cultivation in the present study area.

Methodology

The area chosen for the present study is Dindigul district, situated in the southern part of Tamil Nadu.

Sampling Design

Multistage stratified random sampling technique has been applied in the present study. This study concentrated only on two Blocks, viz., Nilakottai and Attur. The focus was on three villages selected (based on land holding size of the farmers categorized as marginal farmers (less than 1 hectare), small farmers (1-2hectares), medium farmers (2-4 hectares) and large farmers (above 4 hectares) for the present study in each block. Therefore, 150 samples were considered for each block in the present study area.

Cost Structure of Grape Production

The per acre average cost and returns structure of marginal, small, medium and large farmers production grape are furnished in **Table 1**. The cost analysis reveals that the per acre total cost, that is, operational cost of production for marginal farmers worked out to Rs.8,208, whereas it

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was Rs.8,466 for small farmers, Rs.9,436 for medium farmers and Rs.9,508 for large farmers. It is observed that total cost incurred was found higher in the case of large farmer compared to the other categories of farmers.

Table -1
Farm Size-wise Average Cost and Returns Structure of Grape Production

(Per Acre)

SI. No.	Cost Component	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers
1.	Labor Cost*	3,753	3,862	4,267	4,354
2.	Compost	671	741	1,225	1,107
3.	Chemical fertilizer	1,438	1,421	1,445	1,437
4.	Pesticide cost	578	662	558	537
5.	Seed cost	392	391	462	507
6.	Farm manure	557	507	591	673
7.	Cost of irrigation	235	262	297	268
8.	Interest on fixed capital	275	371	511	562
	Cost A	8,208	8,466	9,436	9,508
9.	Rent	817	896	921	938
	Total cost (total)	9,301	9,735	10,868	11,009
	Yield per acre in kg	2,209	2,085	2,321	2,139
	Gross Returns (Rs.)	13,183	12,758	14,870	14,489
	Net Returns (Rs.)	3,881	3,022	4,002	3,479

Source: Computed

Note: *Labor cost includes cost of machine, bullock and human labor

It is understood from Table 1 that the marginal farmers produced 2,209 kgs of grape and earned Rs.13,183 per acre while their net returns per acre were Rs.3881. In the case of small farmers, the yield per acre was 2,085 kgs and they realised Rs.12,758 per acre as gross returns while their net return per acre was Rs.3,022. With regard to medium farmers, the yield per acre was 2,321 kgs and they realised Rs.14,870 per acre as gross returns while their net return per acre was Rs.4,022. In case of large farmers, the yield per acre was 2,139 kgs and they realised Rs.14,489 per acre as gross returns while their net return per acre was Rs.3,479.

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The cost analysis reveals that the per acre total cost, that is operational cost of production, for marginal farmers worked out to Rs.8,208, whereas it was Rs.8,466 for small farmers, Rs.9,436 for medium farmers and Rs.9,508 for large farmers. It is observed that total cost incurred was found higher in the case of large farmer compared to other categories of farmers.

Labour Cost forms the major component of the total cost of production for all the farmer categories. Next to Labour Cost, the amount spent on the use of chemical fertilizers occupied the major portion in the total cost of production. It came behind the cost of farm manure, cost of irrigation, pesticides, seed cost and compost. The costs of the inputs such as Labour Cost, seed cost, farm manure and interest on working capital were higher for large farmers. In case of medium farmers, the inputs such as compost, chemical fertilizer, and cost of irrigation were higher whereas in case of small farmers, the input, namely, pesticide cost only was higher. Thus, it is inferred from the analysis that the medium farmers earned more net returns through grape cultivation than the other farmer categories in the study area.

The percentage of various cost components to total cost (Cost C) is presented in **Table 2**. Table 2 reveals that the percentage cost of variable inputs (Cost A) to total cost (Cost C) was 88.25 per cent for marginal farmers, 86.97 per cent for small farmers, 86.82 per cent for medium farmers and 86.36 per cent for large farmers. In Cost A, Labour Cost was found to be high for marginal farmers which constitute 40.35 per cent followed by cost of chemical fertilizers. The small farmers spent 14.60 per cent of their total cost on the utilization of chemical fertilizer while medium and large farmers spent 13.30 per cent and 13.05 per cent respectively. Next to this the major cost component was cost of Compost which constituted 11.28 per cent, 10.06 per cent, 7.62 per cent and 7.22 per cent of the total cost for medium, large, small and marginal farmers respectively. Cost of pesticides worked out to 6.22 per cent for the marginal farmers, 6.81 per cent for small farmer, 5.14 per cent for medium farmers and 4.88 per cent for large farmers. Farm manure constituted 6.59 per cent, 6.12 per cent, 6.00 per cent and 5.21 per cent for medium, small, large, marginal and small farmers respectively. The rent for land was higher for medium farmers than the other farmer categories which constitute 9.21 per cent.

Table 2
Percent share of Various Cost Components of Grape Production

(Per Acre)

SI. No.	Cost Component	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers
1.	Labour Cost*	40.35	39.68	39.26	39.55
2.	Compost	7.22	7.62	11.28	10.06
3.	Chemical fertilizer	15.47	14.60	13.30	13.05
4.	Pesticide cost	6.22	6.81	5.14	4.88
5.	Seed cost	4.22	4.02	4.25	4.61
6.	Farm manure	6.00	5.21	6.59	6.12
7.	Cost of irrigation	2.53	2.70	2.74	2.44
8.	Interest on working capital	6.23	6.33	5.38	5.65
.	Cost A	88.25	86.97	86.82	86.36

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9.	Rent	8.79	9.21	8.48	8.53
10.	Interest as fixed capital	2.97	3.82	4.70	5.11
	Total – Cost C (total)	100.00	100.00	100.00	100.00

Source: Computed

Note: Labor cost include cost of machine, bullock and human labor

Determinants of Returns to Grapes Production

It is understood from Table 1 that the marginal farmers produced 2,209 kgs of grapes with Gross Returns Rs.13,183 per acre while their net returns per acre were Rs.3881. In the case of small farmers, the yield per acre was 2,085 kgs and they realised Rs.12,758 per acre as gross returns while their net return per acre was Rs.3, 022. With regard to medium farmers, the yield per acre was 2,321 kgs and they realised Rs.14, 870 per acre as gross returns while their net return per acre was Rs.4, 022. In case of large farmers, the yield per acre was 2,139 kgs and they realised Rs.14, 489 per acre as gross returns while their net return per acre was Rs.3, 479.

Covering all categories of farmers, the five independent variables jointly accounted for about 76.16 per cent of the variations in the yield of grape. All the five variables had a positive effect on the determination of yield. Input variables such as fertilizer and capital flow were found to be significantly related to the yield of grape. It indicated that on additional percentage of use of these variables, it was capable of increasing the yield by 0.2783 per cent and 0.2869 per acre respectively. Capital flow was found to be most influential input on yield determination of grape, followed by the variable, fertilizer.

Summary of Findings, Suggestion and Conclusion

In the study, the average cost per acre, total cost and operation cost of cultivation were found higher in the case of the category of large farmers compared to other categories of farmers. The capital flows had greater influence on the determination of yield, by the variables such as labor cost, fertilizer and pesticides. It is suggested on the basis of the findings that the extension service officials may improve technical efficiency by advising the farmers on input application at the proper time as recommended. The farmers in the study area were of the opinion that they could not achieve the maximum yield due to severity of diseases and pest attacks. It is suggested that the farmers should be educated properly to apply the pesticides at the prescribed level and this may be done through the agricultural department officials attached to the Panchayat unions. It is also very essential to see that the price of grape offered to farmers is related to the cost of production. Further, a new mechanism has to be innovated to break the stagnation in the production of grape through adoption of most modern methods of cultivation and to ensure stable remunerative grape price to the farmers. Thus, it is concluded from the analysis that medium farmers are economically more efficient than the categories of other farmers irrespective of the varieties of grape production in the study area. This could be due to better supervision and more efficient farm management favoured by the smaller size of operational holdings. This indicated that apart from efficient allocation of inputs, direct supervision and farm management are crucial determinants of economic efficiency.

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