

COST AND BENEFIT OF INVESTMENT IN GRAPE CULTIVATION – A CASE STUDY

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Abstract

This paper attempted to analyse the Cost and Return and profitability in Grape Cultivation. In Tamil Nadu, Theni District ranks first in the Production of Grapes since it is cultivated in the three blocks namely Cumbum, Chinnamanur and Uthamplayam, which have been selected as the study area for the present study with the sample consisting of 300 grapes growers selected from different villages by adopting simple random sampling method. Thus Multi-Stage sampling method was adopted with the selection of district as the primary unit, Block as the secondary unit and the grapes growers as the ultimate unit. The results are the average establishment cost per acre worked out to Rs.407499.84 of which variable cost constitutes 61.24 per cent and fixed cost 38.76 per cent. The average gross returns from the grapes cultivation worked out to Rs.458421.50 per acre. The gross return were computed by deducting marketing cost incurred to the farmers from the sale proceeded of grapes. The contribution worked out to Rs. 180712.70 after deducting the fixed cost from the contribution net amounted by Rs. 149542.06. It also net profit ratio 32.62 per cent of total amount in statement of income. The Grape Cultivation is financially viable and profitable.

Introduction

A grape is one of the finest fruits and the healthiest food. Grapes are a rich source of vitamins and minerals that can contribute to a balanced healthy life. The crop has wide adaptability and it has been taken up under a wide range of soil types, India's 94 per cent of the cultivated area falls in the tropical region. It represents 24 per cent of Indian's Gross Domestic Product [GDP]. Grape's other uses of utilization: Preparation of Grapes Jelly, Grapes Seed Abstract, Jam, Grapes Seed, Oil, Wine Gal and Beard Spread. One important use of grapes with great health benefits is that it can be made into grapes juice. The cultivars known as juice grapes are those which produce juice for acceptable beverage when it is presented by pasteurization, germ- proof filtration or other means. It is important that the juice should retain the natural flavor of fresh grapes throughout the preservation. The grapes which are primarily used to produce wine are known as wine grapes. Economically, wine is one of the most important uses of grapes. As result, 80 per cent of the grapes produced in the world are used for wine-making; grapes can be fermented without the addition of Sugars, Acids, Enzyme or other nutrias. The important wine grapes varieties of the world are while resoling, chardonnay, cabernet sauvignon, Tinta Madeira and Muscat balance. France and Italy are the top two wine producing countries of the world. In India, wine is made on small scale form Bangalore blue grapes. Among the commercial varieties Thomson seedless and Arka Kanchan, a hybrid evolved at the Indian Institute of Horticulture Research, Bangalore, are very good for wine making.

Review of Literature

The following are the previous studies related to the Cost Benefit Analysis of crops.

M.V.George and P.T. Joseph (1973) in their study entitled "Cost Benefit Analysis of Investment in Tree Crops", focused that the on cost-benefit analysis of investment in tree crops and evaluation of financial feasibility of investment in tree crops using the pay-back period method, the net present value techniques and benefit-cost ratio and internal rate of return.

S.S.Gupta and P.S. George (1974) in their study "Profitability of Nagpur Sandra in their Study (oranges) Cultivation", evaluated and economic viability of investment in Nagpur Sanntra cultivation using NPV, IRR and Benefit-Cost Ratio.

P.Santhosh (1985) in his study "Cost of Cultivation and Marketing of Pepper in Cannanore District, Kerala", evaluated the economics of investment in the production of pepper using four indicators, namely pay-back period, net present value, the benefit-cost ratio and the internal Rate of return.

Statement of the Problem

Grapes are one of the important fruits cultivated in India occupying the 11th position in the world in the production grapes. As grapes have value additions, It has the sizable export of grapes contributes 12 per cent to the total export of various fruits from India. Grapes become important commercial crop as it accounts for 1.14 per cent of total area of cultivation and 2.56 per cent of total production of fruits. India's share in global production of grapes is 2.8 per cent. India is able to achieve higher production and productivity in grapes cultivation because of the various initiatives taken by the grapes growers and government over the past years. As the demand for grape is higher especially in export market, the area-under grapes-cultivation and thread in large number to be trying to achieve higher production. The farmers shall be assured of profitability in the cultivation of grapes, so that they come forward in large number to cultivate this fruits crop and hence the present study.

Objectives of the Study

The main objective of the present study is to analyze the Cost, Return, Profit and Productivity of Grapes Cultivation.

Scope of the Study

It also includes the cultivation, production and marketing problems faced by the cultivators. The study covers Muscat variety of grapes that are mainly cultivated in Theni District.

Methodology

The present study is an empirical research based on the survey method. First hand data were collected from the depraver, and the data relating to the cultivation were collected of Secondary. Data have been collected from the official records of office of the department of Agriculture and Department of Statistics, Government of TamilNadu, Theni and Libraries in the District, The District Collector Office and Books, Magazines and Newspapers Relating to Agriculture.

Period of the Study

The primary data for the study were collected for 4 months during the period from December 2016 to April 2017. The secondary data were collected for 10 years from 2005 to 2015 from the records of the department of agriculture.

Sampling Design

In Tamil Nadu, Theni District ranks first in the production of Grapes. In Theni District grapes are cultivated in the three blocks namely Cumbum, Chinnamanur and Uthamplayam, which have been selected as the study area for the present study. The sample consisting of 300 grapes growers selected from different villages by adopting simple random sampling method. Thus Multi-Stage sampling method was adopted with the selection of district as the primary unit, Block as the secondary unit and the grapes growers as the ultimate unit.

Data Collection

Two types of data were collected namely a) Primary data b) Secondary data

a) Primary Data: Primary Data were collected from the sample respondents. For these an interview schedule was prepared. The schedule was pre-tested and pilot study was conducted. Necessary correction, and crosscheck were done to have a well structure interview schedule were made.

b) Secondary Data: Secondary Data were collected from the Journals, Articles, Government Reports, and Records at Theni Collector Office, Statistic Book, Record of Uthamplayam Taluk, Municipality and News Paper.

Limitations of the Study

As the grapes growers do not maintain any records, the provide data by recollecting from memories. Hence there might be recall bias. So the results of the study cannot be generalized and should be used with caution.

Results and Discussions

The cost of establishment of Vineyard has been ascertained and presented in Table 1.

Table 1: Average Cost of Establishment of Vineyard per Acre

S. No	Particulars	Amount (Rs.)	Percentage
I	Variable Cost		
	Seedlings	6189.57	1.52
	Labour	125254.50	30.74
	Manure	25467.52	6.25
	Fertilizer	27605.75	6.77
	Pesticide	43697.25	10.72
	Cost of irrigation	9450.50	2.32
	Interest on working cap	11883.25	2.92
	Total Variable Cost	249548.34	61.24
II	Fixed Cost		
	Rental Value of Land	15264.75	3.75
	Other Fixed Cost	142686.75	35.02
	Total fixed cost	157951.50	38.76
	Total Establishment Cost	407499.84	100.00
	Annual Share of Net Est. Cost	20374.99	

Source: Primary Data

It could be observed from Table 1 that the average establishment cost per acre worked out to Rs.407499.84 of which variable cost constitutes 61.24 per cent and fixed cost 38.76 per cent. In the components of variable cost seeding constituted the largest share of 1.52 per cent to total cost followed by labour cost is 30.74 per cent and fertilizer 6.77 per cent. Manure was 6.25 per cent and next in order of the cost components are the cost of preparatory cultivation which accounts for irrigation

cost is 2.32 per cent. Cost of care of young pesticide was yet another important component which accounts for 10.72 per cent followed by interest on working cap components accounting for 2.92 per cent. In the component of fixed cost in the total establishment costs are concerned, rental value of land alone accounts for 3.75 per cent on the total cost followed by other fixed cost which was 35.02 per cent.

Variable Cost

The total variable cost amounts to Rs.249548.34 per acre. The total variable cost accounts for 61.24 per cent of the total establishment cost. The various components of variable cost are presented below.

- **Seedlings:** Cost of seedling (plants) is varying place to place and where from they are procuring the sapling. The average cost of sapling in the study area ranged between 13 and 15 number of sapling for an acre is 550 to 600. The average cost of seedling in the study area for an acre is Rs.6189.57.
- **Labour:** The cost of labour includes the sign up and wages paid for family labour for application of manures, fertilizer tipping and thinning the grape Vine till it reach the bower (panda) height. The average cost of labour in the study area was Rs. 125254.50.
- **Manuring:** It includes the cost of manures up to period of bearing stage and other manuring application. Putting sufficient manure hips to give colour to the fruits as well as augment the weight of bunches, besides improving the quality of berries. In the study area it is noticed that the 4 to 5 cart load of farm yard manure is used to fill at the time of Labourers. In case of owned manure, market value at the rate of Rs. 7000 per cart load uniformly taken. The average cost of manure per acre up to bearing stage amounts to Rs.25467.52.
- **Fertilizer:** It includes the cost of fertilizer up to period of bearing stage and other fertilizer application. Putting sufficient fertilizer hips to give colour to the fruits as well as augment the weight of bunches, besides improving the quality of berries. In the study area it is noticed that the 5 to 7 of farm yard fertilizer is used to fill at the time of Labourers. In case of owned fertilizer, market value at the rate of Rs. 2000 to 2500 uniformly taken. The average cost of fertilizer per acre up to bearing stage amounts to Rs.27605.75.
- **Pesticide:** The care of young pesticide (weeding) cost includes wages paid and application to grow of vine as expected way. The pesticide cost varies from time to time and place to place. In the study area average Pesticide cost was Rs. 43697.25 per acre.
- **Irrigation:** Cost of irrigation includes cost of oil for running motors and amount paid to labour during the establishment period. Seven to eight days once irrigation is needed, however it depends upon the prevailing temperature and other environmental factors. In the study area, the cost of irrigation per acre amounts to Rs.9450.50.
- **Interest on Working Capital:** Interest on working capital is worked out at the co-operative banks, loans to the agriculture. This includes the worked an Rs.11883.25 development agriculture interest in the farmers earning of profit fertility in working capital.
- **Rental Value of Land:** Among the fixed cost components rental value of land was one, of the major items. Both owner cultivation and tenant cultivation are popular practices that are prevailing in the study area. As for as sample grapes, Vineyard operated by the owner also includes prevailing rental value for similar crop of land which was taken as the rental value of vineyard. The average cost of rental value of land is Rs. 15264.75.
- **Other Fixed Cost:** It includes interest on fixed capital, depreciation on farm assets and repairs and maintenance cost, Depreciation is charged to meet the loss due to wear and tear on fixed assets. The fixed cost amount to Rs.142686.75 per acre and it represents 35.02 per cent of the total establishment cost.
- **Annual Share Net of Establishment Cost:** In working out the cost of production of grape, the annul share net establishment cost is also is taken into account as the productivity of grape. It is also establishment economic period of the cost Rs.20374.99.

Cost of Production of Grapes

The cost of production of grapes includes both variable and fixed costs. The variable cost includes operation and Maintenance cost and fixed cost includes rental value of land, annual share of not establishment cost and other fixed costs. The detailed cost of production of grapes per acre is worked out and is presented in Table 2.

Table 2: Annual Average Cost of Production of Grapes

S. No	Particulars	Amount(Rs. per acre)	Percentage
I	Variable Cost		
	Labour	136347.35	44.14
	Manure	24651.86	7.98
	Fertilizer	37695.37	12.20
	Pesticide	53614.74	17.36
	Cost of Irrigation	12175.25	3.94

	Interest on Working Capital	13224.23	4.28
	Total Variable Cost	277708.80	89.91
II	Fixed Cost		
	Other Fixed Cost	10795.65	3.50
	Annul Share of Net Cost	20374.99	6.60
	Total Fixed Cost	31170.64	10.9
III	Total Cost of Production	308879.44	100.00

Source: Primary Data

The data in the Table 2 reveals that the cost of production of grapes per acre worked out to be Rs.308879.44. The total variable cost per acre is worked out to be 277708.80 which constituted 89.91 per cent of the total cost of production. It is found out that the total fixed cost worked out to be Rs. 31170.64 per acre.

- **Labour:** This includes the labour employed for weeding, manuring, puring and other agricultural activities; Weeding is done twice a year. The cost of labour per acre worked out to be Rs. 136347.35. This forms 44.14 per cent of the total cost of production.
- **Manures:** The cost of Manures is worked out to be Rs.24651.86 per acre, and this comes to 44.14 per cent of the total cost of production.
- **Irrigation:** The average cost of irrigation amounts to Rs.12175.25 per acre which represents 3.94 per cent of the total cost of production.
- **Interest on Working Capital:** Interest on working capital is worked out at the rate of 4 per cent per annum which the rate is charged by the co-operative banks, while lending loans to the agriculturists. It is Rs. 13224.23 per acre forming about 4.28 per cent of the total cost of production.
- **Other Fixed Cost:** Among the fixed cost, other fixed cost works out to be Rs.10795.65 per acre and its contribution to total cost of production is 3.50 per cent.
- **Annul Share of Net Establishment Cost:** In working out the cost of production of grape, the annul share of net establishment cost is also taken in to account as the productivity of grape also depends on the expenditure incurred during the establishment period. The Net establishment cost is apportioned among the remaining economic life period of 18 years and the annual share of net establishment cost per acre is estimated to be Rs. 20374.99 forming about 6.60 per cent of the total cost of production.

Productivity and Unit Cost of Production

The output of grape per acre and its unit cost of production are computed and presented in Table 3.

Table 3: Productivity and Unit Cost of Production

Total Cost (Rs. Per acre)	Output (Kgs Per acre)	Cost of Production (Rs. Per acre)
308879.44	25462.50	12.13

Source: Primary data

It is extracted from the Table 3 that the productivity grape per acre is 25462Kgs. The total cost of production per acre computed was Rs. 308879.44 and the average cost of production was Rs. 12.13 per Kilogram of grapes.

Gross Returns and Net Profit

The gross returns and net profit were computed using marginal costing techniques in order to analyze the profitability of grapes cultivation in study area. For this purpose average grapes output and average price has been taken in to account for computation of sales value.

The gross returns and Net profit of grapes cultivation per acre were computed and presented in the Table 4.

Table 4: Statement of Income in Grape Cultivation

S. No	Particulars	Amount (Rs)
1	Gross sales	471056.25
	Less: Marketing cost	12634.75
2	Gross return	458421.50
	Less: Variable cost	277708.80
3	Contribution	180712.70
	Less: Fixed cost	31170.64
4	Net Profit	149542.06
5	Net Profit Ratio	32.62

Source: Primary data



Table 4 reveals that the average gross returns from the grapes cultivation worked out to Rs.458421.50 per acre. The gross return were computed by deducting marketing cost incurred to the farmers from the sale proceeded of grapes. The contribution worked out to Rs. 180712.70 after deducting the fixed cost from the contribution net amounted by Rs. 149542.06. It also net profit ratio 32.62 per cent of total amount in statement of income in grapes in cultivation.

Conclusion

The average establishment cost per acre worked out to Rs.407499.84 of which variable cost constitutes 61.24 per cent and fixed cost 38.76 per cent. The average gross returns from the grapes cultivation worked out to Rs.458421.50 per acre. The gross return were computed by deducting marketing cost incurred to the farmers from the sale proceeded of grapes. The contribution worked out to Rs. 180712.70 after deducting the fixed cost from the contribution net amounted by Rs. 149542.06. It also net profit ratio 32.62 per cent of total amount in statement of income in grapes in cultivation. The Grape cultivation is financially viable and profitable.

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