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Constraints in Production of Grapes: A Study among the Grapes Cultivators in Dindigul District, Tamil Nadu

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Abstract - **Grapes are widely consumed as fresh fruit in India. Grape not only serves as a table fruit but also a great value. Therefore, it has gained enormous commercial value. The grape is a perfect food and a fairly good source for minerals like Calcium, Phosphorus, Iron and Vitamins like Bl and B2. Its juice is a mild laxative and acts as a stimulant to the human kidney. The grape cure is the quickest cure as the grape sugar is immediately taken into the blood circulation without undergoing tine process of digestion Basic (Shackleton 2003). Introduction of grapes into South India seems to have yet another course. The grape was introduced at Melapatti, a village near Krishnagiri in Salem district of Tamilnadu by a French priest in 1832. A little later, a French Jesuit priest to Fr.Larney at Michel Patti village in Madurai district introduced it in 19th century Rengasamy Ayyanger, Dindigul district was selected for the present study, as it is one of the most important grape producing regions in Tamil Nadu. Black Seed and Green Seedless varieties of grape are grown in this district. The main objective of the study is to identify the constraints faced by grape growers in production of grapes in Dindigul district and also to study the area and production of grape growers in Dindigul District.**
Keywords: **Grapes, Production, Farmer, Constraints**

I. INTRODUCTION

Grape is one of the finest fruits and the most strength-giving food. It contains many valuable elements necessary for a healthy life. In addition, it has commendable medicinal qualities, and has been used in nature-therapy for centuries. Among the fruits, grape (Vitis Vinifara) is much sought after table delicacies in India and all over the world. The crop has a wide adaptability. It is now grown in every continent, under temperate, sub-tropical, tropical climatic condition and under varied agro-ecological settings, from mountains to plains. Areas with high rainfall, more number of rainy days, coastal humid regions and sub-tropical regions with short period available for ripening are not suitable. It grows very well under all types of soil except the saline - alkali soils. It is one among the most important sub-tropical fruit crops. Grape is one of the most delicious fruits. Grapes are widely consumed as fresh fruit in India.

Grape not only serves as a table fruit but also a great value. Therefore, it has gained enormous commercial value. The grape is a perfect food and a fairly good source for minerals like Calcium, Phosphorus, Iron and Vitamins like Bl and B2. Its juice is a mild laxative and acts as a stimulant to the human kidney. The grape cure is the quickest cure as the grape sugar is immediately taken into the blood circulation without undergoing tine process of digestion Basic Shackleton, 1994 .

Vitis Vinifera is the principal source of all the cultivated varieties of grapes throughout the world. This type of vine was grafted from Vitis silvestris, the wild vine found in the earlier times of tertiary periods of Geological era CSIR, 1996**.** The seeds of both vitis silvestris and Vitis vinifera L. have occurred in the pre-historic sites in Europe, in many of the Neolithic and Bronze Age lake-side village of Switzerland, Italy and Yugoslavia Winkler, 1994. According to the discoveries made recently by the scientists in Western Kazakhstan, grapes are among the oldest plants on earth. They have discovered clear imprints of vines and their leaves in Cretaceous Chalk deposited which dated back 90 to 95 million years a time at which dinosaurs flourished. Therefore, it is evident that grape is possibly as old as mankind Shanmuga Velu, 1998.

Its great age is confirmed by grape seeds found in Refuge mounds of the pile dwellers of lakes in South Central Europe. Details about grape growing and wine making are depicted in Egyptian mosaics of the fourth Dynasty (2440 B.C). Well before the beginning of Christian era, grape had attained considerable importance as a cultivated plant in southern Europe, countries bordering eastern Mediterranean and North Africa Cheema and Jindal, 2001. In India, famous Indian medicine scholars, Sasruta and Charaka in their medical treatises entitled 'Sasruta Samhita' and 'Charaka Samhita', respectively, written during 1356-1220 BC, mentioned the medicinal properties of grapes, kautilya in his 'Arthashastra' written in the fourth century BC mentioned the type of land suitable for grape cultivation Chadha and Shikhamany, 1999. Introduction of grapes into South India seems to have yet another course. The grape was introduced at Melapatti, a village near Krishnagiri in Salem district of Tamilnadu by a French priest in 1832. A little later, a French Jesuit priest to Fr.Larney at Michel Patti village in Madurai district introduced it in 19th century Rengasamy Ayyanger, 1990. It was introduced in Karnataka during the same period. From there it spread to the states of Maharashtra, Andhra Pradesh. Since then, grape cultivation became popular in South India. From Daulatabad, Hyderabad, Salem and Madurai, to grape cultivation spread to the states of Maharashtra, Andhra Pradesh, Karnataka and Tamil Nadu.

II. REVIEW OF LITERATURE

Winkler (2011) reported that the vine establishment costs could be divided over 30 years, this period being the total production period of the vine. He apportioned the maintenance period costs into pre-harvest cash costs, depreciation and interest on investment. He was of the opinion that the establishment cost could be spread over the entire life period of the vineyard.

Sivanandan (2008) in his study on forest plantation at Pudukkotai District concluded that costs may be divided into i) The Establishment cost or Investing cost, and ii) The Maintenance cost. The establishment cost which comprised the opportunity cost on land, cost of clearing the land, aligning and staking, digging pits, pandal erection, cost of seeding, cost of manuring, plant protection, watering watching and all other expenditure incurred upon commercial bearing in Cashew and upto the end of the first year for Eucalyptus and Casuarinas. The maintenance included the expenditure incurred on gap filling, plant protection, manuring, watchman's charges, watering, and inter-cultivation, cleaning of thorny growth and for collection of nuts.

Peter, (2002) suggested that the choice of discount rate in project appraisals should be based on the rate at which capital could be raised. According to him, the acceptance of a single project could be made only when internal rate of return exceeded the interest rate or when the net present worth of the project was positive or when the benefit-cost ratio exceeded unity. He also stressed upon the application of such measures in making comparisons between different projects.

Harrison (2002) studied the cost and return structure of small and large farms in his study on "agricultural modernization and income distribution". The study was conducted in Tanjore district, Tamil Nadu. The study revealed that small farmers spend higher amount per hectare on the inputs. Chemical fertilizer is identified as the highest input cost incurred in the small and large farms followed by seed.

Reddy *et al.,* (2004) have defined gross income as gross value of output sold and net income was the residue of gross income after deducting the total cost.

Gopalan and Venkataraman, (2002) state that profitability of crops plays a significant role in the study of agricultural economics. A farmer grows a wide range of crops in his farm, but all of them cannot be grown simultaneously. Therefore, he has to decide on an integrated crop production plan and deploy the available resources of land, labour and capital among alternative crops to produce the best profit. In doing so, he would naturally have to consider what it would cost him to grow the various crops and what net returns he would get out of them. Profitability refers to the difference between the total cost of cultivation and the gross returns obtained from cultivation.

Jayaraman, (2001) classified the total cost into fixed and variable costs. The fixed costs included the rental value of land, interest on fixed capital, land revenue and other taxes, depreciation on fixed capital and annual share of the total establishment cost upto bearing. The variable cost included all cash and kind expenses actually incurred plus the interest on working capital. The variable cost reflected the annual maintenance and operation cost such as spraying, thinning, inter cultivation, watching and manuring. Costs are defined in many ways. They include cash and non-cash expenses. The costs that a farmer incurs on crops are categorized into a) Fixed cost and b) Variable costs. Fixed costs are of an overhead nature and do not vary with output like rental value of land, depreciation of building, livestock, machinery and interest on fixed capital. Variable costs are expenditure on saplings, fertilizers, pesticides, fuel, electricity bill, repairs and maintenance. This varies with the output.

Sivanandan *et al.,* (2001) have adopted the present value of flow of future returns, benefit cost ratio, internal rate of return and pay back method for measuring the productivity of capital. These methods are further extended with sensitivity analysis by changing the parameters to suit real world situation.

Niggar and Chand, (2001) conducted a study at Ludhiana on five year old vines of Anab-e-shahi variety. Each of N and P (three levels) was applied to the vines in the month of February just after pruning. The results showed that one kg of N in combination with 1.5 kg of $P_2 05$ per: vine was best for yield and production of heavy bunches of grapes.

III. OBJECTIVES OF THE STUDY

1. To study the area and production of grape growers in Dindigul District.
2. Constraints Faced by Grape Growers in Production of Grapes in Dindigul District.

IV. METHODOLOGY

A. Choice of the Study Area

Dindigul district was selected for the present study, as it is one of the most important grape producing regions in Tamil Nadu. Black Seed and Green Seedless varieties of grape are grown in this district. The district is an important source of supply of grape to Chennai, Tiruchirapalli, Bangalore, Mumbai, Kolkatta, throughout Kerala and various markets all over the India. The district's soil and climatic conditions are highly suitable for grape cultivation. Palar, Porandalar, Majalar, Suruli falls, Mullai Periyar River, Shanmuga River, Manjalar River and Vaigai River are crossing through Dindigul district and are providing perennial water supply to the district. Hence, grape cultivation increased spontaneously with an area of 1709 hectares in 2005 to 2006 to 2467 hectares in 2015-2016. These are the reasons for- selecting Dindigul district as the study area.

B. Sampling frame

Dindigul district consists of 8 taluks viz., Dindigul, Nilakkottai, Athoor, Natham, Palani, Oddanchatram, Vedasandur and Kodaikkanal. There are 14 revenue blocks in the district. Out of 14 blocks, two blocks namely Athoor and Nilakkottai were selected for the present study as these blocks cover more than 65 per cent of area under grapes cultivation in the district. In each block, the existing Panchayats under the study blocks were arranged in a descending order of area under grape cultivation and 5 Panchayats from each block were selected randomly which account for more than 60 per cent of grape cultivation in these blocks. Ultimately 10 village panchayats were covered for the present study. The above identification of sample areas were done based on multi-stage method of sampling.

After the identification of 10 village panchayats, the researcher has resorted to stratified sampling producer. After this, a systematic selection was made with 10 per cent of sample from each village panchayat and thus the study covered 250 sample grape growers consisting of varieties viz., black seed grower and green seedless growers. Details of sample drawn from the study area are presented in following table. Secondary data relating to the area under grape production and marketing, yield and the like in India, Tamil Nadu and Dindigul district were collected from the various issues of grape journals, reports and records both published and unpublished.

V. RESULTS AND DISCUSSIONS

The constraints faced by the grapes growing farmers during the various stages of grapes production are classified and grouped under sub-headings viz., technical constraints, financial constraints and marketing constrains. Non availability of technical experts and lack of scientific information within the district and shortage of water during summer were the prime constraints as expressed by sample grapes growers. Grape growers were facing shortage of water during summer coupled with irregular and insufficient power supply for irrigation. High cost of chemicals, irregular and insufficient power supply, lack of competency in field extension personnel for grape production and high susceptibility of grape crop for pest and diseases were the major constraints involved in grape production and marketing. High cost of soluble fertilizers, growth regulators and fungicides, lack of information availability on demand and supply of grape were other technical constraints as perceived by the grape growers. Grape being highly susceptible to diseases, more chemicals and fungicides are used to protect the crop from diseases.

TABLE I TECHNICAL CONSTRAINS FACED BY THE GRAPES CULTIVATORS

Technical Constraints	Black Variety (N=152)		Green Seedless Variety (N=98)		Total (N=250)	
	No.	%	No.	%	No.	%
Lack technically qualified persons specially on grapes	70	46.05	26	26.53	96	38.40
Costly chemicals	85	55.92	42	42.86	127	50.80
Lack of scientific information on grape cultivation by field extension functionaries	94	61.84	36	36.73	130	52.00
Shortage of water	64	42.11	32	32.65	96	38.40
Soluble fertilizer and fungicides are too costly	86	56.58	38	38.78	124	49.60
Highly susceptible to diseases	32	21.05	28	28.57	60	24.00
Lack of information regarding demand and supply aspects	102	67.11	53	54.08	155	62.00
Irregular power supply	98	64.47	62	63.27	160	64.00

Source: Computed

Similarly, to produce healthy and quality grape requires soluble fertilizers, growth hormones. These inputs are very costly and require heavy investments. For these reasons the grape growers might have expressed the problem of high cost of fertilizers, fungicides, soluble fertilizers and growth regulators. The grape fruits being a heavy investment crop require finance for field establishment, production and for expansion of area; the grape growers need adequate credit facilities in time and at low rate of interest and with minimum formalities or procedures from financial institutions.

The financial constraints as expressed by the sample grapes growers are depicted in Table II It is noticed from the table that very high rate of interest, non-availability of credit in time and inadequate credit support for expansion of area under grape, inadequate guidance on credit availability, high cost of production and lengthy and tedious procedure in advancing loan are the important credit constraints expressed by majority of grape growers in grape production and marketing. The gross income is the actual amount realized on sale of produce and he arrived at the net income by deducting cost of cultivation from the gross income (Murugadass 2002). The present state of credit facility in general is not satisfactory as rate of interest is very high and also non-availability of credit in time, lengthy and tedious procedures in advancing loan. These causes are expressed by majority of grape growers.

TABLE II FINANCIAL CONSTRAINS FACED BY THE GRAPES CULTIVATORS

S. No.	Financial Constraints	Black Variety (N=152)		Green Seedless Variety (N=98)		Total (N=250)	
		No.	%	No.	%	No.	%
1	Rate of interest is very high for bank loan	57	37.50	48	48.98	105	42.00
2	Non availability of credit in time	61	40.13	56	57.14	117	46.80
3	Inadequate quantities of credit	34	22.37	31	31.63	65	26.00
4	Very less guidance on credit availability by concerned officers	39	25.66	28	28.57	67	26.80
5	Too much formality to get loan	56	36.84	44	44.90	100	40.00

Source: Computed

TABLE III MARKETING CONSTRAINS FACED BY THE GRAPES CULTIVATORS

S. No.	Marketing Constraints	Black Variety (N=152)		Green Seedless Variety (N=98)		Total (N=250)	
		No.	%	No.	%	No.	%
1	Low price of the produce	89	58.55	64	65.31	153	61.20
2	Very difficult to avoid middleman	58	38.16	48	48.98	106	42.40
3	No scientific based price for the produce	64	42.11	52	53.06	116	46.40
4	Lack of regulated /organized market	48	31.58	39	39.80	87	34.80
5	Lack of processing unit	68	44.74	47	47.96	115	46.00
6	Lack of cold storage at affordable cost	55	36.18	42	42.86	97	38.80
7	No guidance from horticulture department on marketing	66	43.42	54	55.10	120	48.00
8	Lack of cooperative marketing	72	47.37	54	55.10	126	50.40
9	Very less support for export marketing	64	42.11	42	42.86	106	42.40
10	Lack of crop insurance support	47	30.92	36	36.73	83	33.20

Source: Computed

In marketing of grape, the important constraints are low price, domination of middleman, no scientific criteria for price and lack of regulated/organized market. Lack of guidance by department of horticulture on marketing, inadequate processing units within the districts, high cost of cold storage units and lack of co-operative marketing are the other constraints experienced by the grape growers. Non-coverage of grape under crop insurance, lack of support price, lack of connectivity to big markets through railways, non-availability of refrigerated van, high transportation cost and less encouragement and support for export are also indicated as problems by grape growers. It could be inferred from the above table (Table 3) that the grape growers are facing many problems such as lack of marketing facilities coupled with exploitation by middlemen. The grape growers are exploited by contractors as a vast majority of sample grape growers have informed that they have marketed grapes through them only. Majority of the grape growers are not satisfied with prevailing rates in the market for fresh grapes.

VI. FINDINGS

1. The presence of joint family system was noticed among the grapes growing farmers in the study areas. However, it is understood that the grapes growing does not require intensive labor practice and hence family labor itself is sufficient for such activities.
2. Most of sample farmers in this study are share holders and only one third of them have their own land. Of the total land available for production, land used for black seed variety cultivation is more than the green seedless variety.
3. Green seedless grape variety growers are found to have been able to obtain better price at all times when compared with black grape variety growing farmers. In general it is found that grape growing farmers get regular price fixed for the grapes due to floating population visiting the places of tourism in around the Dindigul district besides increase in demand on account of auspicious occasions including temple ceremonies.
4. Non-availability of technical experts and lack of scientific information within the district and shortage of water during summer were the prime constraints faced by the grape growers.
5. High cost of chemicals, irregular and insufficient power supply, lack of competency in field extension personnel for grape production and high susceptibility of grape crop for pest and diseases are major constraints involved in grape production and marketing.

6. Very high rate of interest, non-availability of credit in time and inadequate credit support for expansion of area under grape, inadequate guidance on credit availability, high cost of production and lengthy and tedious procedure in advancing loan were the important credit constraints found among the grape growers in production and marketing of grapes.

VII. CONCLUSION

Grape is an important commercial fruit crop of India, which contributes to the maximum share of export of fresh fruits and vegetables from India to Europe and other parts of the world. Grapes play a vital role in offering significant employment opportunity to millions of rural people. Hence, it deserves a planned and continuous attention, Exporters, government and the like would go a long way in referring to the share of Indian grape in both domestic and foreign markets. Even though there is a lot of support from Research and Extension for grape cultivation, grapes cultivation has many problems and practical constraints. Appropriate management strategies and actions on a broad front are necessary and success largely depends on extension strategies / approaches and resource mobilization. Non- availability of grape experts, shortage of water, high cost of chemicals, irregular, insufficient power supply are important constraints, and to overcome these constraints, farmers need government intervention. The study has identified non-availability of skilled labour at proper time, lack of technical knowledge, non-availability of bank loans, non-availability of pure variety grafts at nearest places, and high cost of various inputs, viz. insecticides, pesticides, micronutrients as the major constraints in production of grapes.

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