Original Research Article

AN ECONOMIC ANALYSIS ON PRODUCTION OF BETEL VINE IN THANJAVUR DISTRICT OF TAMILNADU

Abstract

This study mainly focused on the betel vine production and constraints faced by the farmers.The analysis findings would shed information on the production of betel vine cultivation costs and returns, as well as the constraints faced by farmers and it was graded using Garett's ranking technique. The cost and return of the betel vine farm per acre was worked out to ₹3. 37 lakh/acre and the average gross return was Rs 8 lakh/acre. The result of the study indicates that betel vine cultivation is highly profitable and the benefit cost ratio 2.3.Even the assistances offered by the government are insufficient, farmer is not getting any financial support and there is no research center for this crop. Disease and pest infestation were the biggest problems in the production of betel vine, followed by non availability of labour because daily work in farm, a lack of healthy seed vine, and a lack of daily maintanenace. Price fluctuations is the major constraints faced in marketing because the price of the betel leaf is not same followed by non-availability of export promotional activity since it is a perishable commodity.

Key words: Economic analysis of betel vine, production cost, constraints, Garett's ranking.

1.Introduction

The betel vine, or Piper betel L., is a significant economic crop as well as a national heritage crop in our nation. According to the crop economic characteristics, betel leaf is one of the most promising commercial crops that has the potential to bring in a sizable quantity of foreign exchange for the nation.The peculiarity of the crop is that it generates steady income and employment throughout the year and has also generates employment through trade and selling (Meenakshi Sundaram, 1987). The main ingredients in betel leaves are Carotene and vitamin B.With addition to aiding in digestion, leaves have a tendency to eliminate bad breath. It is beneficial for the respiratory system and is used to treat colds, coughs, and bronchitis. The leaves' numerous health benefits include antioxidant, antibacterial, and anticancer properties. Although leaves have many positive effects, a significant quantity of leaf waste occurs every year—between 35 and 70 percent—due to storage, transportation, and perishability. Shade lighting, a lot of humidity, enough

moisture in the soil, and a constant, moderate temperature are all required for betel vine production. Hence,cultivation is best done under controlled condition.The perfect climate for healthy growth of the plant is mild, with winter temperatures hovering around 10 C roughly 170 cm of rainfall, about 40 C in the summer, and the presence having a high humidity of 40% to 80% (Pradhan, 2015). A fertile, well-drained soil that is sandy, sandy loam, or sandy clay with pH levels between 5.6 and 8.2 is regarded as suitable forts cultivation (Guha and Jain, 1997).

1.1 Production Status of Betel vine in Tamil Nadu

One of the top states for betel leaf cultivation is Tamil Nadu. Betel leaf, which is categorised as a plantation crop, takes up 2% of the state's net cultivated area. More than 70000 tonnes of betel leaves are grown on about 9000 acres in the state. The Thanjavur district of Tamil Nadu is one of the second largest betel leaf producers and recently requested for GI tag to Government.

Table 1: Production Status of Betel vine

S.no	District	Production (no)
1	Namakkal	11004
2	Thanjavur	5796
3	Madurai	4480
4	Karur	3416

SOURCE: https://www.agrifarming.in/district-wise-crop-production-in-tamil-nadu

1.2 Production Status of Betel vine in Thanjavur District

Betel leaves are famous in Kumbakonam. Due to strength and freshness, betel leaves produced in Kumbakonam are regarded as the best in the entire state. Although the Namakkal district is one of the major betel leaf producers, dealers claim that the betel grown in Kumbakonam is different.Numerous farmers from the Tamil Nadu towns of Kumbakonam, Rajagiri, Aaduthurai, Aachanur, Nadupatti, and Nadukavery grow betel leaves.

Rich sandy loam, clay loam soils, a cool climate, and irrigation from the Kaveri river are all favourable for growing betel vines. Both Vellaikodi and Karupakodi are important cultivars of betel vine. The vellaikodi variety, which is among all others, is grown by the majority of farmers . In contrast to other crops like paddy and wheat, however, betel leaf production requires less area.

2. LITERATURE REVIEWS

Farmers depend on natural sources completely and are able to cultivate only a single crop during the rainy season that is they are bound to mono-cropping (Mandal 2013).

Despite being profitable, a lot of farmers were switching from betel vine to other crops due to a lack of funding and credit options and high price volatility in the local market (Absar, 2015). The fact that betel is consumed by between 15 and 20 million people and can create up to 20 million chances for direct or indirect employment in India serves as a sufficient indicator of the betel farming industry's enormous economic potential (Kathirvel,2016). The most promising commercial leafy crop with a high potential for export is betel leaves, which can bring in significant amounts of foreign cash for the nation (Guha, 2006). Betel leaf is commonly utilised in social, cultural, and religious occasions and has substantial medical and nutritional benefits (Sripradha, 2014).Once it is established, a betel vine provides farmers with a consistent supply of work and revenue to meet their daily needs (Chandra and Sagar, 2004). Its cultivation also requires both short- and long-term planning, as well as the right instruction of farm labourers on daily tasks like the sorts of leaves to be picked, how to train and tie the vine, etc (Patil, 2015). In the Dharwad district of Karnataka, conducted a marketing analysis of betel vine. Sixty farmers were the main source of data. According to the analysis, the cost of cultivation per acre came to C18,654.0. In comparison to the services they provided, the retailers' and wholesalers' portion of net returns was higher on the scale. Nalwadi et al. (1997). In the state farmers were cultivating the crop by traditional mode under the special construction of bareja. It has reported that about 3500 to 4000 ha. Under area of the crop (V.R., Balasubrahamanyam, 1994)

3.METHODOLOGY

The objective of the study is to determine the costs and returns of betel vine growing and the constraints faced by the betel vine farmers during production and marketing .

Tamil Nadu districts of Thanjavur, Madurai ,Nammakal, Theni and Karur are where betel is primarily grown. Thanjavur district was specifically chosen for the current study since it had the most betel vine production land among the state's key growing regions**.** The primary data was gathered using a well-structured and thoroughly-tested interview process to achieve the mentioned goals.

The study is limited to Thanjavur district by taking into account its two betel-growing blocks namely,Kumbakonam and Thiruvaiyaru. A random sampling and purposeful sampling strategy was adopted in the investigation. 60 farmers were sampled, with 30 farmers from each block were investigated.

Data collected has been summarized and portrayed in statistical tables, graphs and charts. Other relevant mathematical and statistical techniques such averages, percentages, Garett ranking, have been used to analyse the prospects and problems faced by betel cultivators.

4. RESULTS AND DISCUSSION

The descriptive statistics (Table 1) gives the Socio economic profile of the betel vine farmers in study area .The majority of respondents were men (87%) followed by women (13 per cent).out of 60 respondents, 5% of cultivators are in the 30–40 year age group followed by 37% are in the 40–50 year age group followed by 47% are in the 50–60 year age group and the remaining 11% are older than 60 years old .This suggests that the majority of those growing betel are in their older ages .

The literacy rate of the area is significantly influenced by education. More than half (53 %) of the farmers are illiterate followed by 32% had completed their primary education, whereas just 10% had finished their secondary education. Only 5% of farmers were graduated.The majority of respondents (94%) stated that agriculture was their principal line of work, while the remaining respondents (6%) worked as daily labourers on other people's fields and/or in small companies.

Some betel growers in the study region work on their own property, while others use leased land for their operations. 83% of cultivators work their own land, whereas 12% work leased property. Only 5% of growers use both their own and rented land for their operations.

Out of 60 respondents , 94% of cultivators are cultivating vellakodi and remaining 6 % cultivators are cultivating karupakodi. Betel vine farming has an average of 15-years experience level. The majority of betel vine producers about 69% planted vines are taken from their own fields and the remaining 31% bought vine from nearby farmers

Table. 1 Demographic profile of the sample respondents

S. No.	Demographic Characteristics	Category	Per cent
1.	Gender	Male	93.33
		Female	6.67
		Total	100.00
2.	Age	30-40 years	15.00
		40-50 years	40.00
		50-60 years	28.33

		Above 60 years	16.67
		Total	100.00
3.	Education	Illiterate	41.67
		Primary	30.00
		Higher Secondary	18.33
		Graduate	10.00
		Others	0.00
		Total	100.00
4.	Occupation	Agriculture	86.67
		Allied	13.33
		Total	100.00
5.	Ownership of land holding	Owned	53.33
		Leased	31.67
		Both	15.00
		Total	100.00
6.	Land holding	Less than 1 ha	21.67
		1 to 2 ha	53.33
		More than 2 ha	25.00
		Total	100.00
7.	Sources of irrigation	Own	94.00
		Others	6.00
		Total	100.00
8.	Variety cultivated	Vellakodi	81.67
		Karupakodi	11.67
		Others	6.66
		Total	100.00
9.	Sourcing of betel vine planting material	Own source	78.33
		Others	21.67
		Total	100.00

4.1 Economics of Betel vine Cultivation in Thanjavur District

These typically range in size from 50 to 30 square metres and have a rectangular shape where vines are planted. These are constructed from readily available local materials including bamboo, straw, sticks...etc. Then a thatched wall roof surrounds it. The cost of growing betel leaves involves yearly upkeep, any lease costs, as well as input costs such

labour, fertiliser, and other expenses. Table 2 displays the cost of cultivation and the money received. Thus betel cultivation requires huge investment at initial stage.

Costs for labour, irrigation, manure, fertiliser, plant protection, land tax, and other operational and maintenance expenses are included of maintaining and repairing farm equipment, charges for harvesting and processing.

The estimated total cost of cultivation for the study area includes average annual revenue, expenditure and profit from betel cultivation in one acre of land. The average yearly expense per acre of land is Rs. 337355, with an average income of Rs. 800000. For betel cultivation, this results in a profit margin of Rs 462645 per acre of land. Benefit cost ratio is calculated as 2.3 .

As a result of the study shown below, betel vine cultivation is a fairly profitable business, according to the costs-return analysis, which is the main factor driving recent increases in the area under betel vine cultivation. However, is a difficult crop that need for commitment and expertise**.**

TABLE 2 gives cost of cultivation of betel vine in Thanjavur district of Tamil Nadu

S.N0	**PARTICULAR**	**UNITS**	**QUANTITY**	**VALUE**
A.Human Labour Cost				
1	Land preparation	Man days	**22.35**	**6253**
2	Manuring	Man days	**25.7**	**7723**
3	Fertilizer	Man days	**5.03**	**3586**
4	Planting	Man days	**19.07**	**9518**
4	Irrigation	Man days	**2.69**	**779**
5	Training of vines	Man days	**32.00**	**9600**
6	Spraying	Man days	**5.16**	**1630**
7	Weeding	Man days	**50.14**	**15997**
8	Lowering of vines		**78.72**	**25120**
9	Harvesting and packing		**436.86**	**100710**
10	Total human labour		**635.02**	**208378**
B	**Machine labour**		**11.8**	**4700**
	Sub total		**646.9**	**213078**
C. Materials Costs				

1	FYM	**Tons**	**33.9**	**39145**
2	Fertilizers	**Kg**	**259.16**	**6787**
3	Plant protection chemicals	**Litre**	**2.38**	**2236**
4	Sub total			**48168**
D.	Irrigation cost			**10000**
E	Marketing cost			**38000**
5	Interest on working capital			**21346**
I	**Total variable cost**			**310177**
II. FIXED COST				
1	Rental value of land			**17000**
2	Land revenue			**28**
3	Depreciation			**7597**
4	Interest on fixed assets			**2553**
II	**Total fixed cost**			**27178**
III	**Total cost of cultivation (I+II)**			**3,37,355**

Yield and returns of betel vine

S.no	Particulars	Value
1	Average Yield (P)	**375**
2	Price (C/Pendi)	**2150**
3	Gross returns	**800000**
4	Total cost of cultivation	**337355**
5	Net returns	**462645**
6	BCR	**2.3**

4.2 Constraints Faced by Growers during Production and Marketing

The main restrictions on betel vine yield potential were found using Garrett's ranking method. Farmers were asked to order the constraints they face in order of importance. Rankings of each respondent restrictions were converted into percentages. Eight main yield

constraints in production have been found by betel vine growers among a variety of bio-physical and socio-economic factors. These restrictions prevent farmers who cultivate betel vine in the study location from getting the full harvest. The main challenges farmers experienced in cultivating betel vines were disease and pest infestation, a lack of labour, and the lack of seed vines.

Table 3 Problems faced by growers during production

S.NO	CONSTRAINTS	SCORE	RANK
1	Disease and pest	**58.97**	**I**
2	Lack of labour	**53.08**	**II**
3	Natural calamities	**52.25**	**III**
4	Lack of daily maintenance	**51.9**	**IV**
5	Non availability of seed vine	**50.1**	**V**
6	Lack of availability of manure and fertilizers	**50.06**	**VI**
7	Soil	**49.08**	**VII**
8	Lack of water supply	**48.87**	**VIII**

Table 3 shows that disease and pest attack was ranked first with scores of 58.9 followed by labour shortage that was ranked second and third with score of 53 and 52 respectively. Lack of daily maintenance was ranked fourth and non-availability of seed vine was given fifth rank with score of 51 and 50 respectively.

Marketing constraints

Farmers growing betel vine identified nine primary yield restrictions in marketing are shown in table 4 among various bio-physical and socio-economic factors. Marketing constraints includes price fluctuation, lack of market information, No storage facilities,High transport cost, lack of export promotional activity ,highly perishable commodity,lack of packing materials and high commission charged .

Table 4 Problems Faced by Growers During Marketing

S.NO	CONSTRAINTS	SCORE	RANK
1	Price fluctuation	59.5	I
2	Lack of export promotional activity	58.8	II
3	No storage facilities	56.8	III

4	Highly perishable commodity	55.1	IV
5	High transport cost	53.8	V
6	High commission charged	53.2	VI
7	Lack of market information	50.9	VII
8	Poor customer relationship	49.2	VIII
9	Lack of packing materials	47.1	IX

According to the above table 4, price fluctuations were the primary obstacle that traditional betel vine growers in the research area had to overcome**.** With respect to the second rank, Lack of export promotional activity. The third position was determined by the lack of storage facilities and the fourth-ranked requirement was high perishability. Lack of market information, expensive transportation, and high commission rates are some other significant obstacles that farmers must overcome.

5. CONCLUSION

One of the most significant horticultural crops in Thanjavur is betel growing. According to the findings of the current study, betel cultivation might be a financially sustainable source of income for rural households because of the large profit margin. The following recommendations are offered for improving the viability of betel vine cultivation in the study area. Firstly Farmers should have simple access to knowledge about marketing and production management. Secondly, For a higher return on betel vine cultivation, it could be helpful to set up a market information system to estimate prices in prior while also investigating the export market. Additionally, there are certain general issues that betel growers deal with, such as the absence of a research facility in the region, the lack of betel crop insurance, and lack of subsidies in the event of natural disasters.

Consent

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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