PRODUCTION AND MARKETING OF BETEL LEAF A STUDY WITH REFERENCE TO SHOLAVANDAN TALUK MADURAI DISTRICT TAMILNADU

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DOCTOR OF PHILOSOPHY IN COMMERCE

Researcher

P. SAHAYA PRINCY

(Register No. P3413)

Supervisor

Dr. S. HASAN BANU, M.Com, M.Phil., Ph.D.,
Associate Professor, Department of Commerce,
Hajee Karutha Rowthar Howdia College, Utthamapallyam.

MADURAI KAMARAJ UNIVERSITY

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SYNOPSIS

INTRODUCTION

Agriculture is the backbone of the Indian economy. This sector in India assumes special importance in the context of population explosion, and it is required that agricultural planning should be so devised that agricultural productivity should keep pace with the growing population.

Efficient agricultural management to ensure better productivity may make a valuable contribution to the balanced growth of the Indian economy because India is an agricultural country that is endowed with abundant natural resources. The development of agriculture to its fullest potential is, therefore, the king-pin of the Indian economy. Agricultural growth has a direct impact on poverty eradication. Its development also helps in controlling inflation, rising agricultural wages, and increasing employment generation.

Still, agriculture remains the largest employer, with about sixty percent of the population depending on agriculture for its livelihood. Agriculture provides an immense opportunity for trading activities which passes on the produce from wholesaler to retailer. What is more important is that despite these substantial material gains to the economy, it is a way of life, unique and irreplaceable in human values. Betel leaf is the native of Malaysia is an evergreen perennial creeper. Its botanical name is Piper betel Linn. It belongs to the piperaceae family. The name 'Piper' is probably derived from the Sanskrit word "Pippali". The word betel means 'climbing plant‟ of which leaves are chewed. It is known

as Nagavalli in the northeastern and western regions of the country. In many parts of the country, it is known as pan/paan.

It is cultivated on a large scale in Assam, West Bengal, Orissa Uttar Pradesh, Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnataka, Tamil Nadu, and Kerala. The cultivation of betel leaf in India was confined in the hands of members of a particular community, which has been raising this crop from time immemorial. They were poor illiterate and engaged in betel leaf cultivation to earn a livelihood. No scientific studies have been carried out in the past and till now. Hence, the technology for raising this crop could not be improved. The Government of India realized the importance of developing scientific technology in betel leaf cultivation.

The importance of this crop differs from country to country. The international trade in this commodity is not significant. However, some quantity of betel leaves exported from India to different countries like Saudi Arabia, Oman, Bahrain, Egypt, Pakistan, Kenya, and Bangladesh. Indian‟s net returns form betel leaf are approximately 700 corers. There are many varieties of betel leaf, which is reported to be grown in different states of India. Leaves of betel leaf are chewed along with areca nut and lime throughout the length and breadth of the country. (Chattopadhaya, K. and Lahiri, D. (1986))[1].

HISTORY AND BACKGROUND OF BETEL LEAF

Betevine (Piper betel L) is known by its many names across the country and abroad. In the Indian subcontinent, it is known as *pan* in Hindi, *Tambula* in Sanskrit, *Villayadela* in Kannada, *Vettilakkoti* in Malayalam, *Vettilai* in Tamil, *Tamalapaku* in Telugu, *Videch-pan* in Marathi, *Nagarbel* in Gujarati and *pan* in

[1] Chattopadhaya, K. and Lahiri, D. (1986). "Marketing of betel leaves in Midnapur district of West Bengal." India Journal of Agricultural Economics, 41 (3) : 446-447.

Bangala, *paana* in Odia. In foreign languages, it is known as *Tanbol* in Arabic and *Burg-e-Tanbol* in Persian. It is a perennial climber cultivated for its leaf. Historically, the word pan in Hindi and other Indian languages is probably a derivative of the Sanskrit word „pan" meaning leaf. The leaves of the pan plant have been traditionally used for chewing. Pan chewing is considered as a good and cheap source of dietary calcium. It increases digestive capacity when used with lime. Besides, it neutralizes the acidity and acts as a blood purifier.

It has been very intimately connected with the ancient Indian history, religion, and culture as it is evident by many references in the early Sanskrit literature like Vedas, Ramayana, Mahabharata, Mahavansha, etc., Marcopolo took notice of the pan chewing habit of the people in South India. Over the centuries, pan chewing had become so prevalent that serving and chewing of the pan had been raised to the level of fine art at the Mughal Darbar, particularly during the Akbar"s regime. Over time, offering the „bida" of betel leaf has become a symbol of offering and acceptance of mutual love and friendship. Betel leaf has been under cultivation in India for centuries. No Hindu religious ceremony is complete without pan. It is also offered after lunch and dinner and also during another social get together. (Swarna Priya Pradhan, 2017)[2]

REASON FOR SELECTION OF THE STUDY AREA

The betel leaf plays a vital role in Indian culture mainly in traditional ceremonies, such as offering money to the temple priests and exchanging betel leaves during family functions, such as betrothal. It is an evergreen and perennial creeper which is planted widely in India. No doubt, it increases the national

[2] Swarna Priya Pradhan"A Study on Business Prospect of Betel leaf Cultivation in Nimapara Block of Puri District Of Odisha" Retrieve from http://Krishikosh egranth.ac.in/handle/1/97196 as on 20/10/1

economy and provides the people with employment opportunities directly and indirectly in rural areas.

The origin of the well known Tamil phrase –"Thenur vethalai, Manoor sunnaambu" (Betel leaf from Thenur, Lime from Manoor) indicates the popularity of betel leaf grown in Thenur. The betel leaves from Thenur are sent to Alagarkoil for Lord Sundararaja Perumal. Farmers cultivate betel leaves exclusively. But, owing to water scarcity, the farmers shifting to other vocations has resulted in a drastic decrease in the cultivation of betel leaves here. In this same area, a few farmers who cultivated other crops dedicated a small space of their farmland for the cultivation of betel leaves, and send them to Kallalagar temple as per tradition. It is also believed that the Europeans came to the village in the past to purchase betel leaves from them.

The marketing of betel leaf has come down to a great extent due to the decline in rain and migration of labor and the bad opinion among the people that chewing betel leaves with other ingredients like panparag, which causes cancer. Cultural changes have also resulted in the decline of betel leaf usage among the younger generation. The reasons mentioned above resulted in the decline of betel leaf consumption and, in turn, betel leaf cultivation by the farmers. These reasons persuaded the researcher to analyze the economics of betel leaf cultivation and problems faced by the cultivators in cultivation and marketing the betel leaf in the study area.

OBJECTIVES OF THE STUDY

1. To study the profile of Sholavandan in Madurai District.

2. To study the economics of betel leaf cultivation in Sholavandan in Madurai District.

3. To study the socio-economic profile of the betel leaf growers in the study area.

4. To study the marketing problems of Betel Leaf Cultivation

5. To study the constraints faced by betel leaf growers.

6. To study the findings and give suggestions to improve the betel leaf cultivation in the study area.

SCOPE OF THE STUDY

The study had two phases, one focusing on production aspects and the other on marketing. The objective of covering the production aspects was to examine the economics of the cultivation of betel leaf, which is vital for marketing.

LIMITATIONS

i) The present study is confined to one taluk of the district. Hence, the results obtained from this study may not be generalized for the whole of the district.

ii) The growers are very much unorganized and not habituated to maintain proper production and marketing statistics of their products.

PROFILE OF MADURAI DISTRICT

The usefulness of any research study can be fully appreciated only when the results are studied with the demographic features, such as location, geographical features, population and workforce, infrastructure facilities, climate, and rainfall, etc. Hence an attempt has been made to present an outline

of the study area. An analysis of the characteristics of the sample farmers has also been made.

Location

Madurai District is one of the most important districts of Tamil Nadu. This district is located between 9º 30‟ and 10º 30‟ on the Northern latitude and 77º 00‟ and 78º 30‟ on the Eastern longitude. The capital of this district is Madurai, a city that enjoys a historical and literary reputation. Madurai District is situated in the south of Tamil Nadu state. It is bounded on the North by the districts of Dindigul and Tiruchi and the East by Sivagangai and on the West by Theni and South by Virudhunagar.

Geographical Features of Madurai District

The area of Madurai district is 3741.73 sq.km.which accounts for 2.9 percent of the total geographical area of the Tamil Nadu. There are two revenue divisions, seven taluks and 596 villages in this district. Madurai district is classified into six sub-zones. Typically, subtropical climate prevails over the district without any sharp variation.

TABLE 1

Demographic Feature

S.No		Particulars	Details
1		Area in square km.	3741.73
2		Population	30,38,252
	A	Males	15,26,475
	B	Females	15,11,777
	C	Rural	11,91,451

	D	Urban	18,46,801
3		Density (square km)	812
4		Literates	22,73,430

Source: census, 2011

TABLE 2

Work Force in Madurai District

S.No	Workers	Number
1	Total Workers	13,54,632
2	Male workers	9,02,704
3	Female workers	4,51,928
4	Rural workers	6,27,737
5	Urban workers	7,26,895
6	Cultivators	81,352
7	Agricultural labourers	2,87,731
8	Household Industry	39,753
9	Other workers	7,65,066
10	Marginal workers	1,84,027
11	Non – workers	16,83,620

Source: census, 2011

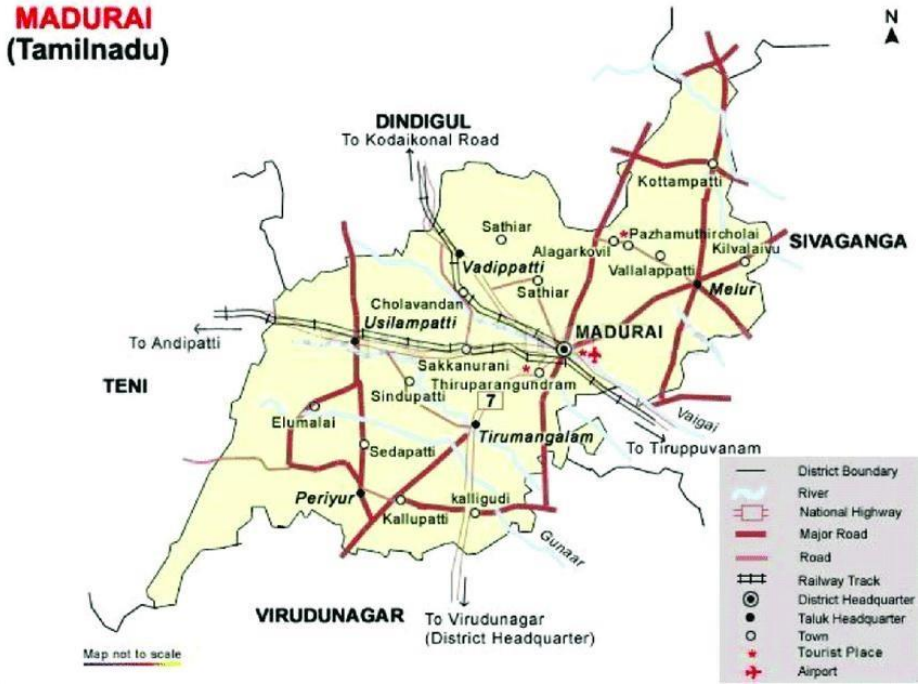
TABLE 3 Rain Fall in Madurai District (in mm)

S.No	Details	Normal
1	Southwest monsoon	335.9
2	North-East monsoon	419.1
3	Winter	28.1
4	Summer	144.8

Source: Census, 2011

PROFILE OF THE STUDY AREA

The study area of the research is Sholavandan Taluk of Madurai District. Madurai lies on the flat and fertile plain of the river, Vaigai, which runs in the northwest-southeast direction through the city, dividing it into two almost equal halves. The land in and around Madurai is mainly utilized for agricultural activity, which is fostered by the Periyar Dam. Madurai lies Southeast of the Western Ghats, and the surrounding region occupies the plains of South India and contains several mountain spurs. Besides Paddy, pulses, millet, oilseed, cotton, and sugarcane are also cultivated sufficiently. Sholavandan taluk is an important taluk of Madurai District. It lies on the left bank of the river Vaigai. It can be stated to be lying in some sort of a valley–between the Nagamalai hills and the Sirumalai. It is also the name of the forest range under the Madurai division. Due to the fertility of the soil and availability of Vaigai Water, various types of crops, such as rice, sugarcane, banana, coconut plantations, and betel leaves, are cultivated throughout the year. It is sometimes called a small "Coconut island".



As per the Population Census 2011 data, the following are certain details regarding Sholavandan Town Panchayat.

TABLE 4 Demographic features of Sholavandan Town Panchayat

S.No		Male	Female	Total
1	Children	1,090	1,123	2,213
2	Literacy	88.98%	75.98%	82.41%
3	Scheduled Caste	1,626	1,725	3,351
4	Scheduled Tribe	11	7	18
5	Illiterate	2,201	3,594	5,795

Source: Census, 2011

The total literacy rate of Sholavandan was 82.41 % in 2011, which is greater than the average literacy rate, 80.09% of Tamil Nadu. Population-wise, out of total 16,783 literates, men were 8,967 while women were 7,816. Also, the men literacy rate was 88.98%, and the women's literacy rate was 75.98% in Sholavandan.

TABLE 5 Literacy Rate of Sholavandan Town Panchayat

S.No	Literacy Rate	Sholavandan	Tamilnadu
1	Women	75.98%	73.44%
2	Men	88.98%	86.77%
	Total	82.41%	80.09%

Source: Census, 2011

In Sholavandan Town Panchayat, out of the total population, 9,602 were engaged in work activities. 86.3% of workers describe their work as Main Work (Employment or Earning more than 6 Months), while 13.7% were involved in Marginal activity, providing a livelihood for less than six months. About 9,602 workers engaged in Main Work, 342 were cultivators (owner or co-owner), while 3,332 were Agricultural laborers.

TABLE 6 Working Population – Sholavandan Town Panchayat

S.No		Male	Female	Total
1	Main Workers	5,965	2,320	8285
2	Cultivators	274	68	342
3	Agriculture Labour	2,184	1,148	3,332
4	Household Industries	85	83	168
5	Other Workers	3,422	1,021	4,443
6	Marginal workers	737	580	1,317
7	Non- working	4,466	8,510	12,976

Source: Census, 2011

Selection of Villages

The study is confined to Sholavandan Taluk in Madurai District, Tamil Nadu. Five villages of this district namely, Mannadi Mangalam, Mulli Pallam, Therku Theru, Kallar Theru, Ayyanar Kovil Theru, have been selected for the research.

Selection of Growers

The sample growers who had grown betel leaf in the agricultural year 2015 to 2016 were taken into account for this research. In choosing the sample betel leaf-growers, an attempt was made to select the sizeable number of growers as per the proposed study design. Still, in the course of preparing of growers‟ list, it was found that the cultivation of this crop is in the very meager area. So it was challenging to categorize the growers according to their land, class, and size, which was ranging between 0.05 and 0.30 hectares as per the records available in respective block offices. The probability proportion method of the ultimate growers was selected village wise. About twenty percent of the betel leaf growers formed the sample size of the study. The detail of the procedure adopted is

presented hereunder. A list of betel leaf growers from each village was selected from the selected villages.

SAMPLING DESIGN

Totally 2254 farmers were engaged in cultivating betel leaf in the selected villages. So, the researcher proposes to select around 25% of farmers for the study, which aims at analyzing the cultivation methods and the problems faced by the farmers in the production and marketing of the betel leaf in the study area. A proportionate convenient sampling method was used to select the respondents. Hence a total of five hundred farmers from five villages, namely Mannadi Mangalam, Mulli Pallam, Therku Theru, Kallar Theru, and Ayyanar Kovil Theru have been selected for this research. The breakup of the total is presented in Table 1.9 below.

TABLE 7 Distribution of Sample respondents in five Selected Villages

S. No	Name of the village	No. of. Betel leaf Cultivators	% to the total	No. of. Sample Respondents
1	Mannadi Mangalam	699	31	155
2	Mulli Pallam	293	13	65
3	Therku Theru	450	20	100
4	Kallar Theru	406	18	90
5	Ayyanar Kovil Theru	406	18	90
	Total	2254	100	500

Source: Vetrilai Vivasaigal Kodikal Sangam

Collection of data

The researcher collected both primary and secondary data for this study. A comprehensive questionnaire schedule was prepared for the collection of primary

data. The schedule was framed by arranging the questions systematically. In preparing such schedules, the objectives of the study were primarily kept in view. The presentation of schedules was done by taking a few farmers. After preparing the schedules, the actual fieldwork was conducted, and data were collected from selected farmers through personal interview techniques. Special care was taken to contact the farmers in their leisure hours in the evening, and also special efforts were made to contact the respondents when they are alone. They were ensured the researcher supply of reliable data for this study purpose.

Period of the study

The secondary data were collected from the records of Betel leaf Association, which is functioning in Sholavandan to analyze Economics of Cultivation of Betel Leaf for ten months, starting from 2009-10 to 2018-19. The primary data was collected during the year 2017-18 by administering the Interview Schedule.

TOOLS FOR DATA COLLECTION

The researcher used the interview schedule to collect primary data from the respondents. Data relating to the personal details, land holdings, methods of cultivation, and details regarding marketing were collected from the respondents.

Other relevant data relating to the study were collected from books, journals, government agencies, and were used as secondary data.

Statistical tools used

The primary data were analyzed with statistical tools. Time series analysis was used to find out the estimated expenses of production and marketing and also to estimate future cultivation and sales of betel cultivation in the sample area.

Trend analysis (Least square method) was used in this study. Percentage tools also used for analyzing the socio-economic characteristics of the sample cultivators. Garret ranking method was also used to rank the problems faced by the respondents.

The following tools have been used in the present study.

1. Trend Analysis – Least square method
2. Garrett‟s Ranking Technique
3. Compound Growth Rate
4. Cost Benefit Ratio

SCHEME OF THE REPORT

The first chapter presents the introduction, reason for selection of the study area, objectives of the study, the sampling design and other aspects of the methodology, Historical background, nature and uses of Betel leaf and its cultivation in the world, in India, in Tamil Nadu, etc., and the scheme of the chapter.

While the second chapter presents the review of previous studies of betel leaf, the third chapter describes the socio-economic profile of the farmer in Sholavandan.

The third chapter analysis the socio-economic profile of the sample farmers.

The fourth chapter analysis the economics of betel leaf cultivation in the study area.

The fifth chapter analysis the price determination and profitability of Marketing Betel Leaf.

The sixth chapter is the blueprint, which highlights the problems of the farmers in cultivation and marketing.

The seventh chapter sums up the findings and the suggestions to improve the production and marketing of the betel.

SUMMARY OF FINDINGS, SUGGESTIONS, AND CONCLUSION

INTRODUCTION

Betel vine is one of the major horticultural plantation crops grown in India for quite a long time and consumed by people in every part of the country. Betel vine, a perennial creeper, probably a native of Malaysia, is cultivated in India for chewing. In India, Tamil Nadu is one of the leading betel leaf cultivating state. Classified as a plantation crop, betel leaf occupies two per cent of net cultivated area in the state. In Tamil Nadu, Sholavandan is one of the major producers of betel leaves. The rich sandy loam, clay loam soils, cool climate, Vaigai river water irrigation are conducive for betel vine cultivation. Therefore, betel vine is grown widely in Sholavandan Taluk. This is the main reason for selecting Sholavandan Taluk as the study area.

FINDINGS

PERCENTAGE ANALYSIS

- The important varieties of betel vine are Vellaikodi, Pachaikodi, Karpurakodi. Among all the varieties, the majority of farmers cultivate Vellaikodi variety.

- The crop will be ready for harvesting from 140 to 160 days from the date of planting. The leaves will be harvested once in three weeks. The total betel leaves plucked per year was estimated to be 18 to 19 lakhs per hectare.

- It could be observed from the analysis that the total human labour used per acre of betel leaves were 11,921 man-days per acre.

- Out of total cost, variable cost is estimated at 96.54 per cent. It amounts to Rs.13,97,022 per acre. Among all the variable costs, labour cost is estimated to be 63.97 per cent which is amounted to Rs.8,93,754. Fixed cost amounts to Rs.49,997, which is 3.45 per cent of the total cost.

- The total gross sales per acre of production of betel leaves are estimated to be Rs.16,50,554 for two years. After deducting the marketing cost, variable cost, and fixed cost from the gross sales, a farmer will get a net profit of Rs.2 lakhs per acre for two years, if good market condition prevails.

- The winter season shows the high price of the betel leaves when compared to the price of the other seasons due to the poor arrival of betel leaves. In the summer season, the price of the betel leaves comes down and again declines in monsoon season. In the post-monsoon season, the price of the betel leaves again increases because of the Hindu functions getting started.

- There is no regulated market for betel leaf marketing in Sholavandan Taluk.

- The betel vine growers are paid in cash immediately after the sale. The mandi association members will collect money from the buyers once in a week.

- The betel vine buyers visit Sholavandan market come from Madurai, Coimbatore, Trichy. It is also dispatched to other states like Mumbai, Kerala, Karnataka, Andhra Pradesh, and Maharashtra.

- It is found from the analysis that 100 percent of the betel vine growers are utilizing well and Borewell methods of irrigation.

- It is found from the analysis that the majority of the respondents are getting finance for betel vine cultivation from private money lenders at a very high rate of interest.

- It is found from the analysis that 84% of the total respondents are earning their income through Agriculture alone. And 16% of the sample respondents are earning their income through Agriculture with business activities.

- The researcher found that 97% of the betel vine growers do their cultivation in leased lands. On the other hand, 3% of the farmers use their own land for betel production.

- It is clear from the analysis that 89% of the betel vine growers follow the group cultivation method of production. Only 11% of the sample growers follow individual cultivation. The main reason behind this group cultivation is that the lease amount of land and expenses of betel cultivation are too high, and the farmers cannot bear it alone. They share the expenses as well as the profit.

- It is clear from the analysis that 52 per cent of the respondents opined as the lease amount is slightly high.

- It can be found from the analysis that the majority of the respondents opined that they are not getting proper information from any source regarding prevailing prices in other markets.

- The researcher found that 72 per cent of the betel growers are selling their products only through vineyard merchants.

- It is clear from the analysis that 50 per cent of the sample respondents are carrying their betel leaves from vineyard to Market place through the cycle. And 40 per cent of the sample respondents are using Motorbike to carry their produces to the market places.

- It is clear from the analysis that size, colour, and taste of the betel leaves are most important factors to fix the price of the betel leaves.

- Betel leaf farmers do not have proper organisation, and therefore they are exploited by middlemen like commission agents, brokers, retailers, and trade associations.

- It can be found from the analysis that all the respondents opined that the bargaining method only offers the best price for their betel leaves.

- It is clear from the research that 95 per cent of the sample respondents are getting lease land through their own arrangements, and at least 5 per cent of the sample respondents are getting the leased land through commission agent.

- The analysis indicated that 53 per cent of the sample respondents follow the price suggested by the vineyard Merchant. And 26 per cent growers are following the Market price observed from the Association.

- The researcher found that 85 per cent of the growers are selling their produce both for cash and credit.

AVERAGE ANALYSIS

1. The researcher found out the variable as well as the fixed cost incurred for cultivating the betel leaves in the sample villages of Sholavandan Taluk. A sample of five villages have been taken for this purpose, and finally, the average amount per acre is calculated. The variable cost incurred for cultivating betel vine is land preparation, Agathi seed sowing, vine transplanting, fertilizer application, pesticide application, irrigation charges, inter-culturing operation, harvesting of the crop, packing, marketing, maintenance. And fixed cost included the rental value of the land.

   The average amount of all variable cost is Rs.13,97,022.20, and fixed cost is Rs.49,997. Finally, the total cost per acre for years 14,47,019.40

2. In cultivating betel vine per acre the growers need a total number of 11,921 labourers. It is the average number of labourers calculated from five villages.

3. Among all the operations in the cultivation of betel vine, inter-culturing is the more labour consuming operation, which requires at least 8880 labourers per acre.

4. The average per acre labour utilisation in the cultivation of betel was 2,380. Out of the total labour utilisation the share of male workers was 1992, whereas the women workers were only 387.

5. The lower percentage of female participation in the cultivation of betel in the sample areas was the place of betel cultivation. The place where betel leaf is cultivated is considered to be a sacred place, where God resides, the entry of females into the betel field is believed to be an act of violating the sanctity of the place, tied up with the belief of the conservative folk society that the 'woman is impure'.

Trend value Analysis

For Tamil Nadu

Area

The trend value equation shows that every year, on average, the total area of betel leaf cultivation in Tamil Nadu decreases by 148.7 hectare. Thus we can infer that the area of betel leaf cultivation is decreasing at a very slow pace and the researcher found that in the year 2020 the total area of betel leaf cultivation in Tamil Nadu will be 1210.45 hectare

Production

The trend value equation shows that every year, on average, the total production in Tamil Nadu increases by 2801.8 tonnes. Thus we can infer that the cost increasing at a very slow pace and the researcher found that in the year 2020, the total production of betel leaf in Tamil Nadu will be 83216.7 tonnes.

Productivity

The trend value equation shows that every year, on average, the total productivity in Tamil Nadu increases by 4.3 tonnes. Thus we can infer that the Productivity is increasing at a very slow pace, and the researcher found that in the year 2020, the total productivity of betel leaf cultivation in Tamil Nadu will be 59.45 tonnes.

For Madurai

Area

The trend value equation shows that every year, on an average, the total area of betel leaf cultivation in Madurai decreases by 7.3 hectare. Thus we can infer that the area of betel leaf cultivation is decreasing at a very slow pace and the researcher found that in the year 2020 the total area of betel leaf cultivation in Madurai will be 87.75 hectare

Production

The trend value equation shows that every year, on an average, the total production in Madurai increases by 551.1 tonnes. Thus we can infer that the production is increasing at a very slow pace, and the researcher found that in the year 2020, the total production of betel leaf in Madurai will be 8037.55 tonnes.

Productivity

The trend value equation shows that every year, on an average, the total productivity in Madurai increases by 6.89 tonnes. Thus we can infer that the productivity is increasing at a very slow pace, and the researcher found that in the year 2020, the total productivity of betel leaf cultivation in Madurai will be 79.78 tonnes.

For Sholavandan

Area

The trend value equation shows that every year, on an average, the total area of betel leaf cultivation in Sholavandan decreases by 3.06 hectare.

Thus we can infer that the area of betel leaf cultivation is decreasing at a very slow pace and the researcher found that in the year 2020 the total area of betel leaf cultivation in Sholavandan will be 70.47 hectare

Production

The trend value equation shows that every year, on average, the total production in Sholavandan increases by 0.569 tonnes. Thus we can infer that the production is increasing at a very slow pace, and the researcher found that in the year 2020, the total production of betel leaf in Sholavandan will be 18.88 tonnes.

Productivity

The trend value equation shows that every year, on an average, the total productivity in Sholavandan increases by 0.011 tonnes. Thus we can infer that the productivity is increasing at a very slow pace, and the researcher found that in the year 2020, the total productivity of betel leaf cultivation in Sholavandan will be 0.2464 tonnes.

For Sholavandan

1. The trend value equation shows that every year, on an average, the total cost increases by Rs.0.55 lakhs. Thus we can infer that the cost increasing at a very slow pace and the researcher found that in the year 2020 the total cost needed for the production of betel leaf in an area of one acre will be Rs.8,53,500
2. The trend value equation shows that every year, on an average, the total production increases by Rs.0.58 lakhs. Thus we can infer that the production is increasing at a very slow pace, and the researcher found that in the year 2020, the total production of betel leaf in an area of one acre will be **Rs. 8,62,000**

3. The trend value equation shows that every year, on an average, the total sales increases by Rs.0.62 lakhs. Thus we can infer that the sales is increasing at a very slow pace, and the researcher found that in the year 2020, the total sales of betel leaf in an area of one acre will be **Rs. 9,36,000**

4. The trend value equation shows that every year, on an average, the total profit increases by Rs.0.02 lakhs. Thus we can infer that the profit is increasing at a very slow pace, and the researcher found that in the year 2020, the total profit of betel leaf cultivation in an area of one acre will be **Rs. 1,07,000**

Henry Garrett Ranking Technique

1. It can be found from the analysis that most of the betel vine farmers continue to cultivate the betel vine crop for the main reason since it is a ‘traditional crop’ and ‘many people do not know other business.’

2. It is clear from the analysis that most of the betel vine farmers harvest their betel leaves within 15-22 days to ‘reduce the wastage of betel leaves’ and ‘high yield’.

3. It is found from the analysis that most of the betel vine farmers sell their produce after harvesting immediately. The main reasons are ‘immediate sale fetches better price’ further it is ‘ because of perishable goods’.

4. It brings out from the analysis that majority of the betel vine growers have to attend to the major production problems of ‘infertility of soil’, ‘Need of daily maintenance’ and ‘wrong management of irrigation’, ‘often diseases and insects attack’, ‘Affect the growth from natural calamities’.

5. Form the analysis, it can be found that majority of the betel vine farmers attend to the major marketing problems such as "Highly Perishable Commodity', 'Non-availability of storage facility'.

6. 'Lack of export promotional activity', 'Non-regulated market' 'Improper method of sales'.

7. From the research it is found that majority of the betel vine farmers have to face the general problems, such as 'Non - availability of loan facility', 'No research centre nearby', 'No insurance for betel vine crop', 'No subsidy loss of natural calamities', 'Lack of effort to neutralize cancer propaganda on betel leaf'.

8. It can be traced from the analysis that the majority of the market intermediaries faced major problems like 'Price fluctuations' and 'Non-availability of storage facilities'.

Compound Growth Rate

1. The growth rate of Betel leaf in Tamil Nadu. The CGR shows that the growth area of betel leaf decreases by 7 percent. The CGR shows that the average growth of the production of Betel leaf cultivation is 3.4 percent. The CGR shows that the average growth of productivity of Betel leaf cultivation is 11.65 percent.

2. The growth rate of Betel leaf in the Madurai District. The CGR shows that the growth area of Betel leaf decreases by 5 percent. The CGR shows that the average growth of the production of Betel leaf cultivation is 9.4 percent. The CGR shows that the average growth of productivity of Betel leaf cultivation is 15.95 percent.

3. The growth rate of Betel leaf in Sholavandan. The CGR shows that the growth area of Betel leaf decreases by 3 percent. The CGR shows that the average growth of the production of Betel leaf cultivation is 3.9 percent. The CGR shows that the average growth of productivity of Betel leaf cultivation is 7.44 percent.

4. The growth rate of Betel leaf in Sholavandan. The CGR shows that the average growth of total cost for Betel leaf cultivation is 15.32 percent. The CGR shows that the average growth of total sales of Betel leaf cultivation is 18.19 percent. The CGR shows that the average growth of the total profit

of Betel leaf cultivation is 4.42 percent. The CGR shows that the average growth of total production of Betel leaf cultivation is 18.82 per cent.

Cost Benefit Ratio

The Benefit-Cost ratio values for all the years are positive, which shows that the cultivation of Betel leaf is positive. The BCR is high in the year 2011 with a value of 1.533. It was low in the year 2018 at 1.099. Most of the years, the BCR value is around 1.1, which shows the cultivation gives only a small profit. The profit is small because of the sharp increase in cultivation cost.

Suggestion and policy implications

On the basis of the findings of the study following suggestions emerged for further actions.

1. At present, more than 90 per cent of betel vine cultivators are engaged in betel vine cultivation under lease land basis. As the land does not belong to them, the Commercial Banks and Primary Agricultural Co-operative banks refuse to sanction credit for the betel vine cultivators. The Government should take necessary steps to issue crop loans for betel vine growers through Commercial Banks and Primary Agricultural Co-operative Banks at a concessional rate of interest to protect the people of this sector and their employment.

2. The input cost of fertilizer, pesticides, chemicals, manure, etc., is increasing to the extent of 20 to 30 per cent every year. It is an utmost need to protect the industry by the Government by offering inputs at a subsidized price. Sometimes, the fertilizers' price is going up to the extent of 100 to 150 per cent due to the hoarding practices of the traders during busy seasons. This practice should be checked and regulated by the Government.

3. As pointed out earlier, the majority of the cultivators are doing betel vine cultivation under leased land for rent. The rent is increasing without any limit every year. The Government should fix the rent for the land which is subjected to lease.

4. Betel leaves should also be included in the list of priority crops and be covered under the Crop Insurance claim. No Crop Insurance facility is available for raising betel vine products. In order to safeguard the produce, necessary steps should be taken by the Government to offer Insurance coverage for betel vine crop also.

5. Betel leaf is considered to be a highly perishable commodity. It is estimated that, sometimes, 10-70 per cent is declared wastage because of the excess of water supply, rain, drought, flood, climate, pest and crop diseases. Therefore, the Government should take necessary steps to minimize the wastage by adopting appropriate processing technologies.

6. The study shows that there is no refrigerated wagons/vans/trucks are available for transportation of betel leaves during the peak period of the harvest to other states. Therefore, the Government should take necessary steps to provide such facilities to the betel vine producers during the peak seasons.

7. A research centre is needed to safeguard the betel vine crop from diseases and to get market information about the product. But in Sholavandan and Madurai, up to this time, no such research centre has been started.

8. The foreign exchange earning potentiality of this crop may be improved through proper research on export systems and intelligence besides modulation of the export-policy decisions.

9. There is wrong propaganda about the use of betel leaves among the people in rural areas that will result in cancer. Therefore, the Government should make proper efforts to neutralize cancer propaganda on a betel leaf.

10. The ‘Vetrillai Kodikkal Vivasaya Sangam’ in Sholavandan should construct a betel vine market yard with sufficient market infrastructure, including temporary storage facilities for betel leaves. If the market regulation is implemented correctly, the malpractices like the existing system of unauthorised deductions, charging an excessive commission, late payment by unorganised brokers, etc., may be rectified.

11. In general, because of the existence of various types of middlemen, such as vineyard merchant, auction market, and farmers’ association are not organized, and therefore, the farmers are subjected to exploitation. In order to reduce the exploitation, the Government should start ‘regulated market’ to bring the farmers under an organized sector. It must educate the betel vine producers to understand the advantages of being a member of an organized and regulated market. The betel leaf growers should be encouraged to form a proper professional association for addressing their own problems.

12. The knowledge about prices of betel leaves in India will strengthen the bargaining power of cultivators in settling the prices of their produce. There is a need to disseminate the Market Intelligence regarding variety – wise wholesale prices at an essential consuming market outside the State. This market information may help the cultivators to plan for their harvesting of betel leaves. This may avoid the excessive arrival of betel leaves to the market.

    The responsibility of the dissemination of information should be under-taken by State level Marketing Authorities. The farmers should be given the training to operate the computer and to make use of Internet facilities to get market information all over India and abroad.

13. Research work on the marketing systems and intelligence and allied aspects relevant to the crop is required to be initiated by the Government to safeguard the wide and unwarranted fluctuation in the price of betel leaves.

14. In order to safeguard the betel vine cultivators during the slack season and excessive production period, the Government should construct the cold storage warehouses at least two or more such cold storage godowns in each taluk in the study area. The cold storage godowns should be offered at a cheap rate of rent to the farmers.

15. The researcher found that the farmers do not get the proper price of the betel leaves they harvested. In order to ensure a better and reasonable price to the farmers, oil-based industries, medicinal based cottage, and village industries should be encouraged.

16. No help is better than self-help. Hence, organization and strengthening of Self Help Groups (SHGs) will be highly effective in solving their problems.

17. It was observed that in the sample areas, there were no efforts taken by any agency regarding the latest technical know-how. It is suggested that suitable measures in this regard should urgently be taken.

18. Awareness among users and consumers has to be created on a large scale regarding health benefits and medicinal value of Betel vine crop.

19. Formation of Betel vine Growers' Co-operative Societies will go a long way in solving their problems on all fronts.

Conclusion

Betel vine is a green-gold of our nation. It is still regarded as an excellent mouth refresher, and mild vitalizer routinely served on the social, cultural, and religious occasions, which has an excellent nutritional composition of minerals and vitamins. Because of its short span of life and very perishable commodity, it gets wasted due to a lack of storage facilities and low market demand. In spite of these wastages, India earns more than Rs.9000 million every year. The Government of India should take necessary steps to

reduce the wastages and losses; publicity from a commercial angle would help to increase consumption, and thereby there will be a demand for betel leaf. Diversification in uses of betel leaves and its by-products (oil, medicine, etc.), promotion of council for export, etc., may help to absorb the excess supply of betel leaves in the market, especially during the rainy season when the price goes abnormally down.

The cost of cultivation is very high, and also it is a labour intensive crop, and the farmers have to face the water irrigation problems, no proper arrangement for storage and non-availability of transport as well as the poor condition of the roads will automatically bring down the production of betel leaves. The Government must provide credit loans to the farmers and also make proper arrangements for storage facilities, irrigation facilities, good conditions of roads and transport facilities; proper price fixation will automatically bring up the lifestyle of the betel leaf farmers.

In order to solve many problems with regard to the marketing of the betel vine growers and also to protect them from the clutches of intermediaries, wide price fluctuation and irregular demand, the Government based service organizations such as regulated markets and co-operative marketing societies should establish their present marketing services and infrastructure facilities to a greater extent.