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Betel Leaf Cultivation in Odisha: Problems and Prospects

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Abstract **- Betel vine cultivation is a type of agricultural activities which provided livelihood for the rural farmers. Farmers collected seasonal income from other crops, while betel vine cultivation produced income throughout the year from a small piece of land. By this it can reduce poverty & unemployment level. Thus an attempt has been made by the present study to examine the problems and prospects of the betel leaves cultivators in Puri district of Odisha. It has been found that the betel cultivators are facing various problems during production, marketing, and also some general constraints. Even the assistances provided by the Government are not sufficient enough. Thus it is therefore necessary to undertake various policy measures to eradicate the difficulties as the profit margin in betel leaves cultivation is very high and this could become an important source of livelihood.**
Keywords: **Agriculture, Betel, Cultivation, Livelihood, Poverty**

I. INTRODUCTION

Betel vine has been cultivated for its leaf since time immemorial in India (Bhattacharya et al., 2012) but has assumed significant commercial importance in the last 20-25 years. The vast economic potential of the Betel farming can be adequately established by the fact that it is consumed by about 15-20 million people and can generate direct or indirect employment opportunities of about 20 million people in India (Kathirvel, 2016).

Besides employment creations, it also contributes to the nation in terms foreign exchange earnings. Betel leaves has good export potential and thus is most promising commercial leafy crop capable of attracting substantial amount of foreign exchange to the country (Guha, 2006). Besides having significant medicinal properties and nutritional values, betel leaf is widely used in social, cultural and religious occasions (Sripradha, 2014).

Odisha is one of the major producing states of betel vine (Acharjee and Sengupta, 1991). Betel vine cultivation is highly labour intensive and particularly suited to small holdings. Once established, a betel vine becomes a perennial source of employment and income for farmers to meet their daily requirements (Chandra and Sagar, 2004). So it could be a good option for the landless farmer to go for leasing and cultivation which could provide them a good return in income.

Various Government and non-government national level organisations like National horticulture Mission, National horticulture Board, RKVY state departments NGOs are providing subsidies to the growers for encouraging betel vine cultivation in various districts of Odisha for boosting production as well as income of the farming communities.

Government of Odisha in 2013-14 introduced a new scheme to increase the production and the productivity of betel vine. As the farmers have to incur a huge expenditure during its initial period of its establishment, it is proposed to provide assistance to the tune of 50% of the 1st year establishment cost under the scheme "Special Crop Specific Scheme- betel vine" under State plan with the objective to promote betel vine cultivation in this State (Economic Survey of Odisha, 2015-16). Considering its importance as a source of livelihood to the farming community, the present study attempts to answer the following research questions:

1. Do betel cultivations provide a viable source of livelihood?
2. What are the constraints that limit the betel leaves cultivation?

II. RESEARCH DESIGN

A. Profile of Study Area

The betel cultivation is mostly done in the coastal districts of Puri, Balasore, Jagatsinghpur, Ganjam and Khurda in Odisha. For the present study, Puri district has been selected purposefully as it occupied larger areas of betel vine cultivation among major growing districts of the state.

B. Sampling Design

In Puri district, there are 11 blocks of which Astarang has been randomly selected. In Astarang block, there are 14 panchayat. Out of these panchayat, 3 Panchayat namely Saripur, Kenderapati, and Korana in Astarang block has been randomly selected. Out of these 3 panchayat, 6 villages are taken through random sampling named as- Koilipur, Kundeswar, Phakirpatana, Balipatana from Saripur panchayat, Kenderapati from Kenderapati panchayat and Udayapur from Korana panchayat. Since, betel cultivation is the main livelihood strategy of Saripur panchayat, so four

villages has been randomly selected from this panchayat. Again Simple Random sampling method has been used to select the samples unit. Betel farmers are considered as the sample units of the present study. The total sample size for the present study is 100 (table I).

TABLE I SAMPLING DESIGN

Gram Panchayat	Villages	No. of sample units
Saripur	Koilipur	15
	Kundeswar	25
	Phakirpatana	6
	Balipatana	25
Kenderapati	Kenderapati	20
Korana	Udayapur	9
Total sample units		100

(Source-Primary data)

C. *Sources of Data and Methodology*

The study has been based on primary & secondary data. Primary data has been collected through structured surveyed schedule from the households during 2016. Data collected has been summarized and portrayed in statistical tables, graphs and charts. Other relevant mathematical and statistical techniques such averages, percentages, t- test, have been used to analyse the prospects and problems faced by betel cultivators.

III. SOCIO-ECONOMIC PROFILE OF BETEL CULTIVATORS

In Odisha basically four types of betel leaf are cultivated. These are Nova Cuttak, GodiBangala, Sanchi and Birkoli varieties. In the study area peoples are cultivated only one variety that is GodiBangala (*Bhainchigodi*). Similarly there are two methods for betel cultivation. One is Open cultivation and another is closed cultivation. But in the study area only close cultivation method should adopted and also in individual cultivation. There is no group cultivation for betel farming.

A. Demographic features of betel cultivators

Social indicators like age, caste and education are some of the important factors that help cultivators to participate in various farming activities (Figure 1). It can be seen from Figure 1 a) that 27% cultivators are in 30-40 years age group, 25% are of 40-50 years and 23% are of 50-60 years. And rest 19% and 6% are in the age group of more than 60 years and between 20-30 years respectively. This indicates that mostly middle aged people are engaged in betel cultivation.

Education plays an important role in determining the literacy rate of the area. It makes people to adopt new information and technologies. More than half (63%) of the farmers had primary education, while 21% farmers have secondary education. It is seen that 8% of cultivators were illiterate, while only 8% had education above secondary level (figure 1 b).

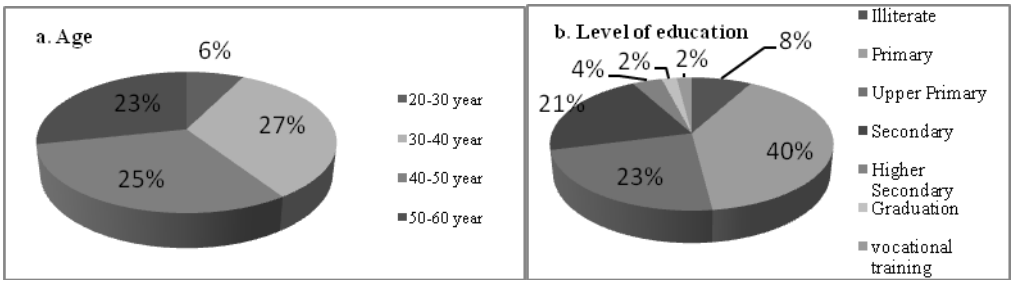
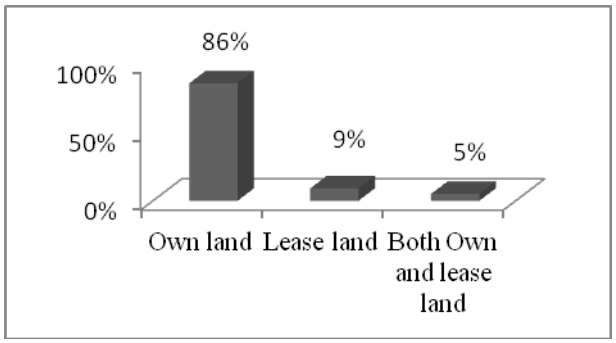


Fig. 1 Age and Level of education of the betel cultivators

B. Size of landholding and Output

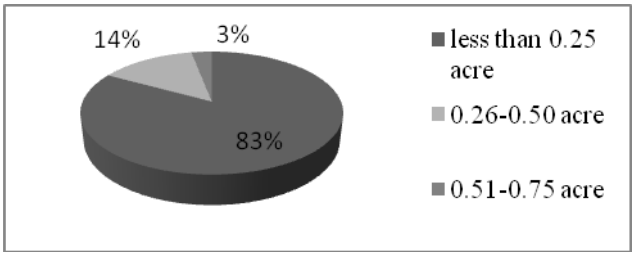
For any agricultural activity, land is the most important input required. But for betel leaf cultivation less amount of land is required for cultivation as compared to other crops like- paddy and wheat. In the study area, some betel cultivators carry the farming in their own land and some on the leased land. Those who do their cultivation on the lease lands used to pay rent locally known as "*Rosama*" per year to the land owner. The distribution of betel leaf cultivators according to nature of the ownership of land is shown in figure 2.



(Source-Primary data)

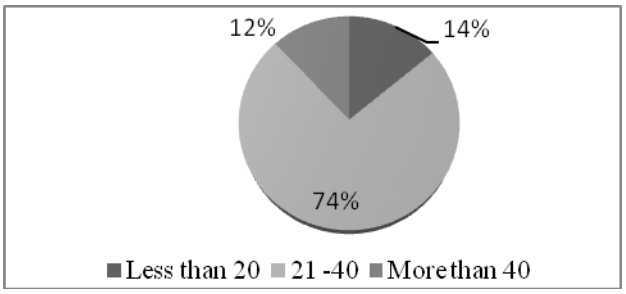
Fig. 2 Ownership of Landholding

The above figure shows that 86% of cultivators cultivate on their have own land and 9% of the cultivators do it on the lease land. Only 5% cultivators cultivates on both own land and lease land. Cultivators pay a very small amount for taking the land on lease to the land owner annually. Now it is most important to know that how much amount of land is utilised by betel cultivators for betel vine. This is shown in figure 3.



(Source- Primary data)
Fig. 3 Percentage distribution of betel cultivators according to size of land

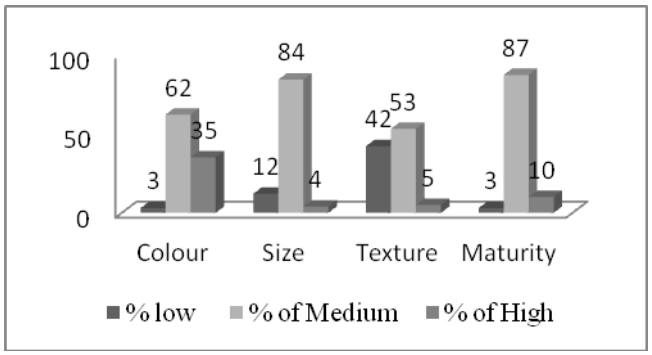
Above figure shows that there are more cultivators have less than one acre of land for betel cultivation. There is 83% cultivators are cultivating in less than 0.25 acre. Similarly 14% cultivators are cultivating in 0.26 to 0.5 acre of land. And a very less amount of cultivators are having 0.51 to 0.75 area of land for betel cultivation that is only 3%. Further in betel cultivation, categories of the cultivator like big or small depends on the number of rows/sides (gachha) a cultivator is having. The distribution of cultivators according to their category is shown in figure 4. It can be seen that there are three categories of betel vine in the study area. These are - less than 20, 21 to 40 sides and more than 40 sides. Cultivators having 21 to 40 sides/rows are highest i.e. 74%.



(Source-Primary data)

Fig. 4 Percentage distribution of the betel cultivators by sides/rows (Gachha)

Next, quality of product plays an important role in determining the price of the product and hence the income of the producer. In case of betel cultivation, leaf quality is determined by colour, size, texture and maturity. Based on these criteria, quality of betel leaf can categorized as low, medium and high. The figure 5 shows the distribution of betel cultivators according to the quality of betel leaves.



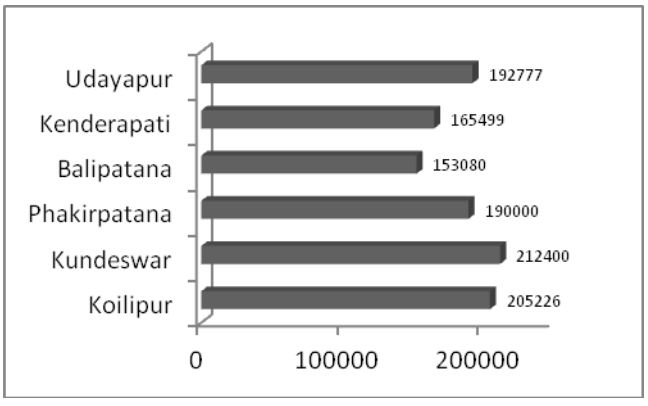
(Source-primary data)

Fig. 5 Distribution of betel cultivators according to the quality of betel leaves

Above figure depicts that mostly the medium quality of betel leafs is produced in the study area. With respect to colour, 3% of respondents produce low quality of leaf, 62% medium quality and 35% produces high quality of betel leaf. Based on size, 84% produce medium size of leaf. With regard to texture, only 5% cultivators produce high quality of betel leaf whereas 53% have medium quality of leaf. Lastly based on maturity criteria, 87% of respondents produce medium quality of leaf and only 10% of respondent have high quality of betel leaf. Thus very few betel cultivators are producing high quality of betel leaves.

C. Household Income

Income level indicates the economic condition of a household. Those households having higher income are economically sound. The average annual household income of the cultivators in sample villages is shown in the figure 6. The average annual household income in the study area is Rs 186497.



(Source-Primary data)

Fig. 6 Average Annual household Income of cultivators in sample villages (in Rs)

IV. ASSESSMENT OF COST AND RETURN OF BETEL LEAF CULTIVATION

Conducive environment for commercial betel vine cultivation comprises artificial shades, presence of

considerable humidity and adequate supply of moisture in the soil, moderate and even temperature throughout the year. Thus its cultivation is best done under controlled condition. The ideal weather condition for the good growth of plant is mild temperature i.e., about 10 C in winter and about 40 C in summer, about 170 cm rainfall and presence of high humidity ranging from 40-80% (Pradhan, 2015). A well-drained fertile sandy or sandy loam or sandy clay soil with pH range of 5.6 –8.2 is considered suitable for its cultivation (Guha and Jain, 1997).

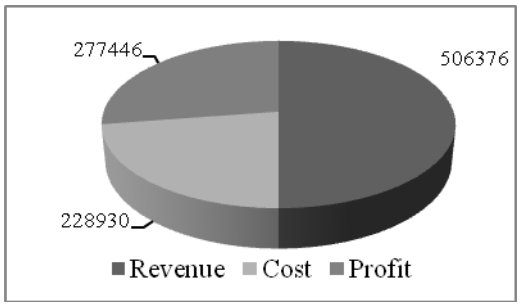
The study area is highly affected with fluctuations in climatic conditions. To avoid this, cultivators cultivate this crop under controlled environmental condition. They are grown in closed conservatories locally known as baroja. These are generally rectangular in shape and often 50 to 30 sq metres. These are made up of locally available materials like bamboo, straw, jute, sticks grasses etc. This is then surrounded by with thatched wall roof. The expected economic life of a baroja on an average is about five years from its erection. Thus betel cultivation requires huge investment at initial stage (the time of planting vine). The cost for betel leaf cultivation includes construction of Baroja, its maintenance every year, lease cost if any and input cost like labour cost, fertilizes etc. The cost of cultivation and the revenue earned is shown in table II.

TABLE II AVERAGE COST AND REVENUE OF BETEL LEAF CULTIVATION IN THE STUDY AREA

Average area of cultivation	Annual Revenue	Annual Expenditures	Annual Profit
0.30 Acre	151913	68679	83234

(Source-Primary data)

The table shows that there is an annual cost of cultivation per 0.30 acre of land is Rs 68679 whereas the average annual income is Rs 151913. Thus the betel cultivators get a good profit of Rs 83234 on an average annually from 0.3 acre of betel cultivation. Figure 7 shows an estimation of cost and return from 1 acre of land for betel cultivation.



(Source-Primary data)
Fig. 7 Cost and Return per 1 acre of land for betel cultivation (in Rs)

The above figure shows that the average annual revenue, expenditure and profit from betel cultivation in one acre of land. Here the average income is Rs 506376 average annual expenditure is Rs 228930 per acre of land. Thus this gives a profit margin of Rs 277446 per acre of land for betel cultivation.

Thus above analysis shows that betel cultivation can be a viable source of livelihood to the rural farmers as the return from the cultivation is very high. But, betel vine crop is a challenging crop, which requires devotion and skill. Cultivation of Betel vine required skilled and trained farm laborers, proper water and disease management, maintenance of humidity and shade, adequate knowledge of marketing practices, etc. Its cultivation also required short-term and long-term planning; proper guidance to farm labourers in regard to day to day functions such as types of leaves plucked, training and tying the vine, etc (Patil, 2015). Additionally, cultivators has also to face numerous problems staring from production to selling (Rahman et al., 2014; Patil, 2015; Mohanasundaram, 2015).Thus it is pertinent to investigate the problems encountered by the farmers in betel leaf cultivation which is discussed in the next section.

V. PROBLEMS/CONSTRAINTS IN BETEL LEAF CULTIVATION

Betel leaf cultivation held many problems faced by cultivators like Production problems, Marketing problems, financial problems and many others. These problems have been discussed below.

A. Production Problems

The various problems faced by the cultivators during the production of betel leaf is analysed below in the table III.

TABLE III MAJOR PRODUCTION PROBLEMS FACED IN BETEL LEAF CULTIVATION

Problems	**%**
Non-availability of skilled labours	97
Degradation in Soil quality	98
Natural calamities	85
Dieses and insects attack	34
Lack of water supply	12

(Source-Primary data)

It can be seen from the table that 97% of the cultivators faced the problem of getting skilled labour. This has caused very high labour cost ranging from Rs 350 to Rs 1000 per day for various activities in betel cultivation. It may be Rs 350 to Rs 1000 per day. Similarly 34% of the respondent says a problem like often dieses and insects attack. Sometimes there are some fungal diseases and mites' attacks to the betel leafs, so the leaf quality is decreased. 85% of respondent are face the problems of natural calamities. This is very big problem in the study area. Thus it is a coastal area so the area faced cyclones many times.

The respondents have faced two super cyclones i.e. "1999 *super cyclone"* & "2014 *Phillin"* which had totally destroyed the betel vine. 12% of respondent face the problems of shortage of water due to wrong management of irrigation. Besides, 99% of the cultivators faces soil problem. Every two to three month the betel vine needs some amount of soil for covering the root of the plant). Supply of water is not a serious constraint as the study area is a coastal area, so the ground water level is near the surface. Further many cultivators have small boar well and diesel pump set, so they can easily irrigate their betel vine. So, only 12% of cultivators face shortage of water mostly during summer season.

B. Marketing Problems

After production, marketing is most important or necessary factor in the cultivation process. It involves activities like harvesting & selling of betel leaf. The mature betel leaves are plucked by hand along with a portion of petiole. Harvested betel leaves are washed, cleaned and graded according to their quality and size for marketing. An average annual yield of a good betel leaves crop is about 60 to 75 leaves/ plant and 6 to 7 million leaves / ha. Then they are packed after cutting a portion of the petiole and rejecting the damaged leaves. The picked leaves are sorted into different grades according to size, colour, texture and maturity. For packing mostly bamboo baskets are used and in many places straw, fresh or dried banana leaves, wet cloth etc. are used for inner lining. This yield also depends on cultivation methods and variety of betel leaves and market demand.

There are basically three harvesting period i.e. 7-10 days, 10-15 days, 15-22 days. But in the study area all the respondents are harvesting between 7-10 days. After harvesting, the cultivators immediately sell the betel leaf. They don't wait for better price, because it is a perishable product and there are also no storage facilities for betel. They used to sell their product to the intermediaries in Local Betel market i.e. Kundhei Haat, Othaka Haat, Naya Haat & Pipili Haat. The problems faced by the respondent betel cultivators while marketing their output is shown in table IV.

TABLE IV MAJOR MARKETING PROBLEMS FACED BY BETEL CULTIVATORS

Problems	%
Price fluctuation	100
High dominance of market intermediaries	98
Non availability of storage facilities	79
Lack of export promotional programmes	47
Lack of market information	26
Lack of transportation facilities	8

(Source- Primary data)

The above table shows that price fluctuation is a biggest problem. In the winter season, the cultivators get a high price, but in the rainy season the price is very low. There is a huge difference between winter and rainy season. In winter, they get Rs 1000 to Rs 1500 per 1000 leafs, and in summer season they get Rs 300 to Rs 500 per 1000 leafs. Similarly in the rainy season the price reduced at very low level, the farmers are getting Rs 50 to Rs 250 per 1000 leafs. Only 26% of respondent have lack of market information, because most of the cultivators gets the information very easily from other cultivators. Lack of storage facility is a big problem in the study area as 79% of the respondent faces this problem. Betel leafs being the highly perishable product; cultivators are forced to sell their product immediately after harvesting. They can't wait for better price. Similarly 98% of respondent says that there is high dominance of market intermediaries. Transportation of output is another marketing problem faced by the betel cultivators (8%). They used motor bike, cycles or auto to transport the betel leaves to market. There is high demand of betel leaves in foreign market, but 47% of the respondent feels that due to lack of export promotional programmes in the study area they are forced to sell their product to local intermediaries for low price who used to export them and reap high profits.

C. General Problems

Apart from above, many cultivators faces other problems like unavailability of finance, research facilities etc. The following table 6 shows the different general problems faced by the betel cultivators in this area.

TABLE V PERCENTAGE DISTRIBUTION OF GENERAL PROBLEMS

Problems	%
Non availability of loan facilities	97
No subsidy loss of natural calamities	96
No insurance for betel vine	12
No Research centre nearby	7

(Source- Primary data)

The above table shows different percentage of respondent facing different problems in the study area. Finance plays an important role in any of the economic activity and its insufficiency becomes one of the major constraints. Betel cultivators too suffer from lack of financial fund. In betel cultivation more capital is required in the initial stage and also maintenance cost. The labour cost is also very high in comparison to other crops. Though there are many institutional external source of finance like banks, co-operatives but due to non-availability of loan facilities, they (97%) largely depend on relatives and money lenders for getting loans and have to pay a very high rate of interest. Many cultivators (12%) also feel that there should be some insurance facility for betel cultivation to cover up their losses when the betel vines are affected by cyclone or disease and pest attack. Some young farmers (7%) complaint of lack of research centre for betel vine in the

study area which could help them to adopt better and new technique or method of cultivation. As the area is prone to natural calamities, even no subsidies are also provided for the crop loss from the Government.

VI. CONCLUSION AND POLICY IMPLICATIONS

Betel cultivation is one of the most important horticulture crops in Odisha. The present study concludes that betel cultivation can be a viable source of livelihood for rural households as the profit margin is very high. But while cultivation, it has been found that farmers encountered various problems relating to production and marketing such as lack of soil moisture (drought), insufficient water supply, occurrence of natural calamities, disease and pest attack, non-availability of skilled labour, high labour cost, lack of storage facilities, transportation facilities, large number of intermediaries, lack of export promotional activities etc. Besides, betel cultivators also face some general problems like lack of research centre in the area, non-availability of loan facilities, betel crop insurance, subsidies during natural calamities etc.

Hence, various measures should be taken by the Government to provide the basic facilities required for betel cultivation. Some of the measures like issue of crop loan for betel vine growers through Banks and Primary Agricultural Cooperative Societies at concessional rate of interest, regulation of labour wages in betel cultivation could be initiated by the Government. Besides, betel leaves should also be included in the list of priority crops and becovered under Crop Insurance claim. Further in order to reduce the exploitation, the Government should directly procure the betel leafs from the betel cultivators.In order to safeguard the betelvine cultivators during slack season and excessive production period, the Government should construct the cold storage warehouses at least two or more such cold storage in each block of the district. The cold storage godowns should be offered at cheap rent to the farmers. Initiatives should be taken to establish research centre in the study area to improve the techniques and methods for betel cultivation. Training and skill development programmes for betel growers should be organised by the government frequently to upgrade and also to encourage young growers for adopting the cultivation, thereby making it to be an important source of livelihood in rural areas.

REFERENCES

[1] S. Acharjee and K. Sengupta, "Economics of Betel Vine Cultivation: A Case Study in Midnapore District of West Bengal", *Economic Affairs*, Vol. 36, No. 4, pp. 210, 1991.

[2] R. B.Bhattacharya, S. K. Mondal, Ray and D. C. Khatua1, "A Study on Bacterial Disease of Betel Vine in West Bengal, India", *International Journal of Bio-resource and Stress Management*, Vol. 3, No. 2, pp. 211-216, 2012.

[3] G Chandra and R. L. Sagar, "Harvesting Green Gold: Cultivation of Betelvine in Sundarban", *Indian Farmers Digest*, Vol. 37, No. 3, pp. 5-13, 2004.

[4] Economic Survey of Odisha (2015-16). Planning and Coordination Department, Directorate of Economic and Statistic, Government of Odisha.

[5] P. Guha, "Betel Leaf: The Neglected Green Gold of India", *Journal of Human Ecology*, Vol. 19, No. 2, pp. 87-93, 2006.

[6] P.Guha and R. K.Jain, "Status report on production, processing and marketing of Betel leaf (Piper betle L.)". Agricultural and Food Engineering Department. IIT, Kharagpur, India.p.23, 1997

[7] N Kathirvel, "Cost and Returns of Betel leaf Cultivation in Tamil Nadu with special reference to Karur District", *Asia Pacific International Journal of Engineering science*, Vol. 2, No. 1, pp. 20-27, 2016.

[8] P. Mohanasundaram, "Marketing Problems faced by Betel Leaf Cultivator", *International Journal of Advanced Research*, Vol. 3, No. 5, pp. 1447-1451, 2015.

[9] B. V Patil, "Challenges before Betel Vine Cultivation", *Scholarly Research Journal for Interdisciplinary Studies*, Vol. 4, No. 25, pp. 2391-2400, 2015.

[10] S.P Pradhan, "A Study on Business Prospect of Betel Vine Cultivation in Nimapara Block of Puri District of Odisha" Thesis submitted to Orissa University of agriculture and technology, 2015. Retrieve from http://krishikosh.egranth.ac.in/handle/1/97196 as on 20/10/2017

[11] M. A. Rahman, M. Tani, K. Asahiro, H. Tsuruta and S. M. A. Ullah. "Farmers' experiences on problems and prospects of betel leaf cultivation in Teknaf peninsula of Bangladesh", Proceedings of 5th *International Conference on Environmental Aspects of Bangladesh*, 2014. Retrieve from http://benjapan.org/ICEAB/proceedingsICEAB14/i17%20p39.pdf

[12] S. Sripradha, "Betel Leaf – The Green Gold", *Journal of Pharmaceutical Sciences and Research*, Vol. 6, No. 1, pp. 36 – 37, 2014.