

**MANAGEMENT OF BETEL VINE'S COST OF CULTIVATION**

Bharat Vitthal Patil, Ph. D. Matoshri Bayabai Shripatrao Kadam, Kanya Mahavidyalaya,
Kadegaon, Dist-Sangli, Maharashtra (India)

Abstract

*Cost of betel vine cultivation and returns collected on the sale of betel vine leaves were known as most important factor in betel vine cultivation. Cultivators were well conversant with the cost of cultivation of betel vine. The growers of betel vine expected on the basis of cost of cultivation. Generally, price of any article was mostly dependent on cost and profit expected by the produces and mediators. The careful analysis of cost and income assisted to fix a certain price which was accepted by Consumers. The analysis of cost and income assisted betel vine cultivators to control unnecessary and excess expenses while using inputs. Cultivators realized to control expenses for earning more income and even a moderate price was fixed by them to relieve customer. This again furnished cultivators to estimate capital requirements for meeting productive and unproductive expense. Cultivators brought a certain quantity of betel vine leaves for sale on a certain price. Price of the betel leaves were determined by mediators and were paid to cultivators after deducting commission, transportation, loading unloading and other charges etc. Betel vine (*Piper Betle* Linn.) was an important commercial cash crop. In India the area under betel vine cultivation was 42287 hectares, in Maharashtra it was 4093 hectares. Betel vine leaves were used for chewing in India and other Asian countries. It was grown inside the artificial created forest area where humidity was more. The betel vine leaves were absolutely indispensable for celebrating marriages, many religious and social functions. Betel vine leaves were treated as holy symptoms for preserving bliss in the family and friendship. All holy days used betel vine leaves for creating and preserving reciprocity among friends and relatives.*

Betel vine leaves had medicinal values which were beneficial to sweeten the mouth and remove bad smell of the mouth. Betel vine leaves serve as the best medicine to remove acidity, cough, indigestion, septic, etc. Betel leaves were useful for curing Asthma, Bronchitis etc. People were habituated to chew betel vine leaves to wipeout uneasiness and exhaustiveness. Mostly betel vine leaves were used by many in regular intervals to obtain enthusiasm for all functions to do emotionally. The betel vine plant was considered as a perennial, creeping climber. Betel vine leaves were known as broad with pointed tips. It was identified as ever-green element to maintain freshness to all chewing people Betel vine leaves were born alternatively on the stem and branches of the betel vines.

Keywords: Fixed cost, Variable cost, Fapada leaves, Kalli leaves, Hakkal leaves, Dag (Packing of 12000 betel vine leaves), Dappa (Packing of 6000 betel vine leaves) and Karandi (Packing of 3000 betel vine leaves)



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Introduction: The betel vine cultivation was highly labour-intensive crop which provided a sound livelihood to many farmers and farm labourers. Nearly twenty lakhs families were engaged in the cultivation and selling of betelvine leaves in various states of India. Betel vine crop was a peculiar type of cash crop which provided socio economic states in the society. The earnings from the sale of betel leaves were sound and attractive to the cultivators through out the year, at regular intervals. Betel vine cultivators obtained financial support in the whole year to do many other farming functions. Majority of the members of the family were engaged in the plantation, training of vine, provision of manures, fertilizers, water and plucking of betel vine leaves. Sangli district was evaluated as one of the famous district in the cultivation of betel vine leaves. Sangli was also holding favorable elements like environment, transportation, market facilities, and willingness of farmers in Sangli district in general and Miraj and Valva tahsils in particular. Under the study, efforts were made to study the cost of betel vine cultivation.

Research Methodology

Objectives

1. To study the cost behavior of betel vine crop.
2. To suggest remedial measures to overcome the problems occurred due to imbalanced cost structure of betel vine cultivation in the selected area.

Hypotheses of the Study

1. The labour cost lead to increase high cost of betel vine cultivation as compared to other cost of betel vine cultivation.
2. Cost control is the main function in the management of betel vine cultivation.

Research Design

Selection of Area: The area under betel vine cultivation was increasing day by day in Sangli district. Miraj and Walva which were noted tahsils showed increasing trend for more cultivation of betel vine and therefore the researcher selected these two tahsils for the intensive study.

Selection of Villages: Five villages from each of tahsil were selected purposely based on maximum area under the betel vine cultivation. Thus 10 villages were selected with specific purpose. The sampling techniques were adopted for the investigation of two stage sampling. At the first stage, village as the primary unit and the second was in regard to betel vine cultivators.

Selection of Samples: Six betel vine cultivators were selected from each of the selected villages out of which two from small size of group, two from medium size of group and two from large size of group. Thus, total sample in two tahsils accounted to 60 betel vine cultivators. The total samples from two tahsils were further classified that 20 cultivators from small size of group, 20 cultivators from medium size of group and 20 cultivators from large size of group.

Significance of the Study: The present study will help to the cultivators of betel vine for the overall improvement of their practices. The present research study will enlighten to manage betel vine cultivation on scientific basis. It is also valuable to the concerned betel vine cultivators and agricultural institutions. This study will also be useful to the central and state Governments to formulate policy for the betel vine crop.

Scope of the Study: The present research study was applicable to only Sangli district in which Miraj and Valva tahsils were selected. Sixty farmers were selected and personal contacts, questionnaires were solicited. The study was mainly concentrated on managerial aspects of betel vine cultivation in Sangli district.

Results and Discussion

Classification of Costs: All the expenses were grouped according to their common characteristics. Costs were classified under two categories known as fixed and variable costs.

Fixed Costs: In aggregate fixed costs were fixed irrespective of changes of volume of production. Fixed costs were time costs. During the agreed period fixed costs remained constant, even though volumes were to change. Fixed cost decreased per unit with increased level of output and increased per unit with decreased level of output. Fixed cost were said to be uncontrollable because the funds must be spent irrespective of level of volume of production. The composition of fixed cost of betel vine cultivation was given in Table 1.

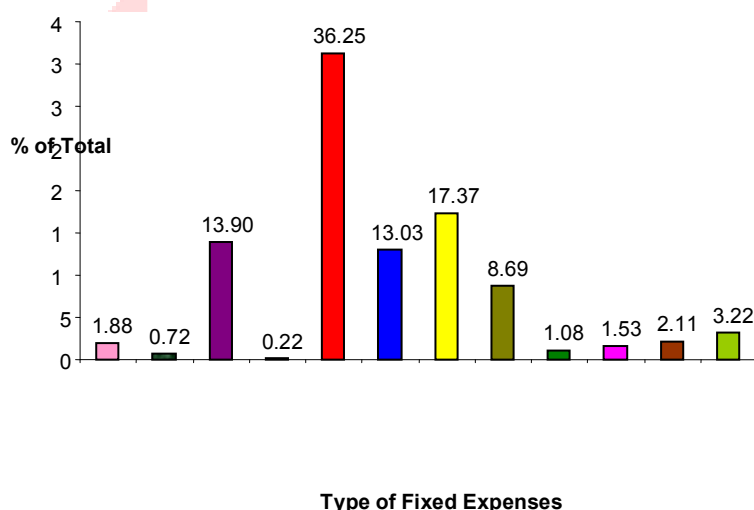
Table No. 1: Classification of Total Fixed Cost per Acre and its Annual Apportionment

Sr. No.	Type of Fixed Expenses	Total Cost Rs.	Cost Per Acre (3÷93 Acres**) Rs.	Annual Apportionment (4÷8 years***) Rs.	% to Total Rs.
1	Land Leveling and Lay-Out	2,41,800	2,600	325	1.88
2	Development of live Supports	93,000	1,000	125	0.72
3	Seed Plant Vines	17,85,600	19,200	2400	13.90
4	Packing Shade	27,900	300	38	0.22
5	Well and Bore-Well	46,57,080	50,076	6259	36.25
6	Pipe line	16,74,000	18,000	2,250	13.03
7	Drip Irrigation System	22,32,000	24,000	3,000	17.37
8	Electric Pump	11,16,000	12,000	1500	8.69
9	Water Storage Tank	1,39,500	1500	188	1.08
10	Wind Protector- 'Tati'	1,39,500	2,100	262	1.53
11	Interest on Fixed capital	2,71,920	2924	366	2.11
12	Farm Equipments	4,13,850	4450	556	3.22
Total		1,28,47,950	138,150	172269	100

Source: Primary source

*** Sample area under betel vine cultivation *** Expected life of betel vine garden*

Total fixed cost of 93 acres of betel vine cultivation of the selected respondents was Rs.12847950. Fixed cost for one acre of betel vine cultivation was Rs. 1,38,150 and it was apportioned for a period of eight years. The life of betel vine gardens was estimated on an average for eight years. Total fixed cost were shown in figure No.1



Graph 1: Fixed Cost

Table No. 2: Classification of Fixed Cost per unit of Dag (Produced and sold)

Sr. No.	Type of Leaves	Dag Produced And Sold	Annual Apportioned Cost Rs.	% to Total
1	Fapada	35	1412	8.18
2	Kalli	338	13,638	78.97
3	Hakkal	55	2,219	12.85
Total		428	17269	100

Source: Primary source

Table No. 2 reveals that total annual apportioned fixed cost of betelvine cultivation was Rs.17269. Out of that fapada dags was 1412 (8.18 percent), kalli dags Rs. 13638 (78.97) and hakkal dags Rs. 2219 (12.85 Per cent). Annual apportioned fixed cost per dag was Rs. 40.35.

Variable Cost: Variable costs changed according to changes in production. Variable costs varied in direct proportion to volume of production. However, variations were not rigid but variable according circumstances. All direct elements of costs like direct material, direct labour and direct chargeable expenses such as electrical power for motor pump were variable. These expenses were more due to the increment in the volume of production and vice-versa. Variable expenses were incurred at the time of production of betelvine leaves. Variable costs per unit remained constant regardless of the level of output. Variable expenses were controllable.

Table No. 3: Classification of Variable Cost

Sr. No.	Type of Variable Fixed Expenses	Total cost (Rs.)	Cost Per Acre (3÷93acres) (Rs.)	
1	2	3	4	5
1	Labour cost	62,96,100	67,700	75.13
2	Manures and Fertilizers.	15,25,200	16,400	18.20
3	Pesticides and Fungicides	1,86,000	2,000	2.23
4	Tying Material for Vine	1,11,600	1,200	1.33
5	Electricity	2,30,460	2478	2.75
6	Interest on Working Capital	15,990	172	0.19
7	Cess and Taxes	141136	152	0.17
	Total	83,79,486	90,102	100

Source: Primary source

Classification of one acre betelvine cultivation cost into fixed and variable expenses were important to determine cost of cultivation. Such analysis helped to the measurement of the cost behavior. The fixed cost incurred after break-even-point became meaningless. Hence only the variable costs were meaningful for proper decision making.

According to the table No. 3, total variable costs were Rs.83,79,486. The total variable cost of one acre betelvine cultivation showed Rs.90.102. As compared to total variable cost, labour costs stood at Rs. 67,700. It was about 75 per cent of total variable cost of production

which was more to be known. Betelvine cultivators needed of controlling high level of labour payments. Manure and fertilizers stood at Rs.16,400 as compared to total variable cost. It was 18 per cent of total variable cost.

Expenses incurred on pesticides and fungicides were Rs. 2000 which was 2.22 per cent of total variable cost. Tainting the betelvine was continuous activity in betelvine cultivation till the lowering of the betelvine. For one year tying materials worth Rs.1200 were required, which was 1.33 per cent of total variable cost. Sufficient and frequent water supply was also necessary. Motor pumps were installed in wells and bore wells to irrigate betelvines. Total electricity power charges amounted to Rs.2478 at 2.95 per cent of total variable cost. Interest on working capital for one year cultivation amounted to Rs.172 It was charged at 13 per cent per annum. It was about 0.19 per cent of total variable cost. Education cess was charged on non-food crops, the charges were 0.17 per cent of total variable cost variable cost per dag was Rs.210.51. Total variable cost of betelvine cultivation was shown in figure 6.2.

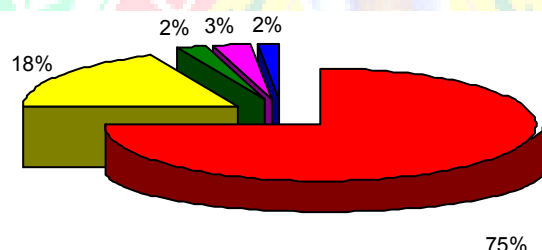


Fig. 1: Percentage of Variable Costs

- Labour cost
- Manures and Fertilizers
- Pesticides and fungicides
- Electricity
- Other Expenses

Table No. 4: Labour Costs Incurred on One Acre of Betelvine Cultivation

Sr. No.	Type of Labour cost	Total Man Power	Total Dags Harvested in a Year	Labour Rate Per day Dag	Total Labour cost Rs.	% to total cost
1	Supply or Water	75	-	60	4500	6.65
2	Training of Betelvine	361	-	60	21,660	32.00
3	Harvesting	-	428	70	29960	44.25
4	Cuttings the Live Supports	14	-	60	840	1.24
5	Lowering the Vine / Rejuvenation	120	-	75	9,000	13.39
6	Spraying	04	-	60	240	0.35
7	Provision of Manures, Fertilizers. & Soil	25	-	60	1500	2.21
Total					67,700	100

In the cultivation of betelvine, the cost of labour was major. Betelvine crop was highly labour intensive. In total labour cost, harvesting cost stood at 44.25 per cent and then training cost amounted to 32 per cent of total labour cost. Third important cost was lowering the vine for which the expenses were 13.39 per cent. Betelvine crop required frequent water supply. During the summer season, the water requirements were twice a week whereas in rainy season, water was needed once in a week. While in winter season, water supplied after 4-5 dags. The labour cost, incurred irrigation was 6.25 per cent of total labour cost. Expenses incurred for cuttings of live support to maintain proper shade in the betelvine garden, spraying and to provide manures, fertilizers, soil in the bed stood aggregate at 3.80 per cent of total labour cost. Maintenance of soil quality was done once in a year by adding new soil.

Table No. 5: Supply of Manures and Fertilizers (per acre)

Sr. No	Type of Manures and fertilizers.	Average Quantity		Average Rate (Rs.)	Total (Rs.)	% Total
		Trucks	Quintals			
1	Manures	6	-	1900	11,400	69.51
2	Oil Cakes	-	5	700	3500	21.34
3	Fertilizers	-	3	500	1500	9.15
Total					16400	100

Source: Primary source

For the cultivation of one acre six trucks of farm yard manure were required which amounted to the total cost Rs.11400. The cost of manures was considered as major expenses. As compared to total cost of manures and fertilizers, manure were nearly 70 per cent oil cake were applied alone or with fertilizers, crystal cake, neem cake, and groundnut cake were mixed proportionately with fertilizers and applied to improve the quality of leaves and the productivity of betelvine. Oil- cake stood at 21 per cent of the total cost of manures and fertilizers. Portion of fertilizers were 9 per cent of total cost of manures and fertilizers.

Table No. 6: Classification of Variable Cost (Per unit of a dag produced and sold)

Sr. No.	Type of leaves	Dags Produced and sold	Annual Variable cost Rs.
1	<i>Fapada</i> leaves	35	7,368
2	<i>Kalli</i> leaves	338	71,155
3	<i>Hakkal</i> leaves	35	11,579
Total		428	90102

Source: Primary source

Table No.6 showed that annual variable cost of betelvine cultivation was Rs.90.102 which was divided according to various types of leaves. *Fapada* leaves dugs were costing Rs. 7368,

kalli leaves Dags were costing Rs. 71155 and hakkal leaves dags were costing Rs. 11579. Variable cost per dag was 210.52.

Cost of Marketing: Betelvine was considered as highly perishable crop. As soon as harvesting was over, immediate marketing was advisable. Cost of marketing affected the selling price of betelvine leaves. The following elements were included in marketing cost.

Table No. 7: Classification of Total Marketing Cost

Sr. No.	Types of Marketing cost	Total Cost Rs.	% to Total
1	Packing Materials	840	2.83
2	Transportation	6,420	21.63
3	Commission	22,427	75.54
Total		29,687	100.00

Source: Primary source

The cost of marketing was essentials for immediate sale of betel leaves. Commission to agents was maximum amounted to Rs.22,427 which stood 75.54 percent of total marketing cost. The transportation charges were also more and essential for the safe carriage of dag. The transpiration expenses amounted to Rs. 6420 was 21.63 per cent of total marketing cost. Packing materials were also important for an effective packing and packaging. The packing expenses were Rs.840 which stands only 2.83 per cent of total marketing cost. Marketing cost per dag was Rs. 69.36.

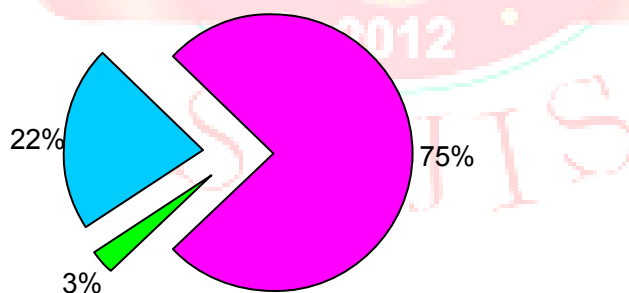


Fig. 2: Percentage of Marketing Cost

■ Packing Material ■ Transportation ■ Commission

Cost of Packing Materials: Various procedures were followed for the systematic packing of betel leaves. The Bamboo basket locally known as *Karandi* was popular in pan-shop customers. It contained 3000 betel Leaves. The Bamboo basket was properly kitted to safeguard betel leaves. One more package was known as *dappa*. It contained 6000 leaves.

Dag packing was also popular which contained 12000 betel leaves. For distance carriage, dappa and dag packages were felt as the most suitable.

For all the varieties of packing the various types' materials were felt needed. For packing of dag and dappa, locally available materials were mainly used. Local mulberry branches were used for making rings which were applied at the bottom and top of dag and dappa. Sugarcane leaves were also used before arranging the betel leaves in the dag and dappa. Banana fibers were also used for the external portion of dag and dappa for the safe transportation. All the betel leaves were properly arranged to absorb more quantity of leaves. To produce a suitable shape and size of the dag, string and plastic fibers were used for their strong trying. How much precautions were taken for production, equal precautions were taken for packing of betel leaves. For the composition of 428 dags in a year, 28 kg of string and plastic fibers were used. Average rate per kg of string and plastic fibers Rs.30 was charged. The totals cost of packing materials amounted to Rs. 840.

Transportation Cost: Transportation maintained the sprit of quick delivery to commission agents and customers to fulfill their demands. Transportation costs were added to determine prices to be charged. The total cost of transportation was amounted to Rs. 6420. In one acre of cultivation, 428 dags were required to arrange for the transpiration for which Rs. 15 were charged by the transportation authority.

Mediators Commission: Betel vine cultivators and consumers were property knitted by commission agents. Cultivators aimed at maximum prices while consumers were aspired minimum prices. Commission agents charged an average 10 per cent commission on sales of betelvine leaves. Total commission charged by agents amounted to Rs. 22427 during the year. Commission to agents was stood at 75.54 per cent of total marketing cost.

Cost of Betelvine Cultivation: Cost of betelvine cultivation included fixed as variable costs. The total costs of betelvine cultivation were classified as follows.

Table No. 10: Total Cost of Betelvine Cultivation

Sr. No.	Type of Cost	Total Cost (Rs.)	Annual Cost per Acre (3÷93 Acres)** (Rs.)	% to Total
1	2	3	4	5
1.	Fixed Cost	16,06,017	17,269	16.08
2.	Variable Cost	83,79,486	90,102	83.92
Total		99,85,503	1,07,371	100.00

*Source: Primary source, ** Sample area under betel vine cultivation*

The table No.10 indicated that total cost betelvine cultivation of the sample respondents was Rs. 99,85,503. Annual apportioned fixed cost was Rs.17,269 which was 16.08 per cent of

total annual cost. Variable cost was the major portion in the cost cultivation of betelvine. Total variable cost of stood at Rs. 90,102 per annum at 83.92 per cent of annual total cost. Annual total cost of cultivation of betelvine per acre was Rs. 1,07,371. Total costs equaled the sum of fixed costs and variable costs.

Table No. 11: Cost of Cultivation According to Size Group-wise Dags Produced

Sr. No.	Size Group	Dags produced (Rs.)	Fixed Cost (Rs.)	Variable Cost (Rs.)	Total Cost (Rs.)
1.	Small	69 (16.12)	2,784 (16.12)	14,526 (16.12)	17,310 (16.12)
2.	Medium	143 (33.41)	5,769 (33.41)	30,104 (33.41)	35,873 (33.41)
3.	Large	216 (50.47)	8,716 (50.47)	45,472 (50.47)	54,188 (50.47)
Total		428 (100)	17,269 (100)	90,102 (100)	1,07,371 (100)

Source: Primary source

Table No.11 showed classification of cultivation according to size group. Apportioned annual fixed cost of small size group was Rs.2,784 which stood at 16.12 percent of total fixed cost. Medium size group, the fixed cost amounted to Rs. 5,769 at 33.41 percent of total fixed cost. Large size group the fixed cost amounted to Rs. 8,716 at 50.47% of total fixed cost. A portion of variable cost of small size group was Rs.14,526 at 16.12 per cent of total variable cost. Medium size group portion was Rs. 30,104 at 33.41 per cent of total variable cost. Large size group portion of variable cost was Rs. 45,472 at 50.47 per cent of total variable cost. Total cost of cultivation of small size group was Rs.17,310 at 16.12 per cent of total cost of cultivation. Cost of cultivation of medium size group was Rs. 35,873 which was at 33.41 per cent of total cost of cultivation. Large size group portion of total cost cultivation was Rs.54,188 at 50.47 %.

Table No.12: Cost of Cultivation According to per Acre of Betelvine Cultivation

Sr. No.	Size Group	Area Under Betelvine (Rs.)	Fixed Cost (Rs.)	Variable Cost (Rs.)	Total Cost (Rs.)
1.	Small	15 (16.13)	2,785 (16.13)	14,533 (16.13)	17,318 (16.13)
2.	Medium	29 (31.18)	5,385 (31.18)	28,096 (31.18)	33,481 (31.18)
3.	Large	49 (52.69)	9,099 (52.69)	47,473 (52.69)	56,572 (52.69)
Total		93 (100)	17,269 (100)	90,102 (100)	1,07,371 (100)

Source: Primary source

Table No.12 indicated that, classification of cost of cultivation according to area under betelvine cultivation. Total fixed cost of Rs. 17,269 was divided into small size group Rs. 2,785, medium size group Rs. 5,385 and large size group Rs. 9,099. Total variable cost of cultivation was Rs. 90,102. Variable cost of cultivation of small size group was Rs. 14,533. Medium size group Rs. 28,096 and Large size group Rs. 47,473. Total cost of cultivation of small size group was Rs. 17,318, Medium size group Rs.33,481 and Large size group Rs. 56,572.

Table No.13: Cost of Cultivation According to Types of Betel Leaves Produced (Per acre / dag)

Sr. No.	Types of Leaves	Dag Produced	Fixed Cost (Rs.)	Variable Cost (Rs.)	Total Cost (Rs.)
1.	<i>Fapada</i>	35 (8.18)	1,412 (8.18)	7,368 (8.18)	8,780 (8.18)
2.	<i>Kalli</i>	338 (78.97)	13,638 (78.97)	71,155 (78.97)	84,793 (78.97)
3.	<i>Hakkal</i>	55 (12.85)	2,219 (12.85)	11,579 (12.85)	13,798 (12.85)
Total		428 (100)	17,269 (100)	90,102 (100)	1,07,371 (100)

Source: Primary source

Table No.13 showed that total cost of cultivation according to types of leaves produced. Fixed cost of *fapada* type leaves dags was Rs.1,412 which stood 8.18 per cent of total fixed cost. *Kalli* type leaves dags portion was Rs. 13,638 at 78.97 per cent of total fixed cost. *Hakkal* type's leaves dags portion of fixed cost was Rs. 2,219 which was 12.85 per cent of total fixed cost.

Variable cost of *fapada* type leaves dags was Rs. 7,368 at 8.18 per cent of total variable cost. *Kalli* type leaves dags was Rs.71,155 at 78.97 per cent of total variable cost. Portion of *hakkal* type leaves dags was Rs. 11,579 at 12.85 per cent of total variable cost.

Total cost of cultivation of *fapada* type leaves dags was Rs. 8,780 at 8.18 per cent of total cost of cultivation. *Kalli* type leaves dags were Rs. 84,793 at 78.97 per cent of total cost of cultivation. *Hakkal* type leaves dags was Rs.13,798 of total cost of cultivation.

Conclusion and Recommendations

Conclusion: The following facts were concluded from this research study.

- 1) Total fixed cost was apportioned for a period of eight agricultural years. Apportioned fixed cost per acre was Rs. 17,269. The major portion of fixed costs were for seed plant vines (13.90 per cent), well and bore-well (36.25 per cent), pipe-line (13.03 per cent), drip irrigation system(17.37 per cent) and electric pump set (8.69 per cent).Fixed cost per *dag*

was Rs. 40.34. 2) Variable cost of one acre betelvine cultivation amounted to Rs 90,102 out of which 75.13 per cent incurred on labour charges. The proportion of labour cost to total variable cost was very high. This indicated that betel vine crop was labour-intensive crop. The variable cost per *dag* was Rs. 210.51. 3) As compared to total variable cost, plucking cost accounted to 44.25 per cent followed by training and tying of betelvine accounted to 32 per cent of total labour cost. 4) The betelvine cultivators generally used manures which were at 69.51 per cent of total cost incurred for manures and fertilizers. 5) Transportation charge and commission of mediators constituted at 97.17 per cent of total marketing cost. 6) The proportion of variable cost to total cost of betelvine cultivation was very high. Variable cost comprised at 83.92 per cent and fixed cost at 16.08 per cent of total cost of betelvine cultivation. Variable cost was five times more than fixed cost. 7) The high initial investment and high cost of cultivation limited the space for betelvine cultivation. 8) The share of marketing cost in total cost of sales in regard to betelvine leaves was at 21.66 per cent. Such heavy marketing cost resulted to increase cost of sales of betelvine leave and reduced a share of profits to a large extent.

Suggestions: 1) Supply adequate credit facilities with low rate of interest for the investment in fixed and working capital to the cultivators of betelvine. 2) Effective control on labour cost is necessary. It was very high proportion in the total cost of betelvine cultivation. 3) Government should ban the production and consumption of substitute items like *Ghutkha, Pan Masala, Pan Parag, Mawa etc.* produced from tobacco. 4) Proper farm accounting practices should be implemented to understand cost and profit of betel vine crop. 5) The Government should frame a policy to control malpractices in the betel leaves market. Open auction in the betel leaves market should be introduced which assists to get better revenue from sale of betel vine leaves.

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