

Betelvine Cultivation Along the Raja Channel Area in Salem District*

by

A. VENKATA RAO¹ K. S. SUBRAMANIAN² and C. S. KRISHNAMURTHY

Synopsis: This article deals with the complete details of Cultivation of betelvine along the Raja Channel in Salem district.

In Madras State, betelvine is grown in almost all districts except the Nilgiris. The cultivation methods as obtained in Poonamalle near Madras and Vellalur near Coimbatore were dealt in detail by Krishnan and Kantiraj (1941) and Balakrishnan (1930) respectively. Irudayaraj (1960) and Chaugule (1960) have discussed the general aspects of betelvine cultivation practices in various states of India.

Betelvine is one of the important cash crops cultivated along the banks of the Raja Channel in Salem district which gets its water supply from the river Cauvery and which runs from Jedarpalayam to Kumarapalayam having a length of about 27 miles. The water is available for irrigation throughout the year except a fortnight to three weeks in the month of March when the channel is closed to undertake the silt clearance work. The crop suffers for water during that period, the requirement to some extent being met from temporary wells of 10' to 15' depth dug by the ryots in the betelvine gardens themselves. Because of the assured supply of water for the major part of the year, betelvine is grown here with confidence and it fetches a reasonable income to the tenants as well as to the land owners and the growers who keep themselves engaged throughout the year as the crop requires day to day attention. The quality of betel leaves produced in this area is considered to be very high and it has therefore a high market value in North Indian Markets such as Bombay, Poona etc. Because of this, the lease amount per acre of betelvine land per year is as high as Rs. 2,000/- and more and the land value per acre is more than Rs. 20,000/-.

Acreage: Betelvine is grown on about 1000 acres along the Raja channel in the Vengarai, Pandamangalam, Pudupalayam, Velur and other villages. The area has been considerably reduced in the recent years due to the large scale damage caused by the "wilt" disease.

Climate: In general, the climate is warm to hot and humid, the temperature ranging from 68-100°F and the annual rainfall ranging from 300 to 750 mm. Strong, dry dusty winds blowing during summer necessitate strong fences for the gardens and additional support to the "arcs" or "goodarams".

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1. Assistant Mycologist, Betelvine Scheme, Pothanur, Salem District.
 2. Assistant Lecturer in Mycology, Agrl. College & Research Institute, Coimbatore.
 3. Mycologist and Associate Professor of Plant Pathology, Agrl. College & Research Institute, Coimbatore.

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Land Tenure: The cultivation of the betelvine is a joint stock concern. The land is then laid out in trenches and ridges or long raised beds. These beds are called 'Kidangus'. The "Kidangus" are then sublet to the actual cultivators the lease amount being realised on the basis of the number of beds sublet. A standard bed is 90' in length and $3\frac{1}{2}$ ' in breadth, there being about 60 such beds in an acre.

Rotation: Betelvine usually follows paddy, the usual local rotation being banana two years followed by paddy one year and followed by betelvine two years. Sometimes sugarcane will also be included in the rotation. Paddy invariably precedes a betelvine crop.

Varieties: The two varieties largely grown in this tract are *Karpura Kodi* and *Pachai Kodi* but the former occupies a larger area than the latter as the demand for it is more. *Karpura kodi* has leaves which are light green to greenish yellow in colour and broadly lanceolate in shape with a sharp and tapering tip. The stem is slender and pale green in colour and the leaves are thin and pungent. *Pachai Kodi* has leaves which are dark green, broad and obovate in shape, the stems being thick and sturdy having a pinkish to dark green colour when compared to the other variety.

Season: Betelvine is grown mainly in two seasons. The season is usually computed from the date of sowing of the standard, *agathi* seeds (*Sesbania grandiflora*). The first season THAI PATTAM commences in April, the planting of betelvine cuttings being in June-July. Originally in this *pattam* *agathi* sowing was done in January-February. Of late, since the channel is being closed for 3 weeks from the 1st of March every year for silt clearance, the Thai *pattam* has been shifted to April. The second season is ADI PATTAM commencing in July August and betelvine cuttings are planted during September-October. One more season called "Karthigai Pattam" was in vogue a few years ago but now it is not followed.

Preparatory Cultivation starts as soon as the paddy crop is harvested. No ploughing is given but trenches are marked $3\frac{1}{2}$ ' apart and dug with *mamuttis* (spade) and the soil from the trenches are formed into ridges or beds, the clods being broken and then levelled. The beds are always dug along the North-South direction, so as to protect the crop from the severe winds which blow in a westerly or easterly direction. The beds are $3\frac{1}{2}$ ' broad and the trench about 1' deep and 1' wide in the initial stage. It will be deepened in course of time as mud is removed from the trenches for plastering the bunds.

Soil: The soil here is mostly of a clayey to clayey loam type. Because of this clayey nature of the soil, the bunds remain intact for the whole period of crop growth (2 years). The bunds are strengthened in addition by frequent plastering with clay removed from the trenches. The soil is kept moist always by the daily splash irrigation with water from the trenches. It becomes very hard, a characteristic of the clay soil whenever it becomes dry.

Manures and Manuring: No manuring is done before planting vines. Twenty-five to thirty tons of farm yard manure per acre are applied two to three months after planting of seedvines. Subsequently once in three months groundnut cake at 10 bags of 160 lb. each per acre will be applied to the crop. As the crop will be in the field for two years, another dose of farm yard manure will also be applied once again during the tenure of the crop. In addition there is a practice of applying sheep's hair waste (tannery waste) to the crop. *Agathi* leaves from agathi standards will also be pruned, put in the beds and allowed to rot. The farm yard manure is spread on the surface of the beds and then plastered with clay. While applying groundnut cake, a shallow pit is made with a pointed stick by the side of the vines, a handful of powdered groundnut cake placed and covered with the soil. Then the bunds are plastered uniformly.

Sowing the Standards: *Agathi* (*Sesbania grandiflora*) seeds are sown on the beds in two rows along the two sides or edges of the beds with a spacing of 13" along the row at the rate of 20 to 24 lb. per acre. Irrigation is given immediately after sowing and water is then drained off. Only *agathi* plants are used as standards here. Sometimes the seeds of *Avuri* (*Lucaena glauca*) are also mixed along with the *agathi* seeds and sown. Usually "Avuri" seeds are sown along the fence as a protection.

Intercropping & Fencing: Banana suckers are planted at the ends of the beds with a view to getting subsidiary income and also for obtaining fresh leaves and fibre for packing the betel leaves at the time of picking.

Fencing is essential to protect the crop against the beating force of the wind and to prevent animals and pilferers from getting access to the crop. *Lucaena glauca* seeds are sown along the boundary of the field. Thick bamboos will be planted at a spacing of 4' to 6' apart and thin canes tied across the fence 6 to 8 lines depending upon the height of the fence and having the stems of *Lucaena glauca* as live supports. The leaves and branches of *Lucaena glauca* will cover the interspaces in the fence. In addition, dry banana leaves will also be tied over the fence so as to cover the fence completely and to provide shade inside the garden.

Planting the Vines: The betelvine crop is raised from cuttings. The seed material is usually pieces of vine with 6-8 nodes taken from the actively growing portion of the vines. About 40,000 cuttings are required for planting an acre. Two cuttings are planted in each hole. A hole is made first at the base of each *agathi* standard with a sharp thin bamboo stick, the base of two cuttings are separated, planted in the holes then covered with moist soil and pressed down well with the base of the palm. Two nodes will be buried inside the soil. Then the portion of the cutting above the soil is run between the *agathi* standards and kept on the soil surface. A lump of clay is placed on the third or fourth node from the tip so as to keep it in contact with the soil with a view to giving another chance for it to strike roots in case the ends buried in the soil fail to establish. The planted cuttings then be covered with dried banana leaves or paddy straw to give shade.

Irrigation: Irrigation is given daily except during rainy days by splashing the water from the trenches on to the beds with wooden troughs. There will always be standing water to a depth of 1' in the trenches. By splash irrigation the surface of the beds is always kept moist but water is not allowed to stagnate over the beds.

After Cultivation: The cuttings take about 45 days to establish and after this period the lump of clay placed on the vine is removed first. A few days later, the vines are lifted slowly and tied to the *agathi* standards by means of *Korai* (*Cyperus* sp) fibre. When the *agathi* standards are about 4 to 6' in height they are tied together in pairs with banana fibre and the side shoots are removed so as to allow the trees to grow tall and thin. This is a regular and periodical operation being taken up once in a fortnight. The vines are tied to the *agathi* standards at each node with banana fibre. Unless this operation is taken up periodically, the vines will be hanging in the air and may break when the wind blows. Excess growth of *agathi* leaves from the standards are pruned during the tying operation and sold and this fetches some additional income to the grower.

Arching and scaffolding: The *agathi* standards along with the vines on the two beds on either side of a trench are tied together in the form of an "arch" or "goodaram" so that each of the two rows of standards with the vines trailed on them on one and the same bed is tied to different arches. A bamboo or *agathi* pole to the length of the bed is used to fix up a scaffolding in two lines to give extra support to the "arches" and also to the vines and standards as a protection from heavy winds. Usually the vines will be allowed to grow only up to the second line of the scaffolding and the vines reaching over this will be cut and sold as seed vines. Each goodaram will be supported by two or more thick bamboos so as to protect them from strong winds.

Coiling of vines: Coiling of vines is done twice, the first being taken up when the crop is about 8 months old and the second when 14 months old. The entire vine is untied from the standard and brought down. A 6" diameter loop or coil is made at the base of the standard near the soil level and the vine again trailed on to the standard and scaffolding. All the vines in a garden are thus retrailed to a uniform height. If there are any gaps due to non-establishment of vines, tillers from the adjoining or opposite vines are run along the bed and trained on to the standard at the gap. The vines that run along the bed and the portion of the coils in contact with the beds are plastered with mud so as to enable them to strike roots. This operation enables filling up gaps leading to increased stand. After this operation, the growth of the crop will be more or less uniform giving a good and full stand of the crop.

Plastering the bunds is also a periodical operation taken up once in 20-30 days to keep the bunds compact and to conserve moisture. The sides of the beds are scraped at times with a tool called "*Uravarai*" and the soil so scraped is used for plastering the sides of the beds.

Weeding is not a problem in betelvine cultivation as the bunds are plastered frequently so that weeds do not grow and establish.

Harvest or Picking of Leaves : The first picking starts after six to eight months of planting the seed vines. Subsequently picking is done once in three weeks. The leaves are differentiated into two categories. (1) *Mar* leaves which are tender and develop from the side shoots or branches. Except two tender leaves at the tip, the rest of the leaves on a branch are plucked. (2) *Chakkai* leaves which are the thick mature leaves develop from the main stem itself. While picking leaves the labourers use an iron "nail" fixed to their thumb. This has a small curved blade which facilitates easy removal of the leaves. (3) *Mutti pari* : This is the picking of all *mar* leaves including the tender ones at the end of the period of crop growth. No rate is fixed for these leaves and the produce is disposed off in the local markets.

The yield varies from 7000 to 8000 baskets per acre per crop each basket containing 2000 leaves.

Labour : In betelvine cultivation, each type of operation is a specialised one and is carried out only by skilled personnel. The labourers are paid at different rates for different kinds of operations and according to the demand for labour at the time. For example for scaffolding, tying and fixing bamboos and planting vines, the rates may vary from Rs. 2 to Rs. 3 per day; for splash irrigation and tying vines the rates range from Rs. 1/50 to Rs. 2/- per day. The digging of trenches is usually given out on contract and the rates vary from Rs. 100/- to 140/- per acre.

Pests and Diseases : The crop suffers heavy loss due to a Foot-rot disease caused by the fungus *Phytophthora palmivora* resulting in large scale wilting of vines. Results of research conducted in the scheme for study of betelvine wilt at Pothanur has shown that drenching the soil with 1% Bordeaux mixture once a month gives considerable protection from the disease.

Powdery mildew disease caused by the fungus *Oidium sp.* affects only the *Pachai Kodi* variety for which in the early stages dusting with powdered sulphur is undertaken.

In the early stages, the *agathi* standards are attacked by the pest *Prodinia litura* causing heavy damage. Spraying with insecticides is undertaken against this pest. Aphids also attack the *agathi* leaves and as a result sooty mould infection is seen on the betel leaves. Since chemical treatment could interfere with marketing of the leaf, no chemical treatment is given generally. But the picked leaves will be cleaned with a wet or moist cloth to remove the sooty mould and during this period the cost of picking leaves goes up to Re. 1/- and more per basket of 2000 leaves. The person who picks the leaves has usually to clean the leaves. Weevils also attack *agathi* plants and bore holes in the stem resulting in the breaking of the stems during heavy winds.

Marketing: The plucked leaves are arranged in *Koulies* or bundles containing 100 leaves each and each basket contains 20 such *Koulies* or 2000 leaves which is the unit of sale. The betel leaves are mainly sent to the markets in Bombay, Poona etc. The agents of Bombay markets have their headquarters in Sankaridurg, a place 28 miles from Pothanur and they have their own sub-agents in most of the betel vine growing villages. The commission agents receive intimation from their merchants daily regarding the requirements of betel leaves. The commission agents distribute their requirement to their betel growers in the morning. The baskets are collected in the evening and are sent to Sankaridurg by road from where they are sent to the different markets outside through lorries. Each local commission agent has many labourers attached to his *Mundy* (godown) for picking leaves. They are paid on the basis of basket of leaves plucked, the rate varying from Rs. 0/37 - 1-00. Depending on the capacity of a particular individual, the wages can be earned. A swift man can pick 6-8 baskets per day. They are paid once in a week.

Fixation of Price: Pothanur is the headquarters of Tamilnad Betel Growers' Association and the President of this Association fixes the price of the produce per basket of *Chakkai* or *Mar* leaves of the different season crop and variety separately according to the demand of the produce in the market. The fluctuation or change in price will be communicated to all the merchants then and there. The commission agents collect the baskets every evening from the growers and send them to their merchants at Sankaridurg and get paid only on Wednesday every week. Commission charges at Rs. 0-12 per rupee will be deducted from the value of each basket and the same will be equally shared by the main and sub-agents. The sub-agents will deduct the picking charge and the balance alone will be handed over to the grower. If for example the price per basket of leaves is Rs. 2/- the grower will get actually Rs. 1-39 per basket as detailed below :

Deductions: Commission at 12 nP per rupee	0-24
Picking charges	0-37 per basket
	0-61

Rs. 2 minus 0-61 = Rs. 1-39

The growers have to sell the produce to the agents only on credit basis and get the money only once in a week. The price fixed by the Association is only tentative and the growers are not always assured of this rate. Depending on the demand for the produce in outside markets, the merchants at Sankaridurg reduce or increase the price and the growers will get sometimes less or more than the price fixed. Being perishable, the growers have to sell the produce only through the commission agents as the same cannot be disposed off in the local market. So the profit is exposed to the fluctuation in price and demand of the same in the market.

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ANNEXURE

Cost of cultivation of betelvine in one acre of leased land for 2 years

S. No.	Particulars of operation	Men		Women	Total
		@	Rs.	@ Re. 1/-	Rs. P.
		1.25	1.50	2.00	
I.	<i>Preparatory cultivation:</i>				
	Digging trenches (on contract)	...	67	...	100/50
	Stirring the top soil of the beds with mamutty (spade)	...	20	...	30/00
	Levelling the beds with hand	...	10	30	45/00
	Total		97	30	175/50
II.	<i>Manures and Manuring:</i>				
	Application of Farm Yard Manure on the beds and covering with mud.	...	...	50	50/00
	Application of groundnut cake and then plastering with mud.	...	...	100	100/00
	Cost of 100 cart-loads of Farm Yard Manure @ Rs. 10/- per cart load	...	...	...	1000/00
	Cost of 40 bags of groundnut cake @ Rs. 30/- per bag.	...	...	...	1200/00
	Total	...	...	150	2350/00
III.	<i>Seeds and sowing:</i>				
	Planting the seed vines	...	...	50	100/00
	Dibbling agathi seeds	...	...	15	30/00
	Cost of 40,000 seedvines @ Rs. 30/- per 1000 seedvines	...	...	...	1200/00
	Cost of 20 lb. of agathi seeds @ Rs. 2.50 per lb.	...	...	...	50/00
	Total	...	...	65	1380/00

ANNEXURE (Contd.)

S. No.	Particulars of operation	Men @ Rs.	Women @ Re. 1/-	Total Rs. P.
IV. Irrigation :				
	Splash irrigation daily 700 days @ 2 men per day per acre	1400	...	1750/00
	Cost of digging wells (10) @ Rs. 20/- per well	...	...	200/00
	Lifting water from the wells @ 2 women per well per day for 15 days	...	300	300/00
	Total	1400	300	2250/00
V. After cultivation :				
	Lifting vines and tying to the agathi standards	...	50	75/00
	Tying agathi standards in pairs	...	20	30/00
	Scaffolding two lines	...	100	200/00
	Tying vines once in a fortnight for 40 times @ 30 men each time	...	1200	1800/00
	Coiling of vines twice	...	100	200/00
	Fixing bamboos along the fence and in the beds	...	50	100/00
	Tying small bamboos cross wise along the fence	...	50	100/00
	Tying dried banana leaves over the fence	...	30	60/00
	Plastering bunds 20 times @ 15 women each time	...	300	300/00
	Weeding 10 times @ 10 women each time	...	100	100/00
	Cost of 300 Big bamboos No. 1 @ Rs. 90/- per 100 bamboos	...	...	270/00
	Cost of 700 Big bamboos No. 2 @ Rs. 70/- per 100 bamboos	...	...	490/00
	Cost of 200 bundles of Kattunathis (Thick bamboo sticks) @ Rs. 3/- per bundle	...	...	600/00
	Cost of 50 bundles of "Ununathis" (Thin bamboo sticks) @ Rs. 2 per bundle	...	...	100/00

ANNEXURE (Contd.)

S. No.	Particulars of operation	Men @ Rs.	Women @ Re. 1/-	Total Rs. P.
	Cost of 10 bundles of 'bamboo' reeds @ Rs. 2/50 per bundle	...	...	25/0
	Cost of 140 bundles of dried banana leaves @ Re. 1/- per bundle	...	...	140/0
	Cost of 40 bundles of coconut fronds @ Rs. 4/- per bundle	...	...	160/0
	Cost of 300 bundles of banana fibre @ Re. 0/50 P. per bundle	...	...	150/0
	Cost of 40 bundles of palmyra fibre @ Re. 0/50 P. per bundle	...	...	20/0
	Total	1270	330	400
				4920/0

VI. Harvest:

Cost of picking leaves is not included as the same is deducted from the value of the basket and the balance alone given as per local practice.

Receipts

Yield:

	Rs.	P.
7000 baskets of betel leaves @ Rs. 3/- per basket	21000	00

Expenditure

I. Preparatory cultivation	...	175	50
II. Manures and Manuring	...	2350	00
III. Seeds and sowing	...	1380	00
IV. Irrigation	...	2250	00
V. After cultivation	...	4920	00
	Total	11,075	50

Lease of land for 2 years @ Rs. 2,000/-
per acre per year

4000 00

15,075 50 (o)

Grand Total 15,000 00

Profit: Rs. 21,000 — 15,000 = Rs. 6,000/-.