

## Turmeric Survey

By

SRI S. LAKSHMANAN, B.Sc. (Ag.)

(Assistant Lecturer in Agriculture, Coimbatore)

Turmeric is cultivated in garden lands as well as wetlands to the extent of about 3,100 acres in Coimbatore District in the vicinity of either a river or its channel. The three important taluks growing turmeric are Bhavani, Gobichettipalayam and Erode which constitute about 850 750 and 1,500 acres respectively. This area is not constant and it varies with the fluctuations in the price of turmeric in the Erode market. The crop is cultivated in about 2,000 acres in Karur taluk (Thiruchirappally District) and a small area in Salem District and the entire produce is marketed in Erode which exports the cured product to all places in the Presidency and also to places outside India through commission agents in Calcutta, Karachi, Colombo, Bombay and Madras. The produce from Valliyampalayam area in Gobichettipalayam taluk is valued highest and considered to be the best among the produce received from different centres. The crop is valued as a dye-stuff in the foreign market apart from its demand as a condiment and use for medicinal purposes. The cultivation and yield vary with the nature of the soil, irrigation, water, kind and availability of manure and also upon the skill of the cultivator.

**Soil:** Turmeric is mainly cultivated in well-drained red alluvial soils with ample facilities for the application of silt having plenty of organic matter, as Bhavani river silt. But it is also grown in heavy black soils as in Paruvachi in Bhavani taluk and Pasupathipalayam in Karur taluk. In heavier soils plenty of organic matter is applied to permit development of rhizomes by aiding drainage.

**Rotations:** No uniform rotation is followed in this tract in the cultivation of the crop. In the garden lands of Gobichettipalayam taluk the common rotation is as follows:—

1. Turmeric (May—June), 2. Fodder Cholan (February—April), 3. Arisi Cumbu (May—July), 4. Late Ragi (July—October), 5. Late Cotton (October—March), 6. Turmeric (May—June).

In Bhavani taluk either the above rotation or the following is adopted:—

1. Turmeric (May—June), Fodder Cholan or Panivaragu (February—April), 3. Arisi cumbu (May—July), 4. Ragi (July—October), 5. Sunhemp (Green Manure) (February—April), 6. Turmeric (May—June).

In wet lands of Erode taluk the usual rotation that is followed is as below:—

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1. Turmeric (May—June), 2. Fodder cholam (February—April),  
 3. Samba Paddy (July—January), 4. Sunhemp for green manure crop  
 (February—April), 5. Turmeric (May—June).

**Season :** The season for sowing the crop ranges from May—July depending on the receipt of water in the channels. In places where lift irrigation is done from Bhavani river like Kadayampatti, Thippichetti, palayam and Oricheri they are all planted earlier. But in Erode and Bhavani taluk planting is done rather late.

**Preparatory Cultivation :** After the harvest of the previous crop the land is ploughed under optimum moisture conditions not less than six times until a fine tilth is obtained. As previously mentioned if a thick sown crop of Sunnhemp is in the field, raised for green manure the tops are cut to facilitate subsequent ploughing in. The seed rate used is about 60 lb. per acre. Generally country ploughs are used but big ryots who are having stronger animals also use various mould-board ploughs like Cooper 11, 25 and P. S. G. 10.

**Manures and manuring :** As the value of silt in the cultivation of this crop is well appreciated by all turmeric cultivators there is severe competition for securing the same. To the extent available silt is applied up to 150 cart-loads per acre. In places like Appakudal and Vempathy in Bhavani taluk the silt accumulated in the tanks in the respective villages is utilised as manure for turmeric. These tanks receive their water supply from jungle streams passing through Bharghur hills and hence carry with them a lot of vegetable matter. In places where the soil is heavier, groundnut husk, rotten palmyra leaves from old roof-tops, kolinji plants cut into bits, cumbu straw which becomes unfit for cattle fodder are also used. Cattle manure, municipal rubbish and nightsoil compost are also used at 30—50 cart-loads per acre. Ryots apply heavier doses of manure in light red soils as they are considered to be hungry soils while the heavy clay soils which are considered more fertile receive a lesser dose of manure. It is said that sheep-penning leads to more of vegetative growth and less of yield in turmeric. Some of the ryots in Sinnapuliyur of Bhavani taluk gave their opinion that cattle manure without the admixture of silt in heavier clay soils leads to the attack of termites. Growing sunnhemp as a green manure crop 1½ months prior to sowing of turmeric and ploughing it in at flowering stage is becoming more and more popular and this lessens the quantity of manure applied to the crop by about 25 cart-loads per acre. In Bhavani taluk some ryots have used groundnut cake at 480 lb. per acre and ammonium sulphate at 112 lb. per acre and obtained very good yields. In Karur taluk on heavier clay soils, an application of 750 lb. of castor cake and 112 lb. of ammonium sulphate per acre did not give any appreciable increase in



yield over the local custom of applying organic manure. In Vellalpalayam village of Gobichettipalayam taluk, superphosphate has been reported to give good yields. In Erode taluk ryots have realised the value of municipal compost and on account of the keen competition it is found to be costlier than cattle manure. In general it is noticed that the value of organic manures and addition of silt is uniformly appreciated by turmeric cultivators in this district.

**Seeds and Sowing:** The seed material used is always selected from the previous year's crop. They are sold in terms of basketfuls or "Sadus" the capacity of the basket varying from 16 Madras measures to 32 Madras measures. In Karur the capacity of one "Sadu" is only 16 Madras measures weighing 60 lbs. Twenty-eight such "Sadus" are required per acre for sowing. In Erode taluk one Sadu is 32 Madras measures and in Bhavani it is 24 Madras measures. In all other taluks except in Gobichettipalayam the harvest of the crop of a small portion is left for seed purposes. Just after a month after the removal of the main crop the stalk of the seed material crop are cut and irrigated twice at fortnightly intervals. Then the seed crop is dug out and the rhizomes collected and preserved on dry sand and covered by dry leaves of turmeric. Only healthy ones free from diseases are selected for seed purposes. Rhizomes which are too thick otherwise called "Periyanadam" are rejected because they shrink very much after being cured. Both the round ones as well as the fingers are used as seed material, but they are sown only separately. Though the round ones are sold at Rs. 30/- less per ton than "fingers" in Erode market the ryots still use only a small percentage of the same as seed material. The ryots could not satisfactorily explain as to why the "round" ones or the mother rhizomes which are cheaper than the "fingers" should not be used as seed material. Ryots in Gobichettipalayam taluk are of opinion that "round" ones are able to produce vigorous growth of plants but give less yield. In Bhavani and Erode taluks the ryots believe that round ones produce vigorous plants and also result in good yield, but the seed material cannot be preserved for a longer time as in the case of "finger" rhizomes. In Karur taluk the ryots say that the round ones are able to come up well in heavier soils and hence suitable only for such soils. The majority of ryots seem to be of the idea that round ones may be preferred to "fingers" as seed material, but the matter needs investigation. About 1500-1800 lb. of seed material will be required per acre.

**Method of Sowing:** In well drained soils of Bhavani and Gobichettipalayam taluks planting in beds is preferred to planting in ridges. It is found that the number of plants in bed system is always greater than when planted in ridges and according to the ryots the total yield per acre increases as the number of plants increases up to a certain limit. In Erode and Karur taluks, when the soils are either heavier or irrigation is done by



direct flow from the channels, the size of the beds varies with the source of irrigation. Usually, they are 8' by 8' feet. In the case of ridges it is  $1\frac{1}{2}'$  to 2' in lighter soils and 2— $2\frac{1}{2}'$  in the case of heavier soils. When the ridges are formed  $2\frac{1}{2}'$  apart they are bigger in size and rhizomes are planted in 2 rows on both sides of the reidges while in smaller ridges they are sown only in one row at the crest. The method of sowing is almost the same in all places except in Sinnadharapuram where it is simply dibbled by the hand in the ridges 1 foot apart. In other cases a cut is made on the ridges with a mammoty and is slightly lifted and the turmeric fingers broken to 2" bits thrown into the pit one at a time so that when the mammaty is taken out the soil will cover the seed material completely. The distance between the seeds in the ridges or in the beds will be about 10 inches. Thus for sowing 1 acre 5 men to dig and 5 women to sow the seed-rhizomes and 2 men to level or reform the ridges respectively will be required.

**Other crops sown as mixtures:** Turmeric is rarely raised as a pure crop. Castor is commonly grown as a minor crop just for giving shade to the turmeric crop and a handful of seeds is sown here and there soon after the turmeric is planted. The other crops which are also grown as a mixture are the following:— Cumbu, Ragi, Maize, Onions, *Sesbania egyptiaca* and *Colocasia*. After turmeric rhizomes are sown, cumbu seedlings or ragi seedlings are planted one foot apart in September when the rhizomes begin to have vigorous growth. In the case of maize the seeds are sown  $1\frac{1}{2}$  to 2 feet apart and the cobs are sold while green and the entire crop is removed within 80—90 days after planting. On the same day or a day after the sowing of turmeric, onions are planted on the ridges on both sides  $1'-1\frac{1}{2}'$  apart and 600 lbs. of seed bulbs are generally required per acre. It is also usual to plant seedlings of chillies, brinjals, tomatoes and other vegetables on the bunds of main channels here and there just to give a subsidiary income to the ryot for meeting the cultivation expenses. Some of the ryots feel that by growing these minor crops as a mixture the main yield is not affected while others believe that the yield of the main crop is reduced thereby. Adverse effects are reported to be variable with different crops. For instance the cultivation of maize is reported to reduce the yield of turmeric considerably while onion does not affect it so much.

**Irrigation:** Ryots always feel that maximum yields of turmeric are obtained in well-drained soils and that too under lift irrigation. In places where water is irrigated by direct flow there is a tendency for over-watering and the soil becoming ill-drained and hence according to the ryots a lower yield is got in such places. Irrigation is done at longer intervals in the earlier stages of the crop and become more frequent, even twice a week from the fourth month after planting, when the rhizomes begin to make vigorous growth.



**After-cultivation:** Weeding with a hand hoe twice, the first, two weeks after sowing and the second  $1\frac{1}{2}$  months after sowing are done. The crop is hoed with mammoties and plants earthed up once, after the harvest of minor crops like cumbu, maize, ragi, or onions and another after the fourth month when the rhizomes begin to grow vigorously.

**Harvest:** The crop becomes ready for harvest eight months after planting when the rhizomes and the leaves are fully mature and the leaves show a tendency to turn brown. The stalks are harvested flush to the ground level soon after irrigating the crop. Subsequently two more irrigations are given once in two weeks and the rhizomes are dug out either by means of a mammoty or a tool called "Kothu" in Tamil. About 40 men will be required for digging the entire produce from an acre and 120 women to clean the rhizomes free of mud, to remove the rootlets, and also to separate the mother rhizomes from the stalk, to sort out fingers and rounds and put them into separate heaps.

The turmeric thus harvested is boiled in rectangular pans made of 12 G. M. S. plates. They are  $3' \times 2' \times 1\frac{1}{2}'$  in size usually, though the size varies slightly in some places. Rectangular pits 3' in depth and of the same dimensions as the pans, are dug and they form the hearths on which the boiling is done. The pans are placed on two iron plates, generally worn-out cart tyres, placed lengthwise on the hearth on the borders. Loppings purchased on contract for the purpose are used as fuel. The pan is filled up with turmeric to be cured, a bucket full of cowdung water and equal quantities of fresh water are added and the surface is covered by means of a moist gunny. Castor stalks and *Sesbania egyptiaca* twigs got from the subsidiary crops in turmeric are also used as fuel for boiling turmeric rhizomes. When white fumes are seen from the gunny or when a broomstick passess into the rhizomes by mere pressure, it is taken that the boiling is complete and the pan is immediately removed and emptied on the threshing floor. The heaps are then spread uniformly, to be dried in the sun for about ten days until the whole stuff is completely dried. A pan can hold about 150 lbs. of green turmeric and when cured and dried it will weigh about 35 lbs. Four men with two pans can cure to get about 7 sattaish or 1960 lbs. of cured stuff in one night, working for 6 hours.

**Polishing:** This is done either by means of a basket or by means of turmeric polishers invented by the Department. New bamboo baskets of 16 Madras measures capacity are hung to a horizontal post just above our head by means of a rope tied at the rims in 2 places in a line passing through the centre. Dried turmeric is taken about two-thirds full in the baskets, a few small stones are also added and 2 women one on each side standing and holding the baskets shake it up and down alternately so that the turmeric rhizomes coming in contact with the rough surface of the basket as well as the stones get themselves polished. Two women working thus for 8 hours can polish 420 lbs. of cured stuff per day. In



the case of a turmeric polisher 5 men can polish 10 "pothis" or 2,800 lbs. of cured rhizomes in a day.\* Of course polishing by means of the improved polisher is cheaper and more efficient but the demand for the machine is so great that all are not able to procure the same. The Co-operative Sale Societies, and the Agricultural Depots in taluks are issuing the same on hire to the ryots but the number here is too inadequate. On enquiry it is seen that many ryots are prepared to purchase the implement for themselves.

**Marketing:** The polished stuff is packed in gunnies without being exposed to the sun lest the polish be affected. Erode is the main marketing centre for turmeric. The entire stuff of Coimbatore District Karur, Salem and sometimes produce from Cochin State are all exported from Erode to various places. There are nine wholesale merchants who purchase the turmeric and sell it to various merchants within the country and also export it to foreign countries through commission agents at Karachi, Bombay, Calcutta, Madras and Colombo. There are a number of commission agents at Erode and Karur who undertake to sell the ryots' produce to the merchants at Erode on a commission of 0-1-0 per rupee worth of produce sold. The Co-operative Sales Society at Gobichettipalayam with its branch office at Erode also undertakes to do the same on a commission of 0-0-10 per rupee but the ryots prefer to sell their produce through private commission mundies than through the Co-operative Sales Society for the following reasons:

1. The private mundies advance crop loans to the ryots at the rate of Rs. 600—800 per acre of turmeric crops to be raised without much difficulty or formality while the Society cannot pay more than Rs. 300/- and that too not so easily.
2. Though the commission is more and ultimately other expenses by way of presents in kind are always more in a commission mundy, yet the ryots find it easier and more convenient. A quick disposal of the produce in consultation with the ryots tempts the ryots to sell the produce through these commission mundies in preference to Co-operative Sales Societies.

The following are the various stages in the marketing of turmeric by a ryot through a commission mundy at Erode.

1. The ryot takes the produce to the Commission mundy packed in gunnies already supplied by the merchant free of hire, and stores it in the mundy.
2. A handful of the sample is taken by the commission agent and various merchants are approached along with the producer and he finds out the price at which the particular stuff could be sold. If the ryot is prepared for the price offered by the merchant, the whole thing is sold to the merchant at that price.



3. Before the weighment is made the round ones that may be found mixed with finger rhizomes are all picked out on a contract rate of a few annas per bag of 140 lbs. and the stuff is weighed. If any stones are found mixed with turmeric the weight of stones found in one maund is deducted at a flat rate from the entire weight of produce.

4. About 40 to 50 lbs. of turmeric for every 2,800 lbs. of produce will be given free towards the *Kalas* charges though the Commission agent also gets a portion of the same.

5. While the bags are being taken into the mundy or loaded in the cart the fingers dropped here and there will all be collected and stored by coolies specially employed by the Commission Agent and over which the ryots do not have any claim.

6. When the total value is worked out in addition to the usual commission at 0-1-0 per rupee, other deductions like "mahimai" "Dharmam" etc., are also made at a few annas per 280 lbs. of turmeric sold.

In the case of the Sales Society, in addition to the Commission they charge 0-2-0 per "sattai" or 280 lbs. towards *kalas* charges. There are no other deductions made. The round ones are purchased by the Commission Agents alone, always at a price Rs. 30/- per "sattai" less than that of finger rhizomes. Fingers which are uniformly thick, smooth, long and cylindrical, and which when broken, break with a sound and show a dark yellow colour are considered best and fetch the maximum price.

**Preparing for Export:** The produce purchased by the wholesale merchant at Erode is further prepared for the market. Nearly 75,000 bags of turmeric are being purchased at Erode by the merchants out of which 60,000 bags are from Erode, Bhavani and Gobichettipalayam taluks. About 12,000 bags are being received from Karur and 3,000 bags from other districts. The quality of the produce is different from place to place and one can easily identify the produce from a particular locality. For instance, the produce from Gobichettipalayam taluk will be long round, branched, smooth and breaks with a metallic sound. The Karur stuff is dull in colour, short, bent and always fetches Rs. 30/- per "pothy" of 280 lbs. The turmeric fingers from Salem are, thick, slightly shrunken and long. Always turmeric is short, straight, sharp at both ends and is said to be superior for the manufacture of dye. But all these qualities are not always constant. Depending upon the demand from particular markets the produce from particular localities are sold at a high rate. For instance though Salem produce is purchased at a relatively cheaper rate at Erode it is sold in some years at Karachi for highest prices. Though the rounds are always purchased Rs. 30/- less per "pothy" than fingers, yet there have been years when the former has been, sold for foreign countries at a higher price than the latter.



So also different markets require different kinds of treatments of the stuff purchased by the merchants at Erode. For instance the produce sold at Karachi and Bombay has to be dry-polished for a second time in a power-driven polisher before it is exported and packed in gunnies of 96 lb. nett. When selling the produce through Calcutta the produce is given a colouring. Two Madras measures of turmeric powder got by powdering round rhizomes is mixed in 20 gallons of water and the coloured solution is sprinkled over turmeric taken in a basket and shaken constantly when the entire produce gets completely coloured. They are dried under shade and packed in gunnies of 164 lb. nett. By the former method there is a decrease in weight of 7 lb. for every 280 lb. and by the latter method there is an increase in weight by about 14 lb. per 280 lb. For turmeric sent to other places within India no other treatment is given. Though there are merchants at Erode who have ample facilities for trading with merchants in foreign countries they are only selling the produce through commission mundies at Karachi, Bombay, Calcutta etc., paying Rs. 2/- to Rs. 2-8-0 per Rs. 100/- because they are not able to supply to the foreign merchants at a specified time large consignments of quality for the following reasons:

1. The produce of different ryots varies in quality and produce of the same quality is not received all at one time.
2. The ryots do not sell their produce to the same merchant every year.
3. The quality of different localities varies considerably.
4. Facilities are not available for keeping the produce for a longer time in the godowns without being attacked by insects.

The ryots who are not able to sell their produce in the same year generally preserve the produce underground.

**Pests and Diseases:** The damage caused by insects to turmeric is negligible, but the leaf-spot disease which in some cases does great havoc is very important and worth mentioning. According to ryot is the disease is severe in years of drought. The ryots have realised that use of healthy seed material always produces encouraging results.

**Land Tenure System:** In Coimbatore District, when turmeric is cultivated in garden lands on lease system, the tenants have to pay at 5-6 pothies (280 lb. for pothy) of turmeric per acre per year or Rs. 300/- per acre. In wetlands in Erode taluk 6 to 8 pothies (192 Madras measures per pothy) of paddy per acre per year is common. The yield of the crop is about 18 sattaies or 3,240 lb. per acre in Gobi, 4,000 lb. in portion of Bhavani and 2,7000 lb. in Erode and other places.

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## Cost of cultivation for one acre of turmeric in Coimbatore District:

Preparatory Cultivation:	M.D.	W.D.	C.D.	B.D.	Rs.	A.	P.
Ploughing 6 times	8	4		8	24	0	0
<b>Manures and Manuring:</b>							
Carting Farmyard manure and Silt from the yard. ...	6			4	14	0	0
Spreading manure. ...	4				4	0	0
Covering manure. ...	1½			1½	4	0	0
Cost of 50 cartloads of farmyard manure at Rs. 4 per cartload. ...					200	0	0
Cost of 100 cartloads of silt at 0-8-0 a cartload. ...					50	0	0
<b>Seeds and Sowing:</b>							
Forming ridges and furrows with country plough and reforming with mammoties. ...	5		1½	1	7	0	0
Cost of 20 Sadus of seed rhizomes at Rs. 15/- per Sadu					300	0	0
Sowing and reforming ridges	8	4			10	0	0
Dibbling onions—8 bags at Rs. 6/- per bag. ...		16			56	0	0
<b>Irrigation:</b>							
40 irrigations at Rs. 12/- per irrigation. ...					480	0	0
<b>After Cultivation:</b>							
Weeding by means of hand hoe. ...	20				10	0	0
Mammoty weeding and earthing up. ...	24				24	0	0
Harvesting onions. ...	40				20	0	0
Cutting turmeric stalks. ...	4				2	0	0
Harvesting rhizomes. ...	20	60			50	0	0
Curing turmeric. ...	8	3			9	8	0
Watch for 10 days. L. S.	10				5	0	0
Hire on boiling pan at 0-8-0 for three days. ...					1	8	0
Polishing. ...	10				10	0	0
Hire charges at Re. 1/- for 2 days. ...					2	0	0



Marketing :	M. D.	W. D.	C. D.	B. D.	Rs.	A.	P.
Transporting to market at 0—8—0 per bag for 40 bags.					20	0	0
Kalas at 0—2—0 per bag.					5	0	0
Lease 5 pothies of turmeric at Rs. 140 per pothy. ...					700	0	0
Fuel ...					40	0	0
					2,048	0	0

**Receipts :**

Cost of 20 sattaits of turmeric at Rs. 140/- per pothy. ...	2,800	0	0
Cost of 20 bags of onions at Rs. 6/- per bag. ...	120	0	0
	2,920	0	0
Net profit per acre.	872	0	0

The hire for 1 pair of bullocks is charged at Rs. 3 per day.

The hire for 1 man per day is charged at Rs. 1/-  
Do. 1 woman or boy Do. Re. 0—8—0

On an exhaustive survey of the crop, the following points are suggested for investigation :

**Cultural :**

(a) Whether it is necessary to leave a portion of the crop in the field itself a month or two more after the harvest of the main crop for purposes of seed.

(b) Whether there is any difference in yield or quality of turmeric grown from these 2 kinds of seed material viz., rounds and fingers.

(c) Investigations into the proper method of preserving round seed rhizomes so that the cheaper stuff can be used as seed material.

(d) The optimum spacing between the seed material sown in the field to get the maximum yield.

(e) The relative bad effects of growing various crops as a mixture with turmeric and finding out the most suitable crop that could be grown with the least harmful effects.

(f) How for the method of sowing could be done with minimum expenses and whether dibbling behind the plough as is done in Guntur could not be followed profitably in Coimbatore District also.

(g) irrigation and water neces

(h) bullock power labour.

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(g) The quality of water that is suitable and the frequency of irrigation at different stages of the crop and the optimum quantity of water necessary to give the maximum yield may be investigated.

(h) The possibility of economising on harvest charges by using bullock power for digging out the produce instead of doing it by manual labour.

#### Varietal:

To examine the possibility of producing a stuff suitable to the foreign market by proper selection from the produce collected from various places.

#### Manurial:

1. Relative value of different green manure crops that could be usefully advocated for turmeric, to increase yields.

2. Suggestion of a suitable rotation so that the fertility of the soil may be maintained.

3. Giving better facilities for ryots to get silt and compost from Municipality for their turmeric crop so that better yields could be obtained at a lesser cost.

4. Since manuring is likely to influence quality it will be interesting to find out suitable manures to improve the quality of crop.

#### General:

1. The Co-operative Sales Societies should be made more easily accessible to the ryots to sell the produce, by relaxing the formalities in the issue of crop advance loans.

2. These Co-operative Sales Societies establish contact with foreign merchants, to cut down the number of middlemen.

3. Many ryots have not got adequate facilities for preserving cured turmeric and as such have to hurriedly sell the produce to avoid loss through insect pests. Provision of proper storage facilities should be seriously considered in the Society godowns.

4. Every village Co-operative Society should have a power-driven turmeric polisher and the entire produce of the village should be polished in a common place.

5. The possibilities of other methods of curing the stuff, like dehydration also need investigation.