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"Reprinted from November 1957 issue of 'Indian Farming'"

Have a few Spice Trees in Your Garden

by

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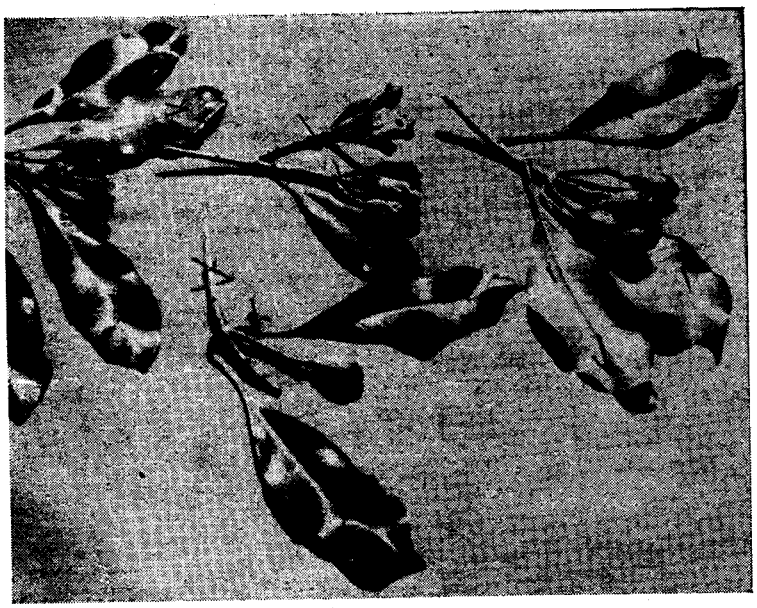
A clove tree with cloves ready for harvest



Branches of a clove tree showing clove flower buds as they look when ready for harvest, and clove fruits or "mother of cloves"

IT will be to your profit to grow a few clove and nutmeg trees in your homestead garden, if the soil and climate are favourable for the growing of these spice trees.

Clove and nutmeg are the most important tree spices of the world and very widely used in India, but their cultivation is even today only in its infancy in this country. Consequently, these spices continue to be articles of import.

Though introduced into India nearly 180 years ago, there are hardly 200 acres of cloves and 300 acres of nutmeg today in the country.

In 1955-56, 56,904 hundredweights of cloves valued at Rs. 1,46,24,000 and 6,759 hundredweights of nutmeg valued at Rs. 12,74,000 were imported by us.

Prior to 1925, India had a large re-export trade in cloves, amounting to about 27 per cent of the quantity imported. From 1936-37 to 1951-52, the average re-export was only 119 hundredweights, and from 1952-53 onwards there have been no re-exports at all, showing thereby the greater increase in home consumption of these spices.

These imports can be stopped if the production of these spices is taken up in this country. Both the spice trees show possibilities of being grown on a more extensive scale.

The soil and climatic requirements of these two spice trees are very similar, and they are usually found grown in association with each other as subsidiary crops of economic value in coffee, tea, coconut, arecanut and other plantations in fruit gardens and in household gardens. Both the trees grow normally from sea level to 3,000 feet above sea level and require humid conditions, an optimum of 80 to 100 inches of well-distributed rainfall, and a mean temperature range of 60° to 100°F. The nutmeg tree can, however, stand a higher level of soil moisture than the clove tree.

The original home of the clove and the nutmeg is reported to be the famous Spice Islands of the East Indies, of which Moluccas is the most important. Although there are indications in some old records that

clove and nutmeg were introduced into India in very ancient times, the first successful attempt to introduce the cultivation of these spices into the country seems to be that of the British East India Company, which established two spice gardens, one at Burliar in the Nilgiris and the other at Courtallam in Madras State.

From Courtallam, the cultivation of these spices spread into Travancore, and today, a few clove groves may be seen in the Blackrock Estate, Kanyakumari district, Puthupalli, and other villages in Kottayam district and scattered clove and nutmeg trees in estates and household gardens of the old Travancore State.

Recent surveys of the progress and development of these spice trees during the last fifty years have shown that they could be successfully grown on the south-west coast of India from Kanyakumari district to Ratnagiri district at elevations from sea level to 3,000 feet and in the hill regions of Tirunelveli district and the Nilgiris.

Trials may also be conducted with profit in growing the clove and the nutmeg in the Andaman and Nicobar Islands, the hill valleys in Orissa and Bengal and in Assam. Though the most suitable area for clove-growing is south of the 20th parallel, it may be possible to grow the trees profitably in the arecanut gardens of upper Assam andon the slopes of low hills free from frost in that State.

CLOVE

The spice is the dried unopened flower buds of the tree *Eugenia caryophyllata.*

Though the clove tree does not seem to be very exacting in soil conditions, the tree thrives best in a rich dark loam with a substratum of gravel or in alluvial or clayey soils which are well-drained and under the climatic conditions and elevations mentioned above.

Observations recently made on the development of clove trees and groves in India during the last quarter century have shown that besides a sufficient and well-distributed rainfall, a satisfactory level of soil moisture throughout the year is essential for the normal development and productivity of the clove tree. This condition may be satisfied by either a well-distributed rainfall throughout the year, or a soil with good moisture-retaining capacity, or both, to a sufficient degree. The tree is, therefore, not likely to grow very satisfactorily with either a long, hot dry season or a period of very low temperature.

In the extreme south-west of the Indian Peninsula, i.e., roughly south of Shencottah, the rainfall is very well-distributed. This region gets continuous South-west Monsoon rains from the beginning of June to the end of August, North-east Monsoon rains from October right up to February, and frequent summer showers in March, April and May.

In the Blackrock Estate in Kanyakumari district situated in this region, at an elevation of 1,000 to 2,500 feet, clove cultivation seems to be the most successful in south India. Here, an average yield of eight pounds of dry cloves, and in good years as much as 15 pounds, are obtained.

In the nearby island of Ceylon also, the nature of soil and the conditions of rainfall and its distribution are very similar to those described above. Yields up to 25 pounds per tree are obtained on the island.

In the northern parts of south-west India, i.e., central and north Kerala, the Nilgiris, Coorg and other parts of west Mysore, south-west Bombay, north-east monsoon rains are meagre, lasting only for ten or 15 days in October, and the summer showers very precarious. This often results in long spells, nearly six months of dry weather, which is not very conducive to the growth and development of the clove tree.

In the hill regions of the south-west India, ranging from 1,000 to 3,000 feet with cooler climates and heavier well-distributed rainfall, the moist valleys and hill slopes seem to be more favourable for clove-growing than the lower elevations of the coastal belt.

In the submontane areas and coastal plain areas of these regions, however, there are innumerable moist valleys, river banks and protected small pockets covered mostly by household gardens, which are highly suitable for clove-growing.

Seedlings raised in shaded nursery beds may be planted out at the rate of 100 trees per acre, and at much wider spacings if planted mixed with other plantation crops, fruit trees or other trees in household gardens. Planting may be done in the beginning of the rainy season in pits three feet × three feet × three feet filled with rich earth. Grafts (inarches) on seedling stock of the clove tree itself have been recently raised at the Burliar Fruit Station in the Nilgiris.

The tree is usually straight-growing and cylindrical or sometimes pyramidal in shape, and grows up to 30 to 40 feet in height.

Nutmeg fruits unopened, partially opened and fully opened showing the mace over the seed. On the extreme left are branches of a male nutmeg tree with male flower buds

A partial light-shade is essential and can be afforded if planted as a mixed crop in orchards and other plantation crops and among household garden trees.

Cropping commences in about the seventh year. Highest yields are obtained from 30 to 60-year old trees. Though older trees continue to flourish and yield, some of them yielding wonderfully large crops, on the whole, 60 years is regarded as the limit of economic life of the clove tree.

The flower buds, just before opening, are gathered in two or three lots and dried in the sun for a few days. The average yield per tree may be four to six pounds. Clove cultivation is a very paying industry, the price per pound of dry cloves ranging from Rs. 2.00 to Rs. 2.50.

The cropping season varies very much in south India itself. It is earliest, i.e., January-February in south Kerala, March and April as we go up to the Courtallam Hills, while in Burliar on the Nilgiris, it is as late as June. Some trees at Burliar, however, have a tendency to crop twice a year, the seasons being March to May and August to September.

Once established, little expenditure is involved in clove cultivation, and the produce involves no troublesome or elaborate curing.

Clove is used primarily as a spice for flavouring foodstuffs. The essence of cloves is used for flavouring confectionery and liquors. Perfumes and articles c toilet are prepared from clove oil. Cloves are aroma tic, carminative and stimulant. By the addition c permanganate of potash the eugenol of clove oil can b converted into artificial vanillin.

The leaves and tender branches of the tree contai clove oil though to a lesser degree, which may be extrac ted commercially.

One of the greatest impediments in the expansion c cultivation of the clove tree in India is the severe seed ling losses, even up to 90 per cent, experienced during th first two years after transplanting. This is due to fungus causing what is known as Collar Rot of the youn plant. Research has to discover a remedy against thi disease.

The young seedlings may be greatly benefited an their growth accelerated by the application of a sma dose of three ounces of sulphate of ammonia per tree.

NUTMEG AND MACE

These spices are the products of the fruits of th tree *Myristica fragrans*. Although wild and usele varieties of nutmeg are found in the forests of sout India and Ceylon, the true and useful variety seems t have been introduced into India along with the clove

Besides nutmeg and mace, the husk or fleshy oute part of the fruit covering them, which to some extent aromatic, is used for pickling and jelly-making.

The tree is propagated by seed. Only large, wel formed seeds of normal colour and which do not ratt in the shell are suitable for propagation, and should b sown within 24 hours of harvest. The seedlings when si inches high may be planted exactly the same way a clove seedlings, but with a spacing of 25 to 30 feet eithe way, under very similar conditions.

Trials have revealed that it is possible to raise graf (inarches) on nutmeg seedlings themselves.

The tree is somewhat bushy and pyramidal in shap and grows 30 to 40 feet or more in height.

An interesting feature is that the tree is either mal or fem Some trees produce both types of flower but high-yielding trees produce only female flower In a grove, there need be only one male tree in every te trees to make the female trees productive.

The tree begins to yield in about eight years, attai its prime in 25 years, and may live up to 60 to 70 or eve up to 100 years. A yield of 1,500 to 2,000 fruits per tr is a good average, and works out to 15 to 20 pounds nutmeg and a pound of mace. Nutmeg is a very payin tree, each fresh fruit costing two to three annas in th market at present.

The tree fruits, more or less, all the year round, bu the heaviest crop is obtained in May-June and Augus September.

Nutmeg is used mainly as a spice. The three t eight per cent oil of nutmeg is used for scenting soap Nutmeg butter made from nutmeg contains ¼th its weigl of fat (20 to 25 per cent nuts) and is used for soa making.

WHERE TO GROW

Extension of cultivation of the spices in the suitable regions may be accomplished by growing:

(1) pure large-scale plantations and small groves,
(2) in existing coffee and tea plantations as shade trees, wind-breaks and as avenue trees,
(3) in coffee, coconut, rubber, cardamom, pepper and orange plantations as a mixture and/or as avenue trees,
(4) in household and other small holdings and mixed groves of mango, jack, coconut and arecanut as a further mixture, and
(5) in the valleys of the *malnad* in the new Mysore and Kerala States on the slopes above the areca gardens.

The extension of cultivation of these spices seems to be best on a household garden basis or in small compact groves in all suitable, well-protected, cool and moist situations in the plantations of the type described above.

A household garden can have a dozen or two of these trees. In such gardens, the cost of production will be insignificant and whatever returns are obtained from the spice trees will be a gain for the owner. By this method, clove and nutmeg production in India can be stepped up to the desired level in the next 15 to 20 years.

There is very great scope for the extension of cultivation of these spice trees in the extensive coconut groves and plantations of the West Coast districts as an occasional and small mixture. Even at the rate of a few trees per acre, in the aggregate they will make up an enormous number, and will mean a large local production of these spices. In Madagascar, clove trees are said to be grown as avenue trees in coconut gardens and they extend to many miles all over the country in this way.

Many of the coconut gardens on the West Coast of India have irrigation facilities, and the matter of establishing the seedlings and raising them to bearing age will be easier than on the hills and elsewhere where such facilities do not usually exist. The shade of the coconut tree does not appear to be harmful to the young clove and nutmeg plants, but if anything, is an advantage.

It is a well-known fact that the coconut tree develops normally and gives satisfactory yields only where the soil moisture conditions are favourable, especially in the dry season. Only in areas where these conditions are satisfied, can these spice trees also be grown successfully in association with the coconut tree. There are innumerable such homestead and other coconut gardens where favourable conditions exist, and excellent clove and nutmeg trees can be grown in such gardens.

On the south-west coast of India, there are at present a larger number of nutmeg trees than clove trees, and these are found scattered in moist valleys, coconut and other gardens and on river banks, mostly in household gardens. Some of these trees are very luxuriant, producing thousands of fruits every year.

It may be mentioned in this connection that mixed cropping is of fundamental importance to the economy of farming in India. Mixed cropping of these spice trees as well as pepper, ginger and turmeric with other crops, especially perennial trees, should enormously help in the development and extension of cultivation of the spices of India.