THE CROTON OIL TREE

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DESCRIPTION

Croton tiglium, Sinh. Jayapala, Tam. Nerwallam, is a small tree native to India and Malaya. The tree has alternate oblong leaves and small flowers in loose racemes. The seed is borne in capsules each of which contains three ovoid seeds about half an inch long.

Croton tiglium should not be confused with the decorative horticultural plant commonly known by the name of "Croton".

CLIMATE AND SOIL

Croton tiglium has been introduced into many tropical countries. It is said to be cultivated throughout the greater part of India where it grows in the poorest soils from sea level up to 3,000 feet. It is probable that it will thrive in Ceylon up to this elevation or even higher. Although found in most of the mid-country and low-country districts of the wet zone it is believed that for the production of sound seed the semi-dry districts are preferable. It is to be noted, for instance, that in the Central Province the plant is chiefly cultivated in Teldeniya, Matale North, and the drier parts of Galagedera.

It is also found in the dry zone.

Good drainage is important.

Trials in old rubber or land previously occupied by rubber or coconut have not been successful.

PLANTING AND CULTIVATION

The plant may be successfully propagated by sowing "seed at stake", two or three seeds in a hole, and this is probably the cheapest method. Alternatively small plants may be transplanted from a nursery when three or four inches high. One grower recommends putting seed in a nursery bed for 10 to 12 days and then planting out before the seeds germinate.

The trees may be spaced 10 feet by 10 feet or 12 feet by 12 feet, the former distance giving 435 trees per acre and the latter 302 trees. Some growers advocate planting 15 feet by 15 feet but from observation at Peradeniya 12 feet by 12 feet would appear ample.

Holes should be dug and should not be less than 18 inches wide and deep. The planting season will vary according to the districts, planting should of course be done at the beginning of a wet season.

Shade is not necessary, though on the Experiment Station, Peradeniya a row of Croton trees which adjoin and obtain some shade from large dadaps serving as shade for an adjoining block of cacao appear rather healthier than those with no shade.

Apart from weeding very little further attention is required, until the trees come into bearing.

PRUNING

At Peradeniya a number of trees have been pollarded to about 6 feet. This has produced a lower and more spreading tree from which it is easier to gather the crop. The yield from such pollarded trees has been found to be fully equal to, or slightly larger than, from unpollarded trees, and the operation can therefore be recommended.

Apart from the removal of dead wood no other pruning would appear to be necessary.

PREPARATION FOR THE MARKET

The extraction of the oil is not as a rule undertaken by growers in Ceylon, and consequently the only form of preparation required is the shelling of the seeds (i.e. the removal of the seed capsule) and the careful removal by winnowing and hand picking of all shrivelled and unsound seed.

Seed is shipped to Europe as such and the oil there extracted in mills. The Director of the Imperial Institute, London states "It appears to be customary for firms in this country to prepare the oil themselves from imported seed. Very little, if any, Croton oil is imported here". Sir George Watt in "The Commercial Products of India", however, states that it is better to express the oil before transit as much is lost on the voyage. In India the oil is extracted by cold pressure in the same manner as castor oil. When run off the oil is allowed to stand for 15 days and then filtered through charcoal before bottling.

USES

The only use for Croton oil of which authoritative information has been received is the medicinal one. The oil is a very powerful purgative and is poisonous in excess. It should be handled with care as it is a powerful irritant to the skin.

Croton oil is considerably used by local Ayurvedic Physicians. There is a constant though limited demand in Europe for seed for the extraction of oil for medicinal purposes.

PESTS AND DISEASES

The most serious insect pest is the caterpillar of *Amyna punctum* which attacks the leaves and sometimes completely defoliates the trees. The caterpillar also attacks the Keppitiya tree, *Croton lacciferus*. Complaints of attack by this caterpillar go back for fifty years, but infestation appears to be local and spasmodic. The simplest method of dealing with the caterpillars is to shake them off the trees, or make them drop off by dusting with lime or ashes, and then collect them up from the ground and destroy them.

On trees weakened by caterpillar attacks infestation by the black scale, *Saissetia nigra*, has been recorded.

Of fungus diseases *Cercospora tiglii*, a disease which attacks the seed capsules, is the most common. This disease does not usually penetrate very deep but may form an additional limiting factor to the production of sound seed in the wetter districts.

The root disease *Fomes lignosus* has been recorded on *Croton tiglium*.

CROPPING SEASON

The climate in many parts of Ceylon is so even that in the case of many crops there is no very sharply defined season. This remark applies to *Croton* and it is quite common to see ripe fruits and flowers on the trees at the same time. At Peradeniya the bulk of the crop is gathered between June and November. A Galagedera grower gives the main crop season as being between July and January. In the Teldeniya district harvesting is said to begin in July and August. A small subsidiary crop is usually gathered at Peradeniya about March but this crop almost invariably contains a large proportion of empty or partially empty seed capsules. The same experience is reported from Galagedera.

YIELDS

The first crop may be expected in two years after planting.

Information on yields is somewhat conflicting. A yield of $2\frac{1}{2}$ cwt. of seed per acre is reported from a $2\frac{1}{2}$ year old clearing containing a large number of vacancies. An area of cacao which was thickly interplanted with Croton giving 800 Croton trees per acre gave 2 cwt. of seed per acre in the first crop season. Estimates of an average crop from mature *Croton* trees vary between 3 and 12 cwt. per acre, but the higher rate is not supported by actual yield figures. It would be safe to say that a yield of 2 cwt. could be expected at the first crop and a yield of from 3 to 6 cwt. of seed per acre from mature trees. It is not uncommon at Peradeniya to find that between 30 per cent. and 40

per cent. of the capsules harvested are empty or light and cannot be used for sowing purposes. This trouble has been experienced in other wet districts. In the drier districts however little trouble from light seed is reported.

At Peradeniya the out-turn of weight of seed to weight of dry seed capsules has been found to be 45 per cent. to 50 per cent., but at Galagedera where trouble from light seed is not experienced the out-turn is stated to be from 56 per cent. to 57 per cent.

The average number of seed capsules in 1 lb is about 600.

The average number of good clean seeds in 1 lb has been found to be 1,554.

PRICES AND COMMERCIAL PROSPECTS

For many years the price of *Croton* seed has been subject to violent fluctuations. The seed is only used for medicinal purposes and being a very powerful drug only used in small quantities the demand is naturally limited. On the other hand the crop is so easily cultivated and comes into bearing so quickly that any rise in price immediately results in further planting with the result that overproduction follows.

In 1885 a correspondent to *The Tropical Agriculturist* commented on the fact that the price had recently fallen from 56 to 40 shillings per cwt. In 1886 prices between 48 and 70 shillings per cwt. were quoted, while by 1887 the price had fallen to 8 shillings per cwt. or less.

Similar fluctuations have since occurred periodically.

On April 21st, 1931 the Director of the Imperial Institute reported "There is a more or less regular demand for seed in the United Kingdom. Latterly there has been a severe shortage, and for the past six months the value of the seed in London has been about 230 and 290 shillings per cwt., that of the oil being about 14 shillings to 15 shillings per lb. The 'normal' values of the seed and of the oil are about 30 shillings, 40 shillings per cwt., and 3 shillings and nine pence per lb., respectively."

"Recent quotations were 280 shillings per cwt. for the seed and 135 shillings and 4 pence per lb. for the oil, and according to firms that have been consulted by the Institute there are indications that conditions in the market are becoming easier."

The above are London prices. The Colombo Customs export figures for the last three years were:—

1929,	338	cwt.	exported	valued	@ Rs.	6,778·00 = Rs.	20	per cwt.
1930,	209	,,	,,	,,	@ ,,	21,197·00 = ,,	101	,, ,,
1931,	377	,,	,,	,,	@ ,,	28,732·00 = ,,	76	,, ,,

Mr. F. J. Holloway supplied the following information in July, 1932. "The highest price obtained in 1930 was Rs. 130/-. 1931, Rs. 120/-, January to May 1932 up to Rs. 120/-. Just now it is round about Rs. 100/-, but a fall in price may be expected this year as a good deal of Croton was planted on the Matale side in 1930 and 1931".

There is little doubt that fairly extensive planting of *Croton* has taken place in the last year or two and that a rapid fall in price is almost inevitable.

The Divisional Agricultural Officer, South-Western Division reported in 1931 "Ratnapura district gets its supply of seed from retail merchants in Colombo at Re. 1/- per lb. which is sold to local medical practitioners at Rs. 2/-. The Colombo merchants import the seed from India. It is said that 15 to 20 lb. are annually sold by Ratnapura dealers." It would appear that there is a small import trade from India which seems quite unnecessary in view of the amount exported from the Island.

The Divisional Agricultural Officer, Central Division, reports as follows: "In 1930 there occurred an unprecedented demand for *Croton* seed and prices rose from Rs. 15/- to Rs. 25/- per cwt. (which were then ruling prices for many years) to over Rs. 150/- per cwt. With this sudden rise in prices village growers in the Teldeniya district have taken up the cultivation."

There appears every probability that past fluctuations in the price of Croton seed will recur again in the future and the planting of extensive areas cannot be recommended.

CROTON AS AN INTERCROP

Croton may be planted as a catch crop in young cacao, and if planted sufficiently early might serve as temporary shade for the young cacao plants. The tree scarcely attains sufficient size to serve as a permanent shade tree for cacao. A line of Croton with the plants 10 to 12 feet apart might be planted between each cacao row.

Croton may also be planted among coffee and in this case the tree appears quite suitable as a permanent shade. Probably a row of *Croton* trees up alternate coffee rows would provide sufficient shade for the coffee or the *Croton* could be given the same spacing as the coffee and alternate plants or alternate rows cut out later.

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