

Calopogonium for Control of Weeds in Coconut Gardens

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One of the important problems that confront the coconut grower, is the eradication of weeds in his garden. In competing with the coconut, the weeds utilise a considerable amount of plant food and soil moisture for their own growth, thereby lessening the available supply to the coconut trees, and consequently reducing their yield to an appreciable extent. Coconut is unique in that when it begins to yield, it produces nuts all through the year, unlike many other perennials and continues its productive phase almost to its entire life period of 70-80 years. Coconut plantations in general are not manured adequately and it becomes all the more essential to make the limited plant food available reach the main crop by eliminating the unwanted weeds which deprive the palm of a fair share of its requirements.

The subject of weed control in agricultural and horticultural cropping has engaged the attention of growers for a long time. The most common and universal practice adopted in controlling weeds is the mechanical method of uprooting the weed and destroying them. In annual crops this operation is a regular feature and periodical hoeing and weeding are included in the schedule of operations given to any particular crop. The crops are on the field for a few months from sowing to harvest and as such this method of eliminating weeds is quite effective and does not add unduly to the cost of production of the crop. Other practices that are in vogue to suppress weeds are burning leaves and rubbish spread over the ground to destroy the viability of weed seeds in the soil, scything before the weeds set seed, mulching, growing cover crops, spreading chemicals and spraying weedicides on the weed population. One or more of these measures are effective with varying degrees of success, but all the same they add to the cost of cultivation of the crop, which an ordinary ryot can ill afford to spend. The knowledge on weed control has so much advanced in the United States of America, that considerable sums are being spent for controlling weeds by the application of weed

killing chemicals to the soil or spraying on the weed vegetation. The figures for 1951 from U. S. A. reveal that 112 million pounds of phenoxyacetic acid derivatives alone have been consumed for weed killing purposes.

In plantation crops like coffee, tea, rubber, cardamom and oranges, the weed growth gets checked to an appreciable degree due to the shade provided by the growing trees or bushes and also by the mulch resulting from the shed leaves, which are allowed to accumulate in the plantations. Such a system was observed in the coconut groves in Car Nicobar in the Nicobar group of Islands. Here the coconut plantations, unlike those elsewhere, are thickly populated and the leaves, husks and other vegetable matter are allowed to accumulate on the surface soil of the plantations, the mulch thus formed inhibiting the growth of weeds. Besides adding to the humus content of the soil, it is also observed that the mulch suppresses weeds successfully. In the coconut gardens on the West Coast, however, the trees are spaced far apart and no leafy mulch is possible, as the few shed leaves are periodically removed and used for other purposes. Thus weed growth remains unchecked. Further, as the palms grow older, the application of manures aided by the high and continuous rainfall spread over a period of nearly six months from May to October every year, creates conditions which are very conducive to the spread of weeds. It is said that 'one year's seeding requires seven years' weeding'. Once the removal of the weeds is neglected, it becomes a difficult and costly item to eradicate them, as they take a permanent footing and rob the valuable plant nutrients, which would otherwise be available to the main crop. The weeds that are commonly met with in coconut gardens are the various grasses, *Hyptis*, *Mimosa pudica* and other herbaceous undergrowth, which thrive under the humid West Coast conditions.

In perennial crops like the coconut, which is on the field for a number of years, the eradication of weeds as done in annual cropping is not always a practicable proposition and is also expensive, considering the area that has to be tackled and the greater frequency of the control measures for visual results. It therefore becomes apparent that a cheap as well as effective control measure that can easily fit into any of the normal cultural or manurial operations given to the plantation, is very necessary.

It has been established from experiments in the Coconut Research Stations on the West Coast that regular cultivation of

coconut gardens increases the yield of trees to a remarkable extent and also minimizes the fluctuation in yield due to adverse seasonal conditions. Conservation of soil moisture in the dry season is ensured by such a practice. It has also been demonstrated that systematic manuring and incorporation of a green manure crop increases the yields. Jagoe R. B. (1939) has stated that experiments in Malaya have shown that growing of a cover crop of *Centrosema pubescens* checks the growth of *Lalang* grass and improves the yield of trees. Sampson (1923) has recorded that growing of a cover crop is beneficial to the coconut trees, but the choice of the crop should be such that it should not continue growing in the dry season and compete with the coconut for the limited supply of soil moisture in that period.

Such a crop is found in *Calopogonium mucunoides*, a green manure-cum-cover crop for coconut gardens, which has been raised successfully in the Coconut Research Stations at Pilicode and Nileshwar for the last two years. The way in which this crop with its quick growth and rapid spread of entwining foliage, makes it almost impossible for any weed to grow underneath, within a period of three months after germination, is really astonishing. The crop has been raised both as a self-sown and a sown crop. The rate of growth is quicker in the self-sown crop than the sown crop, but in either case it attains sufficient growth and spread to inhibit the progress of the weeds underneath. Besides this, the crop also gives an outturn of 10,000 to 20,000 lb. green leaf per acre. It acts as an effective cover to prevent soil erosion and dries up in summer, leaving a thick dry mulch 4-6 inches thick. This protective mulch conserves soil moisture, reducing the evaporation during the rainless summer months.

The method of raising *Calopogonium* as a green manure cum-cover crop and also as a means of controlling weeds in coconut gardens is indicated below. The land is ploughed once in April-May just after the receipt of summer showers. Seeds of *Calopogonium* are broadcast, using a seed rate of 8-15 lb. per acre and covered by working a cultivator or Junior Hoe. The seeds will germinate after soaking showers and by the time the South-West monsoon sets in, the plants would have grown sufficiently to cover the ground. Thereafter the vegetative growth increases and within a period of three months after germination, the entire surface area of the field is covered by this legume, the weeds and grass being smothered to a remarkable extent. From now onwards, there is little chance for

the weeds to grow any further, as the thick mass of entwining foliage suppresses them. The crop flowers in October–November and dries up in December–January. The dried leaves form a layer of 4–6" thick mulch, providing a protective screen against the severe heat of the summer sun. Just before the receipt of summer showers in April in the following year, the mulch should be broken by ploughing the area, which will ensure proper germination of the self-sown seeds. The seeds will germinate with the receipt of soaking showers and the crop will thus continue its useful service to the coconut.



FIGURE I

Three months' old crop of *Calopogonium mucunoides* in Block VIII of Coconut Research Station, Nilleshwar II. See how the weeds are smothered by the thick growth of legume.

One significant aspect to be considered while raising this crop in a coconut garden is the fitting in of cultural and manurial operations, which are as important as growing a cover crop for the coconut. This can be done successfully by adopting either of the following two methods. (1) A strip of four feet width on either side of the rows of coconut trees is dug with the mammutty in August–September. The required manures may be applied in this 8 feet wide strip and further digging given as and when necessary. Thus the tree will continue to receive the benefit of the cover crop as well as the cultural and manurial treatments. (2) The second method is to plough the green manure crop in August–September in the alternate interspaces between rows of trees.

This will facilitate the scheduled cultural and manurial operations to be done in alternate interspaces, the crop in the unploughed plots to be retained as, a mulch and allowed to set seeds. Soon after the setting of seeds one lopping can be given and the lopped material spread over the ploughed area. Thus the whole field gets the mulch in the summer months. Just after rains are received in April, the entire field is ploughed to incorporate the green manure and cover the shed seeds. By adopting this method, the coconut trees get the good effect of the green manure, mulch and a self-sown crop in the next season without losing the advantage of cultural and manurial operations.



PICTURE II

For facilitating cultural operations, note how a strip of 8 feet is dug, leaving the remaining area covered by the *Calopogonium* crop.

Thus, with very little extra cost, a good crop of *Calopogonium mucunoides* can be grown as a green manure-cum-cover crop in coconut gardens and in about three months after germination this crop suppresses weed growth effectively. It provides an economical and practical method of controlling weed growth in coconut plantations. The crop can also be fitted in with the normal manurial and cultural operations so necessary in a coconut garden; at the same time it yields plenty of organic matter, serves as a cover crop to prevent soil erosion and also provides a mulch during the summer months to conserve soil moisture. Its cultivation is within the means of an average coconut grower and it is hoped that a fair

trial for this leguminous crop will be given in the coconut plantations on the West Coast.

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Errata

(Review of Market Conditions of Commercial Crops in the areas of Market Committees for November, 1955, published in the December 1955 issue of the *Madras Agricultural Journal*).

Page No.	Line No.	Correction
554	18	505 instead of 5,050
554	20	2,070 instead of 2,075
558		Under disposal column in the I statement at Mangalore read 265 instead of 375.
558		Under opening balance column in the II statement at Kozhikode read 1,333 instead of 1,833. Under disposal column in the same statement at Badagara read 1,470 instead of 1,476. Under closing balance column in the statement at Mangalore read 38 instead of 39.
559		Under disposal column in the II statement at Kozhikode read 3,098 instead of 3,089. In the same statement at Ponnani read 2,800, 1,500, 2,500 and 1,800 respectively for 696, 1,510, 1,088 and 388. Quantity mentioned as cwt. opposite to Ponnani under Arecanut may be read against Mangalore.
560		Third line under Tobacco read candies instead of days.