

THE ADVANTAGES OF GROWING LEGUME INTERCROPS IN COCONUT GARDEN

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India has about 20 lakh acres under coconut and the crop is grown in different agroclimatic conditions. The present trend in agriculture is to maximise the net income and this could be achieved only by increasing the production, reducing the cost of inputs and creating additional source of income. In coconut gardens where the seedlings are planted 7.5 to 9.00 metres apart, the interspaces offer scope for raising other crops, annuals or perennials, as a source of additional income to the grower. Besides other intercrops such as tapioca, sweet potato, yams, colocasia, turmeric, ginger, banana, etc., legumes also can be profitably cultivated as intercrops in coconut gardens.

The nodulated legumes contribute a good deal of the amount of nitrogen fixed in the soil. The amount of nitrogen fixed in legumes by the effective strains of rhizobia is strongly affected by the nitrogen status of the soil. The cultivation of different grain legumes, green manure, cover legumes and forage legumes is possible in coconut garden.

The advantages of growing legumes in coconut plantation are:

- (a) Fixing of atmospheric nitrogen.
- (b) Prevention of soil erosion.
- (c) Suppression of weed growth thus reducing the weeding cost.
- (d) Addition of organic matter to soil.
- (e) Improvement in the aeration of the soil.
- (f) Conservation of fertility by using available plant nutrients which might otherwise be leached away.
- (g) Stimulates the biological activity of the soil.

The possibilities of growing different legumes in coconut plantation are discussed below:—

GRAIN LEGUMES

The interspaces in coconut garden can be utilised for growing grain legumes as a source of additional income to the grower. Grain legumes provide the economic source of protein in human nutrition in our country. The crops commonly cultivated in coconut plantation are groundnut (*Arachis hypogaea*), horse gram (*Dolichos biflorus*), chick pea (*Cicer arietinum*), pigeon pea (*Cajanus cajan*), cowpea (*Vigna catjang*) and green gram (*Phaseolus aureus*). The legumes can be grown in rotation with non-legume crops for enriching the soil fertility and reducing

the incidence of pests and diseases. After harvesting the grains the plant could be incorporated into the soil or used as fodder to feed livestock. The amount of nitrogen fixed in some grain legumes varies from 50 to 200 kg. N/ha.

GREEN MANURE CROPS

The green manuring consists of turning into the soil green plant material grown *in situ* or brought from outside. Cowpea (*Vigna Catjang*), sunnhemp (*Crotalaria juncea*) and Dhaincha (*Sesbania aculeata*) could be grown for green manuring purposes.

The *Crotalaria striata* and *Sesbania* sp. are found to be the most suitable green manure crops for growing *in situ* and they come up well on all types of soils and tolerate shade of the palm. The crop grown *in situ* is to be incorporated at the time of flowering. The material should be incorporated when there is sufficient moisture in the soil.

The foliage of *Gliricidia maculata*, *Pongamia glabra*, *Calotropis gigantea*, *Cassia tora* and *Crotalaria anagyroides* legumes could be used for green manuring, in gardens where green manuring *in situ* is not possible. The growers can plant this quick growing legumes on the borders of the plantation. The nitrogen rich leaf material decomposes rapidly in soil.

COVER LEGUMES

Cover legumes are those which are able to grow vigorously and cover the ground densely in a short period of time. Some of the cover legumes that can be grown in coconut plantation are *Pueraria javanica*, *Stylosanthes* sp., *Sesbania cannolina*, *Centrosema pubescens*, *Phaseolus atropurpurea*, *Mimosa invisa* and *Colapogonium mucunoides*. Among the cover legumes *Pueraria javanica* and *Mimosa invisa* are found to be more suitable for gardens. Being self sown cover legumes, their seeds have to be sown only once and the crop establishes in the field without any further effort from the grower.

FORAGE LEGUMES

In coconut gardens with acute problems of grazing, forage legumes provide fodder for livestock. The main selection criteria to be adopted in this case are high yielding potential in dry season, late flowering and high nutritive value. The cover legumes such as *Stylosanthes gracilis*, *Colapogonium mucunoides*, *Centrosema pubescens*, *Mimosa invisa*, *Pueraria javanica* and *Phaseolus atropurpurea* could be grown for

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forage purpose. The nitrogen fixation by some of the tropical cover and forage legumes ranges from 60 to 250 kg. N/ha/year.

Forage legumes and grasses could be grown together in order to meet the fodder requirement of the livestock. The dairy animals and other livestock kept in plantations require fodder and hence this practice could be very well adopted. The grasses that could be grown in association with forage legumes are Pusa Giant, NB-21 (Both hybrid napier) and guinea grass (*Panicum maximum*). The mixed cropping experiment conducted with cowpea, NB-21 and guinea grass was found to increase the nitrogen fixing *Beijerinckia*, *Azotobacter* and phosphate solubilizing microflora.

The practice of growing grain legumes as a source of additional income, green manure crops and cover legumes for increasing the soil fertility, forage legumes and forage legume-grasses as fodder for livestock could be profitably adopted in coconut growing areas. Depending on the requirement, the grower can select the particular legumes best suited for his garden. The selection of suitable legume species and their corresponding rhizobia is necessary for improving the soil fertility as well as to increase the protein production for human or livestock consumption. Cultivation of legumes in coconut gardens, besides its other beneficial effects, raises the nitrogen status of the soil.

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It was estimated that at the end of 1977, there were 62,600 ha. under coconuts in Solomn Islands of which some 30,000 ha. were over 50 years old. Nut production was estimated at 293,000,000 of which 239,000,000 were produced on small holdings and 54,000,000 on plantations. It was assumed that the coconut production in the plantation sector was all converted into copra, whereas in the small-holder sector 63,000,000 were consumed as freshnuts, 91,000,000 were made into copra and 85,000,000 were unused. During 1979 with the high world and domestic prices, copra production has risen to a record level at the rate of 35,000 tons per annum in the first six months of 1979.

—The Cocomunity