

***Calopogonium mucunoides* - A Successive Fodder in Coconut Gardens of Pollachi Region of Tamil Nadu**

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Received: November 23, 2022; **Published:** November 10, 2022

Calopogonium mucunoides is a robust, creeping, twining or trailing perennial legume with a limited lifespan. It can grow to be several metres long and creates a 30 to 50 cm deep, dense, tangled mass of foliage. The succulent stems have long, brown hairs covering them. The root system is shallow and dense, only going down around 50 cm. They are infiltrating the lower regions and occasionally, the nodes that come into contact with the earth will develop roots. The trifoliolate leaves can reach a length of 16 cm. The ovate to elliptic, hairy leaflets measure 4 - 10 cm long and 2 - 5 cm wide. Two to twelve tiny blue or purple flowers are carried on a slender, hairy raceme that can reach a length of 20 cm. The fruits are hairy pods with 3 - 8 seeded and in 2 - 4 cm long [1].

It is a grazing and pioneer legume and one of the best cover crops. In the dry months, the legume stops growing. It has a high seed production rate and can tolerate low soil fertility. Seed rate is 3 - 4.5 kg per ha.

Calopo is mostly utilised as a cover crop, either by itself or in combination with other legumes, particularly in rubber, palm oil, or young forest plantations. It performs the roles of cover crop, green manure, pioneer legume, and grazing legume. Although its efficacy for this usage needs to be proven, calopo is utilised for green manure. A pioneer plant known as calopo increases soil fertility, lowers soil temperature, avoids soil erosion, and manages weeds [2].

Calopogonium is an N-fixing legume that nodulates easily and does not have a particular need for rhizobium. When intercropped, it offers soil nitrogen to the subsequent crop as well as to nearby grasses when it is sown in mixed stands (with maize for instance). Their effect can last 14 - 16 years and is a useful green manure for rice fields since it can tolerate standing water. Calopo is the most popular legume among coconut farmers of Tamil Nadu as a cover crop in coconut garden to retain the moisture as well as feed, even if it is not extensively used, and is the legume that Pollachi area in Tamil Nadu uses it in the biggest amount.

Sowing in the coconut garden

In Tamil Nadu, sowing of Calopo as green manure and cover crop takes place during April-May with the onset of pre-monsoon rains which is ploughed in and between August and September, it is incorporated (Figure 1). This will improve the soil's ability to retain water. *Calopogonium* can be planted as a cover crop or as green manure.



Figure 1: Lush growth of calapo in the coconut garden.

As animal feed

It is a high-quality protein fodder legume that develops quickly and keeps producing throughout dry seasons. In moderate it gives a 4 - 5 MT of green biomass. The digestibility coefficient is given in table 1.

Nutrient	Digestibility coefficient (%)
Dry matter	81.32
Crude protein	68.27
Ether extract	74.23
Crude fibre	63.51
Nitrogen free extract	86.89
Organic matter	80.03

Table 1: Digestibility coefficient of *Calopogonium mucunoides* (% Dry Matter Basis) [3].

Human health

Calopo has alkaloids, saponins, flavonoids, phenols, tannins, steroids and phytosteroids that demonstrate a high level of its potential medical and nutritional benefits. Phenolic compounds present in Calopo have redox characteristics that enable them to function as reducing agents, hydrogen donors, free radical scavengers, and metal chelators in addition to acting as antioxidants [4].

Advantages

- It is used as a cover crop in plantations (Banana, Coffee, Rubber, Palms, and Black Pepper), however regular trimming needs be done to keep it from outgrowing the trees.
- Provides large amounts of leaf litter onto soil, smothering most weeds.
- Have allelopathic effect on seeds and prevent weed development.
- Over the past 100 years, it has primarily been utilised as a cover crop in plantations of tropical trees. This plant is valued as a pioneer species because it improves soil fertility and prevents erosion.

Bibliography

1. Chin Chen Peng KM. "*Calopogonium mucunoides*". In: 't Mannetje, L. and Jones, R.M. (editions) Plant Resources of South-East Asia No. 4. Forages (1997): 72-74.
2. Cook RM., *et al.* "Revisão taxonômica do gênero *Calopogonium* Desv. (Leguminosae - Lotoideae) no Brasil". *Revista Brasileira de Botânica* 8 (2005): 31-45.
3. Mynavathi VS., *et al.* "System Diversification for Livestock Nutritional Security through Biomass Yield and Nutritive Value of Fodder Legume *Calopogonium mucunoides* under *Cocos nucifera*". *International Journal of Current Microbiology and Applied Sciences* 6.8 (2017): 133136.
4. Javanraedi J., *et al.* "Antioxidant activity and total phenolic content of Iranian *Ocimum* accessions". *Food Chemistry* 83 (2003): 547-550.

Volume 7 Issue 12 December 2022

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