



Flemingia macrophylla - A Multi Utility Shrub

R. K. Singh

ICAR-Indian Institute of Natural Resins and Gums, Namkum, Ranchi-834010, Jharkhand
Presently Senior Scientist, ICAR-Central Arid Zone Research Institute, Jodhpur-342003, Rajasthan

Email: ranjay_2005@rediffmail.com

Flemingia macrophylla has its multi utilities in lac production, soil conservation, soil nutrient and fertility maintenance. Besides, pruned biomass of this shrub may prove to be very good source of composting. It is also used as a green manure in alley cropping systems. *F. macrophylla* mulch formed a relatively solid layer that effectively prevented germination of weed seeds and/or stunted their early development for 3-4 months.

Introduction

Flemingia macrophylla (Family: Leguminosae), is a woody, deep rooted shrub, up to 2.5 m in height, is found in Asia and Sub-Saharan Africa (Asare *et al.*, 1984). The most important synonym is *F. congesta* and the genus also has been called *Moghania*. The species is naturally found growing along watercourses in secondary forest and on both clay and lateritic soils. The plant is tolerant of light shade and is moderately able to survive fires. Seedlings are slow to develop and donot compete with other species. Once established, plants are strongly perennial and can tolerate competition from companion species. It coppices readily after cutting. When grown in orchards, it has a beneficial effect on trees. It is used as a potential bushy lac host for lac cultivation, sustaining both the *kusmi* and *rangeeni* biotypes of lac insects. The plant has a high leaf stem ratio (Perera *et al.* 1994), providing high fresh edible biomass for animals. Its utility in weed control and fire wood is also worth mentioning. The plant is suited to low-input smallholder production systems.

Soil and Ecology

F. macrophylla can be found from sea level up to 2000 m. It grows on most of the soils, with very low to moderate and even high fertility, with a pH range from 4-8, and high soluble aluminium (80% saturation). It requires a minimum rainfall of about 1,100 mm, and up to 3,500 mm/year, tolerating up to 6 months' dry season. *Flemingia* is a hardy plant that can resist long dry spells, and it is capable of surviving on very poorly drained and occasionally waterlogged soils. It best grows between 22-28° C temperature, producing minimal growth above 36°C and below 12°C. It is moderate to high shade tolerant plant.

Uses

- (i) **Lac production:** One of the bushy host plants alongside *Flemingia semialata*, it is used for lac cultivation for both the lac strains *i.e.*, *kusmi* and *rangeeni*. Lac cultivation on mixed plantation of *Albizia lucida* and *F. macrophylla* intercropping with *tuber* and rhizome crops has been reported by Purkayastha *et al.* (1981).
- (ii) **Soil nutrient status:** *Flemingia macrophylla* has substantial amount of nutrients (N-2.35 to 2.83%, P-0.19 to 0.25%, K-0.98 to 1.40%) (Yamoah *et al.*, 1986b), thus, improves soil

fertility. This apparent improvement can be attributed to the fact that *Flemingia* is a legume, able to fix nitrogen in soil of high acidity and low fertility.

- (iii) **Soil conservation:** This plant is invariably useful in preventing various forms of soil erosion because of densely-matted root system, sufficient leaf fall and canopy spread. It is most commonly used in contour hedgerows for erosion control, often in association with *Desmodium cinereum* (formerly known as *D. rensonii*). Its rapid early growth, even on infertile sites and tolerance of both highly acidic and alkaline soils make it popular for stabilizing and revegetating mine spoils. Susilawati *et al.* (1997) has also reported *F. macrophylla* as an excellent plant for soil conservation.
- (iv) **Biomass:** At 10,000 plants per hectare, *F. macrophylla* produced a yearly average of 12.4 tons of leaf dry matter (DM) over 4 quarterly cutting intervals. This is the utility part of *macrophylla* with regard to biomass production. Pruned biomass of these trees may prove to be very good source of composting. It is also used as a green manure in alley cropping systems.
- (v) **Mulch material:** One of the features of the species is the relative resistance of its leaves to decomposition. According to a report from Ghana, the *F. macrophylla* mulch formed a relatively solid layer that effectively prevented germination of weed seeds and/or stunted their early development for 100 days. In experimental rubber plantations in Ghana, *F. macrophylla* mulch reduced the number of required weeding per year from six to two.
- (vi) **Fuel wood:** Although much of *Flemingia macrophylla*'s biomass is not woody, fuel wood can be a secondary product. A 2-year-old stand with a spacing of 0.5 x 4 m produced 6.8 tons of dry woody stems/ha in Nigeria (Yamoah *et al.* 1986b).

This perennial bushy plant (*Flemingia macrophylla*) with its multi utility merits has some limitations too. Feeding value of *Flemingia macrophylla* has high protein content (Dzowela *et al.* 1995) but its high tannin content is not advisable for and preferred by livestock. It is also less digestible because of high tannin content. The plant establishment is also slow compared to *F. semialata*.

Conclusion

Flemingia macrophylla is recognized as a multipurpose species due to its several uses such as its capability to produce high volumes of fuel wood and its capacity for soil amelioration and protection from soil erosion and runoff. It can be used for several purposes.

References

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