

First report of damage by pest snail in medicinally important *Calotropis gigantea* (L.) plants in Western Ghat of India

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Abstract

In India, western ghat region of Maharashtra is one of the known natural hubs for various medicinal plants. Medicinally important *Calotropis gigantea* L. (Family Apocynaceae) is one of the important medicinal plant commonly found in this region. Studies on *C. gigantea* L. and a literature search revealed that the plant has been utilized for the treatment of many diseases without any side effects if used in known quantity. The first incidence of damage by Snail in *C. gigantea* L. was noticed from Mandangad tahsil of Ratnagiri District, Maharashtra. Later it was recorded from three selected districts namely Ratnagiri, Sindhudurg and Raigad. During this study, it was noticed that pest Snail affecting the *C. gigantea* L. during Monsoon season only. Nearby 45-60% of leaf biomass loss was observed in *C. gigantea* L. due to Snail feeding. This paper first time reports snail as seasonal host for *C. gigantea* L.

Keywords: Snail, *Calotropis gigantea*, medicinal plant, pest, Western Ghat

Introduction

Calotropis plant species *C. gigantea* L. (Family Apocynaceae) commonly called as "crown flower" native to tropical Africa, Subcontinent of India, Cambodia, Indonesia and Vietnam (K. Dhileepan, 2013). From the long period of time, indigenous peoples use plant to make ropes, for weaving clothes, household items, and flowers for garlands. Offering flower garland to Lord Shiva and leaves garland to Lord Hanuman is common practice in India. Owing its medicinal potential plants extensively used in folk medicine preparation. It contains several secondary metabolites, including cardiac glycosides, flavonoids, terpenoids, alkaloids, tannins, and resins. It has been used to treat a number of illnesses, such as ulcers, tumours, leprosy, and piles. Pharmacological activities such as analgesic activity, pregnancy prevention, CNS activity, antipyretic activity, anti-diarrheal activity, anti-inflammatory activity, procoagulant activity, free radical scavenging activity, antimicrobial activity, anti-tumor, antifungal, antitussive, and antifeedant activity (Kumar *et al.* 2011).

Currently, during the rainy season high destructive attacks of injurious pest snail observed on *C. gigantea* L. Severe leaf biomass loss arises in *C. gigantea* L. Accordingly, this study is the first to document the presence of Snail as seasonal pest on *C. gigantea* L. in western ghat region of Maharashtra, India.

Materials and methods

Study area and plant material

Occurrence of Snail on *C. gigantea* L. was seasonal. Mainly rainy season is good for snail growth and development. Therefore monsoon season (June to September) was selected for study. Three districts of Maharashtra namely Ratnagiri, Raigad and Sindhudurg were selected as study

site during year of 2021-2023. Natural habitats of *C. gigantea* L. (Family Apocynaceae) were used for study.

Result and Discussion

The first incidence of damage by Snail in *C. gigantea* L. was noticed in Mandangad tahsil of Ratnagiri District, Maharashtra. Later it was recorded from three selected districts namely Ratnagiri, Sindhudurg and Raigad. During this study, it was noticed that pest Snail affecting the *C. gigantea* L. during Monsoon season only (June to September). Accordingly, field surveys in India and a literature search, near about 65 species of insects and 5 species of mites have been documented on *C. procera* and *C. gigantea* L. (K. Dhileepan, 2014) excluding snail. Pests and diseases led to upto 26% of primary yield losses and even upto 38% of secondary yield losses reported by Cerda *et al.* 2017 [1]. Similarly, upto 50-60% leaf biomass loss observed in *C. gigantea* L. plants (Fig.1). During this study, it is observed that pest Snails were affected the leaves parts only and not the other parts. As result of Snail attack in *C. gigantea* L., it exhibits severe foliage loss as compared to unaffected plant. Equally, losses in fruit production due to pest are frequently reported by many research groups (Walsh *et al.* 2011; Cini *et al.* 2012) [8, 2].

In India, Research mainly focused on the incidence of the pest attacking the agricultural crops and not on the medicinal and aromatic plants (Kumari and Srinivas 2018) [7]. Pest snail leads to affect the life cycle of plant as well as both quantity and quality of medicinal compounds (Rehman *et al.* 2017) [6]. Therefore it is usually necessary to take an action ahead to prevent a pest problem. Occurrence of snail as pest on *C. gigantea* L. in other region of India as well as Worldwide are necessary to study, in order to determine pest status.



Fig 1: Snail feeding on of *Calotropis*

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