

POLLINATION AND BREEDING BIOLOGY OF *ELETTARIA CARDAMOMUM*
VAR. MAJOR THW. (ZINGIBERACEAE)

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Elettaria cardamomum Var. major Thw. locally known as Rata Enasal is indigenous to Sri Lanka and inhabits gaps or partially disturbed sites in the lowland wet zone forests. Although its seeds are used as a spice and in local medicine, this species is not cultivated. Villagers in the vicinity of Sinharaja however, gather large quantities of its fruits in August-September for the local market. Consequently, the biological features useful for its domestication have been studied and the results of its Pollination and Breeding Biology are presented in this paper.

Flowers of *E. cardamomum*, borne on 20-125 cm long racemose inflorescences that trail the ground at the base of leafy shoots, are hermaphrodite, open between 3.00 am and 6.30 am, and have a longevity of 18 hours. Anthers dehisce around 6.00 am. Stigma receptivity was best between 6.00 am - 8.00 am and progressively decreased till 22.00hrs.

Flower visitors included, both pollen and nectar feeding *Amegilla subinsularis* (Hymenoptera), only pollen feeding *Drosophila* sp. and an unidentified species (Diptera), only nectar feeding *Notocrypta paralyos* and *Jamides alecto melichius* (Lepidoptera) and cell sap feeding *Prodiectus haematicus* (Coleoptera). These insects visited the flowers throughout the day and of them, the Hymenopteran may be identified as an efficient pollinator.

Breeding experiments (open pollinated, artificially crossed or selfed and bagged only) carried out using emasculated and non-emasculated flowers showed much less fruit set in all the emasculated treatments as compared to the corresponding non-emasculated ones. In the latter treatments, average fruit success on the 40th day after pollination from two individuals gave the following results: Open pollinated 17%, artificially crossed 37%, artificially selfed 20% and bagged only 11%.

Results from these studies indicate that (i) fruitset in nature is limited possibly by the activity of the pollinators but in their absence fruiting may take place to a small degree, (ii) the species is self comparable but the degree of selfing is controlled by the plant, (iii) crossing doubles the extent of fruitset, and (iv) apomixis may be absent as suggested by 0% fruitset in the emasculated and bagged treatments. Of the two individual plants studied, one yielded more fruit than the other.

These investigations provide information that may prove to be valuable in future breeding and selection programmes of this species.

10th Dec. 1987 (Thursday) 01.30 p.m. - 01.45 p.m.