

FLOWERING AND FRUITING PHENOLOGY, POLLINATION AGENTS AND BREEDING SYSTEM IN *HYLOCEREUS* SPP. (DRAGON FRUIT)

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Hylocereus undatus (Dragon fruit), a species native to Central America, is a climbing cactus species, which has received worldwide recognition as an ornamental plant and a fruit crop. It has been established as a new crop in various tropical countries due to its precocious yielding ability and its acceptability in the market; hence considered as a new fruit crop for the future. Sri Lanka began to grow this species around 1992 as a small-scale crop with a mixture of genotypes including red skin-white pulp (*Hylocereus undatus*) and red skin-red pulp (*Hylocereus* spp.) fruit types. Although, an understanding of the reproductive biology is fundamental to making sound decisions on conservation, management and genetic improvement of species, such information is limited in Sri Lanka for Dragon fruit. Consequently, the objectives of this study were to examine the flowering and fruit morphology and phenology, pollination agents and the breeding system in Dragon fruit at the plantation at Bulathsinhala.

Phenological studies revealed that flowering of *H. undatus* and *Hylocereus* spp. was seasonal and occurred from April to November with 4-7 cycles per year. Floral bud stage to anthesis took about 30 days. Bisexual flowers of Dragon fruit were open from 6.30 pm and closed by 10.00 pm on the same day. However, they remained open till 12.00 noon of the next day if they were not pollinated. During flower opening and the receptive period, the stigma was positioned upright whilst after pollination it turned downward. Synchronous flowering observed among individuals may increase the possibilities for cross-pollination. A detailed investigation of pollination agents showed that the most likely pollinators of Dragon fruit in Bulathsinhala are *Apis cerana* (Honeybee), *Apis florea* (Dwarf honeybee) and *Apis dorsata* (Giant honeybee). Fruiting season of Dragon fruit was from May to January and may extend until February. Fruits ripened 30-50 days after flower opening (pollination). During the ripening, the green coloured skin change to red although scales remain green. Controlled pollination experiments and subsequent assessment of fruit set and fruit quality of different types revealed that white-pulped type (*H. undatus*) is self-compatible and red-pulp type (*Hylocereus* spp.) is relatively self-incompatible. Although selfed flowers of both species also develop into fruits, their size and weight were significantly lower compared to out crossed flowers. In addition, fruits developed after artificial self-pollination were larger compared to fruits that developed after open pollination suggesting inadequate pollination. Implications of these findings on utilization of genetic resources of Dragon fruit are discussed.