

Pollination and seed biology of *Hibiscus furcatus*

H. P. P. Premathilaka and R. M. C. S. Ratnayake

Department of Botany, University of Kelaniya.

Hibiscus furcatus, a common low country plant, plays a considerable role in traditional medicine. This study was aimed to broaden our understanding of pollination biology and seed biology of *H. furcatus*. Pollen biological information, especially the optimum sucrose concentration (0, 5, 10, 15, 20, 25, 30%) and optimum time duration for *in-vitro* pollen germination, viability of pollen after anther dehiscence within the flower and viability of pollen under storage conditions (at 4 °C and 0 °C) were tested. Controlled pollination experiments (natural and artificial autogamy, open, geitonogamy and xenogamy) with a minimum of 50 replicates were carried out to determine its breeding system. Seed biological aspects such as percentage of insect-damaged seeds in a pod under natural conditions and viability of seeds under three storage conditions (desiccator, 4 °C and 0 °C) were determined. Three pre-sowing treatments (mechanical damaging of seed coat, heat shock and conc. H₂SO₄ treatment) were tested for *H. furcatus* seeds to determine the best seed dormancy breaking method.

The optimum sucrose concentration (20 % (w/v)) and duration (180 minutes) for the highest pollen germination (81.32 ± 3.82%) was recorded from flowers opened at around 6.00 a.m. Therefore, for controlled pollination experiments of *H. furcatus*, pollen from nearly open flowers was used. Of the two temperatures tested for pollen storage, viable pollen were identified only from the 4 °C stored pollens after 24 hours (16.50 ± 2.93%) and 48 hours (7.60 ± 1.27). A relatively high percentage (>90%) of fruit set was recorded in the controlled pollination experiments than in natural (open) pollination (76%), indicating that the pollinator availability limits fruit set. The highest fruit set was reported from geitonogamy (96%) followed by autogamy (93%) suggesting that *H. furcatus* is highly self-compatible, but, xenogamy (91%) also occurs.

In this study 44% of pods were damaged by a black colored beetle species. The highest viability of *H. furcatus* seeds (5% ± 0.6) was recorded under low moisture condition in a desiccator. Among the methods used to break dormancy of seeds, soaking in con. H₂SO₄ for 45 minutes was the best (germination was 65.3%). The results of the present study would be helpful to plan breeding designs for *H. furcatus*. Furthermore, the study enhances the understanding of various breeding systems and important seed biological aspects of the family Malvaceae.