CIAT
Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture

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Centre for Agriculture in the Tropics and Subtropics

University of Hohenheim

Floral Biology of the forage legume *Cratylia argentea*

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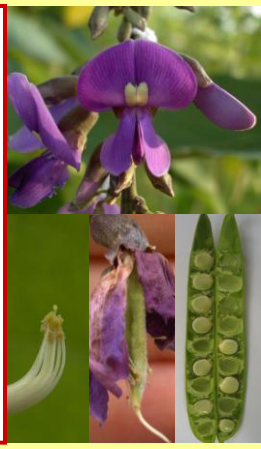
C. argentea: a promising forage legume shrub

- Growing best in the subhumid tropics below 1200 masl
- High nutritive value
- High drought tolerance and adaptation to low fertility acid soils
- Little knowledge about floral development and reproductive system which is crucial for germplasm management and potential breeding

Objectives of the study (conducted at CIAT, Cali, Colombia)

- Is *C. argentea* self- or cross-pollinating?
- Are the flowers' gametes self-compatible?
- Does pollination depend on insects? How?



Materials and methods

Floral phases:

- Daily observation and description of flowers
- Assessment of stigma receptivity timetable during anthesis

Reproductive system:

Four pollination experiments

- Spontaneous self-pollination (SSP)
- Artificial self-pollination (ASP)
- Insect pollination (IP)
- Artificial cross-pollination (ACP)

Visiting insects:

- Identification, observation of behaviour while visiting flowers

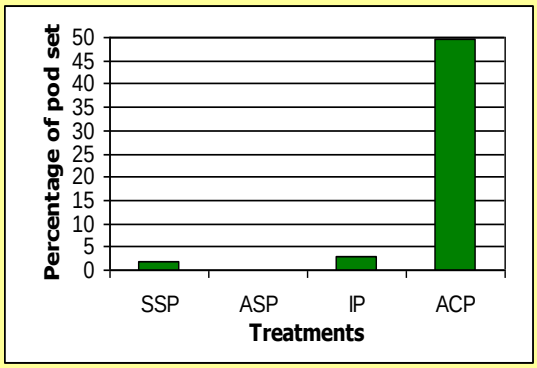


Figure 1: Pod set after four different treatments

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Results

Floral phases:

- From emerging of petals until unfolding of flower: 2 days, anthers opening one day before anthesis.
- Anthesis: flowers open between 8 and 10 am and close in the evening of the same day.
- Flowers remain closed with the petals withering for 5-6 days, during which most of the flowers drop; the remaining ones start forming a pod.

Reproductive system:

- Successful pollination is only possible with pollen from other plants, the species is nearly self-incompatible (Figure 1).
- Low success in insect pollination because insects transport pollen within one plant, thus causing self-pollination; some species damage the flowers considerably.
- But: Insects stimulate stigma receptivity, therefore pollination in nature depends on insect visits.

Main pollinators:

- Bumble bees which are big enough to perform tripping, such as *Xylocopa frontalis* and *Centris* sp. (Figure 2).

Figure 2: *Centris* sp. visiting flower

Conclusions

- Generally high flower abortion
- Successful pollination only with pollen from other plants
- Pollination depends on insects which transport pollen; thus, for purity maintenance of accessions, isolation of the plants is necessary

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