

Closing the chapter on Pongamia

Background

- In 2006, a project was initiated to investigate potential perennial crops for biofuel production in the Northern Territory. Pongamia was one of the plants trialed as part of this project.
- Pongamia is a legume, which can produce its own nitrogen. It can grow in a rain-fed system on marginal lands. The seeds have a high oil content that can be processed for use as biodiesel and has the potential benefit of cattle feed by-products.
- In 2008, a selection of Pongamia accessions, from both local interstate trees were planted at CPRF. These plants are now mature bearing and suitable for a preliminary analysis.

Observations

During 2024, the mature Pongamia trees at CPRF were assessed and observational data was recorded on the following:

- Flowering phenology
- Flower visitors
- Seed and pod yields
- Insect pests

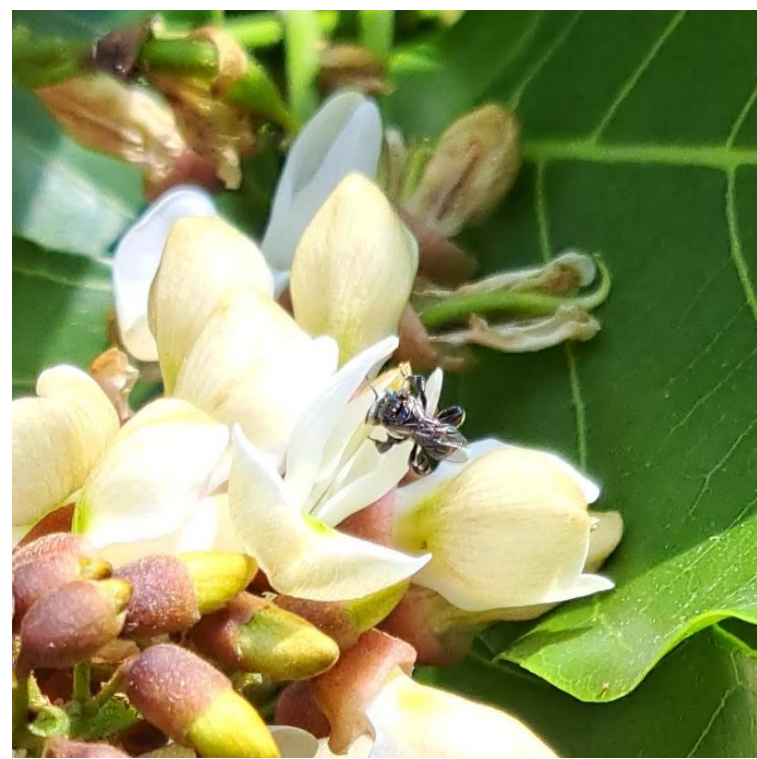
Flowering phenology:

Before flowering Pongamia trees will drop their leaves. Leaf drop occurred from July to September.

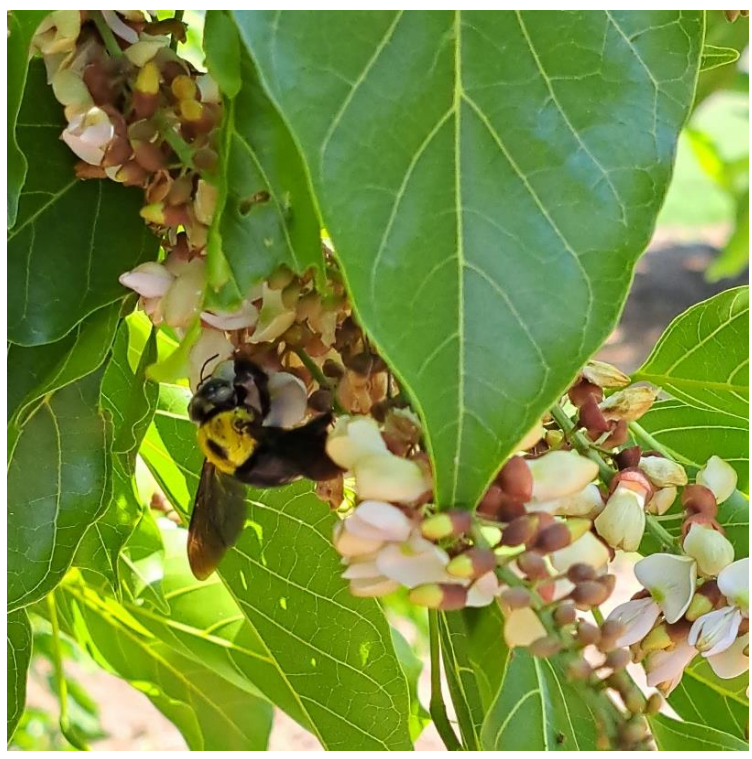
Flowering commenced in September and lasted until early November. Peak flowering for most trees was in early October.

Insect visitors:

Five species of local insects visited Pongamia flowers during the flowering period. Peak insect activity was observed between 10:00 and 11:00am when flowers were open.



Bush bee
(*Tetragonula* sp.)



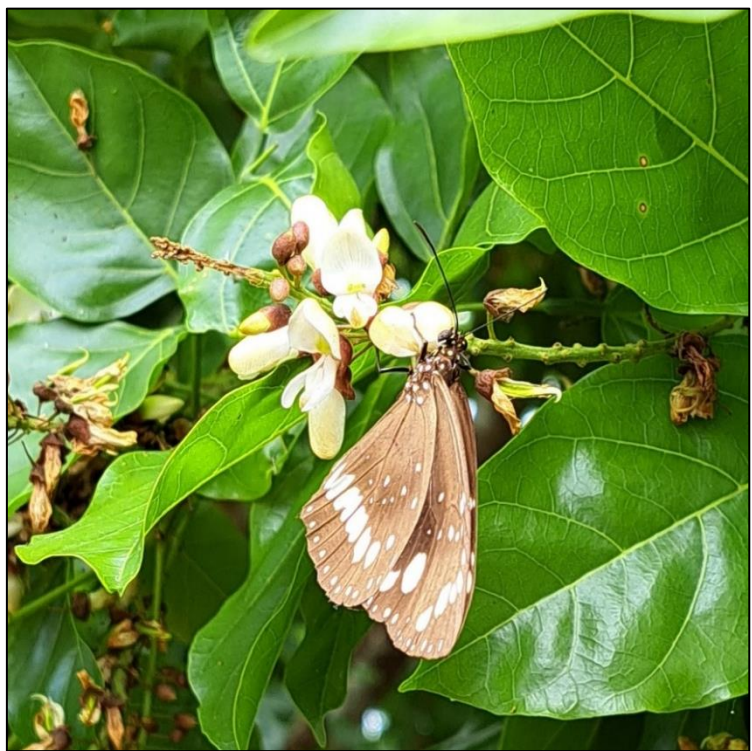
Carpenter bee (male)
(*Xylocopa aruana*)



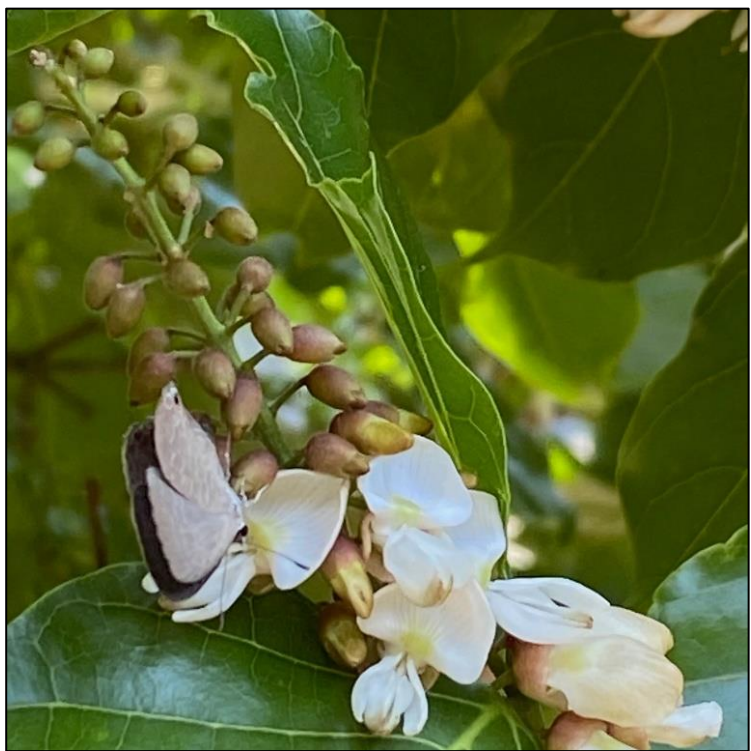
Native bee
(*Amegilla* sp.)



European honey bee
(*Apis mellifera*)



Common crow butterfly
(*Euploea core*)



Purple cerulean butterfly
(*Jamides phaseoli*)

Observations

Seed and pod yield:

Pods from the previous 2023 flowering period were hand harvested at the start of July through to end of September 2024. Seed and pod yields were variable between the trees. Some trees had a large proportion of pods with undeveloped seeds or no seed inside. Pongamia seeds can take 10-11 months to mature.

Climatic conditions, insect visitors, pest pressure and the tree's genotype can affect flowering efficiency and fertilisation success (pod set).



Pods set on tree



Pods with fully developed seed



Pods with undeveloped seed or no seed

Insect pests:

A number of pests were observed in the Pongamia trees in terms of damage to flower panicles from caterpillars feeding and causing webbing, along with a blue-purplish larva eating the seeds inside pods. Pod sucking bugs that can damage young pods were also identified.

Insect pests affecting flower panicles can cause significant damage quickly when occurring in large numbers, which can affect yield.



Jamides phaseoli
(Damage to flowers by larva)



Acanthoclita sp.
(Damage to flowers by larva)



Maruca vitrata
(Damage to flowers and seed by larva)



Sub family Phycitinae
(Damage to seed by larva)



Leptocoris acuta
(Damage to young pods by adults)



Mutusca brevicornis
(Damage to young pods by adults)

Summary

- Seeds harvested from the Pongamia trees will be analysed for their oil content for use as biofuel.
- A final report on the current work including a summary of the 2009 work conducted by Malcolm Bennet and associates will be published online.

Acknowledgements

DAF team: Doris Marcsik, Peter Bergin, Induni Vijaya Kumar, Adrian Donati Chelsea Moore and Haidee Brown (Entomology)

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