



INTEGRATED PEST MANAGEMENT FOR REDUCING MAGPIE GOOSE DAMAGE TO MANGO ORCHARDS



The Magpie Goose is common across northern Australia, with the Northern Territory supporting the world’s largest population. This native bird is protected, and it is an offence to kill a Magpie Goose unless under specified permits.

In recent years, the geese have been aggregating in ever greater numbers on mango orchards and other agricultural lands across northern Australia, where they have been reported to damage and consume crops.

The Magpie Goose is now using farmland and orchards as preferred late dry season habitat and coordinated management efforts are required to reverse this behavioural shift.

KEY MESSAGES

Satellite tracking has shown Magpie Geese migrate hundreds of kilometres – not all are local residents. Groups tend to arrive and depart orchards on a whim.

Farmers are not dealing with the same static or homogenous flock over the course of a season. This has implications for management - one cannot treat once and then forget.

Satellite tracking has determined that Magpie Geese have a daily local pattern of movement – roost site, feed site and watering site.

Drone interventions do work – larger specially configured machines with mounted sound devices are effective in dispersing geese for greater than 24 hours.

It is critical that drones be used on an area-wide basis - else neighbouring farms could be disadvantaged with dispersed geese seeking refuge.

Other aversion techniques e.g. static ground-based visual and noise systems, or shooting, appear to be less effective.


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PHOTO: Charles Darwin University

The birds are heavily imprinted behaviourally - despite shooting, geese come back to the same wetland areas year after year.

General rule to mitigate against geese – avoid routines that promote geese habituation.

Collaborate with neighbours on techniques based on efficacy, resources, and sensitivities.



PHOTO: Charles Darwin University

LEARNINGS AROUND RISKS TO ORCHARDS

- ⊕ Earlier mango harvest - reduced damage from geese.
- ⊕ Later mango season - increased risk from geese.
- ⊕ The better the wet season, the later the geese arrival.
- ⊕ The poorer the wet season, the earlier the migration out of wetlands and arrival in orchards.
- ⊕ Seasonal conditions and geese behaviour are a dynamic system – each year will differ in terms of risk.
- ⊕ Geese have a daily behavioural routine – moving between the daily roosting site, watering site and food site.
- ⊕ Disrupting those patterns of daily movement assists dispersal.
- ⊕ In the future, better understanding the interaction between end of wet season geese population surveys and the effect of wetlands water levels, may assist in anticipating the level of geese risk each harvest season.
- ⊕ Research with using Doppler radar detection of geese movement is showing promise – research is ongoing.

WHAT IS **NOT** RECOMMENDED IN A MAGPIE GOOSE IPM PROGRAM

- ⊗ Relying on shooting of geese in isolation to other approaches.
- ⊗ Relying on any single method in isolation.
- ⊗ Assuming we know everything about the species behaviour and interactions.
- ⊗ Available off-the-shelf sprays – i.e. chilli spray, Flame Guard®, D-ter® and Bird Away® - they don’t work against Magpie Geese.
- ⊗ Complacency following low infestation years.
- ⊗ Delaying effective interventions in years when geese risk is higher.
- ⊗ Leaving unpicked fruit on trees or waste fruit around orchards - they are a food source that will encourage geese to stay.
- ⊗ Thinking that solutions are isolated to a single farm or crop situation.
- ⊗ Failing to collaborate and cooperate with neighbours.



PHOTO: Charles Darwin University

SOME GENERAL RECOMMENDATIONS FOR AN IPM APPROACH

- ⊕ Geese do not behave the same on all farms and therefore ideally an adaptive management approach that is observed and coordinated at the regional scale is desired.
- ⊕ Setting up a geese arrival reporting network could provide early warning of arrival in growing areas.
- ⊕ Develop a strategy to pool resources across farms to fund aversive sound mitigation strategies (these can either be delivered on a mobile ground means e.g. the Long Range Acoustic Device or LRAD; or by aerial drone, across a number of farms).
- ⊕ Do not stop management strategies once the mango harvest is over - altering geese behaviour requires persistence.



PHOTO: Amélie Corriveau



PHOTO: Charles Darwin University

Restrict the food source:

- ⊕ Do not dump waste mangoes where geese can access (bury).
- ⊕ Removing unpicked mangoes and fallen mangoes.
- ⊕ Restrict water access in orchards i.e. fix up irrigation leaks as geese congregate in these areas.
- ⊕ Irrigate at night when geese are at their roost sites.
- ⊕ Keep rows and headlands slashed - geese seem to prefer grassy farms.
- ⊕ Future orchard design - consider trellised high density crops that could be netted.
- ⊕ An early warning strategy that incorporates new science to predict goose numbers, incursion time, and duration of goose interaction with the mango crop is worth future consideration.

Equipment:

A goose distress call that is highly effective for deterring Magpie geese can be purchased from the following website: bird-x.com/bird-products/electronic/sonic/goosebuster-single-speaker

Devices for emitting directional loud sound to deter Magpie geese can be purchased from the following website: birdgard.com.au/pest/magpie-geese

For information about goose management using drones contact Dr Hamish Campbell: hamish.campbell@cdu.edu.au.

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