



Protecting stingless bees from insecticides on farms

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Kin Kin Native Bees

Macadamia

- ❖ Using macadamia as an example as this industry is increasingly the biggest user of native stingless bees for pollination and the most studied.
- ❖ The price for macadamia NIS is at a record high and the industry is rapidly expanding in Bundaberg and central Queensland region



- ❖ Also have 25 years experience as a pest scout in macadamia.
- ❖ Record prices have led to growers wanting to see very low levels of insect damage. Virtually no organic macadamia growers left.
- ❖ Macadamia have numerous major and minor insect pests.
- ❖ Main pest season runs from July (pre flower) through to about late February (hardened nut).
- ❖ 3 of what are considered our major pests, fruitspotting bugs, sigastus weevil and macadamia nut borer, occur after flowering and so threats from insecticides are generally less as the bees are not foraging in the trees.

Flowering from July to early October

- ❖ But unfortunately at least 3 pests also occur during flowering when bees are often in the orchard.
- ❖ At the moment when ETL's are reached, chemical insecticides are the most common form of control used.





Lace Bug

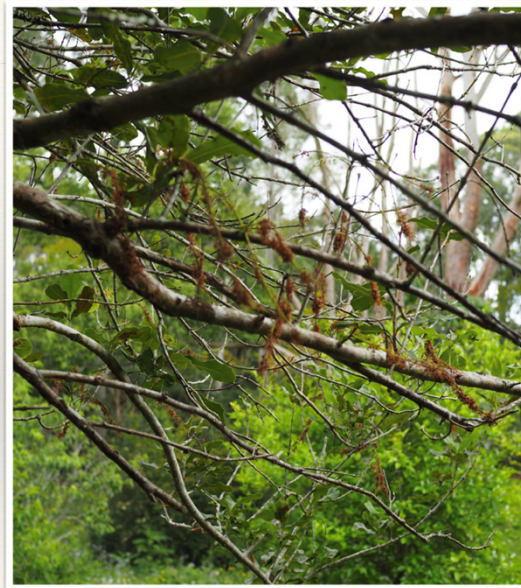


Macadamia Flower Caterpillar



Thrips

- ❖ Only a few years ago Lace Bug was a minor pest and only found in NSW. It's now considered a major pest in the Northern Rivers and has spread as far as Gympie to the north.
- ❖ Both Lace Bug and Macadamia Flower Caterpillar have the ability to inflict 90 - 100% crop loss.
- ❖ Thrips have increasingly become a problem with the erratic weather and can also cause significant crop loss in late flower, especially in QLD.

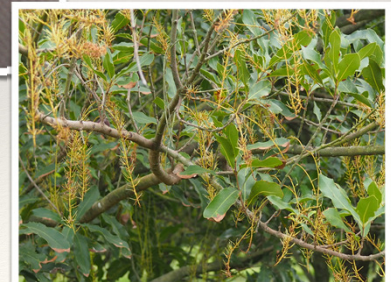


Insecticides

- ❖ The following insecticides are some of the chemicals which could be used during pre, early or peak flowering when bees are often on macadamia forchards.
- ❖ Trichlofon, Acephate, Methoxyfenozone, Diazinon, Pyrethrin and Methidathion.

Fungicides

- ❖ These insecticides can often be also in conjunction with a fungicide.
- ❖ Husk spot control measures include Pyraclostrobin, Copper or Carbendazim.
- ❖ Fungicides applied when bulk of the main flower is at match head size and often still late flowers out and bees still on farm.



Protecting your bees

- ❖ The macadamia industry is actually quite a low spray industry compared to some. If you are putting your bees on any commercial orchard speak to the grower about their spray program
- ❖ **Communication is the key.** Talk to the grower. Ask them their spray strategies around flowering.
- ❖ Ideally growers are using an IPM (integrated pest management) strategy and a pest scout to monitor pest insect levels and help minimise insecticide use.
- ❖ If possible encourage the use of bio control agents and 'softer' chemicals such as methoxyfenozide or BT's for pests such as flower caterpillar.
- ❖ Apply sprays in late evening or night when bees are not foraging to give time for chemicals to partially break down.



Communal hive stands

- ❖ Hives are increasingly being left on farm permanently on communal stands.
- ❖ Avoid drifting chemicals onto the hives.
- ❖ Remove or tape and cover hives which are in the orchard during spraying
- ❖ Provide alternate forage.



Macadamia nut pesticide regulatory status

	Aust	Codex	Canada	EU	USA
Fungicides					
carbendazim					
copper products					
difenoconazole					
spirodione					
metalaxyl					
metalaxyl-M					
penthioprad					
phosphorus acid					
pyraclostrobin					
thiuram					
Insecticides					
abamectin					
azaphos					
azinphos-methyl					
bifenthrin					
bit					
carbazin					
cyfluthrin					
fatty acids - K salt					
methidathion					
methoxyfenozide					
petroleum oil					
spinetoram					
sulfur					
thiuram					
trichlorfon					

Legend

- Deregistered or proposed
- Review proposed or underway
- Use restricted

AH19027 – Regulatory Support and Co-ordination - AKC
 Copper – Restriction on frequency of use. Private standards also restricting use
 Difenconazole – Proposed for review by APVMA and the PMFA in Canada. Triazole common metabolite and dietary exposure the concern
 Metalaxyl – Complicated as Syngenta only support metalaxyl-M. Registrants of metalaxyl need to provide supporting data to maintain metalaxyl Codex MRLs. In US part of registration review schedule.
 Dithiocarbamates – Dietary exposure the main concern and the metabolite ethylene thiourea (ETU) for EB dithiocarbamates. Issues could be for both the ADI as well as ARID.
 Beta-cyfluthrin and pyrethrins have been caught-up in an aggregated assessment of the group. A number of concerns (environmental and human exposure) have been noted with changes to uses a possibility.
 Carbaryl - Canada - all domestic class products, all turf applications (lawns, sod farms and golf courses), a number of agricultural uses (for example, various crops (alfalfa, apples (insecticide use), apricot, barley, broccoli, Brussels sprouts, cabbage, cauliflower, chermes, clover, corn (sweet & field), grapes, kale, oats, peach, pears, peppers, plums, prunes, rye, snapbeans (hand harvest only), strawberries, sweet white lupin, wheat) and the commercial application of carbaryl in residential settings were cancelled
 Methoxyfenozide – US registration review scheduled
 Diazinon - Canada - drench only no foliar use
 Methomyl – Canada recommended revocation of all uses due to dietary intake concerns. USA a registration review has been scheduled for Q4 2018
 Abamectin – scheduled for registration review in the USA
 Trichlorfon – Uses in the US and Canada are for external animal treatment and some non-food tree crops.

