SPIDERS IN CENTRAL QUEENSLAND MANGO ORCHARDS:

DIVERSITY, DIESEL ACTIVITY AND IMPACT OF PESTICIDES.

by

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ABSTRACT

Spiders are naturally occurring predators of insects in agroecosystems. The use of broad spectrum pesticides in agriculture is likely to disrupted spider communities and have a negative impact on their role as biocontrollers. The overall abundance, the species richness, diversity and guild structure of spiders in tropical mango orchards in central Queensland were investigated in this study. Experiments were performed to assess the potential of spiders as natural predators to pest insects in mango orchards. The effects of pesticides on the spider communities were assessed to establish the extent to which the communities were disrupted and the extent of recovery from this type of disturbance. The short term (acute) and long term (chronic) effects were investigated.

The spiders in unsprayed mango orchards were relatively high in abundance, species richness and species diversity. Spiders were present in significant numbers at all sampling times, both day and at night, and during all seasons. The results suggest that spiders do not capture large numbers of prey. However spider exhibit a diversity of capturing techniques so that they capture a variety of insects. The most common guild was the orb-weavers.

The spider abundance and diversity four days after spraying with methidathion suggested that recovery of spider after disruption such as the use of pesticides occurs quickly. Presumably this recovery occurs due to spiders moving into the orchard from surrounding bush land. The long term use of pesticide does appear to disrupt the community and as evidenced by decreases in the abundance, species richness and diversity of spiders.

While it is unlikely that pesticide usage will be eliminated in most commercial mango orchards, this study demonstrates that spiders are potentially important
biocontrollers and that they are adversely affected by pesticide use. In the longer term, it will be desirable to develop IPM strategies to minimise pesticide use and maximise the role of spiders as biocontrollers. Such strategies will depend on studies such as this one and extensions of it.
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