

# Macadamia seed weevil (*Kuschelorhynchus macadamiae*) life cycle and monitoring

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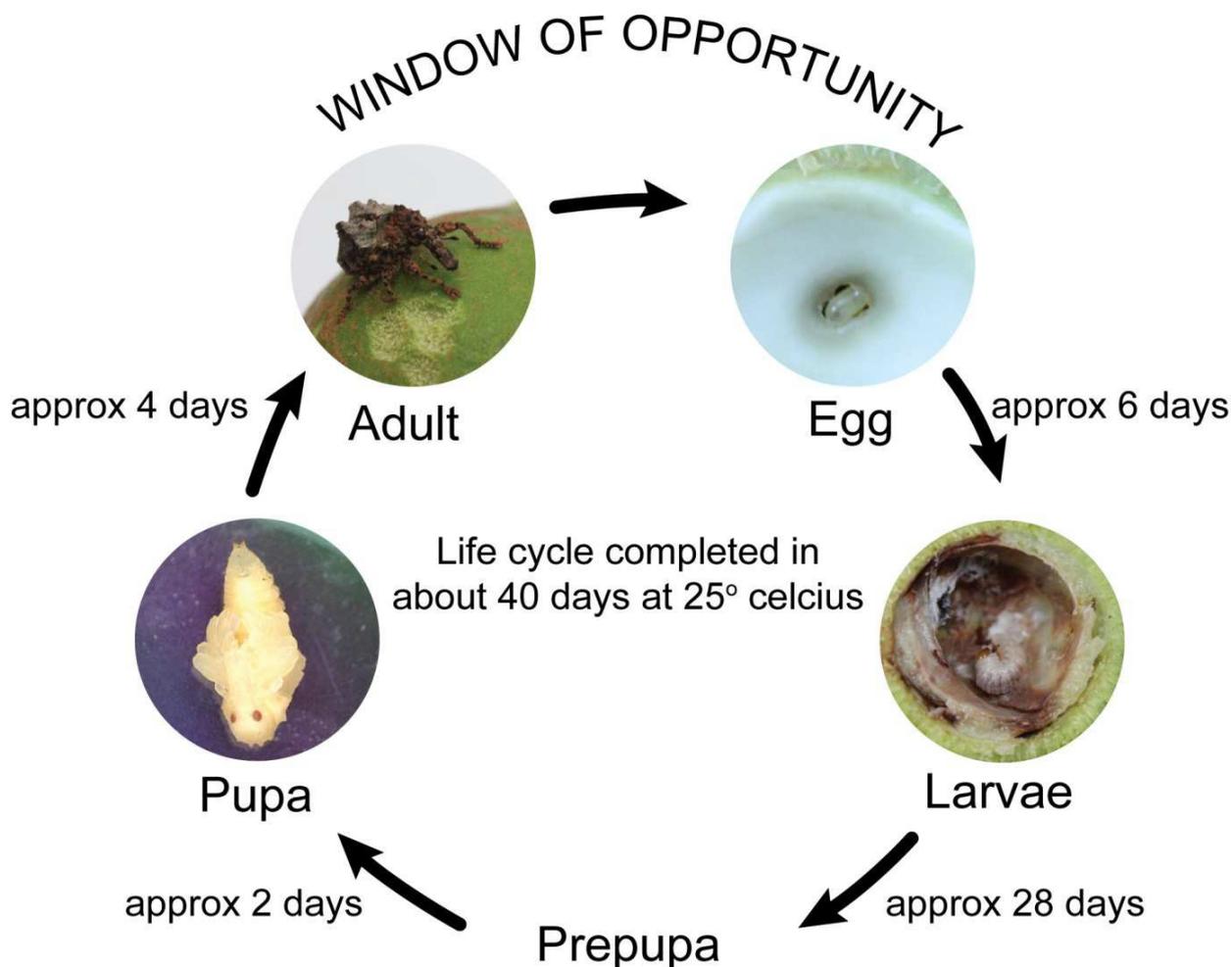
Macadamia seed weevil (previously referred to as *Sigastus* weevil) is a pest that infests macadamia orchards. So far, serious infestations of Macadamia seed weevil have been confined to the NSW Northern Rivers and far North Queensland. This article outlines the latest information on monitoring and controlling Macadamia seed weevil and how to prevent its spread to other macadamia-growing regions.



Figure 1. Macadamia seed weevil lays its eggs between the husk and soft shell of the macadamia.  
Image: Craig Maddox NSW DPI.

## Life cycle

Calendar sprays and poorly timed cultural practices to reduce carryover population are unlikely to be effective. The key to control is better understanding of the Macadamia seed weevil life cycle. With this knowledge, growers can manage the pest with just two strategic spray applications per season.



**Figure 2. Estimated life-cycle for Macadamia seed weevil.**

*Images: Craig Maddox NSW DPI. Layout courtesy of AMS and Molto Creative.*

The window of opportunity depicts critical stages of the weevil's life cycle where growers have control over reducing population numbers through correctly timed chemical and cultural practices. Two features of the Macadamia seed weevil life cycle that need to be considered in timing control measures are:

- Females lay about 20 eggs per week. This is the equivalent of 280 eggs in a lifetime.
- Half of the emerging adult weevils will survive for around 100 days. Some have been known to live for over a year.



Figure 3. Typical mark left by Macadamia seed weevil indicating egg laying.

Image: Craig Maddox NSW DPI.

### Monitoring Macadamia seed weevil

Understanding the life cycle of the weevil in your orchard is the key to identifying when to spray to eliminate the residual egg laying in fallen nuts. It is best to do this in consultation with a professional pest scout, who will help you establish the severity and location of your Macadamia seed weevil population. This assumes that you spray when there are signs of Macadamia seed weevil lay and fruit spotting bug damage which is first identified at pea size nut drop (typically November in the Northern Rivers of NSW).

This is the recommended procedure for monitoring Macadamia seed weevil population growth:

1. After spraying for Macadamia seed weevil, collect freshly fallen nuts.
2. Place nuts in a plastic container in the shade with mosquito netting or gauze on top.
3. Watch for the emergence of weevils.
4. Check the rate of emergence each day and record the proportion of weevils that hatch and the how many days it takes them to develop. This proportion matches the stage of development of the pest in the orchard. When hatchings in the container reach a peak (i.e. when a high percentage of the weevils emerge within a 24-hour period), this signals it is time to contact your pest scout for spray recommendations.



**Figure 4. A lunchbox with gauze over a hole in the lid is used to monitor Macadamia seed weevil populations collected from the field.**

Image: Craig Maddox NSW DPI.

When you clean up the orchard is also important. Remove and destroy fallen infested nuts up to 3 weeks after spraying. This will allow time for nuts which the female did not lay in to fall to the orchard floor. You should then spray again approximately 40 days after initial spray (depending on your emergence from your collection) to control any weevils that escaped the clean-up. Coverage is key for this system to work at its best.

- Follow recommended control programs.
- The APVMA has issued a permit for acephate ([PER81463](#)) for Macadamia seed weevil in macadamias.
- It is important that growers use acephate at a time when it is most effective against fruit spotting bug and Macadamia seed weevil when nuts have developed to pea size (10 mm in diameter).
- Before this, it is crucial that you have completed an orchard floor clean up. Once the orchard floor is cleaned and spray applied, it will be about 40 days until the next spray is required. After this time, the shell has hardened and the weevil can no longer enter the shell.

### Always monitor

The window of opportunity to control Macadamia seed weevil will change from season to season. It is crucial to monitor and collect populations.

### Further information

Fay HAC, De Faveri SG, Storey RL and Watson J, 1998, '*Sigastus weevil – an emerging pest of macadamias in north Queensland*': Proceedings of the Sixth Workshop for Tropical Agricultural Entomologists, Darwin, Australia, pp. 137–140.

Maddox C, 2014, 'Can we make *Sigastus* management easier? Australian Macadamia Society News Bulletin, vol. 42, no. 2, pp. 42–43.

Maddox C, 2016, 'The latest on the *Sigastus* weevil management project', Australian Macadamia Society News Bulletin, vol. 44, no. 3, pp. 52–53.

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