

Navel orangeworm

What is it?

Navel orangeworm (*Amyelois transitella*; NOW) is a major moth pest wherever it is established. It attacks the nuts of almond, pistachio, macadamia and walnut, as well as citrus.

NOW larvae reduce yield through consuming the nut meat. The larvae also leave frass and webbing behind and the damage increases the likelihood of infection by aflatoxin-producing fungi, which further reduce quality and food safety. As NOW larvae are concealed within the shell, nuts-in-shell can continue to be spoilt post-harvest.

What to look for?

NOW larvae overwinter in mummy nuts left on the trees or on the ground. In spring, moths emerge and lay the first pink to orange eggs on or near other 'sticktight' nuts on the tree. Eggs may also be laid on new crop nuts after hull split. Larvae bore into the nuts or kernels damaged by sunburn or other pests.



Jack Kelly Clark, UC Statewide IPM Program

Older Navel orangeworm larvae consume most of the nut



Jack Kelly Clark, UC Statewide IPM Program

Navel orangeworm moth

Where is it found?

This pest is found in the USA and Canada where it causes damage to almond, pistachio, walnut, fig and orange crops. It is also known to attack macadamia and grapes. Current management requires well-timed applications of organophosphates and costly monitoring.



Jack Kelly Clark, UC Statewide IPM Program

Navel orangeworm eggs turn reddish orange before hatching



Jack Kelly Clark, UC Statewide IPM Program

Navel orangeworm larvae can be distinguished by a pair of crescent-shaped markings in the second segment behind the head



Jack Kelly Clark, UC Statewide IPM Program

Navel orangeworm pupae are encased in woven cocoons that may be found within webbing and frass inside nuts

Larvae are reddish-orange but become white or pale pink as they develop. The pupae are found within the nuts, with webbing. Checks for the presence of larvae and pupae in mummies should be completed during winter. Inspection of twigs for the presence of pink to orange eggs is another method of detection.

This pest has been intercepted by border quarantine on citrus imports from California demonstrating an ability to reach Australia.

What is the best protection for my orchard?

Remove as many mummies as possible from trees and the ground following harvest. Practice good orchard sanitation and complete harvest quickly. Regularly inspect nuts and mummies for the presence of any insect pests.

Neglected orchards and feral almonds should be reported to your local department of primary industries.

Check your orchard frequently for the presence of new pests and unusual symptoms. Make sure you are familiar with common pests so you can tell if you see something different.

**If you see anything unusual,
call the Exotic Plant Pest Hotline
on 1800 084 881.**

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