

This short description was prepared in the framework of the EU FP7 project DROPSA - Strategies to develop effective, innovative and practical approaches to protect major European fruit crops from pests and pathogens (grant agreement no. 613678). This pest was listed in the DROPSA alert lists for orange and mandarin, and *Vitis* fruit.

**Amyelois transitella (Lepidoptera: Pyralidae)**

**Location of life stages on plant parts:**

**Fruit pathway:** Larvae feed inside fruits and nuts (NSW, 2012). Eggs are on mummy nuts or new crop nuts (UC IPM, 2014). On Citrus, eggs in the navel end of injured oranges, splits and wounds of citrus fruit (such as for Navel oranges) and larvae feed in or near the core (Biosecurity Queensland, 2011). Attacks damaged, overripe and dried fruits and nuts (AQIS, 1999) but such fruits may be unnoticed and be in consignments. On grapes, larvae feed in the fruit and larvae are most often found in the dried and decaying berries of clusters. Eggs are usually laid in fissures on the ripening fruit or under bud scales. Larvae are most often present in fruit which would not be packed due to quality issues (AQIS 1999). Uncertain if this species would be on traded table grapes.

**Other pathways:** plants for planting (NSW, 2012). Eggs are usually laid in fissures on the ripening fruit or under bud scales (AQIS 1999).

**Hosts:** Polyphagous on a variety of fruits and nuts. Hosts include *Citrus*, *Citrus limon*, *Citrus x paradisi*, *Citrus sinensis*, *Vitis vinifera*, *Acacia farnesiana*, *Brachychiton* sp., *Carya illinoensis*, *Ceratonia siliqua*, *Coffea* sp., *Cydonia oblonga*, *Eriobotrya japonica*, *Ficus* sp., *Forchhammeria* sp., *Genipa Americana*, *Gleditsia triacanthos*, *Heteromeles arbutifolia*, *Juglans regia*, *Malus pumila*, *Phoenix dactylifera*, *Pistacia vera*, *Pithecellobium flexicaule*, *Prunus armeniaca*, *Prunus domestica*, *Prunus dulcis*, *Prunus*, *Punica granatum*, *Pyrus communis*, *Yucca* sp., *Ziziphus* sp. (AQIS 1999).

**Distribution:** **North America:** Mexico; USA (Arizona, California, Florida, Georgia, Oklahoma, Texas, Washington); **Central America:** Costa Rica; South America: Brazil (Aqis, 1999), Argentina (USDA, 2015). Biosecurity Queensland (2011) mentions Canada but no other record was found. Absent from the EU. Italy is mentioned in several publications (e.g. AQIS, 1999; USDA, 2015); this record appears to originate from an interception (Trematerra, 1988). Similarly, *A. transitella* entered Austria (Essl and Rabitsch, 2002), but is rated as not established. Although Lopez-Vaamonde (2010) reports these countries as 'invaded' the pest does not seem to be established. *A. transitella* is also recorded as present in Germany according to Fauna Europaea (de Jong et al., 2014); however, no record was found, and it may also refer to an interception. Consequently, the pest was considered absent from the EU, with an uncertainty.

**Damage:** *A. transitella* is a serious pest of some nut crops (e.g. almonds, pistachios, walnut), and also grazes on Citrus fruit, causing surface scarring that favours entry by decay-causing organisms, leading to fruit quality reduction and fruit drop. Larvae are in splits and wounds of citrus fruit, feeding in or near the core (Biosecurity Queensland, 2011). The pest is identified as the most important and damaging pest of pistacchio (UC IPM, 2015) and the most important insect pest of almonds (Agudelo-Silva et al., 1995). It causes extensive losses to nut crops in the USA, through feeding damage and contamination of nuts with frass and webbing, and it also vectors saprophytic fungi that infect crops (Ampt et al., 2015). Routine spraying is done (UC IPM 2014). On almond, it vectors *Aspergillus flavus* (Palumbo et al., 2014).

**Other information:** Intercepted in Korea on fresh oranges (first case) and walnuts (in the past) from the USA (Hong et al, 2012). *A. transitella* is a pest of concern for Australia and is subject to alerts (Biosecurity Queensland, 2011; NSW, 2012). Proposed in answer to the EPPO questionnaire on pests of concern for Citrus.

<b>Recorded impact:</b> High (on another crop, also vector)	<b>Intercepted:</b> Yes	<b>Spreading/invasive:</b> Yes
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**References:**

- Agudelo-Silva F, Zalom FG, Hom A, Hendricks L. 1995. Dormant Season Application Of *Steinernema carpocapsae* (Rhabditida: Steinernematidae) and *Heterorhabditis* sp. (Rhabditida: Heterorhabditidae) on Almond for Control of Overwintering *Amyelois transitella* and *Anarsia lineatella* (Lepidoptera: Gelechiidae). Florida Entomologist 78(3) September, 1995
- Ampt EA, Bush DS, Siegel JP, Berenbaum MR 2015. Larval Preference and Performance of *Amyelois transitella* (Navel Orangeworm, Lepidoptera: Pyralidae) in Relation to the Fungus *Aspergillus flavus*. Environ Entomol. 2016 Feb;45(1):15562. doi: 10.1093/ee/nvv160. (abstract)
- AQIS 1999. Draft Import Risk Analysis for the Importation of Fresh Table Grapes [*Vitis vinifera* L.] from California (USA). Australian Quarantine & Inspection Service, Canberra, 60pp.
- Biosecurity Queensland. 2011. Navel orangeworm Have you seen this citrus pest? Department of Employment, Economic Development and Innovation Biosecurity Queensland.
- CABI CPC. Crop Protection Compendium. CAB International, UK. <http://www.cabi.org/cpc>
- de Jong Y. et al. 2014. Fauna Europaea - all European animal species on the web. Biodiversity Data Journal 2: e4034. doi: 10.3897/BDJ.2.e4034.
- Essl F, Rabitsch W. 2002. Neobiota in Österreich. Umweltbundesamt, Wien, 432 pp.
- Hong K-J, Hong S-W, Ryu C-S, Lee Y-H. 2012. Navel orangeworm (Lepidoptera: Pyralidae) intercepted on fresh oranges from the USA at the Korean port of entry. Korean Journal of Applied Entomology 2012 51 3 295-297 (abstract)
- Lopez-Vaamonde C et al. (2010) Lepidoptera. Chapter 11. In: Roques A et al. (Eds) Alien terrestrial arthropods of Europe. BioRisk 4(2): 603–668. doi: 10.3897/biorisk.4.50
- NSW. 2012. Exotic Pest Alert: Navel orangeworm. Factsheet. New South Wales Government. Department of Primary Industries.
- Palumbo JD, Mahoney NE, Light DM, Siegel J, Puckett RD, Michailides TJ. 2014. Spread of *Aspergillus flavus* by navel orangeworm (*Amyelois transitella*) on almond. Plant Dis. 98:1194-1199.
- Trematerra P. 1988. *Paramyelois transitella* (Walker) lepidottero americano presente nelle noci importate dalla California. Informatore Fitopatologico, 38(12), 51-55.
- UC IPM. 2014. Navel Orangeworm. Scientific name: *Amyelois transitella*. UC Pest Management Guidelines - Pistachio. University of California Agriculture and Natural Resources.
- USDA. 2015. Risk Assessment for the Importation of Fresh Lemon (*Citrus limon* (L.) Burm. f.) Fruit from Northwest Argentina into the Continental United States. August 3, 2015. Rev: 14. United States Department of Agriculture.