

Mini data sheet on *Gymnandrosoma aurantianum* (Lepidoptera: Tortricidae)

Gymnandrosoma aurantianum was added to the EPPO A1 List in 2020. A full datasheet will be prepared, in the meantime you can view here the data which was previously available from the EPPO Alert List (added to the EPPO Alert List in 2017 - deleted in 2020).

Why: *Gymnandrosoma* (= *Ecdytophaga*) *aurantianum* (Lepidoptera: Tortricidae - citrus fruit borer; macadamia nut borer) is a pest of citrus and other fruit crops in tropical regions of the Americas. The NPPO of Spain has intercepted it on several occasions in consignments of oranges (*Citrus sinensis*) imported from Brazil. Considering that this pest could present a serious threat to citrus production, and possibly to other fruit crops, the NPPO of Spain suggested that *G. aurantianum* should be added to the EPPO Alert List.

Where: *G. aurantianum* was first described in Brazil in 1915, and is reported to occur in most citrus-growing states (however, few details could be found about the situation of individual Brazilian states). So far, *G. aurantianum* has only been reported in the Americas.

North America: Mexico.

Central America and the Caribbean: Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Puerto Rico, Trinidad and Tobago.

South America: Argentina, Bolivia, Brazil (Alagoas, Amazonas, Bahia, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Minas Gerais, Pará, Paraná, Rio de Janeiro, Rondônia, Santa Catarina, São Paulo, Rio Grande do Sul), Colombia, Ecuador, French Guiana, Peru, Suriname, Uruguay, Venezuela.

On which plants: *G. aurantianum* is polyphagous and its larvae can feed on many fruit crops such as: *Annona cherimola*, *A. squamosa*, *Averrhoa carambola*, *Carya illinoensis*, *Citrus* spp. (*C. reticulata*, *C. sinensis*, *C. paradisi*), *Cocos nucifera*, *Eriobotrya japonica*, *Litchi chinensis*, *Macadamia integrifolia*, *Musa*, *Prunus persica*, *Psidium guajava*, *Punica granatum*, *Theobroma cacao*. *G. aurantianum* can also be found on various native fruiting plants growing in tropical forests.

Damage: damage is caused by larvae feeding inside fruits. Females usually deposit a single egg per fruit, and lay 150-200 eggs during their lifetime. After hatching, the larva pierces the peel and penetrates inside the fruit, where it feeds on the pulp (or the kernel). On citrus, attacked fruits turn yellow before healthy ones. When mature fruits are attacked, a brown, circular depression of approximately 2 cm diameter can be seen near the entry hole, as well as insect excrements on the fruit surface. Attacked fruits are prone to secondary infections and fall prematurely. In Brazil, *G. aurantianum* is considered to be one of the most important pests of citrus mainly because larvae render the fruit unusable for both fresh consumption and industrial processing. *G. aurantianum* was first described in 1915 causing damage to citrus trees in the state of São Paulo. By the mid-1980s, economic damage started to be observed in citrus orchards. In the state of São Paulo, yield losses of up to 50% have been reported. In 2000, losses caused by *G. aurantianum* were estimated at 50 million USD per year.

The life cycle from egg to adult lasts from 32 to 60 days. Depending on the environmental conditions and food availability, up to 10 generations per year can be produced. Adults are small brownish moths (approximately 10-12 mm long and 18 mm wingspan) of crepuscular or nocturnal behaviour. Eggs are laid on the fruit surface and larvae hatch after 3 to 4 days. Larvae penetrate inside the fruit and undergo 5 larval stages over 14 to 30 days (mature larvae are 18 mm long). Larvae leave the fruits to pupate in the soil (inside a cocoon made of dried leaves or other debris). In some cases, pupation can take place inside the fruit.

Pictures of the pest and damage can be viewed on the Internet:

<https://www.invasive.org/browse/subthumb.cfm?sub=21822>

<http://www.fundecitrus.com.br/doencas/bicho-furao/18>

Dissemination: Adult moths can fly but no data is available on their flight ability. Over long distances, trade of infested plants and fruits can disseminate the pest. *G. aurantianum* has been intercepted by Spain on several occasions on oranges (*C. sinensis*) imported from Brazil.

Pathway: plants for planting and fruit of host plants, soil from countries where *G. aurantianum* occurs.

Possible risks: citrus and several other hosts of *G. aurantianum* are economically important fruit crops in the EPPO region. Due to their hidden mode of life, larvae are difficult to detect during field or consignment inspections. Economic losses caused by *G. aurantianum* have been reported from Brazil on citrus and IPM strategies have been developed. In particular, the use of sexual pheromones has facilitated pest control in citrus orchards, by helping growers to apply insecticides at the right period and by better preserving the populations of natural enemies. The use of biocontrol agents has also been studied in Brazil (e.g. *Bacillus thuringiensis*, *Trichogramma* spp.). The large volume of trade of citrus fruit from the Southern part of the Americas and the fact that *G. aurantianum* has already been intercepted demonstrates that a pathway for entry into the EPPO region exists. More data would be needed to evaluate the potential for establishment and spread of *G. aurantianum* in the EPPO region. However, it seems that the Mediterranean Basin is likely to present favourable conditions for the establishment of *G. aurantianum*. Finally, during the EU project Dropsa 'Strategies to develop effective, innovative and practical approaches to protect major European fruit crops from pests and pathogens', *G. aurantianum* has been retained as possibly presenting a risk for fruit production in Europe.

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