Data Sheets on Quarantine Pests

Cydia prunivora

IDENTITY

Name: *Cydia prunivora* (Walsh)
Synonyms: *Grapholitha prunivora* (Walsh)
Enarmonia prunivora Walsh
Semasia prunivora Walsh
Laspeyresia prunivora Walsh
Taxonomic position: Insecta: Lepidoptera: Tortricidae
Common names: Lesser appleworm, plum moth (English)
Petite pyrale (French)
Bayer computer code: LASPPR
EPPO A1 list: No. 36
EU Annex designation: II/A1 - as *Enarmonia prunivora*

HOSTS

The main natural host is *Crataegus* spp., especially the larger-fruited species such as *C. holmesiana*. *C. prunivora* readily attacks apples, plums and cherries. It has been recorded on peaches, roses and *Photinia* spp. Larvae may also develop in galls of *Quercus* and *Ulmus*. For more information, see Chapman & Lienk (1971).

GEOGRAPHICAL DISTRIBUTION

C. prunivora is indigenous on wild *Crataegus* spp. in eastern North America (north-eastern states of USA and adjoining provinces of Canada) and has spread onto fruit trees in other parts of North America (western Canada and USA).
EPPO region: Absent.
Asia: China (Heilongjiang only, unconfirmed). The record given for India in the previous edition is erroneous.
North America: Canada (British Columbia, eastern provinces), USA (practically throughout).
EU: Absent.
Distribution map: See CIE (1975, No. 341).

BIOLOGY

The life and seasonal history is similar to that of the European codling moth, *Cydia pomonella*. *C. prunivora* overwinters as a full-grown larva in a cocoon in debris on the ground or in crevices in the trunks of host trees. In the western fruit district of New York State, USA, and in Ontario, Canada, pupation takes place in May and lasts 2-3 weeks. Adults start to emerge in late May and the moths are present throughout June. The eggs are laid singly on the upper surface of the leaves and on the young fruit. First-generation larvae become fully grown over the latter half of July to early August. Many of these larvae

complete their development on fruits that have fallen to the ground. First-generation adults are on the wing in August. Individual larvae of the second generation complete their development over an extended period from late August to early October. They then enter hibernation, constructing cocoons on the ground cover and in the trunks of host trees. Some hibernating larvae may be found in fallen apple fruits in October and later.

In the Milton-Freewater district of Oregon, USA, where *C. prunivora* became a major pest of plums and cherries (Brown, 1953), the species may produce an abortive third generation. Thus, some second-generation adults may appear and lay some third-generation eggs. Even though these hatch, the resultant larvae are apparently unable to complete development. The average temperature in this Oregon locality is 11.59°C and it has a frost-free period of 200 days. The annual temperature average in the New York-Ontario region, referred to above, is about 9.45°C and the frost-free period approximately 160 days.

For more information, see Quaintance (1908), Brown (1953), Chapman & Lienk (1971), Glass & Lienk (1971), Rivard & Mailloux (1974), CIE (1975).

DETECTION AND IDENTIFICATION

Symptoms

At first sight, damage may be confused with that caused by *Cydia pomonella*, especially when the larvae penetrate to the pips. In general, as the larvae feed, they hollow out superficial galleries (usually less than 6 mm deep) under the skin, which remains intact at first, but then wrinkles, turns brown and ampoules form where excrements accumulate. The ampoules usually form in the calyx end of the fruit, but they may also be found near the peduncle or around the apple. Those apples attacked by the first generation tend to fall prematurely, while, later in the season, the fruit may remain on the tree until harvest, but is rendered unsaleable. For more information, see Quaintance (1908), Chapman & Lienk (1971), Glass & Lienk (1971).

Morphology

Eggs

Solitary, oval and flattened and covered with a network of irregular ridges; 0.65 x 0.55 mm; shiny and milky-white at first, but rapidly become yellow. After a few days, a reddish ring develops around the embryo and can be seen through the egg shell.

Larva

Pink, in varying degrees of intensity; attaining 7.5-9.5 mm in length and possessing a brown head and thoracic shield. The larva of *C. prunivora* can be separated from those of other *Cydia* spp. on the basis of size: thus, average head width in *C. prunivora* is 0.82 mm, in *C. molesta* 1.11 mm and in *C. packardi* 0.89 mm. There are some fairly consistent differences between species and these are best revealed in larvae killed in boiling water and preserved in 70% ethyl alcohol. *C. prunivora* is the only species to retain pinkish pigment in the integument, and there is usually more brownish pigment overlay on the head and thoracic shield; in the others, body colour changes to whitish or creamy (Chapman & Lienk, 1971).

Pupa

Yellowish-brown, about 2 x 5 mm and surrounded by a tightly woven, white, silken cocoon.

Adult

Male and female identical; moth with 10-11 mm wingspan and a brown-black body. Forewings dark brown with orange spots and three pale-blue transverse lines and a dusky fringe with a black basal line. Hindwings are grey-brown, fading towards the base, but black at the tip.

MEANS OF MOVEMENT AND DISPERSAL

C. prunivora can spread within countries by flight but is more likely to move in international trade as larvae in fruits or as pupae in soil accompanying planting material of host species.

PEST SIGNIFICANCE

Economic impact

C. prunivora was reported as a major pest of stone fruits in eastern Oregon, USA, in 1953, causing damage resulting in considerable cullage at harvest time and excess packing costs to growers (Brown, 1953). It appeared in outbreak proportions on apples in 1968 and 1969 in New York State, USA and, in 1958, was serious on this crop in British Columbia (also on plums), Manitoba, Ontario (also on cherries) and Nova Scotia, Canada. More recently, possibly as a result of spray schedules being reduced in order to obtain more efficient pest management, this insect has been reported in the USA as serious in commercial orchards in Massachusetts (1972), and Maine and New York (1973). In an experimental block in Wayne County, New York, in the absence of any insecticides, 70% of fruits were found to be infested in 1968; thus, the pest has considerable potential, particularly if chemical control practices were to be substantially eased.

Control

Chemical control is possible with alphacypermethrin (Bostonian *et al.*, 1989). Studies on the biological control of this organism have been concentrated on pheromone traps (Bhardwaj, 1987; Pfeiffer & Killian, 1988), but applicable biological control measures are not yet available.

Phytosanitary risk

C. prunivora is an EPPO A1 quarantine pest (OEPP/EPPO, 1979) and is also of quarantine significance for COSAVE. Since it is capable of surviving as far north as the Canadian Maritime Provinces and of becoming a pest, at least in Nova Scotia, alongside *C. pomonella*, it could be expected to be capable of surviving in most of the apple-growing areas in Europe and of becoming a pest, at least locally.

PHYTOSANITARY MEASURES

In general, all plants with roots of *Crataegus*, *Malus*, *Prunus* and *Rosa* coming from a country where the pest occurs, should be free from flowers and fruits and the consignment should have been grown in an organic medium or growing medium which was treated or tested against *C. prunivora* by an EPPO-recommended procedure. Additionally, the consignment should have been kept under conditions which prevent a reinfestation by the organism (OEPP/EPPO, 1990).

Fumigation with methyl bromide will control infestations in fresh fruit (FAO, 1984).

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