Dacus ciliatus Loew

Identity

Dacus ciliatus

Preferred Scientific Name: *Dacus ciliatus* Loew

Preferred Common Name: lesser pumpkin fly

Taxonomic position: Class: Insecta**: -Order:** Diptera-**Family:** Tephritidae

International Common Names (English)**:** cucurbit fly; Ethiopian fruit fly; lesser melon fly

The genus *Dacus* belongs to the family Tephritidae. *Dacus ciliatus* has patterned wings, and the female has a long telescopic and pointed ovipositor.

Fig.1: Adult *Dacus ciliatus* on a cucurbit fruit

Fig.2: Larvae of *Dacus ciliatus* in a cucurbit fruit

Fig.3: Pupal stage of *Dacus ciliatus*

Hosts/species affected

The Ethiopian fruit fly, *Dacus ciliatus*, is mainly a pest of cucurbit crops, particularly melons, cucumbers, and marrows (summer squash). Cucurbits are the principal hosts, with several other crops apparently of less importance. *D. ciliatus* has been recorded from balsampear, bean chayote, bluecrown passionflower, calabash gourd, citrus, common tomato, cucumber, cushaw, edible snakegourd, mata ratón (*Gliricidia sepium*), gooseberrygourd, horned melon, ivygourd, milkweed, muskmelon, pumpkin, redpepper, Singkwa towelgourd, watermelon, winter squash, and yellowflowergourd.

There are a few reports from hosts other than Cucurbitaceae namely *Adenia gummifera* (Passifloraceae), *Gossypium* sp. (Malvaceae), *Solanum lycopersicum* (Solanaceae) and *Phaseolus* sp. (Fabaceae), but these are not common hosts and may represent aberrant associations or a confused host range (White, 2006).

Growth stages affected

Fruiting stage

Biology and Ecology

The pest requires 2-3 weeks to complete a generation at 28°C. The eggs, in clusters of 5-10, are inserted into the host-fruit, within which the larvae develop. Pupation takes place in the soil and the emerging adults need a few days to reach sexual maturity. Each female deposits about 200 eggs after a single, prolonged mating that takes places in the dark.

Life Cycle

The egg is shiny white, about 2.5 mm long, slightly curved, cylindrical, and narrow at one end. The larva is pure glistening white, except as appearances are altered by the color of the food within the alimentary canal. The puparium is elliptical, brownish, about 4.5–5.5 mm long and 2–2.5 mm wide.

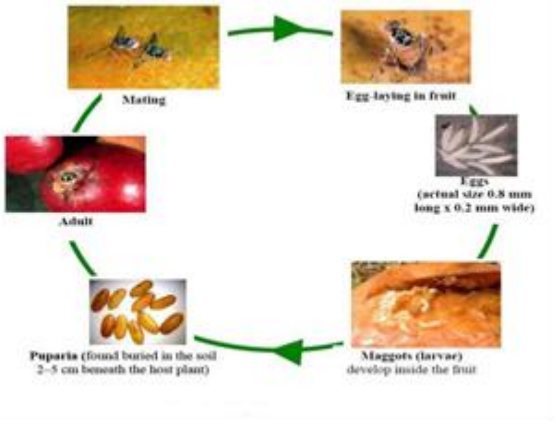

Fig.4: A general life cycle for fruit fly species

Symptoms

Attacked fruit usually shows signs of oviposition punctures around which necrosis may occur. In heavy infestations the fruit may collapse leaving just the skin (El Nahal et al., 1971).

Means of movement and dispersal

Adult flight and infested fruit are major means of dispersal.

Movement in trade

Adult flight and the transport of infested fruits are the major means of movement and dispersal to previously uninfested areas. The flight capability of *D. ciliatus* has not been measured, but it is probably similar to that of many *Bactrocera* spp., which can fly 50-100 km (Fletcher, 1989). Transport of plants of host species that are transported with roots from countries where these pests occur can also be a cause of dispersal of puparia.

A plant part liable to carry the pest in trade/transport is the fruit and the growing medium accompanying plants that can carry pupae.

Impact

The cucurbit fly is an important pest of edible cucurbits, whose current importance is mainly due to its being a quarantine pest in Europe, Japan and North America.

It has been intercepted severally in the EU on Karella (*Momordica charantia*) from Kenya, thus necessitating restriction of export of the commodity into the EU (KEPHIS, interception report).

Phytosanitary significance

EPPO lists *D. ciliatus* as an A1 quarantine pest, within the category "non-European Tephritidae" (EPPO, 2016); it is also of quarantine significance to many other countries. Its quarantine status for the EPPO region is the same as that of the *Bactrocera* spp.

Detection and inspection

Males are not attracted to cue lure or vert lure (no species of *Dacus* is known to be attracted to methyl eugenol, which is an important monitoring attractant for *Bactrocera* spp. (CABI, 2016). Detection is therefore only possible by examination of fruit for oviposition punctures and then rearing the larvae through to the adult stage (EPPO, 2016).

Management

When detected, all infected fruit should be destroyed. Insecticidal protection is possible by using a full cover spray or a bait spray (CABI, 2016). Malathion is the usual choice of insecticide for fruit fly control and this is usually combined with protein hydrolysate to form a bait spray (CABI, 2016). Bait sprays work on the principle that both male and female tephritids are strongly attracted to a protein source from which ammonia emanates. Bait sprays have the advantage over cover sprays in that they can be applied as a spot treatment so that the flies are attracted to the insecticide and there is minimal impact on natural enemies.

Physical protection (growing under the protection of tunnels) provides a more environmentally acceptable approach (CABI, 2016).

Phytosanitary Measures: fruits should come from an area where *D. ciliatus* does not occur and where routine intensive control measures are applied (EPPO, 2016)

Fruits may also be treated by cold treatment (e.g. 13 or 14 days at 0.0 or 0.6°C,, respectively) or, for certain types of fruits, by vapour heat (e.g. keeping at 43-44°C for 6-9 h, according to commodity) (FAO, 1983) or hot water treatment.

Plants of host species transported with roots from countries where these pests occur should be free from soil, or the soil be treated against puparia. The plants should not carry fruits. Importation of such plants may indeed be prohibited.

Consignments of fruits from countries where these pests occur should be inspected for symptoms of infestation and those suspected, should be cut open in order to look for larvae.

References

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