Ceratitis cosyra

Introduction

Ceratitis cosyra (walker), is a serious pest of mango in several African countries namely, Zimbabwe, Ivory Coast, Mali and the subtropical regions of South Africa. It is known to occur in the Americas and could be of phytosanitary information to the Caribbean.

Identity

Authority	: Walker
Classification	
Kingdom	: Animalia
Phylum	: Arthropod
Class	: Insecta
Order	: Diptera
Family	: Tephritidae
Genus	: *Ceratitis*
Species	: *cosyra*
Synonyms	: *Pardalaspis cosyra* (Walker), *P. parinarii* (Hering), *Trypeta cosyra* (Walker).
Common names	: mango fruit fly, marula fruit fly, marula fly
Role	: pest

Signs & symptoms

Oviposition punctures are seen on infested plants. Some cultivars are more susceptible than others, for instance, damage to the mango fruit (cultivar Sensation) is higher compared to other cultivars in Zimbabwe (Rendell *et al.*, 1995).

Morphology

The morphology of C. cosyra is based on the work of de Meyer, (1998) and Smith *et al.*, (1997): The body length of the adult is 3.35 - 5.40 mm.(Fig 1)

Wing length is 3.40 - 5.20 mm with yellow bands. The head has yellow-orange antenna, with the third antennal segment twice as long as the second one. Scutum is predominantly yellow or pale-brown, with a pattern of brown to black spots. The scutellum is black and yellow, with yellow lines or areas meeting the margin, such that each apical scutellar seta is based in or adjacent

Fig. 1: *Ceratitis cosyra* female
(Photo credit- Jeffrey Lotz)

to a yellow stripe. Sub-scutellum is pale with three dark separate spots. The fore-femur is yellow on both sides and in both sexes whereas the fore-femur of the male is not patterned with black and white. The costal band and discal crossbands are joined. The anterior pair of orbital setae is unmodified. Episternum on the thorax has one seta and the male mid-tibia has no stout setae. Male wing length is 4-6 mm. Third instar larvae is 6.5 - 7.0 mm long and 1.5 mm wide. Its head has oral ridges in 11 - 12 rows and mouth hooks with a small pre-apical tooth. The anterior portion of the thoracic segments has an encircling band of spinules.
A spiracles have 11-12 short tubercules and the posterior ones have slits 3.0 - 3.5 times longer that broad (White and Elson-Harris, 1992).

Biology & Ecology

The biology of *C. cosyra* is not very well known, but it is considered to be quite similar to that of *C. capitata*. *C. cosyra* breeds in *Sclerocarya caffra* (Anacardiaceae) among other wild fruits. It also attacks early peaches in the summer rainfall areas and other subtropical fruits. Males are attracted to terpinyl acetate but not to trimedlure or methyl eugenol (Hancock, 1989).

Dispersal/vectors

Dispersal is mainly by adult flight and transport of infested plants and fruits of *Mangifera indica* to previously uninfested areas.

Management

Collecting and destroying infected host fruits is a good practice to stem dispersal from infested areas. Trapping using male lures should be done continuously to monitor population size and spread. Cover spray or a bait spray with insecticides is quite effective. Malathion is used for fruit fly control and this is usually combined with protein hydrolysate to form a bait spray. 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 since they can be applied as a spot treatment and that is less harmful on natural enemies (Smith *et al.*, 1997).

Biological Control
Tests are done using entomopathogenic fungi in bait stations with food lure (as compared to bait stations with food lure and malathion). Results are promising (Dimbi *et al.*, 2002).
Psyttalia cf *concolor* (Szépligeti) and *Psyttalia cosyrae* (Wilkinson) have been found attacking the Mango fruit fly (Mohamed *et al.*, 2002). Vayssieres et al., (2002) also mention several parasites.

Phytosanitary Risk

This pest is of little phytosanitary significance on its own to the EPPO region (Smith *et al.*, 1997). However it is a quarantine pest for Uruguay. It is Considered as pest with major risk of introduction for the Indian Ocean Region, due to the existence of several pathways for introduction.

Phytosanitary Measure

For countries where this pest is important, measures similar to those taken for *C. rosa* should be useful.

Host notes

Alies van Sauers-Muller MOA/CFF

C. cosyra is a pest of mango (*Mangifera indica*), but is also recorded for few other crops including avocado (*Persea americana*), Citrus and peach (*Prunus persica*) (Smith et al, 1997).

It is also recorded on guava, sour orange and maroola plum (*Sclerocarya birrea*) (Drew and Hancock, 1994), and on custard apple and *Sclerocarya caffra*, marula (Anacardiaceae) (Hancock, 1989). Varietal susceptibility to *C. cosyra* was observed by Rendel *et al*., (1995) in Zimbabwe where this species was found to be the most predominant of tephritids attacking mangoes. In Cote d'Ivoire and Mali, mango is mentioned as the host (Hala *et al*., 2002; Vayssieres *et al*., 2002).

Distribution

Widespread in Africa (Drew and Hancock, 1994).

C. cosyra occurs in the north eastern subtropical parts of South Africa (Barnes *et al.*, 2002), Cote d'Ivoire (Hala *et al.*, 2002). Mali (Vayssieres *et al.*, 2002).

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