



## **Fruit Sucking Moth: Ultimatum to Agricultural Crops**

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### ***Introduction***

Fruit sucking moth is a polyphagous pest. It belongs to order Lepidoptera, family Noctuidae and sub families Ophiderinae (Primary piercers) and Catocalinae (Secondary piercers). It occurs in tropical countries all around the world including Indo–Australian–Pacific region. In India, fruit piercing moths were first recorded as serious pest in 1909 by Lefroy. Generally in India, mainly four of species viz., *Othreis fullonia* (Clerck), *O. materna* (Linnaeus), *O. homaena* (Hubner) and *O.cajeta* (Cramer) have been recorded as prominent fruit piercers. It caused 40 to 76 per cent damage in various crops viz., citrus, pomegranate and grape (Cai and Geng, 1997 and Dodia *et al.*, 1986).

### ***Host Plants***

The larva and adult of fruit sucking moth have different host plants. The adults cause widespread damage in crops like orange, plum, apple, banana, mango, grape, quince, custard apple, peach, pineapple, tomato, citrus, pomegranate, apple, apricot, bell pepper, bread fruit, cactus, carambola, cashew nut, coffee, eggplant, fig, guava, jack fruit, lemon, litchi, longan, mandarins, melon, nectarine and papaya (Bhumannavar and Viraktamath, 2002). While, the larvae feed on host plants like *Cocculus hirsutus*, *Tinospora cardifolis*, *Tinospora warneckeii*, *Quisqualis indica*, *Erythrina sp.* (coral trees) and plants of Menispermaceae family and first instar larvae usually prefer the chlorophyll rich area of the leaf leaving the veins intact.

### ***Distribution***

Fruit sucking moth is distributed throughout the world. The genera of *Othreis* are found in Africa, Australia, Asia and throughout the Pacific; *Eudocima* in Australia and Caledonia, *Pericyma*, *Ercheia* and *Pletyia* in Asia and Micronesia (Muniappan *et al.*, 1995). In India, *Eudocima* (= *Othreis*) viz., *O. fullonia* (Clerck), *O. materna* (Linnaeus), *O. homaena* (Hubner) and *O.cajeta* (Cramer) are common (Ayyar, 1944, Sundara and David, 1973). In Gujarat, it was found damaging to tomato (Zala and Bharpoda, 2016).

### ***Life Cycle***

#### ***Egg***

Spherical eggs are laid singly on the weed hosts (climber) like *Cocculus pendulus*, *C. hirsutus* and *Tinospora cardifolia* which grow along fence or hedges around the orchards. Female moth lays 200-300 eggs. Freshly laid eggs on the weed hosts are shiny, translucent,



yellowish white and become dark before hatching. Incubation period is 1-3 days. Eggs round and translucent, spherical in shape (Patel and Patel, 2004).

### ***Larva***

Full grown caterpillars are 64-66 mm long. Larvae are semi-loppers with stout appearance and dorsal hump on the last segment of the body and have distinct eye spots on head and yellow/red colour lateral spots. The average larval period is about 12-15 days with five larval instars (Patel and Patel, 2004).

### ***Pupa***

Pupa is thick and dark reddish brown with 11-14 days duration and pupation took place amongst the mature leaves, which were knit together (Patel and Patel, 2004).

### ***Adult***

Adult is large, bright colored with forewing dark brown or greyish. Hindwing are orange with bean shaped marking at the center in *O. fullonica* and round spot in *O. materna*. Females are comparatively larger than males. Females and males lived for 30 to 35 and 22 to 34 days, respectively (Patel and Patel, 2004).

### ***Behaviour***

- ✓ Caterpillars mostly feed between 5:00 PM and 10:00 AM, but may feed at any time.
- ✓ Located beneath or on the edges of leaves.
- ✓ Young larvae drop to the ground at any sign of danger, while the older larvae take an aggressive attitude by hanging on to the food plant with their hind legs and swaying the rest of their body from side to side.
- ✓ Moths are very strong fliers and can travel great distances from their breeding grounds in search of food. Adults fly mainly between the hours of dusk and 11:00 pm. And not usually attracted to light. When disturbed, the moth flares its forewings, exposing its conspicuous hind wings (Waterhouse and Norris, 1987).

### ***Nature of Damage***

Adult moth sucks the juice from ripening fruits with the help of strong proboscis with sharp spines by making puncture after dusk (sunset) during the rainy season. (Shivankar *et al.*, 1999) and Ghadge (1998) reported that fruit sucking moth insert their proboscis into the fruit with even relatively hard rind and suck up the juice from the fruits. The moth pierced the fruit for several times. Adult moths pierced ripening fruits with their strongly sclerotized proboscis, macerated the pulp and suck the fluid (Sands *et al.*, 1991). Green fruits of orange turned yellow at the site of the piercing and fungi soon developed within the wound (Waterhouse and Norris, 1987). On tomato, the punctures of the tomato skin caused the fruit to turn white and quickly rot (Comstock, 1963). It caused severe damage to fruits and vegetables by piercing and sucking the sap (Magar, 2012). The per cent of fallen fruits due to fruit sucking moth infestation was 32.5% (Nagpur mandarin on rough lemon), 31.9% (Nagpur mandarin on Rangpur lime) and 17.2% (Kinnow) (Bhumannavar and Viraktamath, 2012). Fruit sucking moth was found that a single moth could drill 15 to 20 holes into sweet pomegranate in one



night. Adult moth sucking the juice from the cotton bolls by proboscis. As a result, the area around the puncture becomes soft, fungal and bacterial infection takes place. The puncture becomes pale and soon the boll turn brown and caused direct loss (Zala and Bharpoda, 2015).

### ***Seasonal abundance***

Adult of *Othreis* sp. started to emerge soon after the rains during the night from August onwards and declined up to the end of December (Ghadge, 1998). (Patel and Patel 2004) found that the infestation of fruit sucking moth started from first week of August with heavy attack during 3<sup>rd</sup> week of August to 3<sup>rd</sup> week of September. (Ramkumar *et al.*, 2010) reported that the activity of adult *O. materna* found from the second fortnight of July to January while *O. fullonia* and *O. homaena* were observed from the first week of September and continued up to first fortnight of January.

### ***Management***

#### ***(a) Non Chemical***

Damage of fruit sucking moth in citrus orchard was relatively low in smoked orchards as compared to unsmoked orchards (Baptist, 1944). Oils of Jatropha, citronella, poppy, neem and pongamia along with neem seed kernel extract @ 40 g per liter of water were effective as repellent (Kamala *et al.*, 2010). Ipomoea leaves extract, neem seed oil and custard apple leaves extract were effective against *O. materna* (Patel and Patel, 2004). *Trichogramma chilonis* was found to be effective egg parasitoid against eggs of *E. materna* (Magar *et al.*, 2017). *Photorhabdus luminescens* @ 5.0 ml/L and *Bacillus thuringiensis* @ 2 g/L recorded higher larval mortality. (Kulkarni *et al.*, 2018).

#### ***(b) Chemical***

Sandhu *et al.* (1980) reported that poison bait containing malathion was effective against *O. fullonica* and *O. materna*. Spraying of neem products and fish oil rosin soap reduced the fruit drop significantly (Dadmal *et al.*, 2000). Mohite *et al.*, 1995 noted that pyrethroid insecticides were more toxic to larvae of *O. materna* than the organophosphorus, chlorinated hydrocarbon and carbamate insecticides. Spraying of HMO (Horticultural mineral oil) reduced fruit damage caused by *Eudocima phallonia* (Stephan and Roland, 2011). According to (Magar *et al.*, 2014) chlorantraniliprole 18.5 SC and flubendiamide 480 SC were very effective against *E. materna*. Poison bait containing gur 1kg + vinegar 60g + malathion 50 ml/ 10 liters water in wide mouth bottles /10 trees was highly effective to kill the adult of fruit sucking moth (Jayaraj and Kalyanasundaram, 2015).

### ***Conclusion***

Fruit sucking moth is a serious pest of horticultural crops around the world. The adult causes damage by piercing proboscis and sucking the juice from ripening fruits after dusk (sunset) during the rainy season. It can be effectively managed by adopting IPM tools like smoking of orchard, netting of fruits, regulating fruit season, spraying of plant products, use of bio-control agents, spraying insecticides, application of poison bait and removing the larval host like *Cocculus pendulus*, *C. hirsutus* and *Tinospora cardifolia* around the field.



## Reference:

- Ayyar, R. T. V. (1944). *Indian J. Ent.*, **5** (1-2): 29 - 33.
- Baptist, B. A. (1944). *Indian J. Ent.*, **6** (1-2): 1 - 3.
- Bhumannavar, B. S. and Viraktamath, C. A. (2012). *Entomon.*, **27** (1): 63 - 77.
- Cai and Geng (1997). *Plant Prot.*, **23** (2): 33 - 34.
- Comstock, J. A. (1963). *Can. Ent.*, **95** : 218 - 222.
- Dadmal, S. M.; Pawar, N. P.; Ghawade, S. M. and Shivanker, S. K. (2000). *Bioved.*, **11** (1-2): 31 - 32.
- Dodia, J. F.; Yadav, D. N. and Patel, R. C. (1986). *GAU Res. J.*, **11** (2): 72 - 73.
- Ghadge, K. V. (1998). Studies on biology of fruit sucking moth, *Othreis* sp. M. Sc. (Agri.) Thesis, Submitted to Mahatma Phule Krishi Vidyapeeth, Rahuri.
- Jayaraj, J. and Kalyanasundaram, M. (2015). *The Hindu* <http://www.thehindu.com/sci-tech/science/controlling-fruit-sucking-moths-in-citrus/article6742301.ece>.
- Kamala, P. D.; Verghese, A.; Nagaraju, D. K. and Jhansi R. B. (2010). *Pest Manag. Hort. Ecosyst.*, **16** (2): 124 - 130.
- Kulkarni, S. R.; Patil, S. K. and Guru, P. N. (2018). *Pest Manag. Hort. Ecosyst.*, **23** (1): 12 – 16.
- Magar, P. N. (2012). *Insect Environ.*, **18** (3-4): 64 - 65.
- Magar, P. N. and Kulkarni, S. R. (2014). Seasonal incidence, larval hosts, biology and management of fruit sucking moth. M. Sc. (Agri.) thesis submitted to Mahatma Phule Krishi Vidyapeeth, Rahuri (Maharashtra).
- Magar, P. N.; Kulkarni, S. R. and Chandele, A. G. (2017). *J. Biological Control.*, **31** (1): 10 – 12.
- Mohite, A. S.; Umalkar, S. P. and Shinde, J. S. (1995). *Indian J. Ent.*, **57** (2): 89 - 93.
- Munniappan, R.; Shilva-Krott, I. U. and Lali, T. S. (1995). *Chemoecology*, **5/6** (2): 75 - 77.
- Patel, M. M. and Patel, R. K. (2004). Biology and management of fruit sucking moth, *Othreis materna* L. on Sweet Orange. M. Sc. (Agri.) thesis submitted to SDAU, Sardarkrushinagar (Gujarat).
- Ramkumar, J.; Swamiappan, M.; Raguraman, S. and Sadasakthi, A. (2010). *J. Biopesticide.*, **3** (2): 428 – 431.
- Sandhu, G. S.; Batra, R. C. and Sohi, A. S. (1980). *Indian J. Ent.*, **42**: 531 - 532.
- Sands, D. P. A.; Schotz, M. and Bourne, A. S. (1991). *Bull. Ent. Res.*, **81**: 291 – 296.



- Shivankar, V. J.; Singh, Shyam and Rao, C. N. (1999). Proceedings of international symposium on *Citriculture* (November 23 - 27, 1999). pp. 882-884.
- Stephan, C. and Roland, J. (2011). *The Sci. world J.*, **11**, 2330 - 2338.
- Sundara, P. and David, B. V. (1973). *South Ind. hort.*, **21** : 134 - 136.
- Waterhouse, D. F. and Norris, K. R. (1987). *Biological control Pacific Prospects*. pp 240-249, Inkata Press Melbourne, p.454.
- Zala, M. B. and Bharpoda, T. M. (2016). *Readers shelf*, **11** (7): 19 - 24.