

FRUIT FLY

Bactrocera dorsalis (Hendel),
B. zonata (Saunders) & *B. correcta*
(Bezzi) (Diptera : Tephritidae)



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Sapota or Chiku [*Manilkara achras* (Mill.) Forberg] is an important sweet fruit crop of tropical region of India. The yield loss due to succession of about 33 insect pests at the different crop stages happened due to continuous and overlapping flowering and fruiting pattern under varying ecological situation (Bisane *et al.*, 2018). Fruit fly, *Bactrocera* spp. is a vital insect pest in sapota from consumption and export point of fruit quality.

Identification of Damage:

This is a polyphagous dipteran insect pest. Female adult lays eggs (Fig. 3) on semi-ripen or mature fruit surface by making a small depression using its ovipositor (Fig. 1). White latex can be seen on the fruit surface which has been damaged by fruit flies (Fig. 2). After hatching, the just emerged legless maggots bore through the pulp, feed on it (Fig. 4) and deteriorate the fruit making it unfit for human consumption. Fruits under attack get wrinkled, rot and fall down (Fig. 5). The maggots after attaining maturity, emerge out of the infested fruits and drop down in soil for pupation (Fig. 6). Nature and extent of damage depends upon type, size and condition of fruit, availability of different hosts and population density in the orchard. Fruit fly has a high reproductive potential, high biotic potential, rapid dispersal ability and broad host range, which make it a major threat for fruit crops.



History:

There are about 325 species of fruit flies occurring in the Indian subcontinent, of which 205 are from India alone (Kapoor, 2005). About 6-8 species of fruit fly genera *Bactrocera* have been reported to be of economic importance. Among them, *B. dorsalis* is the most pre-dominant species reported from India and the most preferred hosts in Asia are mango, sapota, guava, litchi, citrus and papaya. Other two species viz., *B. zonata* and *B. correcta* also reported in sapota orchard located in vicinity with other fruits crops.

Life Cycle:

Fruit fly (*B. dorsalis*) lays eggs in clusters of 5 to 15 eggs underneath the rind of the fruit at a depth of about 2-4 mm (Fig. 3) and incubation period lasted for 1-4 days. The shape of eggs are cylindrical, slightly curved on one side and narrow at both ends. The newly emerged first instar maggots are apodous and white, slightly yellowish in colour, whereas, full grown maggots are creamy-white or yellowish in colour (Fig. 4). The maggot duration ranged from 6 to 12 days and fall down in soil up to 2-5 cm deep for pupation. The pupae are barrel shaped and are of dark honey colour (Fig. 6) and pupal duration is observed between 6-9 days. The male adult longevity ranged from 8 to 14 days, while female lived long for 15-24 days. The total life cycle completes between 27-36 days in case of male and 31-46 days in female. Adults of *B. dorsalis* are brown to black colour with hyaline wings, legs are yellow and thorax is ferruginous and brownish-black in colour (Fig. 1). In thoracic region, pair of yellow coloured lateral vittae are prominent (Bansode *et al.*, 2009).

Peak Activity Period:

This polyphagous pest remains active throughout the year in sapota orchards due to its round the year overlapping fruit bearing pattern. The population reaches highest during April to June with the late fruiting stage of sapota during summer period (Fig. 9), which is influenced gradually due to the mango fruiting stage located near vicinity of mango orchard. Sapota varieties *viz.*, PKM-1, PKM-2, Bhuripatti, Pilipatti and Singapore were categorized as least susceptible to *B. dorsalis*. However, Kalipatti, Cricket Ball, Paria Collection, Murabba and Mohangoote were recorded as highly susceptible to *B. dorsalis* (Nandre and Shukla, 2013).

Management:

- Conservation and augmentation of naturally occurring parasitoids and predators at fruiting stage.
- Sanitation should be maintained in orchard.
- Harvest the fruits before fruit ripening to prevent the attack of fruit flies.
- Collection and disposal of all the fallen fruits is also recommended during the fruiting season. Collection of fallen fruit in polythene bag and tide firmly for 4-5 days can effectively kill the maggots in the fruits. Avoid the dumping of fallen fruits in soil.
- Installation of methyl eugenol impregnated wooden plywood block (5x5x1 cm size soaked in alcohol : methyl eugenol : knock-down contact insecticides @ 6:4:1v/v/v solution) based fruit fly trap ['Nauroji-Stonehouse' fruit fly trap (Fig. 7)/ Mineral water bottle trap (Fig. 8)] @ 10 traps/ha. This trapping method attracts male adults and manages the pest by causing mating disruption which is also known as Male Annihilation Technique (MAT). The wooden plywood block should be changed or replenished once in 2-3 months. Mass trapping in large scale in area reduced the fruit infestation.

References:

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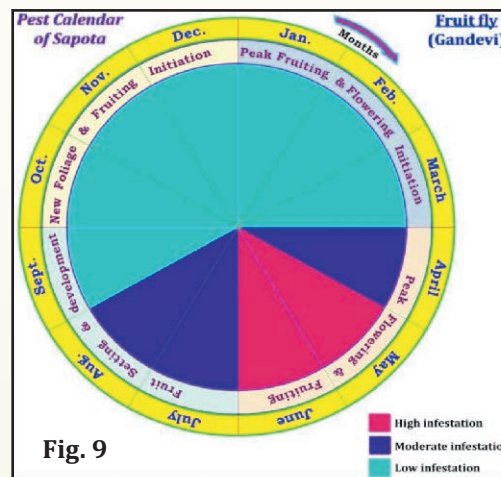


Fig. 9