SAPOTA PEST FACT SHEET 4

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Midrib folder / leaf folder

Banisia myrsusales elearalis
(Walker) (Lepidoptera : Thyrididae)

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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). Among foliage pests, midrib folder is a regular and major pest of sapota particularly in newly planted orchards. It also damages *Khirnee* (rootstock of sapota) under nursery and field condition, which retard the growth and development of new grafts twig.

Identification of Damage:

The caterpillar makes the leaf fold and feed within generally on new foliage flush stage. The early instar tiny larva nibbles mostly near the midrib of tender leaves (Fig. 1), while later second instar onwards, larvae fold the leaf from midrib and web it from margin giving appearance like 'Pea pod' shape (Fig. 2 and 3) or bind 3-4 leaves together and feed from inside the bounded leaves. The larvae remain inside the leaf and feeds within on green matter. The mature larvae make a bigger sized exit hole in the fold for coming out from it for pupation (Fig. 4). The damage of this pest can be visualized by the presence of dried terminal shoots with dried leaves (Fig. 5 and 6). Its damage also reported on the leaves of *Khirnee* rootstocks in nursery. Midrib folder severe damage in new orchard showed the stunted growth of new grafts and planted seedlings and ultimately has a consequence influence on developmental phase of crop.


Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6

History:

Earlier, the midrib folder was reported on sapota in Punjab by Sandhu and Sran (1980). Similarly, the pest incidence also reported in South Gujarat area damaging the leaves of *Khirnee,* a rootstock (*Manilkara hexandra*) in nursery (Jhala *et al.,* 1988). The pest is recorded for the first time and becoming a serious at ZHRS, Mudigere under hill zone of Karnataka (Ravulapenta *et al.*, 2013). Recently, specimens initially identified as *B. myrsusales* are re-identified as *Banisia argutula* Whalley, based on female and male genitalic characters in Florida (Martinez *et. al.*, 2017).

Life Cycle:

Adult female lays the eggs singly on tender leaf and the larvae emerges out within 3-6 days. The larvae passes through four larval instars, possessed reddish brown coloured head and brown colour prothoracic shield. The newly emerged caterpillar scrap the leaf surface and lives for 15-18 days. The fourth instar larva is pale-green with reddish-brown head and light brown prothoracic shield. The mature larva (Fig. 7) comes out leaf fold and pupates within webbed leaves or inside leaf fold. The pupal period completes within 9-12 days. The newly formed obtect type pupa is reddish-brown in colour (Fig. 8). The adult male possessed dark almond colour head, thorax and abdomen, while light coloured head, thorax and abdomen in female (Fig. 9). The total life cycle completes within 34-42 days.


Fig. 7


Fig. 8


Fig. 9

Peak Activity Period:

The succession of this foliage pest is found round the year, but the crest infestation phase on sapota and *Khirnee* was commenced after monsoon period and reached peak during November and December on new foliage flush of tender twigs. Moderate to high damage also noted during May-June months during congenial circumstances of summer (Fig. 10). The varieties like CO-1, CO-3, PKM-3, PKM-4, DHS-1 DHS-2, Murabba, showed higher leaf damage of midrib folder in winter and summer season at commencement of new foliage flush and favourable ecological situation.

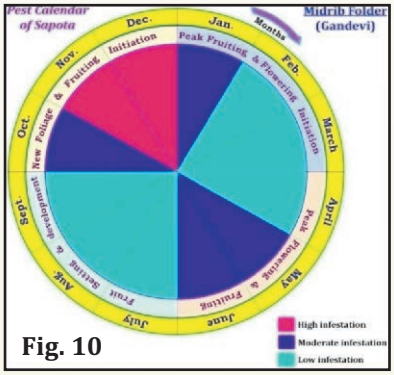

Fig. 10

Management:

- Conservation of braconids parasitoid like *Apanteles taragamae* and *Eurytoma* sp. for parasitization of early stages of pest.
- Collection and destruction of infested leaf twigs along with larvae.
- Maintain sanitation in orchard to avoid the spread of incidence.
- Install light trap to monitor the pest activity in orchard.
- Sequential application of botanical, biopesticide and insecticide schedule at 15 days interval on initiation of incidence on new foliage.

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