

Apple Leaf Curling Midge (*Dasineura mali*)

March, 2016

Apple leaf curling midge was first observed in Okanagan Valley in 2003 but has been present in the Fraser Valley since early 1990s.

Host

Apple

Damage

Larval feeding causes leaves to curl tightly upwards and the tissue to thicken, often displaying a reddish colour (Figure 1). Damage is easily confused with aphid infestations. Feeding on terminal leaves reduces terminal growth and may distort limb growth; leaves may drop prematurely. There is no evidence of reduced fruit quality or quantity in bearing trees. Primary impact is to delay or stunt structural development of nursery and young bearing trees.



Figure 1. Apple leaves with rolled, reddish edges caused by apple leaf midge larvae (Right photo courtesy of Gayle Krahn, Jealous Fruits).

Identification

Egg – Pale pink to orange, elliptical (Figure 3).

Larva - White to orange-red (depending on age), legless, maggots up to 3 mm long (Figure 4 & 5)

Adult female - Delicate mosquito-like fly, dark brown body with reddish abdomen, about 2-3 mm long.

Adult male - Male resembles female but lacks reddish abdomen.



Figures 2 & 3. Apple leaf curling midge female adult (left) and eggs (right) (Photos courtesy of Dr. Joan Cossentine, Summerland Research and Development Centre).

Life History

There are three generations per year in Interior British Columbia and adults are present from April - September. Apple leaf midge overwinter as pre-pupae or pupae in the soil and occasionally in curled leaves or other protected sites beneath host trees. Adults begin to emerge in May to mate and lay eggs on the edge of terminal apple leaves. Larvae feed inside the leaf galls for 2-4 weeks. Pupation occurs in late May to early June with second-generation larvae appearing in June and July and a third in July through September (Dr. Joan Cossentine, Summerland Research and Development Centre).



Figure 4. Young apple leaf curling midge larvae (Photo courtesy of Gayle Krahn, Jealous Fruits).



Figure 5. Mature apple leaf curling midge larvae.

Monitoring

Inspect developing shoots of nursery and young trees less than 2-3 years old for curled, often reddish curled terminal leaves containing white to bright orange maggots. In the UK, researchers have identified female sex pheromones for trapping males. A threshold of 30 adults/trap/week is used for timing insecticide sprays

Control

Cultural - There are no cultural methods that will adequately reduce the risk or severity of apple midge infestations. Hand removal and destruction of infested leaves may help but removing terminal leaves can result in the same impact on tree development. Proper management of susceptible trees will help minimize the impact of the midge.

Biological - Pirate bugs actively feed on larvae (campylomma have also been observed within infested leaves). Native and introduced parasitoids attack midge larvae in eastern Canada . Dr. Joan Cossentine (Summerland Research and Development Centre) is working on native parasitoids and the potential for introduced parasitoids in B.C.

Chemical - Ripcord (cypermethrin) and Decis (deltamethrin) are registered for the control of apple leaf curling midge. These products are not effective against larvae in leaf curls, are harmful to beneficial insects and mites and would lead to mite flare ups. Field trials in Ontario indicate Movento provides good control of apple leaf curling midge at petal fall timing.