

# Issue 8– September 11, 2024

## Fruit Crop Report



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### Provincial Overview

Early season apple varieties harvesting has been completed (late August), while mid-season apple varieties harvesting continues. Good size and flavour but lower yields overall. Yields for many apple orchards are below average and are likely due to a combination of factors such as drought stress from the past couple of seasons and pest stress primarily by potato leafhopper in 2023. Wild harvesting of low-bush blueberries is complete. Wild harvesting of various bush fruit crops (chokecherry, pincherry, and high-bush cranberry) continue. Although these crops are harvested from the wild, commercial processing of these fruit crops into fruit spreads, jams and jellies occur across the province. With the recent hot September weather, increased irrigation is required for berry crops like strawberries and raspberries.

### Commercial Fruit Crops- Timely Topics

#### Apple and Saskatoon Insect Pest

#### Apple Curculio- *Anthonomus quadrigibbus*



Photo PFRA Shelterbelt Centre

Figure 1: Adult apple curculio.



Photo Richard St. Pierre

Figure 2: Larval apple curculio.

The apple curculio (*Anthonomus quadrigibbus*) is a weevil that affects chokecherry, saskatoon, apple, crabapple, hawthorn, plum, and pear. This insect is found in Manitoba, Saskatchewan, British Columbia, Alberta, Ontario and the northern United States. The adult overwinters in leaf litter near the host plant. There is only one generation per year. The adults emerge in the spring at the same time as apples, plums and saskatoons begin to flower. They migrate into orchards when temperatures are below +20°C by walking on the ground and up the tree trunks. When temperatures are warmer, they can also fly to an orchard. Adults are 5-6 mm long, with a distinct curved slender snout and are reddish-brown in colour. Adult curculios feed on immature fruit and shoot tips resulting in puncture marks. Egg laying occurs roughly one month after peak flowering into immature fruit. The larvae, when fully grown, have a cream-coloured, C-shaped body 6-9 mm long, with a brown head, and are legless (figures 2,3).

[Province of Manitoba | agriculture - Apple Curculio \(gov.mb.ca\)](http://www.gov.mb.ca/agriculture/)

There is a similar insect pest, Plum Curculio (*Conotrachelus nenuphar*) which is also present in Manitoba. Adults are 5-6 mm long, dark brown with

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Figure 3: Apple curculio larvae in developing saskatoon berry.

whitish-grey patches and shorter, stocky curved snout. The larvae look the same as apple curculio larvae. This insect is more common in eastern USA and Canada but also extends into Manitoba, North Dakota, Montana and US mid-west. One distinction between plum and apple curculio are apples/plums infested with plum curculio larvae always fall to the ground while apples infested with apple curculio larvae can either fall to the ground or stay attached to the tree.

Further surveying for both types of curculios is required to determine which type is found more frequently in apple, plum or saskatoons. However, this distinction of which curculio are primarily affecting an orchard is of minor concern for growers as controls for either type are similar. Heavily infested apples can still be used for cider instead of fresh apple sales.

## Scouting

Apples and plums can be inspected as they develop for any scarring from egg laying. This will assist with determining if populations are increasing to the point of requiring controls (cultural/ chemical). If scarring damage is increasing, trees should be inspected shortly before and during fruit set for the presence of adult curculios. A drop cloth may be used to collect adults, as the beetles may be difficult to see on the plant. Place a white drop cloth underneath branches that you knock with a stick and see if any plum curculio weevils fall down onto the cloth. In saskatoons, berries may be inspected for presence of punctures caused by egg laying and scouting for adults using drop cloth method mentioned above.

## Symptoms

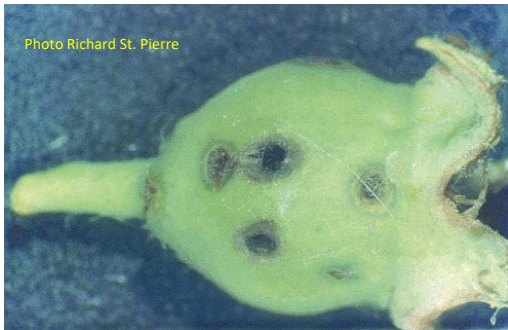


Figure 4: Apple curculio feeding holes on saskatoon blossom.

**Saskatoons-** Damage from apple curculio from the larva feeding on the developing seeds which then emerge causing misshapen, damaged berries (figure 5). Feeding by adults on immature or mature berries can cause deep scarring/ feeding holes (figure 4).



Figure 5: Apple curculio damage on saskatoon berries.

Damage can also occur from adult female egg laying into developing berries. This can be seen as a small hole at the base of the berry near the stem attachment (figure 4). Berries may fall off prematurely or remain damaged on the shrub. If larvae destroy seeds within the fruit, the infested fruit typically do not drop off the plant as uninfested fruit normally would.



Figure 6: Apple curculio egg laying scar on apple.

**Apples-** Typically, egg laying scars on the surface of the apple are the most notable symptom (figure 6). Most of the time, the egg deposited just below the apple surface is destroyed by the rapidly developing fruit resulting in only surface damage from egg laying scaring. If the larvae survive, they can cause internal damage from apple curculio leaving large, darker tracks in the apple flesh to eventually feed on the developing seeds. Any feeding at bloom at the base of the flower, causing damage to the flower can result in knobby/misshapen fruit (figure 9).



Figure 6: Apple curculio egg laying scar on Pembina plum.

**Plums-** Damage from apple curculio is primarily by the larva feeding on the developing seeds, leaving egg laying scars like in apple but with a drop of tan yellow coloured juice from the egg laying puncture hole (figure 6). Unlike in apple, the egg usually hatches, and the larvae are able to develop and feed inside the fruit on the developing stone (with a seed inside). Fruit will usually appear reddish purple prematurely while the other uninfected fruit are still green.

## Cultural Controls

- Remove all fallen apples/ plums and dispose by burying the fallen apples.
- Reducing favourable environments by pruning of trees (when dormant) to open up the canopy improving light and air movement.
- Eliminating nearby neglected or wild apple trees which can be a source of apple curculio. Adults can travel over quarter of a mile (400 m) to find a host.

## Chemical Control

Chemical control in Manitoba orchards is usually only undertaken where populations are very high resulting in high percentage of misshapen or scared fruit OR in very large orchards (many acres) where sanitation by removing fallen apples is too labour intensive. Treatment timing is usually after petal drop and warmer weather conditions. See [OMFRA Crop Protection HUB](#) for registered control products. Confirm on the label that products are registered for use in Manitoba (i.e. not restricted for use in eastern Canada or BC only).

## References

Guide to Fruit Crop Production, Manitoba Agriculture, 2007.

[Province of Manitoba | agriculture - Apple Curculio \(gov.mb.ca\)](http://www.gov.mb.ca/agriculture/)

[Saskatoon Berry Production Manual](#), 2013.

Plum curculio, University of Wisconsin-Cooperative Extension, 2018.

Steeves TA, Lehmkuhl DM, Bethune TD. Damage to Saskatoons, *Amelanchier alnifolia*, by Apple Curculio, *Tachypterellus quadrigibbus* (Coleoptera: Curculionidae). *The Canadian Entomologist*. 1979;111(6):641-648.

[Growing apples in the home garden | UMN Extension](#)

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## Apple Insect Pest

### Apple Maggot – *Rhagoletis pomonella*



Figure 7:  
Apple maggot  
fly, note F  
shaped wing  
markings.

Apple maggot fly adults are 6 mm long with conspicuous F shaped black markings on the wings (figure 7). Adults emerge throughout the summer. Adults require 7-10 days to mature before egg laying begins. Eggs are laid under the skin of the young fruit. Larvae are legless, cream-coloured maggots that reach a length of 5-7 mm. The larvae pass through three stages while feeding in the fruit. When feeding is complete the maggots drop to the ground and form a pupa in the soil. Can be found in apple, plum and hawthorn. Heavily infested apples can still be used for cider instead of fresh apple sales.

#### Scouting

Monitoring for presence of apple maggot is necessary to prevent unnecessary application of insecticides. Visual inspection of lower parts of trees or use of yellow sticky traps or red sticky balls suspended in the tree will indicate presence of the adults. Adults prefer to lay

eggs on the side of the fruit exposed to the sun.

#### Symptoms

Larval feeding results in winding brown tunnels through the apple flesh, which are more conspicuous than the individual maggots (figure 8). External symptoms consist of small pocks or dimples on the skin of the fruit. In



Figure 8: Apple maggot larvae feeding  
tunnels throughout apple flesh.

severe infestations, there may be premature dropping of the fruit. However, this should not be confused with normal dropping of excess apples, which occurs in late June/early July.

## Cultural Controls

- Since heavily infested fruit can drop from the tree, pick up fallen fruit regularly and dispose of them (bury) to eliminate any larvae that may not yet have emerged from the fruit. Composting of the fruit may still allow maggots in the fruit to complete their cycle and should be avoided.
- Red sphere traps with tanglefoot coating can assist with reducing number of infected apple but is more of a suppression of adult apple maggot flies not eliminating the flies completely. Flies are attracted to the round shape and red colour of the trap. Place the traps on the outer tree branches where they are most visible and receive the most sunlight. Minimum 2 traps per tree, and more for larger trees. Homemade red sphere traps [How to Make a Homemade Apple Maggot Fly Trap - Fruit Share](#)
- Ornamental crab apples may serve as a reservoir of infestation in the orchard, and you may wish to include these in your control program.

## Chemical Control

Chemical control in Manitoba orchards is usually only undertaken where populations are very high resulting in high percentage of misshapen or scoured fruit OR in very large orchards (many acres) where sanitation by removing fallen apples is too labour intensive. If insecticides are deemed necessary, applications should be made after petal drop to avoid killing pollinators, resulting in poor fruit set. See [OMFRA Crop Protection HUB](#) for registered control products. Confirm on the label that products registered for use in Manitoba (i.e. not restricted for use in eastern Canada or BC only).

## Distorted or Knobby Fruit

Distorted or knobby fruit (figure 9) can be caused by Apple Maggot or Apple Curculio.

### If caused by Apple Maggot...

- Surface of apple with egg laying dimple or small dent.
- Many faint small tunnels throughout the apple flesh (figure 8).

### If caused by Apple Curculio....

- Surface of apple with egg laying scars (figure 6).
- If larvae present, darker larger tunnels in the apple flesh.



Photo A.Mintenko

Figure 9: Mishappen, knobby apple.

## References

Guide to Fruit Crop Production, Manitoba Agriculture, 2007.

[Apple maggots | UMN Extension](#)

[How to Make a Homemade Apple Maggot Fly Trap - Fruit Share](#)