

This issue contains:

- Fruit development
- Degree Day Accumulations
- Apple Scab
- Fire Blight
- Powdery Mildew
- Codling Moth
- Rosy Apple Aphid
- Green Apple Aphid
- White Apple Leafhopper
- European Red Mite
- Horticultural Tips

Fruit Development

Apples continue to size well with the warm temperatures and regular rain fall. The drop has yet to begin but should begin any day now especially those trees that were treated with a chemical thinner. Drop has begun on sweet cherry with the fruit turning reddish in colour and shriveling.

2008 Degree Day Accumulations

(Temperature data provided by Jeff Franklin, AFHRC, Kentville)

Table 1.0 Degree day accumulations as of June 23, 2008 taken from Kentville weather data. Degree day accumulations are calculated using the single sine method and are based on a start date of January 1, 2008.

Category	2005	2006	2007	2008	5 year average
Plant development (Base 5°C)	486.6	659.7	516.6	555.6	523.2
Insect development (Base 10°C)	210.9	322.6	245.0	250.5	244.9

Apple Scab

Three secondary infection periods were recorded at Kentville during the past week. These were a result of shower and thunder shower activity, therefore, the length and duration of the wetting periods will have varied within the Valley. The first infection period was the result of a wetting period which began between 9:00 pm and midnight on Friday June 20th and lasting to about noon on Saturday. The second resulted from a wetting period beginning around 8:00 pm on Saturday June 21 lasting until mid morning Sunday. The third infection period occurred from a 14 hour wetting period beginning between 3:00 and 4:00 pm on Sunday June 22nd. No infection periods were recorded during the past week. A reminder that secondary infections

occur from the washing of spores from lesions that developed from primary scab infections. Darkness has no bearing on their release so rain that occurs during the night is the start of the infection period. Scab lesions resulting from primary infection should now be visible in orchard blocks. If you are unable to detect lesions after a good visual inspection (top to bottom of trees) then you should be in good shape for the remainder of the season using the cover rates and spray intervals. If scab lesions are easy to detect then you may wish to stay with the precover rates and not stretch the interval out during wet weather conditions.

Fire Blight

The main risk of bloom blight infection would only exist on late planted trees or rat tail bloom on mature trees. On the other hand the risk of shoot infections will exist while shoots are actively growing. This past week symptoms from blossoms infections began to show up. Flower clusters and limbs wilting with the fruitlets turning black in colour and bacterial ooze being observed on the infected fruit and shots. Over the next couple of weeks growers should keep a close watch out for the symptoms of fire blight and prune out the infections when observed. The sooner you can begin a sanitation process the easier it will be for a producer to control the spread of the infection. To reduce the risk of spreading the disease while removing infected shoot avoid pruning during wet weather and when possible remove the infected shoot and limbs from the orchard.

Powdery Mildew

The warm humid temperatures that have occurred for the past couple of days are more ideal for the spread of powdery mildew. Some mildew has shown up in susceptible cultivars such as Cortland. Mildew will continue to spread while shoot and leaves are actively growing. As stated last week growers should not be concerned by one or two mildew strikes in a mature tree. In cases where a number powdery mildew strikes are found then growers may wish to select a fungicide that controls both apple scab and mildew. Fungicide treatments applied for mildew will not eliminate the symptoms of mildew. Remember to check young trees as mildew can have a negative impact on tree growth.

Codling Moth

The 210 degree day mark was reached at Kentville on Monday June 23rd thus treatments using one of the following Assail, Altacor, Calypso, Confirm, Delegate, Intrapid and Rimon could have begun as early as Monday where trap captures indicated that control was required. If you were planning to use one of these products it should go on ASAP. If you were planning to use one of the Ops (Guthion/Sniper, Imidan or Zolone) the time for application could be as soon as June 28th in the warmer areas of the Valley. Treatment for codling moth should be based upon trap captures. The minimum recommended threshold for treatment is 40 moths per trap. The rates of the OP insecticides Guthion/Sniper, Imidan and Zolone can be based upon the number of moth captured and are as follow: 40-99 moth = $\frac{1}{4}$ rate, 100-199 moth = $\frac{1}{2}$ rate and 200 + = a full rate. The insecticides Assail (120-240 g/ha), Altacor (145-215 g/ha) Calypso (290-440 mL), and

Rimon (0.93-1.4 L) also have a rate range. In the case of Assail, Altacor and Calypso the lower rates can be used for low to moderate pest pressure. Use the lower rate of Rimon for trees less than 3 m in height and the higher rate for trees 3 m and larger in height.

The following information was provided by Jeff Franklin AAFC Kentville. As of June 23 the degree day accumulation from the biofix date of June 8th was at 215DD.

Average accumulated heat units since biofix have been 6.50 degree days per day. Based on this historical data, estimated time to treatment is -1 days for Confirm or June 22 and, 5 days for OPs or June 28.

Based on forecasts from Environment Canada, estimated heat units for the next 5 days could be 6.7 degree days per day. Based on this forecast data, estimated time to treatment is -1 days for Confirm or June 22 and 5 days for OPs or June 28.

Confirm, Rimon, Intrepid, Calypso and Altacor applications should be timed for approximately 210 DD after biofix while OPs should be applied at 250 DD.

These temperatures are for Kentville thus may vary by a couple of days or more for the cooler areas of the valley.

Rosy Apple Aphids

Keep monitoring for the buildup of this aphid as it will be in the orchard for a few more weeks.

Green Apple Aphid

This aphid has started to move into orchard block. Some green aphid on terminal shoot growth is not an issue however when they start moving onto fruit cluster they can damage the fruit. The damage often appears as a red circular hollow on the fruit surface. This blemish can result in a down grading of the fruit. On young and nursery trees green aphid can adversely affect shoot growth thus should be controlled when sufficient numbers are observed. Admire/Alias, Assail, Pirimor or Thiodan/Thionex are the main options for controlling green apple aphid. Calypso applied for codling moth would also have some activity on green apple aphid.

White Apple Leafhopper

Growers should check young trees for the signs of feeding damage (white stippling on the leaf surface). A high population of leafhopper on young trees can have a negative effect on the growth of these trees. The first generation of this pest should be completed in the near future however if there are still a high percentage for nymphs you should consider applying one of the insecticide listed in the spray guide for control.

European Red Mite

Egg hatch is underway; therefore growers that were planning to use Apollo should start applying this product the later part of this week.

Horticultural Tips

Tree Training

Now is the time to be conducting training trees to develop a good tree canopy for future fruit production. Trees that were headed back this past spring will require the selection of a strong leader and the removal of strong upright competing shoots. Spread limbs that are narrow crotch angles and pinch out the growing point on limbs that are too strong.

Foliar Nutrients

The application of calcium sprays can begin on blocks where growers wish to make more than four applications prior to harvest. In general four applications of calcium will control bitter pit problems in Nova Scotia however in some situation where there is vigorous tree growth and light cropping this may not be enough.

Calcium is one of the major nutrients that directly affect fruit quality. Calcium deficiency in the fruit can express itself in several forms; 1) bitter pit, which can appear in the fruit during the growing season or after the fruit has been placed in storage, 2) senescent break down of apples in storage, 3) fruit scald and 4) fruit decay that develop during storage. The level of calcium in the flesh of apples is influenced by many factors and therefore growers would be encouraged to follow good horticultural management techniques that will improve soil conditions, encourage uniform annual cropping and encourage moderate tree vigour. The application of foliar calcium is only one of a series of techniques that producers should be utilizing to prevent calcium related disorders and that these sprays should be the last resort in correcting a calcium deficiency.

The application of calcium to the fruit by means of foliar spray or post harvest dip will raise the level of calcium in the fruit flesh. The level by which the calcium is raised is dependent upon the amount of calcium applied to the apple. The amount of calcium required will depend upon the severity of the calcium disorder and the objective of the calcium spray program. The Pennsylvania Tree Fruit Production Guide recommends the application of 4.5 kg to 15.5 kg/ha of actual calcium per season to control problems. The upper end of this application rate would require 6 to 8 sprays. Growing and environmental conditions in Nova Scotia are such that calcium related disorders are not as severe, as those in warmer climates and in most situations the lower end of the suggested annual application rates (4.5 to 8.5 hg/ha per year) should correct bitter pit problems. In most case 4 to 6 foliar applications should correct or greatly reduce bitter pit.

When selecting a calcium spray product the amount of actual calcium that will be applied to the fruit is the more important than the formula it comes in. When selecting a product growers should be looking at the amount of actual calcium that will be applied with each foliar application and its cost per kg. Calcium chloride flake is the most economical product on the market place. Calcium nitrate is another economical source of calcium however 1.6 times as much calcium nitrate has to be applied to be equivalent to a calcium chloride spray. Nitrate in calcium nitrate is not readily absorbed by the leaf tissue but some nitrogen will be added to the orchard and the use of this product should be avoided in orchards that have a high nitrogen level. In some growing regions calcium nitrate is recommended at the start of the calcium spray season with a couple of calcium nitrate sprays and then switching to calcium chloride for the remainder of the season This is done to reduce the risk of problems relate to high levels of nitrogen late in the growing season.

The start of a calcium spray program will depend upon the amount of calcium that has to be applied. Sprays can begin as soon as a couple of weeks after petal fall and repeated every two to three weeks until harvest or left to a month prior to harvest where only a couple of applications are required. Those sprays applied later in the growing season will added more calcium then early season applications as the fruit is larger and more spray will be deposited on this larger fruit. The spray has to be deposited onto the fruit to be effective. The amount of calcium you are able to apply with each application will also have some bearing on the number of sprays applied. The use of dilute sprays will allow for the maximum amount of calcium to be applied with each spray however, this is not realistic for most producers who are applying calcium with their fungicide application in a concentrated form. Once calcium is applied in a concentrate spray the amount of calcium applied on a hectare bases is reduced to avoid damage to the fruit and foliage. The recommended rate of calcium chloride (77-80% flake) is 4.5 kg/1000 L or 15 kg/ha, while the rate for calcium nitrate is 6 kg/1000 L or 20 kg/ha applied as dilute spray. The safety of concentrated sprays depends upon uniformity of spray pattern and spray deposit. In order to prevent potential problems reducing rates by half have proven to be safe. In some growing regions they recommended a lower rate of calcium early in the growing season such as 1.5 to 2.5 kg of calcium chloride per 1,000 L and 3.4 to 4.5 kg/1,000 L during the second half of the season. Calcium should not be applied when temperatures are above 26°C particularly under high humidity. Repeated applications under dry weather conditions can also lead to problems. Without rain washing calcium chloride can build up on the fruit and leaves which may result in damage. Just to sum things up, it's not the formulation of calcium you use but the amount of calcium that is applied that will have the most benefit on fruit quality.

Contributions and consultations were made in the preparation of this newsletter with the Orchard Outlook Committee, Dick Rogers of Wildwood Labs, and Dr. Rob Smith

*Editor: Bill Craig
AgraPoint*