Orchard Outlook

Vol. 18, No. 13 July 18, 2018

In this Issue…

2018 Degree Day Accumulations

Degree day accumulations (base 5°C for plant development) from March 1st to July 17th show that 2018 is close to the 5-year average.

- Approximately 4% less plant development heat units compared to the 5-year average, and 5% less compared to the 10-year average.
- Approximately 8% less plant development heat units compared to 2017, and 2% less compared with 2016.
- Approximately 3% less insect development heat units compared to the 5-year average, and 3% less compared to the 10-year average.

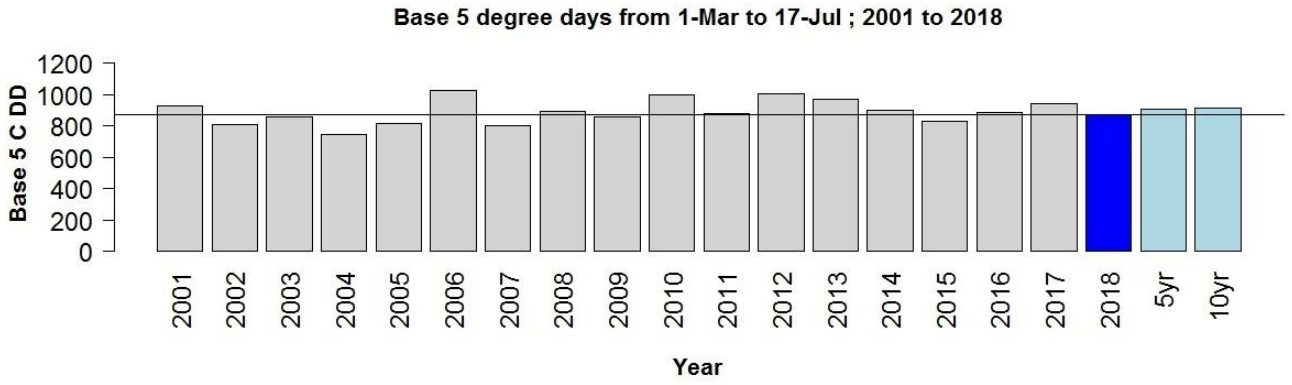

Figure 1: Heating degree day accumulations for plant development (above 5°C) from March 1st to July 17th for the past 17 seasons. Provided by Jeff Franklin (AAFC). All data are taken from the Kentville weather station and calculated using the single sine method.

Diseases

Apple – Apple Scab

During the last week, no secondary infection events were recorded in Kentville.

Recommendations:

- If no scab lesions are present, cover rates of protectant fungicides and longer intervals (10 days in dry weather) are sufficient.
- Any orchards with scab should continue regular fungicide sprays until preharvest intervals no longer allow their application.
- Always tank-mix single-site fungicides with a half rate or full rate Group M fungicide and rotate chemistries with a different mode of action for resistance management.

Powdery Mildew

Recommendations:

- On young trees still filling space, powdery mildew protection should be maintained while terminal shoots continue to grow. Late summer sprays are protectants that will prevent the spread of this fungus and they are not eradicants. Therefore, monitor new growth to determine if sprays have controlled spread. Infected shoots can be removed during tree training, in dry weather.
- Mature blocks with terminal set will not likely benefit from any additional powdery mildew control sprays at this point in the season. Powdery mildew in these areas will be best controlled with well-timed fungicide applications next spring.
- Rotating classes of PM fungicide is key to slow resistance development.

Fire Blight – Shoot Blight Management

On mature trees, many shoots have stopped growing for the season and are at the stage of terminal bud set. In other words, the current year's vegetative growth is complete and a bud has formed at the tip of the shoot. At this point, the risk of new fire blight shoot infections diminishes. During terminal bud set, the shoot develops more protection as the cell walls thicken, stomata on the stem close, and the thick cuticle and bark forms. The result is a shoot that is more resistant to fire blight because the number of entry points has been reduced. After this process of shoot maturation, the only cause of shoot blight is from a trauma event such as hail or wind that drives the bacteria into open wounds.

Figure 2: Vegetative shoot growth (left) and terminal bud set (right). During terminal bud set, the shoot becomes more resistant to fire blight infections.

Recommendations:

- Antibiotic products such as Streptomycin or Kasumin will NOT cure visibly established shoot blight infections.
- Monitor for infections as frequently as possible to remove infected shoots and prevent the spread of bacteria to the rootstock. Young plantings with vigorous growth are the highest priority.
- Remove fire blight strikes at least 2-4 ft below signs of infection. Conduct the pruning in dry weather. Leave them in orchard alleyways to dry thoroughly for several weeks.
- Where the number of infections is light and can be manageably pruned from the orchard, removal on a dry day and discarding in the row middles will help reduce production of secondary inoculum. Removal by pruning should not be attempted where the number of infections would make the chance of accidentally spreading fire blight very high.
- Sanitizing pruning equipment at periodic intervals is a good practice to eliminate spreading fire blight from block to block or row to row.

Nectria Twig Blight

Symptoms of Nectria twig blight include wilted shoots and shepherd's crooking, similar to fire blight. However, Nectria shoot blight usually begins from the base upwards, and there is never ooze present. Nectria infections also often typically have orange coloured fruiting bodies near the base of last year's clusters and are often found on bourse shoots of a cluster where a fruit was picked last fall with the stem left on the tree.

Recommendations:

- Nectria infections should be pruned 8' to 10" below visible symptoms and discarded but this fungus is not nearly as aggressive as fire blight.
- Unlike with fire blight, branches should not be left in orchard rows because Nectria can survive in dead wood and serve as inoculum for new infections on nearby trees.

Summer Diseases

Refer to the Orchard Outlook from July 4th for recommendations to control summer diseases such as brooks spot, flyspeck, sooty blotch, and frog-eye leaf spot.

Stone Fruit – Brown Rot

The brown rot fungus overwinters in mummies on the ground or tree and produces spores in spring that infect blossoms. Infected blossoms produce spores that can infect ripening fruit.

Recommendations:

- An application of a brown rot fungicide before harvest (1-3 days) will help prevent infection and extend shelf life. Check the preharvest interval to choose a funcigide with a preharvest interval of less than three days.
- Check the Stone Fruit Management Schedule for products and rates. Rotate fungicide classes for resistance management.

Insects

Insect management programs should be based on grower monitoring and/or scouting reports.

Green Apple Aphid

Recommendations:

- Watch young trees for green apple aphids in the terminals which can interfere with tree structure establishment. Many colonies are now present.

Woolly Apple Aphid

The woolly apple aphid feeds on shoots and on woody areas of the tree including pruning wounds and cracks. This aphid has been found in new plantings and is one to keep an eye on because their feeding can damage buds and lead to blind wood in the following year. In the past when management programs included organophosphates they often suppressed the woolly apple aphid and now the transition away from organophosphates is likely leading to more issues with this pest.

Figure 3: Woolly apple aphids feed on pruning wounds and cracks. In young orchards, their feeding damage can lead to blind wood in the following year.

Recommendations:

- If many colonies are in the fruiting zone then treatment is recommended.
- Insecticides labeled for woolly apple aphid include Closer (new label expansion)(4), Matador/Warrior/Silencer (3) and Twinguard (4&5).

Apple Maggot

The apple maggot is the only orchard pest that is regulated in Nova Scotia so that export restriction can be met. The adult fly is about the size of a house fly with a dark body, red eyes and a white spot in the middle of its back. The dark bands on the wings form an identifiable "F". The adults emerge in early July from the soil where they overwintered as pupae. About 10 to 14 days later they begin to lay eggs. The eggs are laid just under the skin of the apple fruit and the larvae hatch and mine the fruit.

Recommendations:

- There are high populations of flies being caught in traps this year. Treatments are being applied this week in the Valley.
- The economic threshold is 1 maggot fly per orchard on a yellow sticky board. Apply a treatment 7-10 days after the first fly is captured on a yellow sticky board or immediately after a female is captured on a red sphere.
- Calypso can control three common pests when applied at this stage – it is registered for the control of apple maggot, codling moth, and aphids.
- In organic orchards, Surround can be used to deter egg laying and GF 120 fruit fly bait can be used for suppression of adult flies. Both Surround and GF 120 should begin to be applied as soon as flies are present in the orchard.
- Yellow sticky traps should be cleaned out after application to determine the additional emergence of adult flies. Additional captures when the residual life of the insecticide is complete (14 days depending on rainfall with Imidan) will indicate a second spray is required. With the neonicotinoids (Assail or Calypso) or diamides (Exirel), insecticide residue should be maintained through the end of August and retreatment would be based on rainfall or 10-14 days residual activity.

Mites

European red mite, two spotted spider mite and apple rust mite are the prominent species that affect apple trees. Although not directly damaging to the fruit, these mites in all their motile life stages can drain the nutrients from the trees and dramatically degrade fruit quality.

Recommendations:

- The heat this summer has encouraged the build-up of mite populations at various sites. Scout your orchards or check scouting reports to see if there is a treatable population.
- Both European red mite and two-spotted spider mite are controlled by the products Acramite, Apollo, Kanemite, and Nealta.
- All three mite species are controlled by Nexter and Envidor.
- Mites have many generations per year and therefore have a high potential to develop resistance. For resistance management, it is critical to rotate miticide classes. The use of dormant oil applications will also help to delay resistance selection for European Red Mite.

Potato Leafhopper

The potato leafhopper feeds on the young leaves of terminal shoots leading to yellowing at leaf edges, and cupping that will eventually turn brown. Adults are pale yellow-green and walk sideways whereas the white apple leafhopper is white and moves forward and back.

Potato leafhoppers can potentially transmit fire blight. Their feeding punctures the phloem tissues (unlike aphids and white apple leafhopper) leading to wounds where it is believed that fire blight bacteria can enter and cause infection. Whether they transmit fire blight from tree to tree has not been investigated and a threshold level has not been proposed, but given the risk it is wise to control populations of potato leafhopper.

Figure 4: Potato leafhopper with a 3 mm, yellow-green body, and feeding on young leaf tissue (left). White apple leafhopper and damage on leaves in September 2017 (centre). Leafhopper feeding damage to leaves shown in September 2017. Photo on the far left provided by Erika Bent (APM).

Recommendations:

- Take note above that potato leafhoppers may transmit fire blight. Their presence in young plantings is concerning, especially in areas of active fire blight infections.
- Insecticides labelled for leafhoppers include Admire/Alias, Assail, Calypso, Clutch, and Sivanto Prime.

Obliquebanded Leafroller

The overwintered larvae emerge in spring and feed on the leaves at first and then as they grow larger they web leaves together to feed inside. In June, the larvae pupate and adults emerge soon afterwards to lay eggs for the next generation. Around next week, the second generation of leafroller larvae are expected to begin emerging and feeding on leaves around terminal growth and fruit clusters.

Recommendations:

- Scout your orchards or check scouting reports to see if there is a treatable population.
- Refer to the Pome Fruit Management Guide for a list of products.

Horticulture

Nurseries

- Trimming can be done in dry weather, prior to budding in July and August.
- Select scion wood from blocks that do not have a previous history of fire blight infection.

Site Preparation

- Land preparation can be ongoing and old roots can be removed.

Fertilizer

- Do not apply nitrogen after July 1st. Late applications of nitrogen fertilizer can prevent the trees from hardening off before winter and increase the risk of winter injury/tip dieback.

Shoot Selection

- Select strong terminals on 2-3 year old trees and remove competing terminals. Perform these practices in dry weather to prevent the spread of fire blight.

Tree/Rootstock Training

- Newly planted trees should be pruned for tree structure and supported as early as possible after planting. Train trees only when foliage is dry to avoid unintentionally breaking limbs and spreading fire blight.

Mowing

- Regular orchard mowing will help conserve soil moisture as well as discourage the buildup of rodent populations.

Weed Control

- Continue to maintain the weed-free strip in rows of mature trees to prevent weeds from setting seed and competing for moisture.
- It is important to maintain good weed control during June and July on young plantings which need to develop vegetative growth. Studies have shown that weed competition during this time can have a significant negative impact on early cropping of young blocks.
- A new weed control guide (Pub 75) for horticulture crops has been published in Ontario and can be accessed on the OMAFRA website.

Thinning

- If there is a benefit, then apples can be hand thinned now that natural fruit drop in July is complete. Start with the highest value varieties such as Ambrosia, Honeycrisp, Gala, and Club varieties.
- This is a good time to make a few notes on thinner performance if you left an untreated control.

Calcium (Ca) Sprays

The goal of Ca sprays is to increase the concentration of Ca in the fruit and potentially reduce bitter bit incidence. Honeycrisp and Northern Spy are quite sensitive to bitter bit as are large fruit of Cortland, Gravenstein, and Jonagold. Young trees or trees with low crop load typically have worse problems with bitter pit. The downsides of Ca sprays are possible advanced maturity and leaf burn resulting in reduced yield and size in some cases.

Recommendations:

- The risk of leaf or fruit damage from calcium is highest in warm weather. Susceptible varieties can develop lenticel spotting if damaged.
- Ca sprays should be applied at two-week intervals starting in early July if you are applying four sprays. Where bitter pit is an annual problem and additional Ca is required, sprays can be continued up until harvest.
- Ca has very low movement within the tree and needs to be applied directly to the fruit surface to be absorbed. Therefore, thorough coverage is important to cover developing fruit. Ca should not be applied as concentrate. Use high volume sprays.
- Calcium chloride flake (77% Ca) is the most economical Ca material to use but also the highest risk for foliar burn. Apply calcium chloride flake at 4.5 kg per 1000 L of spray solution. Alternatively, there are various other sources of Ca that can be applied at 3.5 kg of actual Ca per 1000L of spray solution.
- Risk of leaf injury may be enhanced by Captan. Incompatibility has been observed with Polyram, Epsom salts, and liquid or emulsifiable pesticide formulations in some cases. Do not tank mix or apply apogee with calcium sprays.

Events & Notices

NSFGA Summer Orchard Tour

Please mark your calendar for Thursday, August 2, 2018 when the tour will travel to the east side of the Valley. Come and ride the double-decker Wolfville Magic Winery bus for the whole tour and add to your experience some comfort and style. We look forward to seeing you there. Please refer to the July 11th Orchard Outlook for the agenda.

Canadian Agricultural Partnership (CAP) Nova Scotia Cost-Shared Programs

Eligibility usually requires a current farm registration and income & expenses that show income of at least $30,000. After clients apply through Programs and get approved, eligible costs toward approved projects can be claimed retroactively to April 1, 2018. Deadlines are approaching. Visit the Nova Scotia Department of Agriculture CAP website to apply.

Small Farm Accelerator Program

The **Small Farm Acceleration Program** has been launched. This program is designed for farms with farm income up to $60,000 and applicants relinquish their ability to apply for other funding programs (except limestone transportation) while using these program dollars toward their eligible projects.

The **Small Farm Acceleration Program** has two key phases. After the applicants complete phase one they may apply for any (all) of three phases within the second part. The program is open until March 2023 and applications are scheduled to be received at any time (ongoing application process). The application process is slightly different than other programs and involves an application form as well as a farm growth action plan. In addition, to complete Phase 1, there is an online tool that must be completed entitled *'Grow your Farm Profits'*.

- Phase 1 – **Farm Growth Planning** (funding and online tools to plan the growth of the farm via a business plan – 50% funding up to $2,500 or $1,250 if the applicant completes the plan themselves)
- Phase 2 – Stream 1 – **Loan Interest Rebate** (up to $5,000 per year) *(note – this is a Provincial only program and not part of the Canadian Agricultural Partnership)*
- Phase 2 – Stream 2 – **Project Grants** (50% up to $5,000 annually)
- Phase 2 – Stream 3 – **Business Advisory Services** (50% up to $2,500 annually)

10th Annual Environmental Farm Plan Stewardship Award: Open for Applications!

The Environmental Farm Plan Team is once again looking for nominations and applications for our annual Stewardship Award. **What's the Prize?** The winner receives a $2000 cash award and a painting of your farm by a local artist. **The deadline for applications is August 6th, 2018.** As in past years, farms can apply themselves or be nominated by an individual or group. Need some help with the application? EFP staff would love to help! Please visit our website: nsfa-fane.ca/efp. For more information and to get an application form or talk to an EFP coordinator at (902) 893-2293.

Hyperlinks to Tree Fruit Management Guides

- Pome Fruit
- Stone Fruit

Edited by Michelle Cortens, Tree Fruit Specialist, Perennia Food and Agriculture Inc.