

Orchard Outlook



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Apple Industry Growth and Efficiency Program (AIGEP) – Now Receiving Applications for 2017!

The Apple Industry Growth and Efficiency Program (AIGEP) is a partnership between the Government of Nova Scotia and apple growers which will encourage innovation through orchard renewal. This program will help apple growers with their initial capital investment to plant orchards with new, higher value varieties that will help the industry to innovate, grow and be more profitable.

Apple Industry Growth and Efficiency Program (AIGEP) applications are now being accepted for next year. The application and guidelines have been emailed to Orchard Outlook contact list. To request a copy, please contact the Nova Scotia Fruit Growers' Association office. The application is titled **AIGEP Application for 2017 Planting** (.pdf fillable for convenience) and the guidelines document is the **AIGEP Technical & Administrative Guidelines for 2017 Planting**.

Note: Fully completed Applications for 2017 Planting **must** be received by the **Nova Scotia Fruit Growers' Association on or before November 30, 2017**. All applications postmarked after the deadline of November 30th shall not be considered in that application year.

Please read the Apple Industry Growth and Efficiency Program (AIGEP) Technical and Administrative Guidelines before completing the application.

2016 Degree Day Accumulations

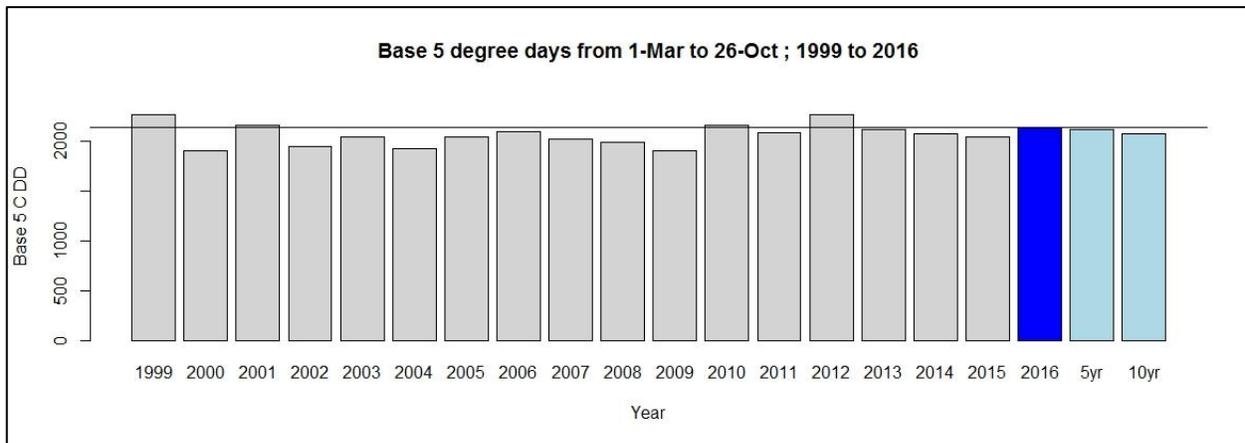


Figure 1: Degree day accumulations from March 1st for the past 17 seasons. Provided by Jeff Franklin (AAFC).

Heat accumulation from March 1st through October 26th was (Figure 1):

- About 1% more plant development heat units compared to the 5-year average.
- About 5% more plant development heat units compared to 2015.
- About 2% more insect development heat units compared to the 5-year average.

2016 Season Summary

A warm fall followed by a mild winter led to the possibility of a very early spring in 2016. Some initial signs of bud movement were observed on crab apples as early as late February with above average temperatures for the month. However, as March and April came, temperatures returned to more seasonal values and bud break in commercial apple orchards did not occur until the final week of April which is close to average for Nova Scotia. The majority of bloom took place during the final week of May with no significant issues due to frost or poor pollination conditions. A very good fruit set was observed in all areas with adequate bloom, and crop thinning was required.

The primary weather-related issue in 2016 was a notable lack of rainfall. From May 8th through July 5th, the Kentville Agriculture Centre received just 44.9 mm (<2 inches) of rain— a period stretching over 9 weeks. Normal rainfall during this time is typically about 180 mm (> 7 inches). Water stress during the early period of fruit development caused some decreased fruit size in 2016, particularly on shallow, sandy, and/or low-organic matter soil types. The prevailing dry conditions throughout much of the summer also probably contributed to the widespread bitter bit symptoms observed in many apple orchards.

There were no major widespread disease or insect problems with the tree fruit crop overall. Sporadic outbreaks of fire blight occurred again in 2016, however, in nearly all instances were caused by carryover infections dating back to 2014. Occurrences of fire blight in blocks with no previous history of the disease were very few. There continued to be some mid-season tree collapse as a result of rootstock infections that took place back in prior years. An expanded weather forecasting and disease modelling network to help predict and manage fire blight infection conditions should be available in 2017. Aside from fire blight, there was an elevated

incidence of powdery mildew in 2016 due to the persistent dry weather pattern this summer. Black rot disease also appeared to be a bigger problem on Honeycrisp this season. Overall, insect damage was fairly typical, with some increased damage from European apple sawfly.

Harvest was advanced in 2016 by 5-7 days compared to average. Total heat until accumulation was slightly above the 5- and 10-year averages by the end of the season, however, it was felt that dry soil conditions was the primary factoring contributing to accelerated maturity. Fruit colour started out very poor in September, however, excellent colouring conditions began in the final week of September and October-harvested fruit were well coloured. Fruit size was highly variable in 2016 due to inconsistent soil moisture conditions across different soil types. Some shallow, coarse, low-organic matter soil types struggled with fruit size, and conversely some deeper soils with greater water-holding capacity produced very large fruit in 2016. Fresh fruit harvest will be completed in the second week of November.

Initial reports indicate the total apple crop in 2016 is similar to the previous year in the range of 1.7 million bushels. Excellent crops of peaches and nectarines resulted following the mild winter. Pear yields were reported to be lower and several older plantings continue to be affected by fire blight. Plums crops were average whereas sweet cherry yield and quality were quite variable between blocks.

Winterizing Orchards

There are a few orchard practices discussed below than can be done after harvest to prepare orchard blocks for the winter and to get an early start on the next growing season.

Fall Scab Control

There are a couple of strategies that growers can use in the fall to reduce the scab spore inoculum load for the 2017 growing season. Research indicates that both urea fertilizer application and/or flail mowing accelerate the breakdown of apple leaves, thereby reducing the number of viable ascospores in spring.

Reducing apple scab inoculum can be done in two ways:

- 1) Shredding the fallen apple leaves on the orchard floor in November or April can reduce the number of scab spores by as much as 85%. The difficulty is being able to shred the leaves under the tree canopy with a flail chopper. If you are only able to flail chop the alleyways you could reduce scab spores by as much as 50%. Flail chopping will break the leaves into smaller pieces which allow for a quicker breakdown and consumption by earthworms. Flail mowing in April will invert about 50 percent of the leaf pieces which can result in ascospores being released towards the soil instead of the air to land on developing apple tissue.
- 2) The application of urea just prior to leaf fall or after leaf fall will also reduce spore load. Spraying the surface of leaves on the ground can reduce spores by about 66%. The

recommended rate is 50 kg/ha in 1000 L/ha of water. Coverage should be in both alleyways and under the tree. It would be best to dissolve the urea in warm water before putting it in the tank because it will be slow to dissolve in cold water. It could be applied with an orchard sprayer with only the lower nozzles turned on however a boom-type field sprayer is recommended for best results. The 45 kg/ha rate will supply approximately 20 kg/ha of nitrogen to the ground so nitrogen application next spring should be adjusted accordingly.

The following video from Michigan State University summarizes both strategies:

http://www.youtube.com/watch?v=QjfodgZ9pj8&list=PLTX7F7O1t3cl4SXzX0PcmEw_U5RgZP8wp

Fall Herbicide Application

If drop apples have been cleaned up, and tree row soil is almost bare with minimal leaf drop from the orchard trees, a fall application of a pre-emergent herbicide can offer considerable benefits for weed control in 2017. Benefits of a fall herbicide application include:

- Jump start on weed control during the critical weed-free period of bud break to 30 days post bloom.
- Possibly avoiding the need for spraying herbicide during the spring rush of orchard tasks.
- Fall application of some pre-emergent herbicides has actually shown better activity than spring applications in residual weed control.
- An effective pre-emergent program can reduce the need for post-emergent herbicides such as glyphosate (Roundup and generics), glufosinate-ammonium (Ignite), and paraquat (Gramoxone) which have been implicated in possible bark injury to fruit trees.

There are several registered herbicides that can be applied in the fall. These herbicides should be applied before the soil freezes and when temperatures are above freezing.

Alion (indaziflam) provides long residual control of a broad spectrum of annual grasses and broadleaf weeds. Do not apply Alion to orchards prior to their 4th leaf.

Chateau (flumioxazin) provides good residual control of many annual weeds when applied in the fall. Do not apply Chateau to green bark or foliage, fine-textured clay soils, orchards in the planting year, or soils with greater than 5% organic matter.

Casoron (dichlobenil) is a very effective residual herbicide for a wide range of annual grasses, broadleaf weeds and certain perennials. Method of application may be the main drawback since Casoron is a granular herbicide and needs to be applied by hand spreader or tractor-mounted spreader. Casoron should not be applied to coarse sandy soils or to orchards in the planting year.

Sinbar (terbacil) has good residual control of annual grasses and broadleaves. Do not apply Sinbar to orchards prior to their 4th leaf.

Where tough perennial weeds such as brambles, Canada thistle, quackgrass etc. have become established and still have some green foliage, spot applications of glyphosate can be useful. In certain cases, weeds may translocate glyphosate to the root after fall application but its effect will not be observed until spring.

Perennia and Scotian Gold Cooperative are collaborating on a field trial this fall to evaluate the residual weed control of fall applications of: Alion, Chateau, Casoron, Sandea, or Sinbar. We should have some interesting results next year!

See Guide to Weed Management in Orchards at http://www.perennia.ca/wp-content/uploads/2015/09/GUIDE_TO_WEED_MANAGEMENT_IN_ORCHARDS_final.pdf for the weed control spectrum of these herbicides.

Winter Rodent Control

Immediate and extended snow cover throughout the winter will increase the chance of mouse damage to the trunks of orchards. This can be especially damaging in high-density orchards where the trunks remain small and susceptible to damage throughout the life of the planting. Mouse damage has occurred in many blocks over the past few years and has resulted in tree decline and eventual orchard gaps in some locations. The following steps will help to reduce mouse damage over the winter.

- Mow ground cover to a height of 10-20 cm.
- Clean up drop apples from the tree row and alleyways.
- Apply chemical mouse bait by broadcasting or using bait stations as necessary.
- Install tree guards if feasible on young trees. Remove after snow melt in spring to avoid fungal problems at the base of the trunks.

Consult Orchard Rodent Control at <http://www.perennia.ca/wp-content/uploads/2015/09/Orchard-Rodent-Control.pdf> for further information.

Peach Leaf Curl

Peach leaf curl is a fungal disease of peaches and nectarines that is usually well controlled by a fungicide application in spring or late fall. Infections occur in the spring at bud swell as overwintering spores are washed from the surfaces of the bark, therefore, a fungicide application prior to bud swell in the spring is preferred. However, occasionally early warm temperatures combined with extended snow cover can make spring applications challenging.

If your sprayer is still up and running, a fall application for peach leaf curl can also greatly reduce inoculum and provide good disease control. As the spores overwinter on the bark, applications for peach leaf curl should be made to provide complete coverage of trunks and branches. Fall application should be made after 90% of leaf drop has occurred in November. Chlorothalonil (Bravo ZN @ 7.0 L/ha or Echo 90 DF @ 3.9 kg/ha) products have been the most effective fungicides in Nova Scotia. However, Ferbam 76 WDG, fixed copper, and lime sulphur are

also registered for peach leaf curl control. Fixed copper and lime sulphur are options for organic orchards.

Where the disease has been a problem, a fall application should be followed up with a spring application prior to bud swell. Application of chlorothalonil in spring only has been very effective for control of peach leaf curl, provided it is made at the appropriate timing and with sufficient coverage.

Events

Upcoming Fall/Winter Fruit Conventions & Conferences

Date	Event	Location
December 6-8 2016	Great Lakes Fruit, Vegetable and Market Expo www.glexpo.com	Grand Rapids, Michigan
January 24-25 2017	NSFGA 153rd Annual Convention www.nsfga.com	Old Orchard Inn, Wolfville
February 19-23 2017	IFTA 60th Annual Conference www.ifruittree.org	Wenatchee, Washington
February 22-23 2017	Ontario Fruit & Vegetable Convention www.ofvc.ca	Niagara Falls, Ontario

This Orchard Outlook has been published with the input of the Orchard Outlook Committee and Erika Bent (APM).

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