

78th Annual New York, New England, Canadian Fruit Pest Management Workshop
Burlington, Vermont, 18-19 October 2016
2016 Report - Nova Scotia Tree Fruits

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A. Weather

The 2016 growing season was started cool and wet then finished hot and dry. May and June were below the 5-year average for degree day accumulation (base 5C) with catch up occurring in July. May was wetter than in previous years but June was very dry with only 15 mm of rain for the month. July had rainfall occur in intense rain events so much simply ran off and didn't soak into the soil. August and September were both lower for rainfall than either 2015 or 2014. Other than prevailing dry conditions throughout the summer, there have been no major weather events impacting the crop to date such as frost, wind, or hail events.

B. Production

Apple harvest was slightly ahead of previous years. 'Honeycrisp' harvest started almost a week ahead of typical in conventional orchards and about 10 days earlier than 2015 for organic growers, and like last year the color did not develop well due to the warm nights. However, fruit being picked in October is showing a large improvement in color. Total production is expected to be in the range of 1.8 million bushels, similar to 2015. The 2016 crop overall is coming in with reasonable fruit size and quality with the exception of reduced colour development on some varieties. Fruit size was definitely affected by lack of rain fall in some varieties especially in orchards on coarse soils without irrigation.

C. Insects

Aphids – Rosy Apple Aphid (*Dysaphis plantaginea*) populations rebounded from the unusual low in 2015. Green Aphid (*Aphis pomi*) and black cherry aphid (*Myzus cerasi*) were both less prevalent this year compared with 2015 populations.

European apple sawfly (*Hoplocampa testudinea*) – populations were consistent with those observed in 2014 and 2015. Emergence occurred a week earlier than in 2015 and almost 2 weeks ahead of 2014. The 50% of the population emergence mark was reached by 24 May in 2016, compared with mid-June in 2015 and early June in 2014. Organic growers reported EAS damage this season. EAS damage was up in 2016 over previous years in both conventional and organic orchards.

Codling moth (*Cydia pomonella*) – despite the difference in spring temperatures, first capture in 2016 occurred on June 6 with 50% of the population in flight by late June. This is a more typical

emergence pattern (similar to 2014) however, moths were captured well into August which is unusual. It is more common for flight to end in late July. Organic growers experienced damage from CM with one organic grower reporting 40% damage in some blocks. CM trap captures were reported to be higher in 2016 in commercial orchards though limited damage resulted. Control of CM has been excellent in most orchards in recent years.

Apple maggot (*Rhagoletis pomonella*) – emergence of apple maggot occurred on July 6, earlier than in 2015 (July 17) and later than in 2014 (June 30). This is likely due to the low rainfall in June which extended into July. GF-120 was used in organic orchards with variable results. Some blocks experienced excellent control while others experienced heavy AM damage. Conventional orchards experienced typical levels of damage.

Apple leaf curling midge (*Dasineura mali*) - populations were lower in 2016 when compared with 2015 and on par with those observed in 2013 and 2014. New orchards reporting issues with this pest in 2015 did not experience problems in 2016.

Oblique-banded leafroller (*Choristoneura rosaceana*) - Pressure from OBLR was typical in 2016.

Brown marmorated stink bug (*Halyomorpha halys*) – surveys for this pest continue with no confirmed captures in NS or NB during 2016.

Japanese beetle (*Popillia japonica*) – although present in Nova Scotia, it has not become an issue for agricultural crops to date. In 2016 there were reports of this pest in grape and raspberry for the first time reaching levels of concern, likely due to the extended warm weather throughout July and August.

D. Disease

Powdery mildew (*Erysiphe* spp.) –Powdery mildew pressure was strong in 2016 with extended periods of warm, dry weather ideal for mildew growth. Many orchards received 1-2 additional fungicides for powdery mildew compared to the previous year. In one conventional block, powdery mildew damage exceeded damage from all other pests.

Apple scab (*Venturia inaequalis*) – Again moderate apple scab pressure observed in 2016 with 5 primary infection periods and 10+ secondary infections from budbreak through to fall. Light scab was observed in some commercial orchards which is typical for NS. Damage was noted in varieties reported to be scab resistant, i.e. 'Liberty'.

Fireblight (*Erwinia amylovora*) –Sporadic outbreaks of fire blight occurred in Nova Scotia orchards 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 2014.

Cedar apple rust (*Gymnosporangium juniperivirginianae*) - Is present in localized areas of NS but does not cause commercial damage.

E. Projects

Blatt Entomology Lab:

1. Rootstock trials and interactions between rosy apple aphid and root lesion nematode
2. Degree day models for European apple sawfly and apple maggot
3. BMSB surveys
4. Biocontrol of Leaf Curling Midge
5. Novel attractants for Tortricid species in apple, blueberry and cranberry
6. Detection of Fireblight using mobile molecular diagnostic technologies

Reekie Organic Tree Fruit Lab:

1. Development of IPM program for fruit orchards incorporating the bioinsecticide Quassia.
2. Impact of a modified Swiss sandwich system on soil nitrogen supply, tree performance and fruit quality in organic 'Honeycrisp' production in Nova Scotia.
3. Using reflective mulch as a pre-harvest management tool in apple orchards for the improvement of fruit color and quality.

Perennia Extension:

1. Evaluation of mechanical pruning on high-density plantings of Gala and Honeycrisp
2. Evaluation of precision fruitset model in Nova Scotia