

**76<sup>th</sup> Annual New England, New York and Canadian Fruit Pest Management Workshop**  
**Burlington, VT, October 21-22, 2014**  
**2014 EXTENSION/FIELD REPORT -APPLES**

**Location:** Ontario, Canada  
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**Pest Types:** Disease, Insects, Mites

**Overall Situation:**

The long, hard winter saw some growers trekking through the deep snow, cutting buds to assess damage, while others simply waited for “time to tell” if there would be bud loss. Numerous ice events and heavy snow fall resulted in significant overwintering damage to young trees in many regions, from tearing of branches to deer or vole feeding.

Many growers across the province are still working to return trees to annual bearing following the 85% provincial loss in 2012 and bumper crop in 2013. Overall, Ontario saw above average precipitation and below average crop heat units throughout this spring and summer. With a cooler spring this year, bud break occurred late April, which was about 2-3 weeks behind a typical Ontario season. Several growers reported issues with misshapen fruit and light crops on some varieties, which was likely due to cold injury associated with the winter weather. Extreme rain, hail and wind events in many areas left water-logged soils throughout the season, creating ideal conditions for ruts and wet holes. Good spray windows were often few and far between due to the frequent and often heavy rainfall, causing growers to either spray during breaks in the rain or to run the risk of leaving the orchard unprotected until a dry period occurred.

With the number of overcast days, apples have been slow to colour and ripen. In general, fruit size is good, but seed set has been low for many. Models are showing a high risk of browning during storage, possibly as high as 1992. Storage operators are advised to harvest fruit at optimum maturity, use SmartFresh and strictly maintain the correct storage temperature.

**Major Problems or Unusual Events -Disease:**

**Apple scab:** Most regions had approximately 6-8 significant infection periods from the end of April to early June, with >2 inches of rain in some events. However, with the exception of a few growers that were chasing scab from last year, most were able to maintain good control. Typical scab program used captan and mancozeb season long, with some SDHI use during the pink to petal fall period. There is a general movement away from strobilurins and DMIs due to resistance issues (Canadian survey of 98 orchards found 52%, 98% and 39% of scab populations to be shifting or resistant to trifloxystrobin, myclobutanil and difenoconazole, respectively). However, PMRA is currently re-evaluating metiram, mancozeb and captan, which could leave growers with few options for scab management.

**Fire blight:** Many orchards across the province were hit hard with fire blight this year because of ideal conditions during bloom leading to extreme infection periods, and the numerous storm events that occurred after. This included orchards in traditionally less prone areas and on less susceptible varieties. Rootstock fire blight is on the rise, as more growers are planting susceptible rootstocks. Many growers assumed fire blight was not an issue in their orchard and did not use streptomycin or did not prune out strikes. Despite recent registrations for streptomycin alternatives, such as kasugamycin and Blossom Protect, most growers still tend to rely heavily on streptomycin. Growers continue to struggle with management options following hail or wind damage.

**Powdery mildew** –Since growers struggled with this disease in 2012, many have turned to a fairly aggressive program, including sulphur with all cover sprays. Pressure was low this year due to the cold winter and cool, wet season. Resistance issues (preliminary results from Canadian survey suggest resistance developing to strobilurins and DMIs) are causing concern for what products to use.

**Bitter rot** –This has become an increasing problem in recent years, mainly in Golden Delicious, Gala, Empire, McIntosh, Honeycrisp and Ambrosia. Sequencing of samples collected this season identified causal pathogen as *Colletotrichum fioriniae*. Some growers are throwing everything at it, including captan, strobilurins, and thiram, and rot is still present (up

to 40% in some blocks). Still have many questions: When does infection actually occur and when do symptoms appear? Is this an increasing storage problem? Some growers are confusing bitter rot with **black rot**, which was also rampant with the wet weather, and large number of mummified fruit left on trees from chemical thinning.

### **Major Problems or Unusual Events -Insects:**

Petal fall pests, including **plum curculio**, **mullein bug** and **obliquebanded leafroller** were difficult to control in some orchards due to wet weather. Heavy rain events made timing insecticide sprays difficult or required re-application.

**Codling moth:** Late season damage. Possible reasons for this could be because many growers target 1<sup>st</sup> generation, then back off for 2<sup>nd</sup> generation, or has there been a change in emergence patterns, ie. are we still seeing 2 distinct generations?

**San Jose scale:** This is an increasingly problematic pest. Even with regular monitoring, damage still came as a surprise at the end of the season, especially on higher value varieties, such as Honeycrisp and Ambrosia. Growers with a historical SJS problem applied dormant oil, but many would prefer a summer spray alternative. Current labels suggest when crawlers are active, but growers have little understanding of when this is and how to monitor for it.

**Apple leafcurling midge:** This is also becoming an increasing issue in all regions. Previously, growers assumed midge to be a problem for young trees only. However, in established orchards this season, up to 50-60% of shoots were infested. How does this impact yield? Growers want to know if there is any direct damage to the fruit. Larvae were observed around stem during harvest, but no obvious signs of feeding. Unknown if this presents any storage issues. Difficulty lies with monitoring and timing a spray, when pheromones are too expensive for commercial use. As part of a national project, native parasitoids have been reared from midge collected from organic and conventional orchards in Ontario.

**Apple maggot:** Water-logged soils provided excellent conditions for emergence of maggot this season. Trap counts reached levels nearly 10 times higher than normal in many regions across the province and remained high for consecutive weeks; some individual traps even reaching into the 100's of adults caught. High trap numbers were even found in Essex County, which is a region that does not typically monitor or control for apple maggot. Flight continued well into September, causing growers to juggle early harvest while still maintaining good control. Most orchards saw significant grade-outs due to maggot damage. Growers are interested to know how to use insecticides for late season pest control with the loss of OPs.

**European apple sawfly:** This pest has moved slowly westward and damage can now be found as far west as Toronto and north to Georgian Bay. This is an estimated westward movement of 100 km per year. With ideal spray timing coinciding with bloom, growers are struggling with when and what to spray for this pest. Preliminary trials with biological, *Quassia* extract indicate control comparable to conventional products.

**Brown marmorated stink bug:** Established populations have been confirmed in a number of regions across the province in recent years. Along with homeowner finds, BMSB have been caught in pheromone traps from 7 mixed tree fruit farms. Harvest assessments conducted at one of these farms found suspected damage on Gingergold, Mutsu and Golden Delicious varieties. Other grower reports of similar damage and late season fruit drop have not been confirmed. Growers are concerned with the limited control options that are available and how these products (eg., malathion, methomyl) will impact established IPM programs.

**Mites:** Despite cool, wet weather, late season flare-ups occurred across the province, especially European red mite and apple rust mite. Some growers and consultants were questioning the impact of novaluron on beneficials. Concerns with miticides have sparked a spider mite resistance survey.