University of Massachusetts Amherst Fruit IPM Report for 2016

Daniel Cooley, Arthur Tuttle, Jon Clements, Sonia Schloemann, and Elizabeth Garofalo
University of Massachusetts

Diseases

Apple scab -- there were 7 primary apple scab infection periods according to NEWA (http://newa.cornell.edu) at the UMass Orchard with 100% ascospore maturity occurring on 23-May. Research at UMass suggests that ascospore maturity was delayed beyond 23-May, and there was one additional primary infection event in early June. Scab was quite manageable by most, however, an exception or two was noted. In addition to the apple scab model being available on 48 NEWA sites in Massachusetts, there were 4 RIMpro (http://www.rimpro.eu/) sites using either NEWA weather data or Meteoblue, plus 9 experimental RIMpro sites using HRDPS. There were also 6 AgRadar (http://agradar.info) locations available. All DSS's (Decision Support Systems) provide valuable IPM decision support through the use of apple scab, fire blight and insect models, among others.

Fire blight -- while bloom was a long, drawn out affair for most of the state, drought conditions prevailed through most of this time creating conditions that were not particularly favorable for FB, except very late in the bloom period. Some strikes were found here and there, but seriously a pretty much a "no-show" in 2016. Orchards with a previous recent history of fire blight saw more strikes. FB will be back in force we are afraid one of these years, largely a consequence of earlier bloom combined with warmer early spring temperatures.

Rust diseases -- Cedar apple rust lesions were prevalent on foliage in orchards where fungicide management was not sufficient to arrest this disease; fortunately, there was little fruit infection.

Summer diseases -- sooty blotch/fly speck/fruit rots were definitively hampered by the dry weather in late summer. Really not much news to report here, we suspect minimal summer fungicide sprays were necessary. Golden Delicious trees in at least one orchard were seriously afflicted by necrotic leaf blotch.

Peach leaf curl -- With a total crop loss throughout the entire state, not many people were thinking about pesticide applications in peaches this year. As a result peach leaf curl was seen in several orchards.

Powdery mildew -- not a bad year, although some was certainly observed (in Honeycrisp in particular); growers need to be sure to include a PM-effective fungicide (SDHI's in particular, or sulfur) every year beginning at pink bud stage.

White pine blister rust on 'immune' black currant cv 'Titania'. *Cronartium ribicola* was found in Massachusetts on the black currant cultivar 'Titania', which has been considered to be immune to this disease. A breakdown of this immunity was first reported in a limited number of plants in Connecticut in 2008. See here for more information on this. Since that time, incidence have increased in CT but *C. ribicola* infection of 'Titania' had not appeared in MA until 2014 and then again this year. There has not been a reported increase of the disease on White Pine trees, the alternate host.

Insects

San Jose scale -- we are seeing ongoing issues with SJS. Softer insecticide use (aka Assail) may be contributing to this and/or warmer winters. (Or a decline in spring oil/Lorsban applications.) Aggressive management, including a good dose of spring oil (with or without Lorsban, depending on your inclinations), and effective insecticides such as Esteem, Centaur, and Movento/Sivanto are being recommended.

Plum curculio -- an early influx of PC with warm and wet conditions (on or about 24-May and the days after) caught some growers off-guard as fruit were only 5-6 mm in size and significant damage resulted here and there. Overall it was a pretty high-pressure year for plum curculio, but still easy to control with timely effective insecticide application. (Emphasis on timely and effective. And Imidan.)

European apple sawfly -- Yet another one of those pests that is usually well managed by a petal fall (or pre-bloom) spray that was dicey to get on this year due to the prolonged bloom period. Above average EAS activity and damage was noted this year.

Lepidoptera moths/worms -- despite significant pheromone trap catches, little damage observed from these worms. Some growers are effectively controlling these leps either with targeted sprays (of Delegate, or Altacor among others) where a known, historical problem exists or they are still being effectively controlled by insecticides (Imidan, Assail) targeting other pests (like plum curculio). The lack of a peach crop made Oriental Fruit Moth control less urgent, but late-season tip injury to peach trees was noted. (Although no shoot tip invasion was to be found earlier in the year.) Just in -- reports of either codling moth or Oriental fruit moth damage to harvested fruit are increasing.

Mites -- dry weather favored mites, most likely both European red mite (ERM) and two spotted spider mite (TSSM). Spot or whole orchard treatments with miticides became necessary, however, with some control failures. One report of significant damage to pear foliage by TSSM. Rust mites on apple foliage were also documented in late July, they may be an under-rated problem on some susceptible varieties, however, generally don't warrant treatment.

Gypsy moth -- caterpillars were observed in young trees and treatment was needed; by late-summer, gypsy moth adults were being caught in pheromone traps (for other moths) in at least one orchard, however, no damage reported; anecdotal report of complete defoliation of small/organic orchard in south-central MA by GM; young plantings, which are often not sprayed with insecticide, will need to be monitored in 2017 if GM has another banner year.

Spotted tentiform leafminer -- only a problem in a few orchards, however, letting it get out of hand can cause pre-harvest drop and some tree health issues. Monitor flight(s) beginning in April, and treat the sap-feeding mines with effective insecticide(s) applied according to degree-day model and scouting for mines. Foliar urea applications and leaf chopping will go a long way to reducing the pupae overwintering in orchard leaf litter.

Apple maggot fly -- surprisingly heavy pressure given the dry weather. Still generally easily controlled. A Delicious tree near an abandoned orchard was really hammered. Growers are advised to monitor AMF populations through the use of sticky traps to ascertain if and when treatment is necessary.

Pear psylla -- we have had to become better managers of this pest where pear growers continue to have issues. Spring and summer oil applications are your best friend here, followed by applications of Centaur, Movento/Sivanto, etc. Conventional insecticide resistance is likely, and many generations/overlapping life stages makes pear psylla a tough one to master. Aggressive management, use of effective

insecticides (lead by oil), and timeliness of insecticide applications are the only effective approach, but well worth it to clean up this sticky (literally) situation.

Winter moth – Warm weather in early spring prompted concern about early emergence of Winter Moth in 2016. In the end, emergence was approximately 'normal' in early April, coinciding with the April 4-6 freeze temperatures. These cold temperatures did not, however, have a noticeable impact on caterpillar survival. Damage reports from Winter Moth varied among blueberry growers with some achieving good control with timely oil/insecticide applications and others suffering significant losses. This continues to be a difficult pest to manage. We published 9 Massachusetts IPM Berry Blasts (often in collaboration with Heather Faubert in RI) with information about winter moth.

Spotted wing drosophila (SWD) – Early reports from Pennsylvania and Ontario prompted worries about an early onset of SWD in New England. We monitored SWD emergence with a trapping network of 9 locations around the state. Traps were monitored weekly in most cases. First capture occurred on 7/8 but sustained captures did not occur until 7/18. Population levels seemed to remain relatively low through August. Drought conditions that prevailed during this time seemed to suppress population development. Primocane fruiting raspberries and blackberries continue to be the most significantly impacted. Late season blueberries are also affected. Wine and table grapes have mixed reports with the main issue coming where fruit damage has occurred from either bird depredation or fruit cracking following sudden rainfall. Modifying the crop canopy to allow for open air-flow and light penetration to the base of the plants has been recognized by growers as a critical component to successful SWD management. Seven issues of Massachusetts IPM Berry Blast contained information on pest status and management recommendations.

Horticulture

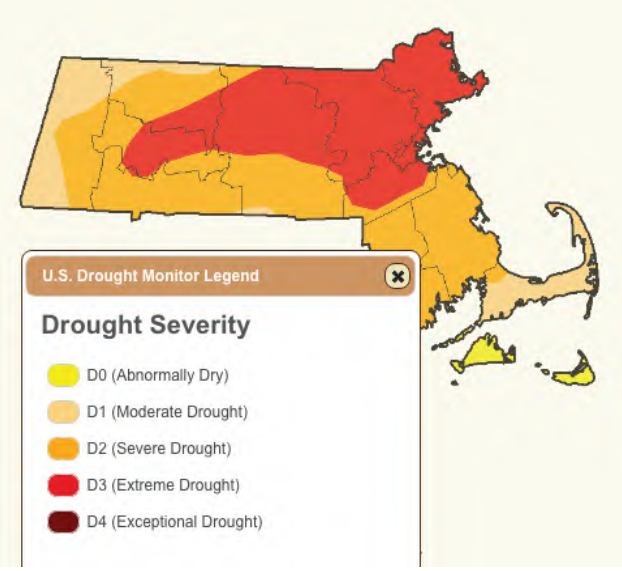
April freeze -- which occurred at early green tip clearly damaged flower buds, resulting in significant variability in bloom, fruit set, and crop load largely depending on location; some orchards ended up with a very minimal crop whereas some were close to "average." Keep in mind a lighter crop was likely in 2016 following a heavy apple crop in 2015. Bloom

was extended and flower buds were showing crinkled spur leaves and flower petals, thus significant damage; somewhat surprisingly, fruit set was remarkably good for some varieties like Honeycrisp and Macoun, whereas some McIntosh blocks appeared to be in trouble. A pretty much non-aggressive approach to chemical thinning was common, however, in retrospect it would have been advised to do more chemical thinning as fruit was clustered and in some cases heavily set; hand thinning was necessary, but not always done.

Blueberry and raspberry buds were affected. The impact on yield was less than feared. Some varieties of blueberry were more heavily impacted than others. Impact on raspberries was varied depending on location and variety. Overall, the summer crop of raspberries was good.

Weeds -- maintaining effective weed management throughout the growing season is a critical piece to keeping your orchard healthy. A weed free strip in row and well mowed aisles will not only reduce competition between weeds and crop plants but will reduce safe harbors for voles and many insect pests. This practice can also help reduce pesticide exposure for pollinators, provided weeds are prevented from blooming in the orchard when insecticide sprays are made.

Drought -- at this point in the season, just over 50% of Massachusetts is in a state of extreme drought (90% in severe drought). Compared to the precipitation average of the last five years in Belchertown, as of September 28, we are down about 10" of rain this year. This has caused many issues in the orchard from weeds



that are less susceptible to herbicides to uneven fruit sizing. Short of beefing up your irrigation systems (and maybe a rain dance) there is not much that can be done about this. Well, except the fact Massachusetts has been declared a primary disaster area because of the drought by USDA and there are numerous state and federal low/no interest loan programs available to farmers who need financial assistance. Let us know if you have trouble finding those programs.

Other

Northeast Regional Berry Call-in: we participated in the weekly Berry Call in conference calls organized by Cornell University which brought together Extension and Industry and Growers from the Northeast (PA to Ontario) to discuss current observations and timely topics together. These calls are extremely useful for problem solving and general awareness of growing conditions and challenges. Calls started in mid-April and ran through July.

IPM Fact Sheets – two new IPM fact sheets were published in 2016, Blueberry IPM – Cherry/Cranberry Fruitworm and Strawberry IPM – Tarnished Plant Bug. More are planned for 2017.