University of Massachusetts Fruit IPM Report 2014

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

Most specific observations made at the UMass Cold Spring Orchard in Belchertown, MA.

Winter harkened back to the winters of the 1970's: long and cold and snowy. Minus 8º F recorded at Belchertown on 4-January, but -10º to -15º F temperatures were likely experienced in many orchards. Some damage to stone fruit buds was anticipated.

Spring lagged compared to average but not too many complained about it. Apple green tip was April 14, full bloom approximately May 13. It was a long time between green tip and bloom, and near-record mid-April cold may have done some damage to buds. McIntosh petals were off by May 19. Pictures of bud stages are archived on the UMass Fruit Advisor (http://www.umassfruit.com). It was becoming apparent at this time that mid-winter and/or early spring bud injury to stone fruit would take a toll, although depending on site and variety, a peach crop was still anticipated.

Summer was seasonal, with abundant sun and near average rainfall. Irrigation was only necessary on an occasional basis. Hail hit a few unfortunate orchards. The maximum temperature was 89ºF on July 23. A coolish and sunny August lead to good, early color development of apples.

The peach crop was down state-wide because of mid-winter or early-spring cold damage to buds. Some peach blocks on colder sites had absolutely no bloom. Some damage (die-back) to scaffold limbs and sometimes whole trees was noted. Peaches were of good quality and sold briskly, which was a change from last year when production was high and the market went flat towards the end of the peach season.

Apple harvest started about right on schedule. Most growers felt production was going to be overall down. McIntosh and Cortland in particular were on the lighter side. Most likely the trees were taking a year "off" after the heavy crop in 2013. But the crop was very orchard-dependent, some growers having a very good crop. Little pre-harvest drop was reported. Before Columbus Day weekend some orchards were already closed to PYO.

Figure 1. Fire blight symptoms in apple observed and the severity of infections realized in very early June, 2014 in Massachusetts.

Depending on interpretation of beginning and end of primary scab season and model used, there were 6-10 primary apple scab infection periods in 2014. Many growers commented it seemed like an "easy" scab management season with clearly defined infection periods and relatively good spraying weather. During the middle of May (around bloom of course) there was a protracted period of wetting which presented

the biggest scab control challenge. A few orchards got into trouble with scab, however, most achieved good control of our most prevalent disease problem in the New England – well, until this year with fire blight!

Fireblight, this was your year. After a mostly no-show in 2013, fire blight (FB) hit many orchards in MA, CT, RI, and NH with a vengeance. There were signs of a problem beginning around May 9-10, and growers who heeded Extension and consultant alerts of a moderate to high FB infection risk and applied streptomycin (two times) got away relatively unscathed. Growers without a history of FB who did not apply antibiotic generally got FB. McIntosh was hit quite hard, as well as Paulared, and most other varieties susceptible to FB had it to varying degrees. Somewhat surprisingly, not much fire blight was observed in Honeycrisp apple or in pears. At the UMass Orchard, whole young Golden Delicious trees were lost to fire blight, and it is suspected that further tree mortality is occurring in M.9 EMLA rootstock infected with fire blight. Growers spent considerable time in June removing fire blight strikes, and there was no doubt a significant economic impact across the board. Hopefully, now that most everyone has experienced fire blight, they will get on an annual fire blight management program (http://bit.ly/1ty4lfq) and pay particular attention to the FB risk level during bloom.

Figure 2. Adult brown marmorated stink bug (BMSB) caught in pheromone trap in central Massachusetts orchard in early September, 2014.

The Massachusetts NEWA network (http://newa.cornell.edu) includes 21 on-site weather station/ orchards (plus 23 airports, total 44 locations) providing fruit and vegetable growers with daily developmental models (including forecasts) to aid in decision-making for management of insect and disease pests. Some of these locations were a centerpiece for providing Extension team-based IPM recommendations on diversified fruit & vegetable farms via the Extension IPM (eIPM) Project, which also provided training in monitoring and management of key pests to nine mentor growers, twelve partner growers, and seven collaborator growers across Massachusetts. Mentor growers worked on 2-3 key IPM issues over the course of 10 farms visits and 5 months and were involved with twilight meetings and project guidance. Partner growers were involved with one research/ extension project over a shorter period of time. Collaborators were part of scouting networks.

Overall insect pressure was average, with nothing particularly noteworthy to report. The University of Massachusetts eIPM team, with the assistance of growers and independent scouts around the state, maintained and monitored nineteen brown marmorated stink bug (BMSB) traps. Two different traps were used. One, the small green plastic rocket was placed either in a fruiting tree and the other a large, free standing, black pyramid was placed at the base of a fruiting tree. Two different pheromones were used, one developed by the USDA meant to attract BMSB specifically and the other a commercially available lure intended for stink bugs in general. Trapping began in early June and ended in early October. The first confirmed sighting was August 12, in Worcester County. While

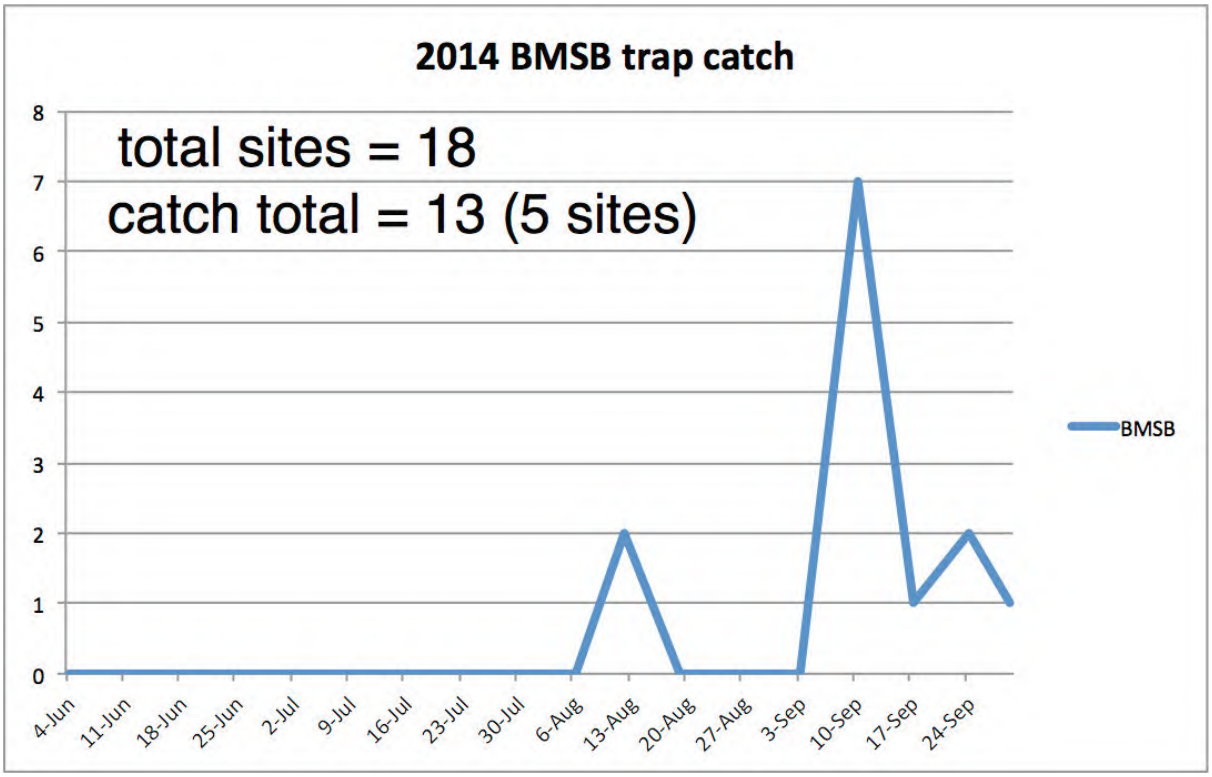

Figure 3. Season-long brown marmorated stink (BMSB) trap catch in Massachusetts in 2014.

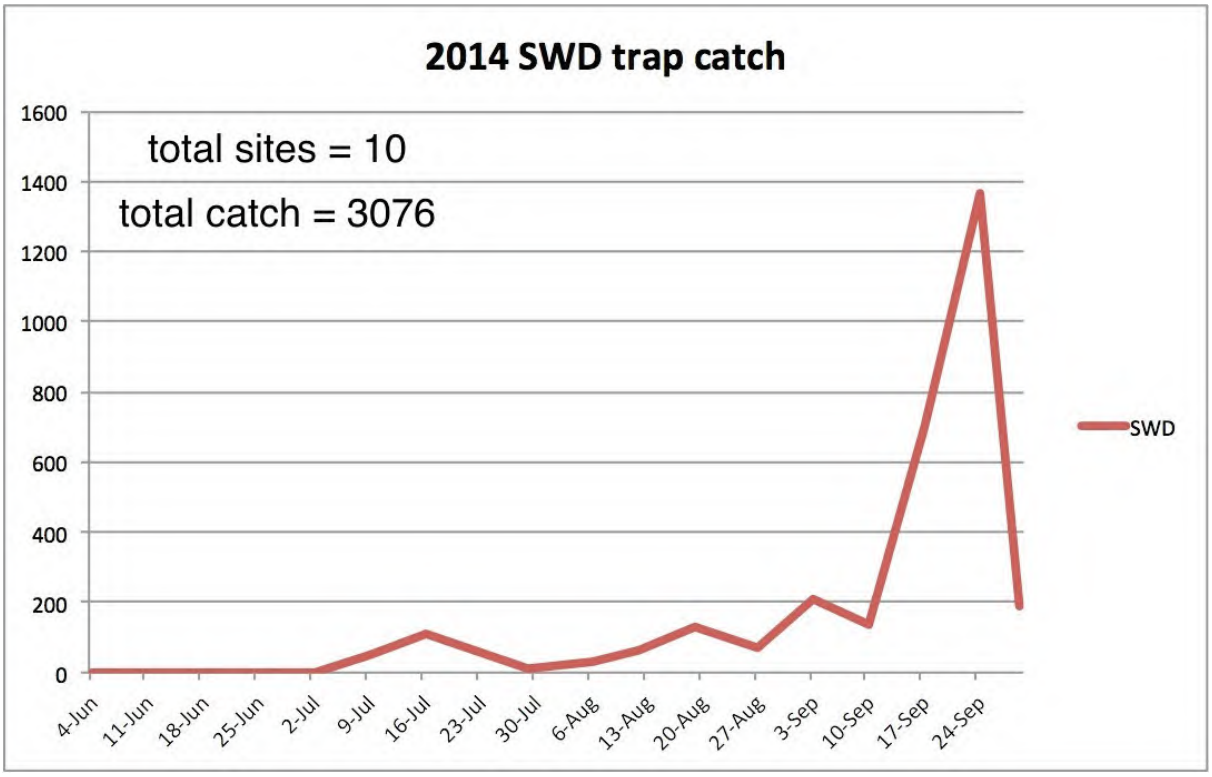

Figure 4. Season-long spotted wing drosophila (SWD) seasonal trap catch in Massachusetts in 2014.

trap captures were not high (13 total from 5 sites), this pest remains of concern to growers in Massachusetts. It is suspected that there are small resident populations developing in orchards (and on farms), and it is just a matter of time before real economic damage occurs. It may already be occurring, either by native stink bugs and/or BMSB, however BMSB has not been observed "loose" in the orchard. One outcome of BMSB trapping/monitoring has been increased awareness of native stink bugs (brown, green, dusky, etc.) and likely damage they are causing in orchards. A dedicated BMSB information page was maintained on the UMass Fruit Advisor.

Spotted Wing Drosophila (SWD) got off to a slow start in 2014, but the numbers ramped up significantly in early September. Again, a statewide trapping and monitoring program was in-place by UMass Extension and partially funded by the Massachusetts Department of Agricultural Resources. Aggressive management of SWD where present using insecticides was commonplace. A dedicated SWD web page was maintained on the UMass Fruit Advisor.

Figure 5. 'Z-Trap' (Spensa Technologies, spensatech.com) automated pheromone traps deployed at UMass Cold Spring to monitor Oriental fruit moth, codling moth, and oblique-banded leafroller. Z-traps were used with Spensa's MyTraps to automatically monitor adult flight of these moths and set biofix.

A Northeast SARE funded study, Towards Sustainable Disease Management in Northeastern Apples using Risk Forecasts and Cultural Controls continued with 19 commercial orchards in New England and University/extension research facilities in MA, NH, and ME. Collaborating scientists are William MacHardy, Cheryl Smith, and George Hamilton of NH and Glen Koehler and Renae Moran of ME. Scab sanitation strategies, advances in the delayed first scab spray strategy (delay until pink), PAD counts, and spring ascospore trapping and maturation were the foci of the study. This was the last field season and results are being summarized and reported.

We also participated in the fifth year of an SCRI (Specialty Crops Research Initiative) study, Manipulating Host- and Mate-finding Behavior of Plum Curculio: Development of a Multi-Life Stage Management Strategy for a Key Fruit Pest. We created a colony of PC from June-dropped apples, performed "trap-tree" experiments for PC management at one orchard in New England, and participated in a nematode bio-control study. Tracy Leskey, USDA-ARS Kearneysville is the project director.

There were approximately 30 research/data-collection/demonstration trials/plots at the UMass Cold Spring Orchard in 2014. Research projects included: the use of plant growth regulators for crop load management, growth control, and stop-drop; using Decision Aid Systems for managing apple scab; apple and peach rootstock plantings; apple, peach, cherry Asian pear, and grape variety and planting system evaluation; improving young apple tree growth and branching with fertigation and hormones; precision apple thinning; Z-Trap demonstration; and Apta (Nichino) new insecticide demonstration.

Five growing season Twilight Meetings for commercial tree fruit growers were held in Massachusetts, Rhode Island (in cooperation with the Rhode Island Fruit Growers' Association), and New Hampshire (in cooperation with the University of New Hampshire) during April, May and June. *Healthy Fruit* was published 19 times from April-September with timely integrated pest management information for pome and stone fruit. The Massachusetts Fruit Growers' Association Summer Meeting was held at the UMass Cold Spring Orchard with USDA's Tracy Leskey the featured speaker on new monitoring and management strategies for plum curculio, brown marmorated stink bug, and spotted wing drosophila.