An Overview of the Long Island Tree Fruit IPM – 2018

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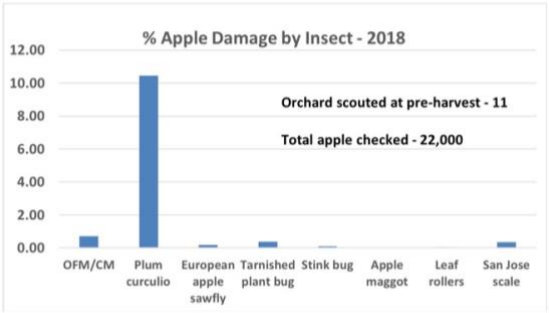
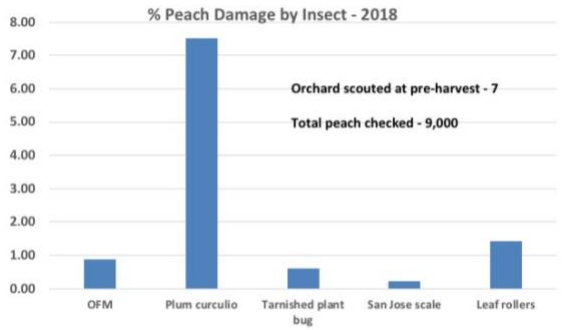
Tree fruits and berries such as apple, peach, pear, blueberry, raspberry, strawberry, and raspberry are important not only as agriculture commodities but also for agro-tourism-based economic activities on eastern Long Island. Long Island has approximately 550 acres of tree fruits and berries cultivated by about 26 growers. As in other agriculture production, efficient pest management is crucial for successful farming. Knowledge about pests, including timely control, is key for a successful management strategy and production of good quality fruits as well as economic sustainability. In 2018, 11 apple and seven peach orchards on Long Island participated in a fee-based tree fruit integrated pest management project run by the Agriculture Stewardship and Entomology Programs of Cornell Cooperative Extension, Suffolk County. Growers were provided season-long weekly pest monitoring information and management recommendations with support from staff at CCE-Suffolk County, NYSAES at Geneva, and Cornell University's Hudson Valley Lab. In 2018, prior to harvest, a total of 22,000 apples and 9,000 peaches were inspected for insect-related fruit damage (500 fruits/sample checked from 10 interior and 10 border trees). As expected, plum curculio, codling moth, oriental fruit moth, tarnished plant bug, European apple sawfly, San Jose scale, and stink bug were the most common pests causing direct damage to pome and stone fruits. Overall these were responsible for about 16.11% of insect-related damage to apples and 10.86% to peaches. Although many orchards had very low levels of damage, the average was significantly higher than the past several years due to issues related to control timing at some sites. Overall, fruit damage among the 18 orchards ranged from <1.0% to as high as 89%.

In 2018, less than 1.0% of apples showed damage by codling moth (CM) which was much lower than 2014 - 2015 (>23.0%). A pest of pome fruit, over the past three years CM damage has dropped due to a more concerted effort specifically targeting this pest, including more careful use of mating disruption ties, better selection of effective pest control products, and more precise timing of insecticide applications. This year, plum curculio (PC) was the most damaging pest on Long Island apples responsible for 13.9% fruit damage, much higher than in past 6 years. Timing and choice of control is especially critical for this pest, and the high level of damage in some orchards was related to these issues.



Our relatively small orchard sizes with diverse cultivars having different bloom times, surrounded by long forest borders that harbor overwintering PC present challenges for control, since controls need to be timed immediately around petal fall. The history of experience with PC shows application of effective controls in a timely manner is a must for producing high quality fresh fruit. Plum curculio infestation was 2.87% in 2017, 2.28% in 2016, and 1.9% in 2015 but much lower than 2011 level (>15%). Over the past six years

Long Island fruit growers made significant progress in plum curculio control primarily by early detection services provided by Cornell Cooperative Extension staff and timely use of the effective insecticides Avaunt and Assail. Similar to the past four years, in 2018 tarnished plant bug (TPB) damage was low in apples (0.45%) and peaches (0.61%) in 2018 despite populations being relatively high, down from 1.28% and 2.04% for apples and peaches, respectively, in 2012 (highest in the past 6 years). Timely weed management is among the recommended management strategies for reducing TPB damage in fruit. No insecticide applications were needed to control TPB. Similar to 2017, European apple sawfly damage was low to 0.18% in 2018, down from 2.0% in 2012 (highest in the past 6 years). Despite the continuing threat from brown marmorated stink bug (*Halymorpha halys*, BMSB), stink bug damage was also low, less than 0.37% in apples and <0.10% in peaches. Stink bug damage in apples has increased only marginally in the region from last year (0.2%) but we haven't found BMSB levels increasing (based on trap catch in fruit orchards) over the past four years on Long Island. Numbers in traps remain very low (1.50 BMSB/trap/season, highest catch 1.75 in 2014) as well as complaints (about 28) from local homeowners. A complex of stink bugs on Long Island can cause fruit damage, including BMSB, green and brown stink bugs, so we're not able to attribute the limited damage observed to any particular species or group of species. Oriental fruit moth (OFM) damage was low in all peach orchards this year except for one where mating disruption was not used (2.28% fruit damage). Overall 0.90% of inspected peaches had damage from OFM (average from 7 orchards).



In 2018, five growers (covering nearly 65% of tree fruit acreage) on Long Island used pheromone mating disruption techniques for controlling OFM, CM, peachtree and dogwood borers in tree fruits. Since 2013, we have seen an upswing of CM and OFM damage in the region. In 2014 and 2015 CM has emerged as a greater threat for pome fruit on L.I. and it can be a more challenging pest to manage, with a noticeable increase in damage at a couple locations during late summer and early fall in 2014 and 2015. Special efforts to address the situation appear to have helped decrease damage at these locations since 2016 primarily because of timely monitoring and applications of efficient pest control products. Dogwood borer also appears to be on the rise, primarily as a pest damaging graft unions on apple in a few locations, so we have also made special efforts to address this particularly through use of mating disruption. No DWB adult was captured from the apple orchards that have used mating disruption in 2018. Whereas the numbers were very high (over 100/trap in some weeks) in some orchards without mating disruption. Growers are encouraged to use mating disruption techniques and/or better choice and timing of effective insecticide applications for controlling lepidopteran pests in tree fruit orchards. Although not yet seen in a high-numbers, local fruit growers should be watchful for some emerging pests in the coming years. We have seen incidences of San Jose scale (seen in 3 out of 16 apple and peach orchards), apple leaf curling midge (2 orchard), dogwood borer (3

orchards), pear psylla (2 orchards), and leopard moth (2 orchards) on Long Island. Although no established population has yet been found on Long Island, spotted lanternfly and European cherry fruit fly are other tree fruit pests that may arrive here in the coming years.

In 2018, although overall insect damage in local tree fruits was higher than levels in 2017 (3.96%) and 2016 (4.26%), levels remain low in most locations. In the remaining sites the situation can be corrected by addressing PC, CM and OFM through better timing and selection of controls. We noted the slight rise of CM and OFM at one location was related to abandoning mating disruption in 2018 after four consecutive years of use. In the past five years, fruit damage from insect infestation was significantly reduced in Long Island orchards largely because of season long pest monitoring and timely management. The very low pest levels we've all achieved can lead to complacency, but the cases illustrate how quickly pest populations can respond. CCE-SC Entomologists and Agricultural Stewardship staff will continue working with Long Island tree fruit growers including new businesses entering production in the coming years. There will be an education session for fruit pest management in the upcoming Long Island Agricultural Forum meeting on January 9, 2019 (2:00 – 5:00 pm). For more information on L.I. tree fruit pest management please contact Faruque Zaman at the Long Island Horticulture Research and Extension Center at 3059 Sound Avenue, Riverhead, NY 11901 (631-727-3595).

Leopard moth damage

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