Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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Tree Fruit News

Apple Crop Summaries– Season to Date

Hudson Valley, *Dan Donahue*

An extraordinary mild winter raised havoc with the apple crop this year. The early accumulation of heat units led to McIntosh green tip at the Cornell Hudson Valley Research Lab on March 16th, three weeks earlier than average. Development continued at a faster than normal pace, reaching ½" green to early tight cluster by April 5th. Disaster struck on the evenings of April 5th and 6th as temperatures dipped into the single digits in Columbia County, and the low teens in Ulster. According to published cold injury charts, flower bud mortality should have been close to 100%. In reality, a substantial number of buds resumed development. At pink stage, the weather cooled, with the bloom period being cold, wet, and much longer than normal. Quality pollination appeared questionable. While viable bloom did emerge, the quality of fruit set was considered to by uncertain, at best. Concern over poor pollination conditions, cold injury to spur tissue, and what unseen damage lurked in the tree caused pomologists to be very cautious with thinning recommendations in mid-May. As the days progressed, the crop began to look stronger. Early season efforts at chemical thinning were ineffectual due to low rates and cold conditions. Some grower decided to forgo chemical thinning entirely, resorting to hand thinning later in the season. By May 23rd it became more clear that surviving flowers with viable pistils (most flowers) that set fruit weren't going to drop off on their own, CCE ENYCHP issued an E-Alert suggesting that chemical should be used at normal rates based on the NEWA carbohydrate model. The resulting crop has a "clumped" distribution on the tree, reflecting the loss of the king bloom, along with a high degree of set of the side bloom, and poor chemical thinning performance. In late June, growers and industry professionals estimated the Hudson Valley crop to be 70% of the 2015 crop. Maturity estimates calculated in early August resulted in a prediction of Gala, Mac's, and Honeycrisp running three days earlier than 2015. As this is written, Ginger Gold harvest is underway. Anecdotal reports from the field indicate early apples are picking out at 50%, with a significant degree of scarring and russetting. Size on early apples have been smaller than expected, especially since soil moisture conditions have been generally adequate to date. Data from apple maturity testing conducted on August 15-16 supported earlier observations that this season is running a few days earlier than last year. Fruit surface defects will continue to be a concern.

Temperature and Rain 7/19/16 - 8/15/16

Locations	Avg Temp (F)	Max Temp (F)	Min Temp (F)	Total Rain (in)
Chazy	71.5	88.5	51.9	5.22
Peru	72.2	89.7	54.4	1.37
Crown Point	72.3	97.9	51.9	0.07
Clifton Park	74.4	93.2	53	5.15
Hudson	74.9	96	52.9	8.12
Highland HVRL	75.2	96	52.9	7.07
Marlboro	74.5	93.5	56	4.8
Riverhead	78.9	96.3	59.2	1.23

Champlain Valley, *Anna Wallis*

Winter conditions were extremely mild prior to the 2016 growing season in the Champlain Valley. Temperatures rarely dropped below 0°F, with the exception of two cold nights in February that reached nearly -20°F. Throughout the growing season, environmental conditions posed major challenges this year. Bud swell began very early, due to warmer than average temperatures in May. In the first week of April, the region experienced frost conditions several nights in a row. Fortunately, tree growth was not advanced enough to cause significant bud injury; most farms experienced minimal to zero damage, for the most part restricted to loss of a few king flowers and/or some lopsided fruit in the most advanced varieties and blocks. Very warm conditions and rain events at the tail end of bloom led to severe fire blight infections in most orchards. Growers responded by using cultural, mechanical, and chemical practices to slow down plant growth, in order to minimize further

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spread of infection. These management decisions have had an effect on vegetative growth, crop load, and fruit development. Conditions were exacerbated by severe isolated thunderstorms including very high wind gusts (>40MPH) and hail. Very dry conditions for most of May, June, and July caused severe drought stress. Rain at the end of July and beginning of August have provided relief to dry weather and are contributing to fruit sizing. Harvest is anticipated to be a few days earlier than average, due to warmer than average conditions over the course of the season.

Tree Assistance Program (TAP) for Fire Blight Losses Sign-up

Jennifer Basley– FSA, Malone, NY

Orchardists and nursery tree growers who experience losses from natural disasters during calendar year 2016 must submit a TAP application either 90 calendar days after the disaster event or the date when the loss is apparent. TAP was authorized by the Agricultural Act of 2014 as a permanent disaster program. TAP provides financial assistance to qualifying orchardists and nursery tree growers to replant or rehabilitate eligible trees, bushes and vines damaged by natural disasters.

Eligible tree types include trees, bushes or vines that produce an annual crop for commercial purposes. Nursery trees include ornamental, fruit, nut and Christmas trees that are produced for commercial sale. Trees used for pulp or timber are ineligible.

To qualify for TAP, orchardists must suffer a qualifying tree, bush or vine loss in excess of 15 percent mortality in from an eligible natural disaster. The eligible trees, bushes or vines must have been owned when the natural disaster occurred; however, eligible growers are not required to own the land on which the eligible trees, bushes and vines were planted.

If the TAP application is approved, the eligible trees, bushes and vines must be replaced within 12 months from the date the application is approved. The cumulative total quantity of acres planted to trees, bushes or vines, for which a producer can receive TAP payments, cannot exceed 500 acres annually.

Please contact your local FSA office for more information. The Clinton-Essex FSA office is located at the 6064 Route 22, Plattsburgh or by calling 518-561-4616, option 2.

Nicotinoids and Bees in the Public Eye…

Dan Donahue and Anna Wallis, ENYCHP

Over the past few years, research examining the role of pesticides in honey bee decline has received a lot of attention in the media. This week in particular, several articles were published covering two studies with contrasting conclusions: a Washington State University study in the *Journal of Economic Entomology* and a United Kingdom study in *Nature Communications*.

Photo from The Ithaca Journal

Immediately following on pages 3 & 5 are two stories that appeared in the media this week. The apparently divergent nature and conclusions of the two studies and how they were portrayed by the media demonstrates the complexity of the issue. Differences including a focus on wild bees vs honeybees, long term correlation vs short term risk analysis, verbiage such as 'decline' vs. 'disappearance', the disparate conclusions that neonicotinoids *are* vs. *are not* negatively affecting bees in their natural environment, and the 'spin' the journalist put on the story, are all distinctions that average non-scientists may fail to recognize, and contributors to the confusion in the public eye.

The findings from these studies and media coverage obviously have major implications, in particular for European markets. In general, European Union markets are focusing to an increasing degree on pesticide use by suppliers. Neonicotinoid risks to bees are currently being reviewed by the European Food Standards Authority, and the study described in the Reuters article below, a long-term

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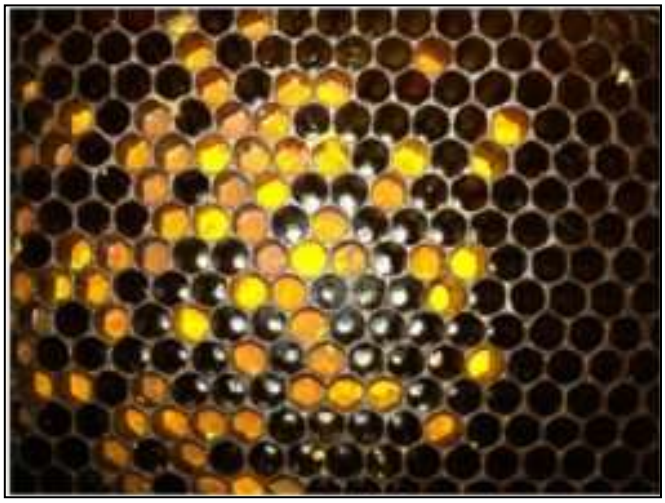
study on wild bee decline in the U.K., will likely be influential when the final results are published in January, 2017. Growers are encouraged to follow this issue and be prepared for the possible impact on their future marketing plans. The Reuters article used the word "link" to describe the relationship of neonicotinoid pesticides to the decline of certain wild bee species from treated oil seed rape fields. Link is a strong word with the implication of causation in the public's mind. The study did find a correlation, but that is not the same as causation. Critics of the study point out that there are likely other factors, environmental and otherwise, that can contribute to the "disappearance" of a wild bee species from an oilseed rape field, but these factors were not addressed in the study, or mentioned in the article.

In contrast, the study from Washington State University studied the risk of bee exposure to neonicotinoids in commercial honeybee apiaries in urban, rural and agricultural areas. 'Risk, which is the likelihood that bad things will happen to a species based on a specific hazard or dose, is very different from calculating hazard, which is the potential to cause harm under a specific set of circumstances' such as dosed exposure studies in a lab setting. The authors were clear that neonicotinoids are toxic, and must be handled appropriately, but the study supported conclusions that "hazardous exposures [to foraging honeybees] are not likely to occur in a real-life setting."

New Study Shows Neonicotinoids Pose Little Practical Risk to Bees

Daveid Eddy, editor of Meister Media Worldwide's American Fruit Grower® and Western Fruit Grower® magazines



Article is reprinted from the Growing Produce website www.growingproduce.com, posted August 15, 2016.

While neonicotinoid pesticides can harm honeybees, a new study by Washington State University (WSU) researchers shows that the substances pose little risk to bees in real-world settings. The team of WSU entomologists studied apiaries in urban, rural and agricultural areas in Washington, looking at potential honeybee colony exposure to neonicotinoid insecticides from pollen foraging. The results were published in the Journal of Economic Entomology. The research team collected samples of beebread, or pollen packed into comb cells, from 149 apiaries across the state. After calculating the risk based on a "dietary no observable adverse effect concentration" – the highest experimental point before there is an adverse effect on a species – of five parts per billion, the study's results suggest low potential for neonicotinoids to harm bee behavior or colony health.

"Calculating risk, which is the likelihood that bad things will happen to a species based on a specific hazard or dose, is very different from calculating hazard, which is the potential to cause harm under a specific set of circumstances," said co-author Allan Felsot, WSU Tri-Cities Professor of Entomology and Environmental Toxicology. "Most of what has dominated the literature recently regarding neonicotinoids and honeybees has been hazard identification," he said. "But hazardous exposures are not likely to occur in a real-life setting." Felsot said the study shows that the risk of bee exposure to neonicotinoids is small because bees aren't exposed to enough of the pesticide to cause much harm in a real-world scenario. Lead author Timothy Lawrence, Assistant Professor and Director of WSU-Island County Extension, said many sublethal toxicity studies, whether at the organism level or colony level, have not done formal dose-response analyses. "The question we posed focused on the risk of exposure to actively managed honeybee colonies in different landscapes," he said.

With the cooperation of 92 Washington beekeepers, the team collected samples of beebread, or stored pollen, from 149 apiaries across the state. Throughout the one-year trial, neonicotinoid residues were detected in fewer than 5% of apiaries in rural and urban landscapes. Two neonicotinoids, clothianidin and thiamethoxam, were found in about 50% of apiaries in agricultural landscapes. Although neonicotinoid insecticide residues were detectable, the amounts were substantially smaller than levels shown in other studies to not have effects on honeybee colonies. The WSU researchers referenced 13 studies to identify no observable adverse effect concentrations for bee populations, which they used to perform a risk assessment based on detected residues.

"Based on residues we found in apiaries around Washington state, our results suggest no risk of harmful effects in rural and urban landscapes and arguably very low risks from exposure in agricultural landscapes," Felsot said.

While exposure levels were found to be small, Lawrence said it is still important to be careful with use of neonicotinoid insecticides and follow product label directions. For example, insecticides should not be used during plant flowering stages when bees are likely to be foraging. "While we found that bees did not have chronic exposure to adverse concentrations of neonicotinoids, we are not saying that they are not harmful to bees – they are," he said. "People need to be careful with pesticide use to avoid acute exposure."

Other researchers on the study included Elizabeth Culbert, WSU Food and Environmental Quality Lab (GEQL) research technician; Vincent Hebert, WSU associate professor of entomology and laboratory research director; and Steven Sheppard, WSU professor and department chair of entomology.

Coming Soon...2016 Controlled Atmoshere Storage Clinic Proceedings

Dan Donahue, ENYCHP

Eastern New York apple producers and storage operators have been inquiring about the scheduling of local apple storage workshops for 2016. Last year, Dr. Chris Watkins held storage workshops in all three apple regions of New York, and they were well received. For some background, over the last number of years the Controlled Atmosphere Storage Clinic has been held annually, with host responsibilities alternating between Michigan State University and Cornell University from one year to the next. 2015 was Cornell's year to host, and Dr. Watkins decided to hold local workshops instead of the traditional conference in Ithaca. The Michigan conference was held on August 3rd, 2016, and included presentations on the following topics:

- Use of DPA to prevent CA injury in Honeycrisp and Empire (Randy Beaudry)
- Storing Honeycrisp - Harvista highlights, delayed CA, O_2 injury (Jennifer DeEll)
- Storage of Western apple varieties (Peter Toivonen)
- Internal browning disorders in Empire McIntosh and Gala (Jennifer DeEll)
- Understanding the DA Meter (Peter Toivonen)
- Structured illumination reflectance imaging for detect ing defects in apples and other horticultural products (Renfu Lu)
- Dynamic CA technologies - a review (Randy Beaudry)
- In-field Apple Sorting System Update (Renfu Lu)

MSU Extension staff is working hard to post the proceedings on the MSU Apple Extension webpage, and we hope to be able to access the proceedings soon. The link to the MSU Apple Extension webpage is:
http://msue.anr.msu.edu/topic/info/apples

Notice of the storage conference proceedings availability will be announced in a future ENYCHP E-Alert, in the meantime, please check out the MSU webpage, a lot of useful information there.

Need Help with GAPS?

Eric Schellenberg, ENYCHP

Get a basic food safety plan for under $100 and two hours of your time. A food safety plan allows you to decrease your marketplace liability by increasing your knowledge of food safety. Many produce buyers are increasingly requiring GAP certification, and the food safety plan is the center piece of the GAP certification process. The plan itself will direct your farm's food safety efforts, and help you gain access to markets which would otherwise not buy your products. The industry is quickly changing now and within a few years it is anticipated that GAPS certification will become a standard for most fruit growers in the Hudson Valley region.

In an effort to help more farms get a customized and sensible food safety plan written down and prepare for their future marketing, we are offering a flat-rate assistance program. We will help you create and maintain a plan that is customized to your farm and will help you increase the quality and safety of your product. The fee for the basic food safety plan assistance program is $20/hr. This is broken down into two parts:

- 1 or 2 hour on-site consultation to review field operations, packing house, storage, and transport
- Drafting of customized plan and relevant record and procedure sheets mailed or sent by email after the consultation

In addition to this fee, we offer additional materials such as food safety worker training dvds and other educational materials. Please contact Erik Schellenberg at 845-344 1234 or jkochosc@cornell.edu

Long-term Study Links Neonicotinoids to Wild Bee Declines

Kate Kelland, Rueters Science News

Article is reprinted from www.rueters.com, posted August 16, 2016.

Wild bees that forage from oilseed rape crops treated with insecticides known as neonicotinoids are more likely to undergo long-term population declines than bees that forage from other sources, according to the findings of an 18-year study. The new research covered 62 species of bee found in the wild in Britain and found a link between their shrinking populations and the use of neonicotinoid pesticides.

Neonicotinoids are used worldwide in a range of crops and have been shown in lab-based studies to be harmful to certain species of bee - notably commercial honeybees and bumblebees. The European Union limited use of the chemicals - made and sold by various companies including Bayer CropScience and Syngenta - two years ago, after research pointed to risks for bees, which are crucial for pollinating crops. Neonicotinoids were initially licensed for use as a pesticide in Britain in 2002. By 2011, the proportion of UK oilseed rape seeds treated with them was 83 percent, according to the researchers leading this latest study.

Going back to data from 1994 up to 2011, the scientists analyzed how large-scale applications of neonicotinoids to oilseed rape crops influenced bee population changes. The results, published in the journal Nature Communications, found that bees foraging on treated oilseed rape were three times more likely to experience population declines than bees foraging from other crops or wild plants. Giving details at a briefing in London, Ben Woodcock, who co-led the study, said the average decline in population across all 62 species was 7.0 percent, but the average decline among 34 species that forage on oilseed rape was higher, at 10 percent. Five of the 62 species studied declined by 20 percent or more, he said, and the worst affected declined by 30 percent.

Woodcock, an ecological entomologist at the Natural Environmental Research Council Center for Ecology and Hydrology, said the findings showed the extent of the impact. "Prior to this, people had an idea that something might be happening, but no-one had an idea of the scale," he told reporters. "(Our results show that) it's long-term, it's large scale, and its many more species than we knew about before." Woodcock's team said this should add to the body of evidence being considered in a review of neonicotinoid risks to bees being carried out by the European Food Standards Authority, expected to be completed by January 2017.

Christopher Connolly, a neurobiologist and bee expert at the University of Dundee, who was not directly involved in this research, said: "The evidence against neonicotinoids now exists in key bee brain cells involved in learning and memory, in whole bees, entire colonies and now at the level of whole populations of wild bees."

(Reporting by Kate Kelland; Editing by Janet Lawrence)

Might the Ambrosia Apple have a Future in the Hudson Valley?

Dan Donahue, ENYCHP

What to plant for mid-season? With the continuing popularity of Gala, Honeycrisp, and McIntosh, Hudson Valley growers struggle to keep up with the harvest demands of these early fall season varieties. Mac's like to drop, Gala's require multiple picks, and some growers will pick Honeycrisp five times before it is all over. The late August through the third week in September window is spoken for. The late fall harvest is dominated by Fuji, Rome's, and Pink Lady. However, the late September through mid-October presents more of a variety selection challenge.

Photo credit to www.foodtravellist.com

Growers interested in replacing Empire, Red Delicious and Jonagold plantings are looking for a high quality variety suitable for this harvest timing and the Hudson Valley climate.

How about Ambrosia? A chance seedling discovered in a British Columbia orchard in the early 1990's, Ambrosia was registered in Canada in 1993. The apple is crisp, bi-colored, low-acid and sweet. Canadian growers have had unrestricted access to the variety after the payment of a $2.00 Can./tree royalty fee. The Canadian patent, along with the mandatory royalty expired in 2015. The

introduction of the variety into the United States was initially royalty-based, and without restriction. The situation changed substantially in 2005 when distribution rights to the variety were granted exclusively to a Washington State packer/ marketer, McDougall & Sons. The 25 existing commercial producers of Ambrosia were grandfathered in, and all packing and marketing responsibilities were assumed by McDougall. According to the *Good Fruit Grower*, McDougall is reaching close to a million packed boxes. The apple made a rare and successful transition from a royalty -based open distribution to a tightly controlled club. The apple is now the second most popular variety produced in British Columbia.'


Photo by Dan Donahue

Is Ambrosia suited to the Hudson Valley? The Okanagan Valley of British Columbia is known for its hot, dry summers and moderately cold winters. The variety is considered to prefer significant swings between cool nighttime and warm daytime temperatures for good color development, a condition the Hudson Valley can certainly provide during September. In the Hudson Valley, the mature tree demonstrates moderate vigor, flat branch angles, and reliable annual cropping on the M9 rootstock. No unique disease or insect problems have been observed to date amongst the few trees planted here. Ambrosia is a multiple-pick variety with harvest starting in the last week of September.

Unrestricted access to nursery trees next year. The United States patent on Ambrosia will expire in 2017. Commercial nurseries will be legally free to bud trees in September of next year for 2019 delivery. The exclusive marketing agreement with McDougall & Sons will expire in 2019, so apples eventually produced by these new orchards will also be free of marketing restrictions. As is common practice today, contracting with your nursery of choice will result in your best price and assurance of availability. For wholesale market producers, it is ideal to work in coordination with your sales agency(s) to ensure the presence of a good market for whichever new varieties you decide to introduce in your orchard. By the time Hudson Valley production ramps up, there will have been some two decades of solid "club-style" marketing behind Ambrosia, reducing some of the marketing risk when placing that bet on a new variety. As for the farm stand operator, I think Ambrosia will be a real winner in the Hudson Valley.

Update and Review of the Use of Plant Growth Regulators in the Orchard

Duane W. Greene, University of Massachusetts. Amherst, MA

Editor's Note: Below is a link to the PDF of a presentation on plant growth regulators made by Dr. Duane Greene at the 2015 University of Vermont Fruit School. Dr. Greene discusses the history of stop-drop PGR's; ReTain rates and timings; ReTain in combination with NAA; Use of NAA alone, and general stop-drop strategies. Dr. Greene presents the results of six years of research trials, as well as his work with Kudos, an alternative formulation of Prohexadione-Ca, the active ingredient in Apogee. DJD

http://www.uvm.edu/~fruit/treefruit/tf_meetings/PGRsVTFGA15.pdf

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