The Produce Pages

Serving the fruit and vegetable growers of Eastern New York

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Watch for Fall Pests in Brassicas

Adapted by Teresa Rusinek, CCE ENYCHP, from University of Massachusetts Amherst Brassicas: Fall Insects and Diseases

This fall is the first time I've ever seen Powdery Mildew on a brassica plant. After doing a bit of research it turns out that it is unusual in the Eastern New York region but does occur regularly in southern Ontario, among other locations, especially on rutabagas and turnips. Brussels sprouts, kale, Chinese cabbage, collards, broccoli, mustard and cauliflower are also reported to be hosts. Just as you would expect, the symptoms are white talcum-like growth on the upper leaf surface, starting as circular patches and expanding to cover the leaf. Leaves become pale green to yellow or tan, or if severely infected, curl and die. The plant is rarely killed, but growth can be stunted or defoliated, and of course is the leaves are sold, the disease would

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The Produce Pages

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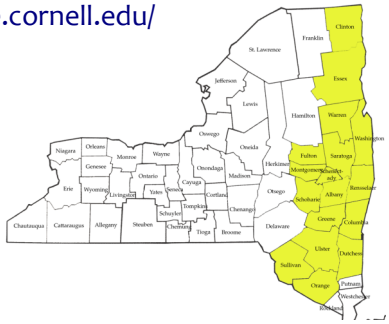

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On the cover: Cauliflower field in Montgomery County. Below, cauliflower from the field. Images: Crystal Stewart

Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

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render them unmarketable. Note that this is a different species of powdery mildew than those that infect cucurbits, or tomato, or various ornamental crops.

Conditions that favor this disease seem to be low relative humidity with cool temperatures, water stress of the crop, and the availability of a thin film of moisture in which spores can germinate. (This was certainly the case in much of the eastern NY region throughout September and early Oct.) The white powdery growth includes mycelium and spores (conidia), which can be dispersed quite long distances by wind. Spores overwinter "with difficulty"; however, survival of the fungus is better when live plant material carries over through the winter, enabling the fungus to produce new spores in the spring. It seems possible that we may see this disease more often if we start to have consistently milder winters which allowed survival of brassicas, and because growers are overwintering Brassica plants through protection with row covers. **If you see powdery mildew this fall, don't overwinter those Brassicas!**

Fungicides which are labeled for fungal diseases of Brassicas, especially those which also work against powdery mildew in other crops, should provide control of the disease. Apply at first indication of disease. Put crop residue under as soon as possible after harvest, control Brassica weeds which could also harbor the disease.

Cabbage aphids tend to build up in fall Brassicas, and this fall I've seen some incredibly heavy infestations. The lack of heavy rainfalls over the latter part of the summer and into the fall allowed aphid colonies to flourish. These are gray-green aphids with a waxy coating that makes them appear whitish gray. Winged aphids arrive, and produce colonies of wingless nymphs that also reproduce. Colonies tend to form in younger, upper leaves, in cabbage heads, between cauliflower curds, or in long-season Brassicas such as Brussels sprouts. Large colonies can stunt plants or cause curled leaves, and will contaminate harvested parts.

Biocontrols (predators and parasites, and a fungal pathogen) often keep colonies under control; however, if numbers are building, insecticides may be needed. University of Connecticut recommends a

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Powdery mildew on kale (top) and cabbage aphids on kale (bottom) *Photos by Teresa Rusinek*

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threshold of 10% infested plants in cabbage, broccoli, cauliflower and Brussels sprouts after heads or sprouts begin to form.

There is a range of chemistries available among insecticides labeled for this pest: including pyrethroids and organophosphates, neonicotinoids, pymetorzine, and insecticidal soap. Note plant back limitations or limits on which Brassicas are allowed. Always uses a spreader sticker to obtain better coverage and more insecticide persistence. Insecticidal soaps are capable of reducing cabbage aphid and are relatively easy on natural enemies. Soap are quite effective as long as the material contacts the pest at the time of application, but they have no residual activity once they have dried. Ensure good coverage of the undersides of leaves. Several applications may be needed. See the Cornell Integrated Crop Guidelines for current chemical recommendations.

Harvest Maturity Program — Offered for the First Time in Eastern New York

By Anna Wallis and Dan Donahue, CCE ENYCHP

Harvesting apples at the appropriate maturity is critical to the successful long-term storage of fruit, and the delivery of a quality product to the marketplace. 'Harvest windows,' the optimum time intervals for harvesting fruit, can be predicted well in advance using mathematical models based on bloom data. Actual harvest window is then confirmed by testing fruit weeks to days before actual harvest.

Maturity indicators include tests for starch content, sugar concentration of juice, and pressure. These indicators are very effective at predicting harvest date. However, it is labor intensive and time consuming for growers to sample the many blocks and varieties on their own farms, especially during a time when all hands must be 'on deck' in the orchard harvesting fruit and managing large labor crews. In addition, testing of internal ethylene concentration (IEC), a gas produced during fruit ripening, is considered one of the best indicators of fruit maturity for several varieties. This includes Macintosh, one of the staple fruits of the North Country. Testing for IEC requires sophisticated and expensive lab equipment and technical skill, which almost all growers do not have access to.

Maturity testing of NY-2 apples. Penetrometer (bottom) measures firmness and refractometer (top) measures sugar concentration. *Photo by Amy Ivy.*

Starch test of Maslin vs standard strain of Pink Lady.

Photo by Dan Donahue

This year for the first time, CCE provided apple growers in the entire eastern region of NY with a Harvest Maturity Program (HMP) to help assess fruit maturity and determine precise harvest windows. The HMP run by the ENYCHP was modelled after a very successful program run by Craig Kahlke through the Lake Ontario Fruit Team in western New York.

Samples of key varieties approaching maturity were taken on a weekly basis from representative orchards in the Champlain Valley, the Capital District, and the Hudson Valley. Information based on data collected and field observations was collected in a weekly conference call including growers, consultants, and

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specialists throughout the two regions, and often from other parts of the state. Harvest recommendations were then delivered in a weekly report distributed as a tree fruit e-alert to subscribers of the ENYCHP.

Gas chromatograph at the Hudson Valley Lab, used to measure Internal Ethylene Concentration (IEC).

Photo by Dan Donahue

This season, 22 varieties (plus multiple strains of many varieties) were sampled from over 15 orchards, from Orange County in the south to Clinton County in the north. The data produced allowed us to determine precise harvest windows of well-studied varieties and investigate the patterns and indicators of maturity for newer releases, such as NY-1 and 2. The data collected this year allowed us to track maturity locally, while observing patterns across the region and state. Weekly conference calls were hosted, where participants discussed the preliminary data, and other field observations throughout the region. The results of each week's sampling was reported to growers via email, called the weekly E-Harvest Alert. Each report ran for 6-8 pages, and included weather summaries and forecasts, as well as the status of harvest labor in the region. We received very enthusiastic grower support and plan to run the program again next season. As we continue to collect information, we will be able to track maturity trends and explore seasonal variations.

In addition to the data disseminated and the physical report distributed to subscribers, the HMP was an extremely effective way to hold one-on-one meetings with growers. Frequently a 15 minute sampling stop turned into an hour -long discussion of the factors affecting the harvest of a specific block and patterns throughout the state, followed by a segue into other concerns in the orchard. Through these conversations, invaluable information was collected and communicated, we became more familiar with individual orchards and patterns across the region and state, and our relationships with growers and stakeholders were strengthened for future collaborations.

Late Season Strawberry Care

Weed control in November should be a priority for strawberry growers. For strawberries planted this spring plan to apply Devrinol at 8 lb/A. Sinbar can also be applied at this time but there are plenty of caveats for using Sinbar. Don't apply if soil organic matter is less than 0.5% and make sure to wash Sinbar off strawberry leaves within 24 hours. Sinbar rate is variable between 4-6 oz/A but no more than 8 oz should be applied in one season. The same materials can be applied in November on bearing strawberries. An additional tool that you could use is 2-4,D but only if weather remains warm. Make sure to read the labels on all materials carefully before applying.

Fall Strawberries. *Photo by Laura McDermott*

Straw from wheat or other grains are applied as mulch when soil temperature has consistently dropped below 40° F. This usually happens in late November, although southern locations might not see these temperatures until early-mid-December. This winter cover prevents winter heaving and crown desiccation. Level plantings with no raised beds, require 2.5 to 3 tons of straw per acre – about 150 40 lb. small square bales. This will result in a 2-3" layer across the planting. Raised beds could require twice as much mulch because of the tendency for the straw to drift into the alleys. If you have small acreage, then applying mulch by hand is the way to go – just shake it out evenly over the plants. If you have large acreage, you will want to use a bale chopper. Keep an eye on the most windswept areas of your field and replace the mulch if it has blown off.

Save the Date! Workshops on Managing Spotted Wing Drosophila

The New York State Berry Growers Association is sponsoring 3 **In-Depth Full Day Workshops about Managing Spotted Wing Drosophila**. The dates and locations are below. Detailed information and registration details will be available soon, but mark these dates on your calendar.

- Wednesday, December 17th – Syracuse, NY
- **Wednesday, January 14th – CCE Albany Co., 24 Martin Road, Voorheesville, NY 12186**
- Wednesday, March 4th – Batavia, NY

Registration for all classes will begin at 8:30 am. There will be 5.5 DEC credits available in several categories. Specific registration information will be available soon.

The agenda will include information presented by Cornell researchers and will include information on SWD biology; SWD management including cultural, biological and chemical management and spray technology; preparing for 2015 – understanding signs and symptoms of SWD infestation, utilizing existing SWD decision making resources and educating your customer base about SWD.



California Fine and Winery Closure has Sharpened Focus on Use of Volunteers

By Paul Vigna, published online at pennlive.com
September 27, 2014

When wineries use volunteers, it's often to assist with picking grapes during harvest, Generally, the compensation is wine and/or a meal.

There have been national reverberations from the fines levied against a California winery recently for using volunteers. Westover Winery was hit with a $115,000 penalty for using unpaid workers, a fee that put it out of business.

According to a story on the San Jose (Calif.) Mercury News website, Westover was cited in July for not paying minimum wage, not providing wage statements and not paying workers' compensation insurance, said Peter Melton, a spokesman for the state.

"These are not idle things. People should be paid for their labor. The workers' compensation violations are very serious. What happens if someone has a catastrophic injury at the winery?" he asked.

Wendell Lee, attorney and vice president.for The Wine Institute, which represents more than 1,000 California wineries, was quoted as saying that if the organization's member wineries are using volunteers, "they might want to reconsider."

That sentiment was echoed in a blurb in The Finger Lakes Vineyard Update of Sept. 24, noting the California penalty and issuing the same advise as The Wine Institute.

"There was a recent article from the San Jose Mercury News about a winery in the Castro Valley region of California that was assessed a $115,000 fine by the state of California for using volunteers at their business. These volunteers, according to the article, were helping out with various functions at the winery - some with the idea of learning about the industry by working at a winery. The winery was cited because none of the workers was covered by workers' compensation or paid a wage for their work at the winery, which is against California law (and federal law, as it turns out).

"After seeing this article, I called the NY State Department of Labor to ask if for-profit businesses in New York were also prohibited from using volunteer labor, and the answer was yes. In other words, no for-profit business in New York (including agriculture, as far as I know right now) is allowed to use volunteer labor. There are conditions for allowing an "intern" to work at a business who is not paid (see the US DOL fact sheet reference below).

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"I don't want to try to interpret New York labor law and regulations here, and please don't take this as any kind of legal advice, but I wanted to get the word out about what I was told regarding this subject. I will try to get some other resources and clarification from the state about this and pass it along when I do, but suffice to say, any growers and wineries who are considering using volunteers to help out during harvest should probably think twice before doing so."

Wineries across this region will use volunteers for everything from harvesting to helping with bottling to manning the tables at wine festivals. I've written several times that it was picking grapes at Maryland's Basignani Winery, a morning followed by a large home-cooked lunch and wine, that germinated my interest in regional wine and led to this 6 1/2-year-old blog.

But the huge fine in California and subsequent fallout prompted an email today to Pennsylvania's Department of Labor & Industry, where press secretary Sara Goulet provided this interpretation of how the state looks at volunteers:

"As a general rule, under PA's Minimum Wage Act, employers who use volunteers, for work that is generally paid to employees, must pay at least minimum wage to those "volunteers." There are a few exceptions, but that is for non-profit, charitable or religious organizations. The regulations do permit wages paid to include the reasonable cost of board, lodging or other facilities (which has been interpreted to include food and drink), BUT that cost must be the actual cost of the benefit and must not include any profit for the employer."

Taking Stock: What Stays, What Goes, What Grows

By Crystal Stewart, CCE ENYCHP

Many growers in Eastern New York enjoyed a very good growing season this year, reaping abundant, healthy crops with minimal problems. At the end of such a year it can be easy to wrap up the season and turn your mind to the next task, whether that be enjoying some well-earned time off or ramping up for winter markets. This is also an important time to take stock of the farm, yourself, your employees, and your finances, because years of abundance can lend themselves to making needed changes.

There is interesting research to back up the idea that times of abundance are the best moments to make decisions. A couple years ago in a book called, Scarcity: Why Having too Little Means so Much, author Sendhil Mullainathan studied farmers in India and determined that prior to harvest, when uncertainty loomed and perceived scarcity was high, farmers were much more likely to make decisions that negatively affected their lives. Scarcity was not just financial, though that is the most obvious limiter for many. Scarcity of time to complete an ever-longer to-do list also greatly affects our ability to make good decisions. It's easy to relate to these farmers from India, often choosing paths which might place them behind in the long run because they could not take the time or spare the resources to even see that they might choose differently. Whether your mind drifts to having to mow a field of weeds that used to be veggies, or you think of the more serious examples which often involve sacrificing personal safety to save time or money (yes, we all have examples), we know how this can happen.

In Scarcity, the author tells us that the stress of having too little takes up tremendous amounts of mental "bandwidth," making it harder for our brains to effectively take on complicated tasks like prioritizing expenses or time. In effect, scarcity makes us less capable of the task at hand, in the same way that standing on a tightrope while trying to talk on the phone might. Even if you aren't specifically thinking about how you might pay for some large unforeseen expense, it's still lurking in your mind, making it harder to focus on the task right in front of you. By contrast, when you are not worried about some form of scarcity, your mind will be much freer to tackle complex problems. Hopefully most of you feel like you are in this place, where you have the slack to really focus on a few questions that might help make next year a little better than this year.

What went really well this season, and why?

Every year there are certain crops that do extremely well, and others that do not perform up to expectations. Sometimes a crop does better because of actions by you, and sometimes the difference comes from environmental conditions (or, most often, it's a combination of both). The two examples that come to mind this year are pumpkins and tomatoes. As most growers will attest this was a stellar pumpkin year.

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Depressed prices from a flooded market illuminated this trend quite well. The excellent pumpkin yields and high quality had less to do with exceptional management this year, and more to do with being wet and dry at the right times and with having somewhat lower disease and insect pressure. Sure, growers had to choose varieties well, ensure good fertility, and control weeds and pests. They still had to farm. But, if you did everything business-as-usual, you probably did quite well.

Tomatoes were a little different for many growers this year. Bacterial diseases were a serious issue from one end of the region to the other for growers who did everything business-as-usual. Yields of tomatoes were generally still good, but this crop was not a slam dunk. An interesting exception to the bacterial disease issue came from Fulton County (and was replicated in other protected culture systems throughout the region), where a grower tried caterpillar tunnels for the first time. He planted one full of Primo Reds and Mountain Fresh, and planted the remainder of his tomatoes outside. The tomatoes in the caterpillar tunnel were so much better than the tomatoes outside that he vowed never to plant outside again. Between keeping the rain off the plants, which reduced disease pressure dramatically, and the larger plants and fruits growing in an ideal environment, he felt like the choice to invest in tunnels was very positive. He plans to integrate protected culture wherever he can afford to do so to reduce the vagaries of the weather.

These two stories remind us that it's important to look at our successes, understand why they happened, and try to expand them with management changes whenever possible. I like to call investment into what works one kind of "wealth generating expense." Spending money to make money is a hard lesson for some farmers, but when you crunch the numbers and can make an extra $10,000 on a $5,000 investment, for example, it becomes easier to spend that money, especially in a good year.

In general, we have found that weather mitigation strategies are good investments for those looking for a few key wealth-generating expenses (I know you aren't looking for expenses—think of them as investments). It is not uncommon to recommend both drain tile and irrigation when we are helping growers assess fields recently. Think about what made this season in particular work really well, and try to come up with ways to replicate that. If the answer was that we had water at all the right times, how can you replicate that effect even when nature doesn't give you what you need?

Protection from extreme weather events is generally proving to be a good investment as well. Frost protection in the form of row covers, wind and hail protection via low tunnels and caterpillars, and erosion mitigation strategies such as strip cropping, contour farming, etc are proving good options.

<u>What did not go well this year?</u>

What was the first thing you thought when you read that sentence? What would your workers say? What would your family say? These are equally important questions to address as you consider next year. As you answer these questions, make sure to take some time to look at whether your answers really address the root cause of the problem, or are simply addressing a symptom. As a simple example, consider the classic problem of tomatoes with blossom end rot. We know that blossom end rot is caused by a calcium deficiency, and could be tempted to apply more calcium to fix the problem, But often, particularly in plasticulture, we find that the root cause is a lack of water to transport

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These two pictures were taken just a few feet from each other on the same day, and are both Primo Reds. The tomatoes on the left were grown outside, and those on the right were grown in a high tunnel. *Photos: Crystal Stewart*

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available calcium to the fruit. So adding more water is the solution which would address the root cause. Most problems are not this simple, and will involve more variables to understand. Taking the time to really look at the question is always worthwhile, though. Consider weed pressure as a slightly more complex example. Is it better to look at new ways to control weeds once they are out of the ground, to prevent them from germinating at all with mulches, to reduce the weed seed bank, or to reduce disturbance of seeds near the surface? The answer will depend entirely on your system, and chances are there many answers that would answer the problem to some extent but one which would have more impact than the rest. I call this addressing the weakest link in a chain of production.

Is your farm supporting your life, or is your life supporting your farm?

I've never met anyone who went into farming to get rich or so they would have lots of free time, but most people do agree that farming is a lifestyle that they choose because they love it. It's important to take stock of your life at the end of the season and make sure that your job is supporting your life in ways that are going to sustain you and your family in the long term. If your farm isn't allowing you to take the time and/or resources you need to take care of yourself, it is important to look at whether there are ways to change that balance. What can you do to make farming easier on your body, on your mind, or on your family dynamic? What is the one most important thing you could change this year to improve your quality of life related to the farm? Is it purchasing a piece of equipment which will keep you working more comfortably, or taking a week vacation with the family away from the farm (I know!!!), or stopping growing some crops that you really dislike in favor of crops you really do like and grow well?

I hope that as you enter this time of relative rest, answering these questions will prove a positive exercise which helps you to meet the coming growing season with renewed enthusiasm. As always, if there are aspects of answering these questions that you would like help with, you can call any of your ENY Commercial Horticulture Team and we can sit down with you and do some planning.

The Pricing Crystal Ball……
Or, In Search of the Silver Bullet that Carries the Magical Answer

By Bob Weybright, ENYCHP

What price and how should I set my price is a frequently asked question many in search of the mythical magic bullet that will lead to maximized profits. Truth be told, there is no such single answer. Also, if there was "THE one price" to charge the Federal Trade Commission might take an interest into what was going on. A truth that can be considered a solid foundation when looking at pricing is that accurate knowledge of the world in which you are selling, observations of what is going on at the point of harvest all the way to where you will be selling, is key to determine if your prices are solid and realistic. This approach will help to maximize the return on investment for your crops and products. As a prelude to the following considerations around pricing please understand that these are all from the premise that **Profit is not a dirty word.**

Towards that end I would like to offer some thoughts to consider: First is what channel(s) you are selling into. This could be a single channel or a combination of channels. Among the more common channels that most growers think of, and which might require different pricing structures include wholesale to retailers, wholesale to restaurant, wholesale to processors, retail farmers market, retail pick your own (PYO), or retail farm stand. My reasons for breaking sales outlets into these types of classifications is that one really should give some solid thought towards a pricing structure for each of these channels since each may require different levels of packaging, sorting, work to sell, delivery expense, or marketing activities that should be included in the cost determination when setting the price.

In addition to these inputs the setting of urban vs rural can come into play. One would expect that urban markets are able to command a higher selling price that rural. However, research by Dr. Marvin Pritts and Cathy Heidenreich of Cornell University has shown that often the opposite is true. This only serves to support the notion that a review of pricing in your selling region and outlet is a worthwhile activity to assure you are maximizing your returns.

The next sets of considerations are quite obvious; what are the financial objectives and needs of the farm. While one might think (and rightfully so) that pricing for

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profit margin is the most important and only consideration when setting price there are in fact other situations that may override this practice. This is partially true as other needs such as the generation of cash flow to pay short term financial commitments can be a driving force to set a lower price point to move product and get quick access to cash. I have also heard that some grower's strategy is to utilize a fixed price across a season, planning to break even at the beginning and end of a growing season when harvest expenses can be higher with the desired profits being generated in peak season when harvest costs are lowest and yields are higher. What is the net of this?.....basically to be aware of what financial pressures might be floating around in the back of your mind when you set your price, or pricing strategy for the season and make conscious decisions that encompass all your needs and goals.

Other things to think about when determining a price are those which are very much out of your control. If something is out of your control then why be worried you might ask. Quite simply it is so you can monitor whether your prices can be tweaked up, need to shift a tad bit down, or are good and can stay right where they are. Pricing according to the time of season and therefore availability of product is something that a lot of large volume growers follow. Quite simply; when supplies are tight (beginning or end of season) prices can be higher, then dropped in peak season to encourage movement of all the available product… A wonderful example of basic Macro Economic supply and demand theory in a market economy put into action. Now in the interest of full disclosure this may not hold true for niche or specialty berries as they are not as readily available and often considered "premium". I would venture to say that strawberries and possibly blueberries might follow this pricing trend from the larger production areas. Of course there is always the "blip" to watch for that might allow you to increase your margin if you follow what is going on in the world around you. An example would be earlier in July when there was a shortage of trucks available in south Jersey to move their berries to market. This created the potential in some of the wholesale markets to get an extra few pennies per pound for the short time the supply remained strained.

Again, awareness of the world is becoming even more important as we unfortunately have a new 600 pound gorilla in the closet to contend with, the dreaded Spotted Wing Drosophila!! As I am sure you are aware this is a menace that adds a new dimension to berry production and harvest in our world. You now have to take into consideration the cost of spraying to keep it at bay as it is a definite factor which can become very costly to keep under some semblance of control. This makes keeping tabs on the world at large even more important to see if there may be opportunity knocking. If you have paid the time, effort, and money to spray so that you have crop, and are the only supply in town then you really need to give serious consideration to which market channels can and should absorb a price increase. (Remember from paragraph one where I clarified that this premise of this article is that profit is not a dirty word).

Having read this far might raise the question about where to find this information which can used as a tool with which one can evaluate their prices against, or do research to determine whether their prices are a reasonable expectation. This can be a daunting task as admittedly there are a number of resources which have the potential to generate reams of data that would be more than a full time job to review.

That being said I would suggest to start with the Hunts Point Market prices that are generated daily, http://www.terminalmarkets.com/huntspoint.htm. This a handy and relatively easy to use starting point. Their reports are nicely broken down into separate reports for fruits, vegetables, etc. A valuable report that is included via this link is the trucking report; where monitoring this would have let any blueberry growers know that there was a short term potential "shortage" coming out of South Jersey this summer.

Next, and probably a winter project at this point in time is to look at the USDA's Agricultural Marketing Service (AMS) http://www.ams.usda.gov/AMSv1.0/. There is an amazing amount of information contained at this website that takes some time to sort through and determine which is relevant and useful to you and your business. Once you get an idea of what information you wish to incorporate into your decision making processes this is the link to the page where you are able to create custom reports, http://marketnews.usda.gov/portal/fv, that you can access as part of your regular weekly or monthly business review. While you are at that link you might want to take a scan at the various search tools on the left side of the screen that might be of interest as well

Essentially the goal of all this information is to learn what is available and can be developed into a report

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format that is succinct, relevant, and workable for you and your operation on a regular basis. Over kill on data can easily lead to analysis paralysis.

Now the big question of all that has been presented here: So What!!!

It is hoped that some take away thoughts include an understanding and agreement that it is worthwhile to be aware of the business environment as a whole so that you can make conscious and informed business decisions. Be aware of changes in pricing and market dynamics that have the potential to affect your sales outlets. In my opinion this can most easily (I am not saying that this is an easy process) be achieved by using the reference sources that are available. And, do not become complacent and price via benign neglect, make conscious and informed pricing decisions.

I apologize if you were reading this and made it this far expecting to see magical formulas to calculate price appear here. As someone who has read this far I would hope that you would agree that there are a very large number of variables that can affect the decision to set a selling price. And, most if not all of the variables that would show up in any standard pricing formulas are situational based on individual farm needs and goals. This when it is all said and done is a good thing as it creates possible opportunities against your competitors. So if you are able to create and follow a process to evaluate your production costs, farm operation, sales outlet, and business position you will be able to more confidently set prices that will work for your business over the long term.

Your Soils: Have They Had a Checkup Lately?

By Justin O'Dea, CCE Ulster County

Understanding the condition of your soils is an invaluable component of 1) economical and efficient fertility management, 2) understanding crop responses to soils, and 3) recognizing whether your soil management practices will sustain your farm for in the long-term. *Cornell recommends that cropland soils be tested for standard analysis at least every 2-3 years for crop fertility recommendations.* Soil sampling and testing often is conducted in the fall. Sampling and testing can be more accurate in spring, but often is understandably at odds with other tasks during the busy early growing season.

Photo Courtesy NRCS-South Dakota

Soil nutrient analyses can let you know the status of 1) available soil macronutrients often annually in flux with crop removal and environmental conditions, and 2) the status of micronutrients (often more static) which may need supplementing in order to bring your cropland into an acceptably productive condition for the long-term. Often a single limiting soil nutrient can disproportionately affect the yield of a crop even if all other nutrients are in adequate supply. Soil tests can also indicate oversupply of available nutrients along with potential nutrient toxicities that can cause crop illness. Oversupply of nutrients can easily occur with both inorganic and organic nutrient supplements. For instance, nitrogen from synthetic fertilizers is most notoriously noted to be in oversupply and leading to loss from croplands, but high phosphorus levels in animal manures can also easily lead to P oversupply if manure is commonly added to cropland in amounts to meet N requirements. If you've grown legumes as a crop or green manure/cover crop also take into account the amount of N that it may contribute to the soil. Legume-fixed N varies depending on species and the quality of the crop residues were turned into the soil; for instance, beans, peas, and soybeans that were grown to maturity and harvested may commonly contribute ~0-30 lbs/acre of N from their residues, while a healthy red clover or hairy vetch green manure turned in to the soil around the flowering or early pod stages may commonly contribute ~70-180 lbs/acre of N to the soil. Legume N is generally released more incrementally than fertilizer N, but the amount contributed to the soil must be taken into account to avoid N over-fertilization. Both N and P play are significant players in causing

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Your Soils: Have They Had a Checkup Lately? continued from previous page

surface and/or groundwater pollution. Understanding how different nutrients are retained and lost from agricultural systems with differing crop practices and fertility amendments is extremely useful in developing economical and efficient nutrient management plans.

Soil chemical tests also indicate **soil pH**, which critically affects nutrient uptake, even when *all* nutrients are in adequate supply. Soil pH is easy to neglect, but when pH is sub-optimal, your crop uptake will be sub-optimal, and hence so will be your crop performance. You can also inadvertently put your crops at a disadvantage in the face of weeds that can thrive better at a given sub-optimal pH (especially if your pH is getting particularly acidic). Generally, unless your soils were formed from limestone bedrock, soils of the humid northeast naturally tend to be more acidic, and may require liming to optimize nutrient uptake for many crops. Sandy soils often are often inherently less fertile for cropland because they have less capacity to store and retain nutrients than finer-textured soils, and are likewise more sensitive to fluxes in pH; hence, knowing the texture of your soil is also important in understanding how to manage its fertility.

While soil nutrient tests supply measurements that provide powerful information for informing crop management, soils have a very complex ecology that affect crops in numerous indirect ways when thrown out of balance. Testing for **soil organic matter** levels is the most rudimentary and well-established indicator of a soil's inherent fertility condition and potential **soil health**. Testing for other biological and physical indicators of soil health is becoming increasingly popular amongst farmers and researchers though. Soil health tests can often help indicate causes of elusive issues in crop response to soils, and whether your management is nurturing the long-term sustenance of your soils. In addition to standard soil test measurements of pH, organic matter, and nutrient levels, Cornell's soil health assessments include indicators of: soil structure (soil aeration and water-handling indicators), biologically active carbon and nitrogen fractions of soil organic matter (soil nutrient cycling capacity indicators), and soil pathogen levels (plant root health indicators). To date, Cornell is the nation's only land-grant university to offer a soil health testing service.

For more information on soil testing and soil sampling for tests see:

Cornell's Nutrient Analysis website:
http://cnal.cals.cornell.edu/

Cornell Soil Health Testing:
http://soilhealth.cals.cornell.edu/extension/test.htm

Agro-One/Dairy-One Laboratory
(service in collaboration with Cornell University):
http://www.dairyone.com/AgroOne/default.htm

If you need additional assistance, or have questions about soil testing, sampling for testing, interpreting soil test results, or want leads on other soil testing laboratories, contact the your local CCE office.

Postharvest Hopyard Management

By Erin Lizotte, Michigan State University

As growers wrap up hop harvest this season, they can follow these postharvest tips to help prepare for next year.

For the most part, the work of the season is complete but growers can still consider pest management practices that may impact next year, postharvest irrigation, compost application and record keeping.

Many growers struggled to control downy mildew this year due to challenging weather conditions. Growers cultivating particularly susceptible varieties faced a particularly difficult season and may be wondering what can be done postharvest to combat this important and damaging disease. To properly answer this question we need to fully understand the disease cycle of *Pseudoperonospora humuli*, the causal agent of downy mildew of hops (Figure 1) and how growing conditions in Michigan can affect the efficacy of late season treatments. Mycelium, the vegetative part of the downy mildew pathogen, overwinters in buds and crowns or plant debris (infected leaves, stems) left on the field. As shoots emerge in the spring they may already be infected with this overwintering mycelium. As the hop bine begins to grow, the mycelium produces a microscopic spore-bearing structure (sporangiophore) on the underside of leaves giving the underside a gray, fuzzy appearance. These structures give rise to an asexual type of spore called zoospores. Zoospores move via wind and rain and act as the major cause of disease spread during the season, infecting new leaves, shoots and eventually even cones. The reproductive cycle that produces zoospores may repeat multiple times over the season, depending on temperature and

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Postharvest Hopyard Management, continued from previous page

moisture availability. Alternately, mycelium may also yield a resting spore (oospore) that it produces through sexual recombination. Oospores are typically more resistant to environmental changes and are often referred to as resting spores. It is unclear at this time if Michigan's climate provides environmental conditions conducive to oospore production.

When considering a postharvest treatment, it is important to remember that the downy mildew fungus will overwinter in the plant itself and is protected by the plant epidermis. While there are no data to suggest that post-harvest treatments are beneficial in terms of a reduction in disease next season, there is a general correlation between disease presence and severity from season to season that warrants further research. If growers want to try an experimental postharvest application, they should focus on utilizing systemic fungicides that move downward in the plant tissue and might disrupt the mycelium that will be the source of next year's infection.

Systemic fungicides are typically described as locally systemic, acropetal systemic (moving upward), or basipetal systemic (moving downward). Locally systemic materials are not useful for the treatment of downy mildew at this time because they do not move far from the site of application and don't reach the sites where the pathogen overwinters. Truly systemic fungicides are taken up by the xylem or phloem tissue of the plant and moved to new tissues. Many of the systemic materials today are only translocated outward via the xylem or water-conducting tissues. Distribution of a systemic fungicide in the phloem or carbohydrate-conducting tissue tissues (basipetal translocation or downward movement) would include translocation into the crown and roots where downy mildew overwinters. Fungicides labeled for hops that move systemically downward include Aliette and phosphite fungicides. Given the overwintering location of the fungus a systemic fungicide with downward movement would be the best option. That being said, with little remaining leaf area and bines shutting down from shorter day length, there may be limited value to a fungicide

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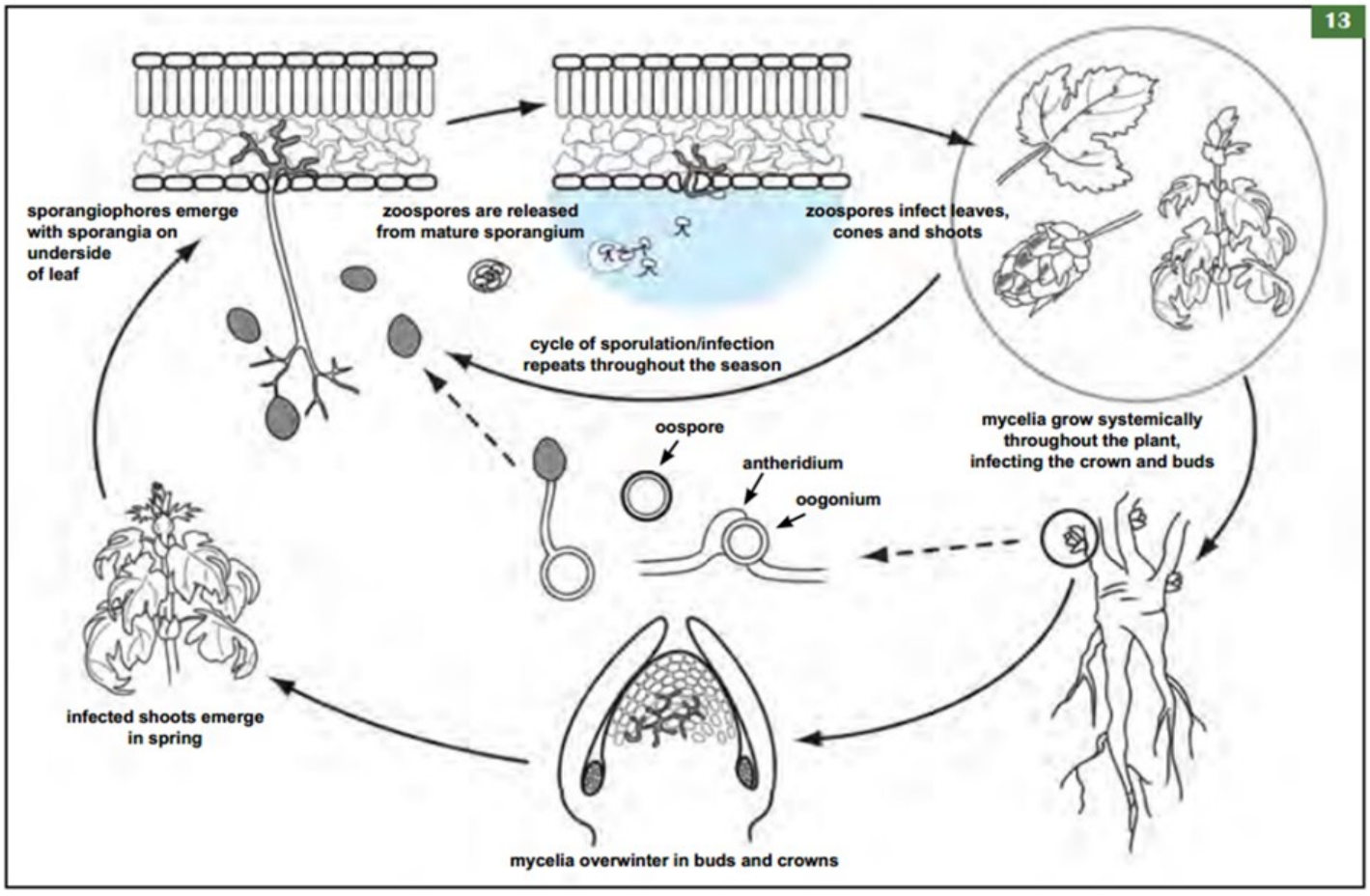

Figure 1. The disease cycle of *Pseudoperonospora humuli*, the causal agent of downy mildew in hop.

Credits: V. Brewster, Compendium of Hop Diseases and Pests

Postharvest Hopyard Management, continued from previous page

application at this time. Based on the lack of supporting data, postharvest treatments for downy mildew are not recommended as a general practice at this time. Growers with high levels of downy in their hopyards should instead focus on developing an early and aggressive protectant treatment program for next spring. Refer to the article, "Battling downy mildew as hop harvest approaches".

Figure 2. Potato leafhopper nymph and hop leaf covered in nymphs and showing signs of feeding damage with necrotic leaf margins. *Credit: Erin Lizotte, MSUE*

Now let's consider some of the problematic insect pests still lingering after harvest. Potato leafhopper (PLH), damson hop aphid and two-spotted spider mite were all reported at significant levels in hopyards, and growers are considering what treatment strategies are available postharvest. PLH (Figure 2) were a real issue for some growers, but a treatment now would not affect populations next season because the PLH currently in hopyards will not survive the winter. PLH move north on spring storms and reinfest each year. Once PLH arrives they reproduce in the hopyards and can cause significant damage. However, their inability to survive the winter wipes out the entire population in Michigan each year.

Damson hop aphid was observed in higher numbers as harvest approached and some growers had problem infestations at harvest (Figure 3). Again we must look at the lifecycle of the pest to determine if a postharvest treatment could help keep numbers down next season. Hop aphids overwinter as eggs on *Prunus* species (genus of trees and shrubs that includes the plums, cherries, peaches, nectarines, apricots and almonds). In early spring, eggs hatch into stem mothers which give birth to wingless females that feed on the *Prunus* host. In May winged females are produced and travel to hop plants where additional generations of wingless females are produced. As cold weather approaches, winged females and males are produced, move back onto a *Prunus* host, mate and lay eggs for before winter. We expect that this migration away from hops and onto plants in the *Prunus* genus occurs sometime in September. Growers with particularly high populations could apply a postharvest insecticide to limit the overwintering populations, but only if they are still present in the hopyard. Growers considering an application should scout their fields and confirm the presence of aphids before applications are made. Refer to the article, "Aphids on hop reported in significant numbers" for more information on management.

Figure 3. A wingless damson hop Aphid on hop.
Credit: Erin Lizotte, MSUE

Finally, two-spotted spider mites (TSSM) were an issue for some growers this season. Again, if we examine the lifecycle of the pest we can make better decisions about the potential impact of postharvest management. Hops are a unique situation when it comes to mite management. Many horticultural crops use postharvest treatments in infested sites to reduce overwintering populations, but hop growers remove the plant itself quite early in the season, likely removing a large portion of the mites with it. The TSSM that remain overwinter as mated females on plant debris and trellis structures in the hopyard. Mites remaining in the hopyard are susceptible to miticide applications but likely account for a relatively small number in fall when they are beginning to migrate to overwintering sites. Unless the

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Postharvest Hopyard Management, continued from previous page

infestations were at an economically significant level, miticide applications should be avoided if possible. Often one mite treatment leads to continued mite treatments as the natural balance of predators and beneficials is upset. For these reasons, postharvest TSSM treatments are not recommended unless hopyards were left unharvested and experienced extremely high populations. Refer to the article "July 31, 2014 Hop Update" for more information on managing two spotted spider mites.

Growers should also consider the importance of sanitation at this time. Removal of all bines and leaves from the hopyard is recommended after the first hard freeze. Plant tissues can harbor insects and disease and should be removed, buried or burned. Growers who did not harvest this year (as in first year hops) are advised to remove the plants after a hard frost to prevent increased pest and disease pressure next season.

Growers planning to utilize compost fertilizer can apply it this fall. Recommendations from the west suggest applying a couple of shovels full directly onto and around the crown. Conventional wisdom also suggests watering the bines just before shutting down the irrigation for the year, particularly in areas without good snow cover where desiccation might be an issue this winter. Growers are advised to not fully saturate the soils but keep the final watering moderate, particularly on heavier soils where rot could become an issue.

Figure 4. Two spotted spider mite, eggs and cast skins.
Credits: Erin Lizotte, MSUE.

Growers may also consider sub-soiling between rows in areas in need of better drainage, applying herbicides for perennial weed control, and removing unproductive or diseased crowns.

Lastly, it is well worth a grower's time to set aside a moment to reflect on the season. Take note of trouble areas in the hopyard, and consider planning how to address pest or nutrient issues in the following season. It is also recommended that growers review their spray records and ensure they are complete. For more information on record keeping visit the resources page of the MSU Pesticide Safety program at http://www.ipm.msu.edu/pesticide_education_safety/resources

Environmental Quality Incentives Program — Cutoff Date Nov. 21

New York Natural Resources Conservation Service (NRCS) announces **November 21, 2014** as the application cutoff date for the Environmental Quality Incentives Program (EQIP) for Fiscal Year (FY) 2015. Applications accepted after November 21, 2014 may be considered for funding if additional application rounds are announced or for potential consideration in FY2016. All applications are competitive and are ranked based on national, state and locally identified resource priorities and the overall benefit to the environment.

"NRCS provides New York's agricultural producers with financial and technical assistance to treat the resource concerns on the land," said Gregory Kist NRCS State Conservationist. "Our programs are as diverse as New York's agriculture providing exciting opportunities for all of New York's agricultural producers to work with us."

Environmental Quality Incentives Program (EQIP): offers financial assistance for practices which address soil erosion, water quality and habitat degradation. Practices implemented through EQIP include strip cropping, grassed waterways and manure storage facilities. Focus areas within the EQIP program include soil health, livestock waste, habitat, forestry and grazing.

If you are interested in applying for an NRCS conservation program please visit our website at: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ny/programs/financial/eqip/?cid=nrcs144p2_027058.

You may apply by visiting your local NRCS field office, which can be located at: http://offices.sc.egov.usda.gov/locator/app?state=NY.

Great Resources in Print

Plant and Life Sciences Publishing (formerly NREAS) offers 42 unique books for sale. PALS books are based on the research and experience-based knowledge of Land Grant University faculty. PALS is a program of the Department of Horticulture in the College of Agriculture and Life Sciences at Cornell University.

See what they have to offer. From bees to wine to berries to cover crops, there is something for almost every interest. Visit: http://www.palspublishing.com/

2014 Agribusiness Strategic Marketing Conference

"New, Niche, and Non-Traditional Market Opportunities: Developing a successful and profitable relationship for all"

November 11-12, 2014

The Inn on the Lake, 770 South Main Street, Canandaigua, NY 14424 (Adjacent to NY Wine and Culinary Center)

For full agenda, registration and travel information see: http://dyson.cornell.edu/outreach/strategic_marketing_conference.php. Condensed Agenda:

Tuesday, November 11th

- Findings and Realities Learned Researching Alternative and Emerging Market Channels, *Miguel I. Gómez, Assoc. Professor Charles H. Dyson School of Applied Economic and Management, Cornell Univ.*
- Ethnic and Export Markets
  - Latin American Specialty Produce, *Chris Wayne – GrowNYC FARMroots program*
  - Halal Meats and Middle Eastern Value Added Products, *Zaid Kurdieh - Norwich Meadows Farm*
  - Aggregation from smaller growers to access Export Markets, learnings from the China Export Development Project, *Jim Manning, Cornell Cooperative Extension Oneida County*
- Expanding Markets; Utilizing Non-Traditional (Institutional) Partners
  - GreenmarketCO, *Olivia Blanchflower, GrowNYC*
  - Food banks, *Mitch Gruber, Foodlink and Andy Orbaker Orbaker's Fruit Farm*
  - Catholic Charities and Workplace CSA's , *Laura Biasillo, Cornell Cooperative Extension Broome Co.*
- Changing or Adding Market Channels to My Current Mix
  - Shifting the traditional CSA model, *Chris Hartman, Good Food Collective*
  - Season Extension Across the Winter, *Paul and Sandy Arnold, Pleasant Valley Farm*
  - Alternative and Innovative Funding of CSA Shares, *Chris Brockel, Fairshare CSA*
- Participant Announcements and Programming Updates from around the State and Region
- Optional Dinner at New York Wine and Culinary Center

Wednesday, November 12th

- Pricing research, analysis, and calculation, an interactive session, *Steve Hadcock, Cornell Cooperative Extension Columbia/Greene County*
- Strengthening Relationships Between NYC and Other Large Metropolitan Markets
  - Market Maker National Update, *Darlene Knipe, Market Maker*
  - Farmers Web, *David Ross*

For more information, please contact Bob Weybright at 845-797-8878 or email rw74@cornell.edu or Carol Thomson at 607-255-5464 or email cmt8@cornell.edu.

Cornell Tax Schools

November 5 & 6 - in Utica at the Radisson Hotel - Utica Center
November 10 & 11 - in Buffalo at the Millennium Hotel
November 17 & 18 - in Syracuse at the Holiday Inn Syracuse/Liverpool
November 19 & 20 - in Rochester at the RIT Inn and Conference Center

All details and online registration at http://agfinance.dyson.cornell.edu/tax-programs.html.

Contact: phone 607-255-1585 or email taxschools@cornell.edu.

Tile Drainage School

November 12 9:30 am-3:00 pm

The Factory Eatery, 20 Prospect Street
Ballston Spa, NY 12020

Tile drainage can improve the productivity and profitability of fields but needs to be done correctly and with minimal environmental impact. This school looks to increase the chance for success when installing and maintaining tile drainage while remaining within conservation compliance standards.

For a complete agenda and online registration: http://cnydfc.cce.cornell.edu/event.php?id=157.

Speakers include Allenwaite Farm Inc., with George and Travis Allen; Steve Mahoney the owner of River Bend Farm Agricultural and Environmental Services; Larry Geohring from Cornell University's Department of Biological and Environmental Engineering; Scott Fitscher, NRCS Conservation Program Manager for Washington and Warren Counties; and David Holck, County Executive Director for the Farm Service Agency in Washington, Rensselaer, Saratoga, and Warren Counties.

Registration deadline November 7. Space is limited, RSVP today! $40/person. If you have any questions you can contact Aaron Gabriel at (518) 380-1496 or adg12@cornell.edu, Kevin Ganoe at (315)-219-7786 or khg2@cornell.edu, or Ashley Pierce at (518) 272-4210 or arp253@cornell.edu.

Asset Management Series *Save the Dates!*

December 3rd & January 14th 3rd session TBA
1:00-3:00pm at CCE Orange, 18 Seward Ave, Middletown, NY 10940

From wills to insurance to eldercare to proxies and gifting this program will touch on many subjects to give everyone "nuggets" on important business topics. Professionals representing will provide basic information that will help you discover and utilize resources on your own to enhance developing and protecting your family's assets.

The first 2 sessions will provide these "nuggets" and the 3rd session will be an in-depth view of one of the topics, decided by the attendees. Members from every generation interested in the farm assets are encouraged to attend. $60 per farm family for whole series. $25 per session.

Keep an eye out for registration information to follow soon.

EXPO Session Highlights

Empire State Producers Expo, January 20, 21, and 22 at the Oncenter Convention Center in Syracuse, NY. Registration and full agenda will soon be available at http://nysvga.org/expo/information/.

Did you know that members of the Eastern NY Commercial Horticulture program are instrumental in making the NYS Fruit and Vegetable EXPO happen each year? We chair many of the sessions during this three-day meeting, bringing in speakers from all over the country to talk about topics we think will help our industry. We hope that hearing about some of our sessions will get you excited about coming to EXPO. And, if there are topics you haven't been seeing at EXPO but that you want to see, let us know and we will see if we can make them happen. -Crystal

Tomato Session—Teresa Rusinek

Problems with uneven ripening disorder? Then come to the tomato session to review the ABCs of NPK! Steve Reiner's presentation will help you refine your tomato fertility program and balance nutrients to avoid yellow shoulders, grey wall, and white core.

So the question this year was, "Who didn't have bacterial canker and speck?" Professor Christine Smart will help shed light on managing these tenacious diseases that left many fresh market tomato growers with dead plants and spotted tomatoes. Chris Smart's research this past year resulted in important findings on fruit infection periods. Find out what was learned.

Tomato viruses such as Tobacco and Tomato mosaic are resurging, and a new one, Spinach latent virus, is emerging. Dr. Marc Fuchs will cover the biology of these diseases and steps you can take to keep virus out of your operation.

Symptoms of Grey Wall


Image by Anna Wallis

Floriculture Session—Teresa Rusinek

The theme of the floriculture session this year is "crossing over". Whether you are a flower or vegetable grower, you will get valuable information from this session to help your operation succeed.

The session will begin with a presentation from Pat Ponto of Ponto's Greenhouses in Baldwinsville NY. The topic is "Maximizing profits through management". Pat will share his experience in gaining efficiency and quality through detail oriented management practices. Learn how Pat reduces shrink, improves energy efficiency, manages inventory and much, much more.

Are you aware that there are several diseases, such as Late Blight, Powdery Mildew and Virus that can move from flower to veg plants (or vice versa) in the greenhouse? ENYCHP Vegetable specialist Teresa Rusinek will show you what to watch out for.

Sanitation is your first line of defense in controlling greenhouse pests. Elizabeth Lamb of NYS IPM will discuss best practices and options for growers.

Tree Fruit Sessions—Anna Wallis and Dan Donahue

Tree fruit experts from across the country will speak about the most pressing issues in tree fruit production in several sessions of this year's EXPO. Cornell scientists, Terence Robinson, Susan Brown, and Chris Watkins, will

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EXPO Session Highlights, continued from previous page

present information on their recent findings. Stefano Musacchi, Italian native and recently hired faculty member of Horticulture Department at Washington State University, will offer his expertise during two of the sessions on high density training systems and mechanization as well as the new DA meter used to gauge fruit maturity. An entire session will be devoted to the management of Honeycrisp, from orchard establishment to post harvest conditioning and storage.

These sessions will be held on Tuesday January 20th from 9-11am, Midday from 1-2:30pm, and Wednesday, January 21st from 1-2:30pm. Additional information on the 2015 EXPO will be published as it becomes available.

Berries—Laura McDermott

Join commercial berry growers from across the state on Thursday January 22nd 2015 for a day-long commercial berry education session at the Empire State Producers EXPO held at the OnCenter in Syracuse, NY.

"Going Bigger" is the focus of the 2015 Empire Producers EXPO Berry Session. Making the big move can be very profitable, but challenging. Hear how you can grow your operation through new crops, new methods, new markets, and better business planning!

The morning starts with considerations for expanding your berry plantings with a new crop – Juneberries! Dr. Erwin "Duke" Elsner, small fruit educator from Michigan State University will detail the basics of getting into Juneberry production and marketing, sharing insider how-to's for this exciting new crop.

Is organic blueberry growing on a large scale right for you? Dr. Bill Sciarappa, Rutgers University Cooperative Extension, brings it all into focus in his talk on "Organic Blueberry Production and Promise".

Final insights from a 2-year berry farm business summary project will help you learn how to evaluate your berry farm business using enterprise budget data.

The afternoon session begins by focusing on new market opportunities in New York City and then on growers from Ohio, New Jersey and Massachusetts that have successfully grown their berry businesses.

Focus shifts late in the day to bird and pollinator management, plus sustainable management of strawberry root pests using microscopic entomophagus nematodes (aka bug-eating soil inhabiting round worms…) which you CAN grow and try at home!

Finally, an update of the progress being made in Spotted Wing Drosophila research will round out the Berry Session at the 2015 Empire EXPO – Don't miss it!

Root Crops—Crystal Stewart

The two primary areas of difficulty for New York growers with root crops are managing foliar diseases during the growing season and then maintaining storage quality in storage. This session will get at the "root" of these issues by helping you first understand how to grow healthy, disease free root crops with our new pathologist from down under, Dr. Sarah Pethybridge. Roxbury Farm's Jean-Paul Courtens will follow up on this by talking about the benefits of growing carrots and parsnips on ridges, as in common in Europe. Finally, Dr. Steve Johnson of the University of Maine will tag-team with me to evaluate different kinds of storage systems ranging from cool-bots in refrigerated truck boxes to fully engineered traditional systems, for both cost effectiveness and storage quality.

High Tunnel School: Best Management Practices for New High Tunnel Growers

Thursday December 4, 2014 from 10 am - 3 pm

CCE Dutchess County, 2715 Route 44, Suite 1, Millbrook, NY 12545

This program is focused on those new to growing in high tunnels but all are welcome. $30 includes lunch and materials. For information on registering contact Marcie at 518-272-4210 or email mmp74@cornell.edu.

Topics covered include:

- structural considerations when choosing a high tunnel
- site selection for success
- crops best suited to tunnels
- variety selection
- training, pruning and crop layout
- grower experiences and lessons learned

Speakers include

- Judson Reid, Cornell Vegetable Program
- Amy Ivy, ENYCHP
- Grower Panel

The Cooperative Extension Association
of Rensselaer County
Agriculture and Life Sciences Building
61 State Street, Troy, NY 12180

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UPCOMING EVENTS

November - 4 dates and locations **Cornell Tax Schools** Nov. 5 & 6 in Utica, Nov. 10 & 11 in Buffalo, Nov. 17 & 18 in Syracuse, and November 19 & 20 in Rochester. *See page 4 for details.*

November 11-12 **Agribusiness Strategic Marketing Conference** The Inn on the Lake, Canandaigua, NY. New, Niche, and Non-Traditional Market Opportunities. *See page 3 for details.*

November 12 **Tile Drainage School** Ballston Spa. Improve productivity and profitability of fields while remaining within conservation compliance standards. *See page 4 for details*

December 3 & January 14, plus a 3rd session TBA **Asset Management Series** CCE Orange, Middletown. Discover and utilize resources on your own to enhance developing and protecting your assets. *See page 4 for details.*

December 4 **High Tunnel School** CCE Dutchess County. Best management practices for new high tunnel growers. *See page 20 for details.*

December-March - 3 Dates and Locations **Spotted Wing Drosophila Management Workshops** December 17 in Syracuse, January 14 in Albany, and March 4 in Batavia. Cornell researchers will present information on SWD biology and SWD management, spray technology, and preparing for 2015. *See page 2 for details.*

January 20-22 **Empire State Producers Expo** Oncenter Convention Center in Syracuse, NY. Comprehensive trade show and educational conference for fruit and vegetable growers. *See page 5 for details.*