The Produce Pages

Serving the fruit and vegetable growers of Eastern New York

Terminal Market Price Reports

November 2015

BY JESSE STRZOK AND BOB WEYBRIGHT

The USDA's Agricultural Marketing Service provides daily price reports from terminal markets. A terminal market is a central site for trading of commodities, often in a metropolitan area. Due to our unique location in Eastern New York we have some of the world's largest terminal markets for agricultural commodities within 170 miles of Albany. Hunts Point Cooperative

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Cornell University
Cooperative Extension
Eastern New York Commercial Horticulture

The Produce Pages

Editor:
Maire Ullrich, Vegetables
Phone: 845-344-1234 Email: mru2@cornell.edu

Regular contributors:

Vegetables
Chuck Bornt
Phone: 518-859-6213 Email: cdb13@cornell.edu

Amy Ivy
Phone: 518-561-7450 Email: adi2@cornell.edu

Teresa Rusinek
Phone: 845-691-7117 Email: tr28@cornell.edu

Crystal Stewart
Phone: 518-775-0018 Email: cls263@cornell.edu

Kevin Besler
Phone: 845-344-1234 Email: krb98@cornell.edu

Fruit
Laura McDermott
Phone: 518-791-5038 Email: lgm4@cornell.edu
James O'Connell
Phone: 845-691-7117 Email: jmo98@cornell.edu

Dan Donahue
Phone: 845-691-7117 Email: djd13@cornell.edu

Anna Wallis
Phone: 518-410-6823 Email: aew232@cornell.edu

Business and Marketing
Jesse Strzok
Phone: 518-429-1464 Email: js3234@cornell.edu

Bob Weybright
Phone: 518-727-6238 Email: rw74@cornell.edu

Food Safety
Erik Kocho-Schellenberg
Phone: 845-3441234 Email: jk2642@cornell.edu

The *Produce Pages* is a monthly publication of the Eastern New York Commercial Horticulture Program. For more information about the program, please visit our website at http://enych.cce.cornell.edu/.

Contents

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, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

Market in the Bronx covers 60 acres and is the largest terminal market in the world.

The USDA reports daily prices which are accessible online via the USDA's website (with a little searching around) or TerminalMarkets.Com which publishes links to the reports. Savvy growers should take these current market prices into consideration when pricing, discussing contracts, planning for the future, etc. For our area we would suggest going to terminalmarkets.com/markets.htm and looking at the daily price reports for N.Y.C. and Boston. Remember, these are wholesale market prices, not retail prices, which are being published in these reports.

A good use of these resources is to determine what is happening the world of produce prices. For our region in particular, the Hunts Point Market report is useful because it gives a daily price range, usually posted each morning. A key reason to monitor these price resources is to verify that you are pricing your products properly and receiving the best price for your work and effort. This time of year can see a wide range of prices which can be affected by early frosts, weather restricting trucking from the larger production areas, and disease pressures at the end of a growing season that may restrict or eliminate suppliers shipping across the country.

The bottom line is this - seller beware of what is happening in the produce world and be sure to price your products to achieve the highest revenue you can for all your effort and work this year.

Market links

http://www.huntspointproducemkt.com/

http://www.terminalmarkets.com/markets.htm

http://terminalmarkets.com/huntspoint.htm

http://terminalmarkets.com/neweng.htm

Wall Street, Main Street, and Food Safety

ERIK SCHELLENBERG

In September of this year, a young Wall Street businessman who left the hedge fund he'd been managing to become CEO of Turing Pharmaceuticals, bought the rights to a drug called Daraprim. The drug is an anti-parasitic compound and is currently the standard treatment for toxoplasmosis, which is a serious debilitating disease caused by the protozoan *Toxoplasma gondii.* Cats are a carrier of this pathogen, which can be easily transmitted to humans via cat feces or other bodily fluids. Even cat paws that have come in contact with feces can transmit the pathogen to surfaces, which can then be

transmitted to anything that touches the surface. In the USA, about 23% of the population has been or is currently infected with *T. gondii.* It is often difficult to diagnose because it causes flu-like symptoms and weakens the immune system, but not necessarily to a level that patients would recognize as being caused by a parasite. The pathogen causes $3 billion in medical harm every year in the US, ranking it second only to Salmonella!

The parasite is of major concern in fresh produce growing, packing and shipping operations because contaminated produce may be eaten raw

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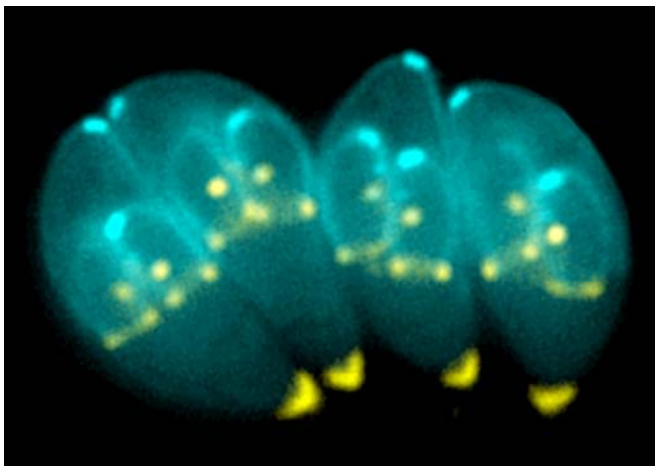
and transmit the disease. It is for this reason that cats must be kept out of fresh produce production, packing, and shipping areas at all times. Traditionally barn cats have been seen as an ally, keeping the rodents away from the produce. Rodents also transmit a number of diseases, but research has revealed that keeping cats near fresh produce operations increases the risk of human disease. Up to now, toxoplasmosis was relatively cheap to treat, at $13.50 per pill. After Martin Shkreli bought the rights to the drug he raised the price to $750 per pill, earning him the status of "most hated man in America" by various media sources. New studies will almost certainly find that shortly after this price increase, *T. gondii* will be the most expensive foodborne pathogen in the United States, raising far above the healthcare costs of E. coli, Salmonella, Listeria, Campylobacter and the rest.

What did this wall street decision have to do with main street? Any insurance claims that are made for treatment of toxoplasmosis are going to be astronomically expensive from now on. If any farm sells produce contaminated with *T. gondii* and causes a foodborne disease outbreak, the fallout is almost guaranteed to be bankruptcy of the farm because of the price hike. Many farmers know the risks and understand how cats cause toxoplasmosis, but have not been very serious about removing cats from fields, packing houses, storage areas, and vehicles. In light of the new financial risk, it is essential that this is done immediately. It's time to get rid of the cats and take over their jobs using rodent traps which are checked on a regular basis. Remember never to use poison baits inside packinghouses or storage areas.



Crop Rotation for Management of Vegetable Diseases

KEVIN BESLER

Crop rotation is a systematic approach to crop production where different crop types are grown in the same field in a sequenced manner over the course of several years. Planting beans, sweet corn, squash, and tomatoes successively in the same field over the course of four years is one example of a crop rotation. There are several benefits that can be attained through the use of crop rotations, however, one of the most widely touted advantages is its use as an inexpensive and effective means to control plant diseases. Every comprehensive IPM program should include crop rotation as a cultural method of disease control. The off-season is a good time to think about diseases that affected your crops this year and whether those diseases may be controlled or mitigated using crop rotations.

Many plant pathogens survive in the soil on crop debris or other organic matter for a period of time until they encounter a susceptible host on which they can complete their life cycle. Soil survival is not limited to pathogens that attack plants below ground or at the crown; many foliar pathogens survive on debris in the soil. Growing the same crop year after year in the same field can result in a rapid buildup of pest populations, causing significant yield losses. Crop rotations control plant diseases by breaking up the life cycle of the pathogen through the planting crops that are non-hosts for that organism. With no suitable host on which to complete their life cycle, pathogen populations will decrease over time and are less likely to cause disease and subsequent yield losses when a susceptible host is reintroduced into the field. In many cases, the complete eradication of a pathogen population is possible.

While crop rotation is an essential part of an effective IPM program, it has several limitations that need to be taken into consideration. Diseases that are insect-vectored from an outside area, such as aster yellows (leafhoppers) or tomato spotted wilt virus (thrips), cannot be controlled with rotations. Similarly, pathogens with great

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Vegetable	Disease	Period without a susceptible crop
Beans	Root rots (*Fusarium, Pythium, Rhizoctonia, Thielaviopsis, Pratylenchus*)	3 years; use grain crops, including sweet corn in rotation
	White mold (*Sclerotinia sclerotiorum*)	3 years; use grain crops, including sweet corn in rotation
	Anthracnose (*Colletotrichum lindemuthianum*)	2 years
	Bacterial blight (*Xanthomonas campestris pv. phaseoli*)	2 years
Beets	Cercospora leaf spot (*Cercospora beticola*)	3 years
	Root rots (*Pythium ultimum, Rhizoctonia solani*)	3 years; use grain crops, including sweet corn in rotation
Cabbage Broccoli Cauliflower Brussels Sprouts Radish Turnip	Clubroot (*Plasmodiophora brassicae*)	7 years; avoid all brassicas
	Fusarium yellows (*Fusarium oxysporum*)	7 years; avoid all brassicas
	Black leg (*Phoma lingam*)	4 years; avoid all brassicas
	Black rot (*Xanthomonas campestris*)	3 years; avoid all brassicas
	White mold (*Sclerotinia sclerotiorum*)	3 years; use grains crops, including sweet corn in rotation
Carrots	Leaf blights (*Alternaria dauci, Cercospora carotae, Xanthomonas campestris pv. carotae*)	2-3 years
Celery	Leaf blights (*Pseudomonas syringae pv. apii, Cercospora apii, Septoria apiicola*)	2 years
Cucumber Melons Pumpkin Winter squash	Scab (*Cladosporium cucumerinum*)	2 years; avoid all cucurbits
	Gummy stem blight (*Didymella bryoniae*)	2 years; avoid all cucurbits
	Bacterial leaf spots (*Pseudomonas syringae pv. lachrymans, Xanthomonas campestris pv. cucurbitae*)	2 years; avoid all cucurbits
	Fusarium wilt (*Fusarium oxysporum*)	5 years; avoid all cucurbits
	Fusasrium crown and foot rot (*Fusarium solani* f. sp. *cucurbitae*)	3 years; avoid all cucurbits
Eggplant	Verticillium wilt (*Verticillium albo-atrum, V. dahliae*	4-5 years; avoid tomato, potato, pepper, strawberry, brambles
	Fruit rots (*Colletotrichum coccodes*)	3 years; avoid potato, tomato, pepper
Lettuce	Drop (*Sclerotinia sclerotiorum, S. minor*)	3 years; use grain crops, including sweet corn in rotation
Peas	Root rots (*Fusarium, Pythium, Rhizoctonia, Thielaviopsis*)	3 years; use grain crops, including sweet corn in rotation
Peppers	Bacterial spot (*Xanthomonas campestris pv. vesicatoria*)	2 years; avoid tomato
	Anthracnose fruit rot (*Colletotrichum gloeosporioides*)	2 years; avoid solanaceous crops

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Vegetable	Disease	Period without a susceptible crop
Potato	Early blight (*Alternaria solani, A. tomatophila*)	2 years; avoid tomato, eggplant
	Common scab (*Streptomyces* spp.)	3-4 years; avoid root crops
Spinach	Downy mildew (*Peronospora effusa*)	2 years
	White rust (*Albugo occidentalis*)	3 years
Sweet corn	Smut (*Ustilago maydis*)	2-3 years
	Northern leaf blight (*Exserohilum turcicum*)	1 year
Sweet potato	Black rot (*Ceratocystis fimbriata*)	3-4 years
	Pox (*Streptomyces ipomoea*)	5 years
	Scurf (*Monilochaetes infuscans*)	3-4 years
Tomato	Bacterial canker (*Clavibacter michiganensis* subsp. *michiganensis*)	3 years
	Bacterial spot (*Xanthomonas campestris* pv. *vesicatoria*)	2 years; avoid pepper
	Bacterial speck (*Pseudomonas syringae* pv. *tomato*)	2 years
	Early blight (*Alternaria tomatophila, A. solani*)	2 years; avoid potato
	Anthracnose (*Colletotrichum coccodes*)	3 years; avoid potato, eggplant
	Septoria leaf spot (*Septoria lycopersici*)	2 years
	Fusarium wilt (*Fusarium oxysporum* f. sp. *lycopersici*)	5-7 years

Table adapted from: *Do Rotations Matter within Disease Management Programs?* Alan MacNab & Thomas Zitter

dispersal capabilities are not effectively controlled with rotation. Cucurbit powdery and downy mildew overwinter in the southeastern US and migrate north during the growing season to infect crops throughout the eastern US and are therefore poor candidates for control by rotation. Rotations are also limited by the survival time of a given pathogen in the absence of a living host, which can vary from a few weeks to several years. Members of a few pathogen groups, such as *Pythium, Phytophthora,* and *Burkholderia* are able to survive in the soil indefinitely as saprophytes and are thus difficult to manage via crop rotations.

When designing a crop rotation for disease management it is important to consider of the host range of pathogens as well as the family to which crops belong. Rotating between plant families is recommended for disease management because many pathogens are capable of causing disease on multiple plant species within the same family; *Alternaria solani* can cause early blight on tomato, potato, and eggplant. In some cases, related weed hosts can serve as disease reservoirs. A few pathogens have an extremely diverse host range and will attack completely unrelated crops; *Sclerotinia sclerotiorum* can cause white mold on beans, tomatoes, potatoes, lettuce, and several brassicas. Also, take note of the scientific name of the pathogen and be aware that diseases with the same common name may (or may not) be caused by two distinct species. The organism that causes anthracnose on beans (*Colletotrichum lindemuthianum*) is different from the organism that causes anthracnose on cucurbits (*Colletotrichum orbiculare*), so rotating between these groups would still be effective in reducing

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the pathogen population.

Choosing which crops to plant successively in a rotation may seem like a daunting task, however, a judicious rotation schedule can be an effective method for reducing disease at little to no cost. The previous tables outline the length of time required to successfully manage diseases of some major vegetable crops.

Changes in WPS

MAIRE ULLRICH

The EPA has announced new proposed changes to Worker Protection Standard. The original rules from 1994 are still what is in force. When the new rules are published in the Federal Register it will include an effective date for compliance which is expected to be about 14 months after publishing. This will allow some time for adjustment. So likely, these will not be in force for the 2016 season but you should keep them in mind. And you may have also heard of some changes to pesticide licensing. There is significant cross over between that and these new rules.

What are the Major Changes for Farmers and Farmworkers?

- The revisions to the Worker Protection Standard cover many different areas. The major revisions include:
- Annual mandatory training to inform farmworkers on the required protections afforded to them. *Currently, training is only once every 5 years.*
- Expanded training includes instructions to reduce take-home exposure from pesticides on work clothing and other safety topics.
- First-time ever minimum age requirement: Children under 18 are prohibited from handling pesticides.
- Expanded mandatory posting of no-entry signs for the most hazardous pesticides. The signs prohibit entry into pesticide-treated fields until residues decline to a safe level.
- New no-entry application-exclusion zones up to 100 feet surrounding pesticide application equipment will protect workers and others from exposure to pesticide overspray.
- Requirement to provide more than one way for farmworkers and their representatives to gain access to pesticide application information and safety data sheets – centrally-posted, or by requesting records.
- Mandatory record-keeping to improve states' ability to follow up on pesticide violations and enforce compliance. Records of application-specific pesticide information, as well as farmworker training, must be kept for two years.
- Anti-retaliation provisions are comparable to Department of Labor's (DOL).
- Changes in personal protective equipment will be consistent with DOL's standards for ensuring respirators are effective, including fit test, medical evaluation and training.
- Specific amounts of water to be used for routine washing, emergency eye flushing and other decontamination, including eye wash systems for handlers at pesticide mixing/ loading sites.
- Continue the exemption for farm owners and their immediate families with an expanded definition of immediate family.

More information, including a 5-page table that shows comparisons between old and revised regulations can be found at:

http://www2.epa.gov/pesticide-worker-safety/revisions-worker-protection-standard

Source: www3.epa.gov

See more on special permit training on p. 20

Stress-Induced Watercore in NY-2 (RubyFrost) Apples

ANNA WALLIS & DAN DONAHUE

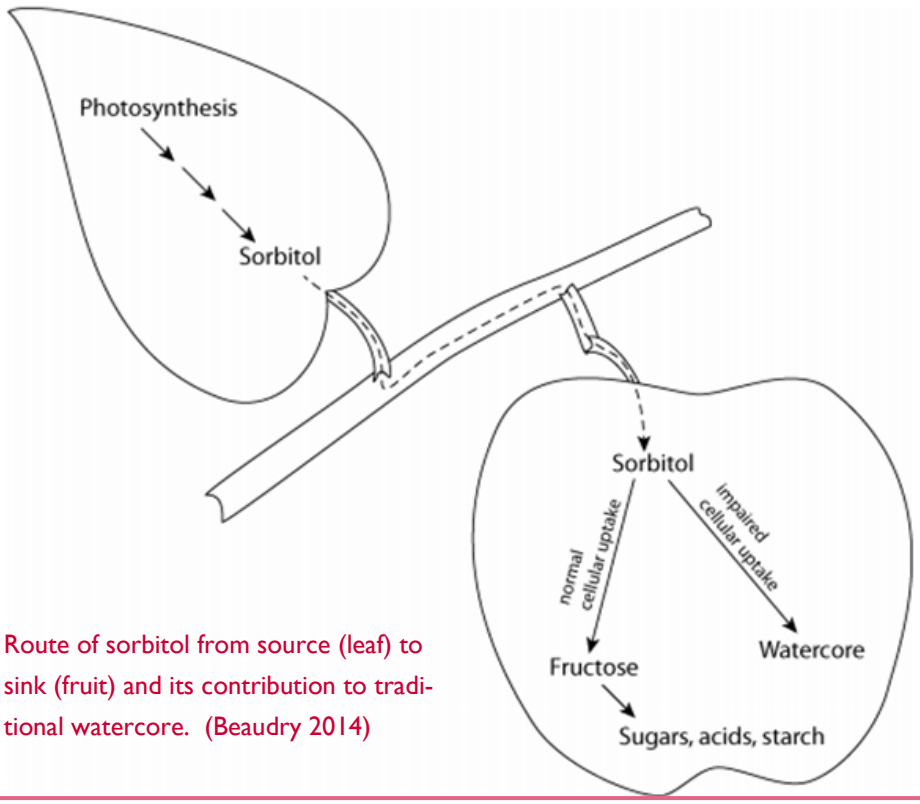
The most recent releases from the Cornell apple breeding program became available to consumers in 2014 and 2015. These varieties, NY-1 and NY-2 (Snapdragon® and RubyFrost® when packed) are marketed exclusively by the club Crunch Time Apple Growers, formerly NY Apple Growers (NYAG). With a large percentage of the trees coming into production this year and last year, the supply of fruit increased significantly. Unfortunately, like all new things, there are still challenges being identified and solutions found for growers producing these fruit.

Stress-induced watercore (SIWC) has been identified as an issue for this variety in all production regions of NY, this season, especially as fruit gets closer to maturity. Traditional watercore is a physiological condition in the fruit that is characterized by *glassy, water-soaked tissue* within the flesh of the fruit. Why does this happen? Photosynthates (sugars produces by photosynthesis) are transported from the leaves to the fruit in the form of sorbitol. When the fruit cells are unable to take up the sugars, they remain in the intercellular space, pulling water out of the cells by the simple process of osmosis.

This new form of watercore (SIWC) is similar to typical watercore in that it produces glassy, water-soaked tissue in the fruit. However, rather than being associated with the vascular bundles, this tissue is found *directly under the skin, on the most sun-exposed side* of the fruit. It is hard to detect without cutting into the fruit, but not impossible. Somewhat translucent, water soaked tissue is apparent just under the skin, and can appear like a darker, blotchy, poorly defined discoloration.

At present, there are several hypotheses for the cause of this disorder and solutions being tested. We at ENYCHP, Gemma Reig at the Hudson Valley Lab, and Chris Watkins in Ithaca are following up on this with a couple of trials:

- We are investigating preconditioning as a means of treating this fruit in both the Hudson and Champlain Valleys. Storing fruit at temporarily at a higher temperatures for a brief period will increase metabolism in the fruit, hopefully leading to dissipation or re-absorption of the sorbitol and water back into cells. Thus, glassy, water-soaked tissue would be reduced.
- A longer-term air-storage trial is being carried out at the Hudson Valley Lab.
- A more complex storage trial is being conducted by Chris Watkins in Ithaca.



Route of sorbitol from source (leaf) to sink (fruit) and its contribution to traditional watercore. (Beaudry 2014)

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Hopefully these trials will provide more information on this phenomenon; unfortunately whatever we learn is more likely to be helpful for next year's harvest.

Stress-induced watercore (above) compared to traditional watercore (left) *Photo by A. Wallis (a) and R. Beaudry (l)*

Visit the ENYCHP Website

For online class registrations, announcements, previous issues of our newsletters, and more, visit the ENYCHP website at

http://enych.cce.cornell.edu/

Email or call any of the educators with questions or comments on the website – we want to make it work for YOU!

Resources for New High Tunnel Growers

AMY IVY

As part of a 3-year project to work with new high tunnel growers, we have developed a set of fact sheets and other resources focusing on some Best Management Practices (BMPs). They are posted on our ENY website and will soon be included on Cornell's high tunnel website that is currently under revision. We started this project in response to all the new NRCS-funded high tunnels being put up around the state. Our focus was on things newer growers needed to know but we included some information on grafting tomatoes as well.

In addition, this 30 minute webcast by our colleague Judson Reid from the Cornell Vegetable Program, *Tomato Diseases Favored by High Tunnels*, addresses our BMP's that help reduce disease pressure in tunnels, and answers many questions about high tunnel production that we receive from new growers.

http://www.plantmanagementnetwork.org/edcenter/seminars/tomato/hightunnelgreenhouses/default.asp

Here are the titles of these fact sheets BMPs for new high tunnel growers:

Site Selection – Several new growers have struggled with tunnels located in wet sites or in low lying areas so all the rain they deflect was running right into the tunnel. Deciding where to put a new high tunnel requires careful consideration. A good site will set you up for success by avoiding potential problems. Snow load, sun and wind exposure, overall drainage of the location, soil type of the tunnel, and availability of water for irrigation, are all key considerations buyers need to keep in mind when deciding.

Tomatoes for High Tunnels - One of the first choices when beginning high tunnel tomato production is the type: determinate or indeterminate. Differences in the growth habits, nutri-

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tional needs, disease resistance, and fruit attributes of determinate and indeterminate tomatoes will influence the types and varieties a grower will choose. Some markets pay a premium on heirloom tomatoes while others value perfect fruit more highly. By understanding their options, growers can make the best decisions for their operation for greater yield, price and profitability.

Spacing – New growers tend to pack in as many plants as they can, but more plants does not necessarily mean a greater yield. Providing enough room for plants to thrive results in greater ease in training, pruning, harvesting, and scouting the plants.

Training and Pruning Tomatoes - Tomatoes grow rampantly under the ideal conditions a tunnel provides and that growth must be controlled to make the crop manageable for the grower. This BMP illustrates through pictures and descriptions our suggested methods of pruning and training both types of tomatoes.

Leaf Mold on Tomatoes – While most foliar diseases of tomatoes are suppressed under the rain-free conditions of high tunnels, brown leaf mold, *Passalora fulva*, is actually enhanced by the protected conditions. The only effective way to manage leaf mold is by choosing resistant varieties. Fungicide sprays are limited in tunnels and are ineffective on this particular pathogen. Leaf mold is often confused with other leaf spots so this BMP includes photos of look-alike problems to enable growers to properly identify the damage. Heirloom varieties are popular with many growers but all are susceptible to leaf mold. We encourage growers to plant several varieties and include at least some with leaf mold resistance, to help them realize a profitable yield even if this disease appears. Once a tunnel has leaf mold it returns every year thereafter.

Cucumbers in High Tunnels - Although tomatoes are the top crop for high tunnels, especially for new growers, cucumbers are the next most profitable. And because they are unrelated to tomatoes, they do not share the same diseases which makes them an excellent crop for diversified production.

To access these fact sheets visit our ENY website:

http://enych.cce.cornell.edu/

and then click on the tab 'Greenhouse & Tunnels' near the top in red letters. If anyone would like a printed version of any of these fact sheets, contact Amy Ivy with your mailing address.

The project team consisted of Amy Ivy and Judson Reid as Principle Investigators, as well as Stephanie Mehlenbacher from CCE Steuben County, and Elizabeth Buck and Cordelia Hall, field technicians with the Cornell Vegetable Program. The funding came from the Specialty Crop Block Grant Program at the U.S. Department of Agriculture through a grant from the New York State Department of Agriculture and Markets.

ENY COMMERCIAL HORTICULTURE

UPCOMING WINTER

LOCAL PROGRAMS

February 15, 2016.
Northeast NY Tree Fruit School. Lake George, NY.
February 16-17, 2016.
Hudson Valley Fruit School – Tree Fruit Sessions.
February 18, 2016.
Hudson Valley Fruit School – Berry and Grape session.

New Dates Added Regularly at: http://enych.cce.cornell.edu/

High Tunnel and Greenhouse Film: Is it time to change?

COMPILED BY

TERESA RUSINEK

Most growers have films on their structures that are made to last 3-5 growing seasons. After that, wear and tear will significantly reduce the performance of the film and potentially your crops. Over time, changes take place in the plastic film resulting in less light moving through it that the plants can use for photosynthesis. Accumulation of dust and scratches also reduces light transmission which results in yield loss. Maximum light transmission is especially important during winter growing when light levels are already low. While some may try extend the lifespan of the film, it is worth noting that it can reduce your crop growth and quality. If it's time to replace the plastic or if you are putting up a new structure, there are many options to consider when choosing a film. The best one will depend on your specific growing cycles and location. Below are some resources to help guide you through the process.

Plastic Greenhouse Film Update

John W. Bartok, Jr., Extension Professor Emeritus & Agricultural Engineer, Department of Natural Resources and the Environment, University of Connecticut, Storrs CT 2013

Polyethylene plastic has many properties that make it useful as a covering for greenhouses. Its low cost, large sheet size, ease of attachment and good light transmission are properties that have helped to expand its use so that today it is the most common glazing.

Since the early 1960's when polyethylene film was first used to cover wood frame greenhouses, many improvements have been

Photo credit: www.hightunnels.org

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made. Early films lacked durability and had to be replaced annually. They didn't stand up to the abrasion from the structure and the weather. They also had a short life due to deterioration from the ultra violet rays of the sun.

Most polyethylene film is manufactured as a co-extrusion of three layers with different polymers and additives. Each of them contributes to the quality of the film and enhances its performance. The following summarizes some of the characteristics that you need for your crops.

Life – the life of polyethylene films is limited due to degradation processes induced by sunlight and heat. Co-poly is a low-cost material that is good for one season. It is a good choice for seasonal greenhouses, overwintering structures and high tunnels. Avoid construction grade material that has less strength. Greenhouse grade poly is warranted for 4 years or more and costs about double that of co-poly. It contains an ultra-violet (UV) stabilizer that reduces degradation. If additional strength is needed, such as windy in locations, a woven poly or nylon scrim-reinforced material should be considered.

Thickness – one-year co-poly film is available in 3, 4 and 6 mil thickness. Three or four mil film is common for one year use on narrow tunnels and overwintering houses. Greenhouse grade material, only available in 6 mil thickness, is best for multi-year application.

Condensate control (AC) – also referred to as anti-drip is a wetting agent that reduces surface tension allowing condensation to flow rather than form droplets. This can be sprayed on the film or incorporated in the center layer and usually lasts a couple of years. Condensation droplets reduce light transmission and can lead to disease problems when they drip onto plants. An anti-fogging additive may be included to prevent early morning and late afternoon fog formation in the greenhouse.

Reduced nighttime heat loss (IR) – this is an additive that traps the inside radiant heat from escaping. In heated greenhouses, the savings have been measured to total from 10 – 20% depending on whether the sky is cloudy or clear. In double layer poly installations, the IR film is always placed as the inner layer to retain nighttime heat. Research has shown that IR film can increase color and/or compactness and accelerated crop development. This is most likely due to increased nighttime plant tissue temperature. Costing only a couple of cents more per square foot, the payback is only a few weeks for a greenhouse heated all winter.

Reduced daytime heat gain – in areas with strong sunlight, blocking part of the infrared spectrum can lower inside temperature up to 10ºF. Selective pigments can be added to the outside layer in copolymer film to reflect or absorb the near infrared radiation which is useless for plant growth. Research has shown that the higher the outside temperature, the larger the temperature difference achieved by use of these films. The advantages include lower cooling costs, greater worker comfort, lower irrigation needs, reduced plant stress and improved fruit taste.

Ultra-violet (UV) – bees need UV to navigate. If you are using bees to pollinate plants in the greenhouse, purchasing a film that allows some of the UV part of the light energy spectrum to pass through may be important. Otherwise, UV blocking film will reduce whiteflies, thrips, aphids and other insects. It can also control some fungal diseases.

Controlled diffusion – light diffusion is another property that has recently been added by manufacturers. This increases the amount of diffused light that reaches the plants, reducing scorching and increasing light to lower leaves. It is especially important with tall crops such as tomatoes, cucumbers and peppers. Research has shown that diffused light also reduces fungus spore development and insect propagation.

Light transmission – photosynthetically active radiation (PAR) light transmission varies with the type of additive in the film. Typical values are UV stabilized film – 88 - 91%, IR-AC film – 82 - 87%, IR-AC with diffusion – 77 - 88%. Dust, smog and plastic deterioration can also reduce light transmission. A "rule of thumb" is one percent increase in light equals one percent increase in plant growth during the winter or in cloudy weather. Some growers replace the plastic every year just to get a few percent higher light levels when growing plants

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during the short days of winter. Some manufacturers make a film with anti-static properties that repels dust, dirt and smog.

Photoselective films – these absorb or reflect specific wavelengths of light. They can enhance plant growth, suppress insects and diseases and affect flower development. Red films such as Dupont IR and Smartlite Red film reduce PAR light and create a shading effect. They have also been shown to improve rose yield and quality.

Single or double layer poly –if you are growing during the heating season, an inflated double layer is desirable. It reduces heat loss at night by about 40%. It also reduces the stress at the attachments and the rippling of the plastic on a windy day. Air inflation at ¼" water static pressure is best. A slightly higher pressure should be used in windy or snowy weather. Connecting the blower to use outside air will reduce condensation between the two layers. Single layer is common on high tunnels and nursery overwintering houses.

Plastic failure – early failure of poly can be attributed to attachment stress, abrasion on rough surfaces and sharp edges or heat build-up in the area of rafters, purlins and extrusions. Contact with chemicals from pesticides or pressure treated lumber can also affect the life of the plastic. Poly may also be subject to cuts from blowing ice especially if there are multiple greenhouses adjacent to each other. A scrim reinforce poly may be desirable in these situations.

The high quality and long durability make today's copolymer plastic a good choice for greenhouse glazing. Make your selection from the many options that are available to enhance plant growth.

The following is excerpted from
Selecting your structure
University of Vermont UVM.edu
http://www.uvm.edu/sustainableagriculture/Documents/HighTunnels_SelectingStructure.pdf

Plastic Film

By far the most common covers for high tunnels of all types are made of polyethylene. UV resistant greenhouse-quality polyethylene is far superior to common construction- grade polyethylene. It transmits light better; is more resistant to wind, heat, and yellowing; and has a longer life. It is important to replace poly film as recommended. For instance, after four years, standard 6-mil plastic loses about 15% of its ability to transmit light. This is particularly significant during winter production, especially in cloudy climates. Greenhouse film treated with anti-condensate additives prevents condensation drips. Infrared reradiant (IR) materials are added to film to reduce overnight heat loss. In the U.S., metal halides are typically used to treat the film, while in Europe phosphorous and boron compounds fill this function.

Chris Wien, at Cornell University, points out that "films that lack an additive which blocks infrared radiation can allow so much heat to escape on cold clear nights that temperatures in high tunnels are lower than they are outside the tunnel. You can have instances in which the plants inside freeze before plants just outside the greenhouse. It is very important that polyethylene films used on high tunnels have an infrared blocker added to prevent such a problem."

Anecdotal evidence suggests that the frost forming on the inside of the plastic on a high tunnel is an excellent reflector of infrared radiation. Steve Moore thinks that it may be equal in value to special infrared AC plastic in unheated structures. In heated structures (where the interior frost is not present), infrared AC plastics undoubtedly retain heat better.

New designer greenhouse films are now entering the market. When the Cramers replaced the film on their Haygrove multi-bay tunnel, they chose *Luminance THB* (thermal heat barrier) poly which costs 10% more than ordinary greenhouse film *(See www.bpiagri.com/hort-luminance.htm).* Using infrared blockers, this enhanced poly reduces ex-

cess daytime heat and scorching while also helping to minimize heat loss at night. It also increases light diffusion, making more light available to plants to increase photosynthesis and yields. In particular, it is recommended for ornamentals and nursery stock and has been shown to improve tomato yields. However, the manufacturer cautions that it is not the best choice for early spring growth.

Steve Moore experimented with several types of plastic film over a multi-year period on two adjacent high tunnels. He compared double layers (inflated) of the standard 6-mil 4-year film with infrared re-reflectants and anticondensate to single layer *Coeava*, a 7.8 mil film with reportedly an 8-year useful life.

In south central Pennsylvania, a high tunnel with two layers of 6-mil, 4-year standard poly was warmer by an average of over 6°F during the winter, and had superior plant growth compared to high tunnels with a single layer of 7.8 mil high performance plastic. Steve suspects that this difference in thermal performance between the two types of film would be less significant in a warmer climate or under late fall or early spring conditions. In carrying out this experiment, Steve had thought that the lower insulating ability of a single layer of poly could be offset by using more layers of row cover inside the structure. He also hoped to gain the benefit of enhanced light transmission and save money by not using another layer of high tunnel covering. But neither of these theories proved correct. In the dead of winter, the double walled tunnel stayed warmer and outperformed the single layered tunnel.

Double Versus Single Layers

A double layer of poly film with inflation between the layers provides insulation and reduces heat loss by 40% according to Aldrich and Bartok (see NRAES publication, "Greenhouse Engineering,"). Along with increasing heat retention, the second poly layer reduces the light level by about 10% so a balance must be reached. Low light levels cause plants to become weak and leggy, and slow down growth. As an alternative to double poly layers with an inflation fan, some farmers use multiple layers of floating row covers, which more drastically decrease light transmission. Unless these covers are removed during the day, crop production may suffer.

Many farmers have found it sufficient to use a single layer of polyethylene on their high tunnels. However, in the winter, these high tunnels will have greater heat loss and will be colder than tunnels with a double layer of poly. And where a heating system is used, significantly more fuel will be needed if just a single layer of poly film is employed. Using a double layer requires electricity to run a small blower fan. An alternative to being connected to the electrical grid is a modest solar power system.

The following is excerpted from
Reduce Storm Damage to Your Greenhouses
November 25, 2014
John Bartok, Jr. Agricultural Engineer, Ashford, CT

Snow Loading

Snow that accumulates on a greenhouse can put significant weight on the structural members. Snow loads vary considerably from 0 along the southern coastline to more than 100 pounds per square foot in Northern Maine. Local building codes specify the design snow load.

Snow can be light and fluffy with a water equivalent of 12" of snow equal to 1" of rain. It can also be wet and heavy with 3" equal to 1" of rain. Snow having a 1" rain water equivalent will load a greenhouse with 5.2 psf. This amounts to 6.5 tons on a 25' x 96' greenhouse.

The following are a few pointers to consider before the next snow season:

- The foundation piers or posts should be large enough to support the weight of the building including crop and equipment loads.
- All greenhouses should have diagonal bracing to keep it from racking from the weight of the snow or force of the wind.
- Collar ties and post connections should have adequate bolts or screws. This is a weak point in some greenhouse designs.
- Allow 10' to 12' between individual greenhouse for snow accumulation and to prevent sidewalls from being crushed in.
- When building new hoophouses, consider using a gothic design that sheds snow easier. In hoop shaped houses, install 2" x 4" posts under the ridge every 10' when heavy snow is predicted.
- The heating system should be large enough to maintain 60ºF to melt snow and ice. It takes 250 Btu/hr per square foot of glazing to melt a wet snow falling at a rate of 1"/hour. Heat should be turned on in the greenhouse or under the gutter several hours before the storm begins.
- The plastic should be tight and inflated to at least 0.25" water pressure. This can be checked with a monometer. Any cracked or broken glass should be replaced.
- Energy screens should be retracted to allow heat to the glazing.
- A standby generator should be available with adequate fuel for the duration of the storm to power heaters, fans and blowers.
- Selection of greenhouses that meet the International Building Code and good construction techniques are important considerations when building new greenhouses. A little preparation before a storm can minimize damage from severe weather events.

Plum Pox Virus Found in the Hudson Valley – Unfortunate News for Stone Fruit Growers

DAN DONAHUE

Introduction

The Plum Pox Virus (PPV) (Sharka Potyvirus) has been given the dubious distinction by the New York State Department of Agriculture and Markets as being the "most devastating viral disease of stone fruit". An infected tree will suffer a shortened life span, and produce misshapen and unmarketable fruit. Potential hosts of the virus include selected *Prunus* and non-*Prunus* cultivated, wild, and ornamental species, including peach, plum, apricot, sweet and sour cherries. There are currently no known control measures. In other parts of the world, including Europe, PPV is referred to by its Slavic name "Sharka".

History

PPV symptoms were first observed in Bulgaria in 1915-18, although there had been reports of symptoms dating back to 1910 in Macedonia. The disease became established in Western Europe during the 1950's, subsequently moving on to North Africa and the Middle East. In the United States, the virus was found for the first time in Pennsylvania in 1999, then in Ontario and Nova Scotia, Canada in 2000, and Western New York and Michigan in 2006. The Hudson Valley of Eastern New York can now be added to this list, following the discovery of the virus in a single plum tree in Ulster County in 2015. The United States Department of Agriculture considers PPV to be an invasive species. USDA-APHIS, in cooperation with state agriculture departments, is charged with the responsibility to design and implement eradication programs in the regions where the virus is found, as well as developing protocols to inhibit the spread of infected bud wood and nursery stock.

Symptomology, Means of Distribution & Economic Loss

PPV symptoms can appear on leaves, fruits, flowers, and seeds, and will vary according to the cultivar, PPV strain, season, and location. Commonly a yellow or necrotic "ring" is observed in leaves and fruit, apricot and plum fruit can be misshapen, and rings found on the stones. On the other hand, an infected tree may not exhibit any symptoms at all.

PPV-Light green patterns on plum leaves

Photo credit: Marc Fuchs

Aphids are known vectors of the virus, and are capable of infecting neighboring trees. PPV will survive approximately three hours on the mouthparts of the aphid, a 30 second "exploratory" probe of the leaf by the aphid is all that is required to transmit the virus. Over longer distances, the virus moves along with infected budwood and infected nursery trees. PPV will significantly reduce the life span of an infected tree. Yield losses of 80-100% have been observed in the most susceptible cultivars.

Management & Eradication

The American Phytopathological Society (APS), in a bulletin titled "Plum Pox Potyvirus Disease of Stone Fruits", lists the following preventative measures:

- Regulation of the importation and movement of propagative materials and commercial propagants.
- Production of virus-free trees through the indexing of mother trees and the selection of virus -free budwood and rootstocks.
- Indexing of germplasm in quarantine.
- Production and use of resistant cultivars.
- Annual visual inspections and surveys in orchards and nurseries.

Once the disease has become established in a region, APS scientists recommend the following control measures:

- Early detection via surveys, with subsequent removal and destruction of infected trees.
- Planting of non-host tree buffers
- Chemical control of migratory or over-wintering aphids.
- Planting of resistant cultivars and rootstocks developed using genetic engineering and conventional plant breeding techniques.

Recent Experiences with PPV in Western New York

PPV surveys of New York State stone fruit orchards resulted in the discovery of the virus in Niagara, Orleans, and Wayne counties of Western New York in 2006. NYS Agriculture and Markets specified "quarantine" areas where bud wood collection and nursery plantings were prohibited, and "regulated" areas where new plantings of stone fruit were prohibited, covering 38,400 acres of both planted orchard and open land. Infected and adjacent orchards within at least 50 meters of known infection sites were destroyed in an effort to eradicate the disease. Affected growers were compensated through a NYS Department of Agriculture and Markets (NYSDA&M) program, with payment amounts based on the age of the trees removed. Stone fruit orchards continued to be surveyed for PPV, with the last strike being observed in 2009 in Wayne and Orleans Counties, and 2011 in Niagara. Federal law requires that a controlled region must test clean for three consecutive years before restrictions can be lifted. As of the 2015 season, it is now legal to plant stone fruit orchards in the three controlled counties, and propagate trees in Wayne and Orleans (but not in Niagara). All 120,000 leaf tissue samples from the three counties tested negative for the virus in 2014. At this point in time, the eradication program in Western New York can be considered a success. The Hudson Valley is now the final toe-hold of PPV in the United States.

PPV-Ringspots on a peach fruit

Photo credit: Mariano Cambra

What to Expect in the Hudson Valley

A survey this summer turned up a single infected plum tree in Ulster County. A follow-up survey in September confirmed the single strike. However, since leaf tissue at this time was beginning to deteriorate (senescence), another follow-up survey will be made in the Spring of 2016. All Hudson Valley stone fruit producers known to New York State were notified of the find by letter in September. NYSDA&M is currently working to identify the extent of the quarantine and regulated areas, and will announce their findings at two grower meetings. Hudson Valley stone fruit growers are strongly en-

PLUM POX VIRUS GROWER MEETING ANNOUNCEMENT

Two grower meetings with New York State Department of Agriculture & Markets staff will be held so that stone fruit producers in the Hudson Valley will have an opportunity to get the latest facts about the finding of Plum Pox Virus in Ulster County, and have their questions answered about eradication requirements, planting and propagation restrictions, and compensation programs within the designated restriction and quarantine zones. Two meeting times are being offered to maximize convenience for the growers, it is only necessary to attend one:

Wednesday November 18th at
2:00 pm
OR
7:00 pm
at Conference Room
Hudson Valley Research Laboratory
3357 Rt. 9W, Highland, NY

Questions?

For more information contact Dan Donahue at 845-691-7117, or by email at *djd13@cornell.edu*

Continued on next page

couraged to attend one of these two meetings to learn the latest facts and have their questions answered by the experts.

In general, we can expect the following here in the Hudson Valley:

- The quarantine and restricted areas will be defined by township borders around the infected site, not county borders, so it is anticipated that only portions of certain counties will be included initially.
- All susceptible plant material within a 50 meter radius of the infected tree will be removed and destroyed, including anything left at or below ground level that could produce sucker growth.
- The NYS Eradication Program will reimburse affected growers for the loss of their trees, on a sliding scale based on the age of the removed trees, up to a radius of 500 meters from an infected tree. *Note: While it is mandatory to remove all susceptible plant material within 50 meters, the grower has the option to increase that to 500 meters, and still be compensated.*
- While even excellent aphid control cannot guarantee that the spread of PPV will be contained, for 2016 stone fruit growers should pay extra close attention to the management of these pests in their stone fruit orchards.
- Pick-Your-Own is popular in the Hudson Valley. Growers will need to prevent customers with "green thumbs" from taking cuttings from the quarantine areas for propagation in their home gardens.

Vole Management in Berry Plantings

EDITED FROM AN ARTICLE WRITTEN BY

C. HEIDENREICH, CORNELL UNIVERSITY

Voles, also known as meadow or field mice, can do a lot of damage to berry plants during winter months by feeding on plant roots, girdling canes, gnawing on crowns, or simply disrupting soil and plant rooting below the snow cover. Population monitoring and management can help reduce losses incurred on berry crops by these small mammals.

Vole Life History and Management

Twenty-three species of voles occur in the United States but Meadow voles and Pine Voles are of the greatest economic importance to fruit growers. Voles are 5 to 9 inches in length, and weigh 1 to 2 ounces. They are gray-brown in color with short legs and tails and have small eyes and partially hidden ears. They are nocturnal. Vole lifespan ranges from 2 to 16 months. Populations tend to be cyclic with peaks occurring every 2 to 5 years. Numbers can be reduced by cold winters and food scarcity.

Voles do not hibernate, reproducing for most of the year with peaks occurring in the spring and fall. Highly prolific, voles produce 1 to 5 litters per year ranging in size from 3-11 young/litter. Females are reproductively mature in 35 to 40 days. Young voles reach maturity within 21 days.

Voles feed on a wide variety of plants but most commonly feed on grasses and forages. Other plant food sources include seeds, tubers, bulbs, and rhizomes. They are also known to occasionally feed on insects, snails, and animal remains. The preferred habitat for most voles is an area with heavy grass cover or leaf debris and mulch. When populations are high they may spill over from these habitats into fruit plantings, wind breaks, and cultivated fields.

In terms of quick ID, the tail is shorter than hind foot length for pine voles and larger than hind foot length for meadow voles. Trapping is an effective way to positively identify vole species present in an area. A snap-type mouse trap is sufficient for

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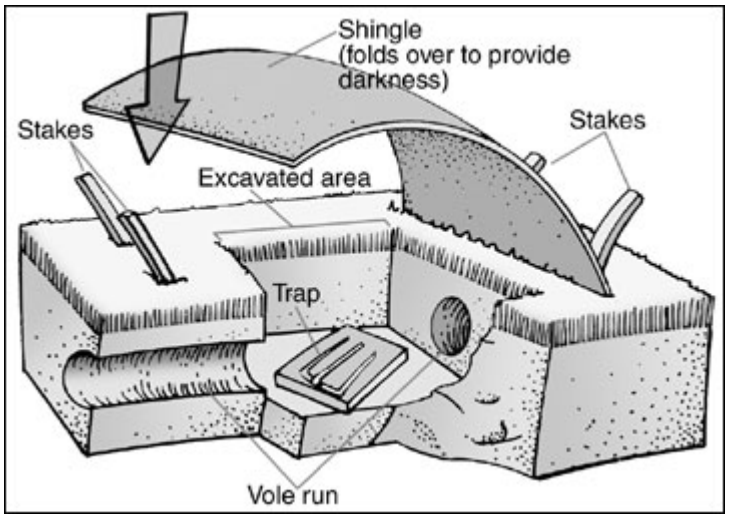

Figure 1 Pine vole trap (Pierce, 2003)

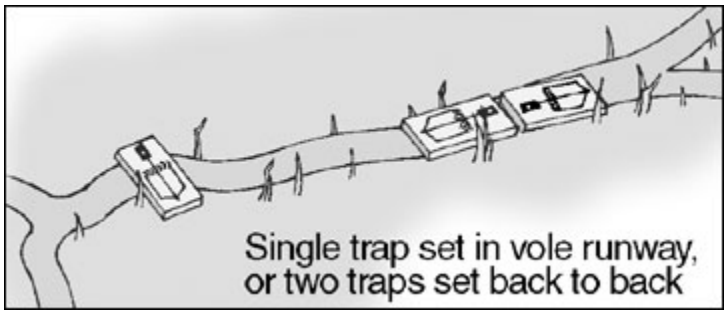

Figure 2 Meadow vole trap (Pierce, 2003)

this purpose. Bait the trap with a small piece of apple. Some excavation may be needed to position traps in pine vole runs (Figure 1). Place a bent roof shingle over the trap to form a protective cover for the trap. Allow sufficient height between the trap and the shingle roof for the trap to spring without hitting. Meadow vole traps should be placed at right angles to surface runways or back to back inside runs (Figure 2).

Recognizing Vole Damage to Berry Crops

Pine voles feed on berry crop roots, and Meadow voles girdle berry root crowns and canes. Girdling typically occurs in fall and winter. Damage may also occur to irrigation systems through voles chewing on tubing. Girdling alone is not solely indicative of vole damage to bush and caneberries. Rabbits and other rodents may also girdle berry Vole girdling is typically 1/8" wide by 3/8" long and 1/16" deep. Marks occur at various angles and in irregular patches. This type of feeding, coupled with evidence of extensive burrowing, burrow entrances and surface runways may indicate Meadow vole damage. Pine vole spends most of its time and causes its damage *below* ground. In comparison, Meadow vole spends considerable time and causes most of its damage *above* ground. Extensive vole tunneling creates air pockets in the root zone and may disrupt water movement through the planting (Figure 3).

Vole Management Strategies

Cultural practices are effective in reducing vole populations in berry plantings. Weeds, ground cover and litter should be eliminated around bushes as much as possible. Grass alleyways should be mowed regularly, especially in spring and fall. Mulch used for weed management should not excessively cover bases of canes or crowns.

Voles are excellent swimmers. Unmanaged waterways, rights-of-way, and ditch banks provide excellent vole habitat. Manage these adjoining areas carefully to reduce vole numbers. Keeping surrounding vegetation to a minimum through mowing, spraying, or grazing may also reduce vole populations. Tillage of surrounding non-berry crop areas also helps reduce vole damage. Tilling removes cover, kills some voles outright, and destroys burrows.

In addition to cultural practices, some growers opt to use pelletized baits with rodenticides to further reduce vole populations. These products may be broadcast applied to whole plantings or applied by hand near entrance holes and in runways.

Figure 3 Tunneling in strawberry field (L. McDermott)

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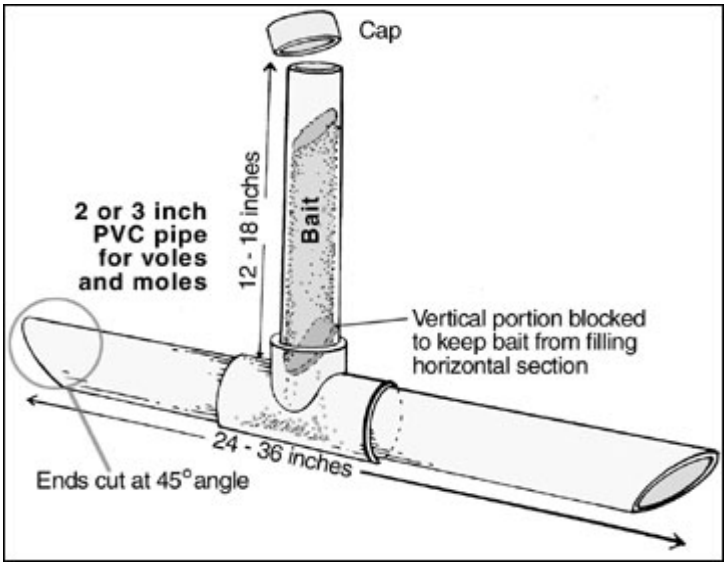

Figure 4 Bait Station diagram (Pierce, 2003). Note: Meadow voles will sometimes not use these types of bait applicators.

Broadcast and hand applications, while easier to implement, have been found to be generally less effective than bait station use. Broadcast baits tend to degrade more quickly as they have full exposure to the environment. Moreover, their wide dispersal causes less frequent vole ingestion/exposure. This in turn may lead to bait shyness through ingestion of sub-lethal doses of the bait. Broadcast baits should not be applied to areas with bare ground as this may increase non-target animal consumption.

Rodenticide bait stations protect bait from moisture and reduce the likelihood of bait consumption by non-target animals. Stations should be activated in fall if population numbers are high and maintained through spring if populations remain high during winter months. They may be constructed from PVC pipe or other water repellent materials (Figure 4). Place bait stations at 10- ft intervals in infested areas. Repeat baiting again after 5 days. After 21 days, repeat the apple sign test to check efficacy of control measures.

Two types of rodenticide baits are currently available for vole population management: zinc phosphide containing baits which are a one-time application for quick knock down of rodent populations and baits containing anticoagulant compounds such as chlorophacinone that provide protection throughout the winter.

Zinc phosphide baits such as Prozap zinc phosphide pellets or ZP Rodent bait Ag contain 2% zinc phosphide. Both products are currently registered for use on bushberries and caneberries in NY. These products are restricted use pesticides which may be purchased and applied only by certified applicators. They are acutely toxic to all vertebrates (humans, domestic animals, wildlife). Broadcast applications by cyclone seeder or hand (follow all label precautions!) of these products may only be made during the dormant season (after final harvest and before leaf emergence in the spring); PHI for bushberries and caneberries is 70 days. Hand applications should consist of throwing tablespoon amounts of bait into heavy cover along bushes, rock out crops, fence lines and runways. Make up to 2 applications at a minimum interval of 21 days, at the rate of 6 to 10 lbs. per acre (0.12–0.2 lb. ai/A) per application. Maximum application per growing season is 20 lbs. per acre (0.4 lb. ai/A). Never apply these materials to bare soil. Zinc phosphide baits should not be applied when ground is snow-covered, or when rain or snow is forecast within 48 hours of application.

Zinc phosphide baits should reduce vole populations within 72 hours of treatment. After the vole population has been reduced, an application of anticoagulant bait will assist in reducing the number of voles repopulating the planting during winter months. Anticoagulant baits, such as those containing chlorophacinone as an active ingredient,

Continued on next page

are more toxic to voles than to other birds and mammals. These baits have a lower percentage active ingredient (0.005%) and require multiple feeding events by voles to be effective. Risk to non-target wildlife is minimal with these products when they are use according to label directions. There is currently one anticoagulant bait product registered for use in NYS with this ai: Rozol Vole Bait (EPA number 7173-242). It may be applied to border areas/buffer strips adjacent to crops (within 100 feet of the edge of the crop land). Before application, locate vole trails, runway systems, and harborage areas to be treated. Rozol must be applied by "Hand Spot Baiting" only in NY. Place 1 ½ ounces (6 tablespoons) of bait in each active hole, trail or runway; cover each placement with a shingle or grass to avoid exposing non-target organisms, or place in a tamper resistant bait station. Do not exceed 10 pounds per acre. As always, read and follow all label directions whenever applying rodenticides or other pesticide products.

References:

O'Brien, J.M. 1994. Voles. in: Prevention and Control of Wildlife Damage Handbook, Hygnstrom, S.E., Timm, R. M., and Larson, G. E. (eds).
http://icwdm.org/handbook/rodents/ro_b177.pdf.

Pierce, R. A. II. 2003. Controlling Voles in Horticulture Plantings and Orchards in Missouri. University of Missouri- Columbia Agricultural Guide G9445.
http://extension.missouri.edu/explorepdf/agguides/wildlife/g09445.pdf.

Tobin, M.E. and Richmond, M.E. 1988. Meadow Vole and Pine Vole. NYS IPM Tree Fruit Fact Sheet 102GFSTF-M1.
http://www.nysipm.cornell.edu/factsheets/treefruit/pests/vole/vole.asp.

Tobin, M.E. and Richmond, M.E. 1987. Bait Stations for Controlling Voles in Apple Orchards. Third Eastern Wildlife Damage Control Conference.
http://digitalcommons.unl.edu/ewdcc3/61/

Source: New York Berry News Vol. 12 No. 9

NYS DEC Special Permit Program is at Risk of Cancellation

DAN DONAHUE & ANNA WALLIS

Now that apple harvest has wrapped up, here is a brief reminder and warning for those farms that rely on the Special Permit Training program. Some 250 employees from 42 orchards received NYS DEC Special Permits this past spring in Eastern New York. US EPA is currently proposing revisions to the Worker Protection Standard regulations. Our understanding is that the proposed changes would effectively eliminate the issuance of Special Permits by the NYS DEC. As a result, all farm employees who apply restricted use pesticides would need to meet the training requirements of, and pass the NYS DEC test to become certified private applicators. An important point; NYS DEC does not administer tests in the Spanish language. A 90 day comment period on the proposed changes is currently open until November 23rd 2015, there will still be time once harvest is complete to contribute your comments about the importance of the Special Permits to your orchard business. More details on this issue will follow; in the meantime here is a link to the US EPA site describing the proposed changes:

http://www2.epa.gov/pesticide-worker-safety/epa-proposes-stronger-standards-people-applying-riskiest-pesticides.

Related to WPS article on p. 7

Calendar of Events

Tuesdays, Nov. 10-Dec. 15th, 2015, evenings from 6:30-8:00pm - ***Berry Production (BF 122) - Getting Started with Production and Marketing*** – One of the Northeast Beginning Farmer On-line courses. If you're exploring the idea of adding berries and bramble fruits to your farm, this course will help you consider all the aspects of this decision, from varieties and site selection all the way through profit potential and marketing. Register on-line at: ***http://www.nebeginningfarmers.org/online-courses/all-courses/bf-122-berry-production/.***

December 8-10, 2015. *Great Lakes Fruit, Vegetable, and Farm Market EXPO and Michigan Greenhouse Growers Expo.*
http://www.glexpo.com/#

December 15-17, 2015. *New England Vegetable and Fruit Conference.*
http://www.newenglandvfc.org/

January 7-9, 2016. *North American Strawberry Growers Conference*, Savannah, Georgia. Held in conjunction with the Southeast Regional Fruit and Vegetable Conference.
http://www.seregionalconference.com/

January 19-21, 2016. *Empire State Producers EXPO*. Syracuse, NY.
http://nysvga.org/expo/information/

February 2-4, 2016. *Mid-Atlantic Fruit and Vegetable Convention*, Hershey, PA.
http://www.mafvc.org/

March 2-4, 2016. *North American Raspberry and Blackberry Conference*, Colonial Williamsburg in Williamsburg, VA.
http://www.raspberryblackberry.com/

CRAVE Conference
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Advances in
Viticulture and
Enology
November 4, 2015
8:30 – 3:30 PM

ILR Conference Center and WebEx webinar

You are invited…

The annual CRAVE (Cornell Recent Advances in Viticulture and Enology) conference features 15 minute presentations by Cornell faculty, extension associates, and graduate students on current extension and research topics of their choice. For this year's conference, we would like to invite you to log on for as little or as much time as you want to hear cutting-edge presentations about viticulture, enology, economics and more. Find out what Cornell Research and Extension faculty and staff have been up to this past year.

To Attend:

WebEx: The entire program will be broadcast as a webinar you can access through your computer. To join the webinar, simply click on this link: Join CRAVE or: https://cornell.webex.com/cornell/j.php?MTID=m9c2a3a53417a9ea90d708d06846c0c4b

Meeting number:	317 586 442
Meeting password:	Grapes2015

And type in the password: **Grapes2015**
Then follow instructions to join the 'audio conference'. You will hear the speakers' audio and see their slides. You may also ask questions by typing them in at the 'Chat bar'.

For a detailed Program Agenda and topic:
CRAVE Schedule 2015

ENY COMMERCIAL HORTICULTURE LOCAL PROGRAMS

February 15, 2016. *Northeast NY Tree Fruit School.* Lake George, NY.
February 16-17, 2016. Hudson Valley Fruit School – Tree Fruit Sessions.
February 18, 2016. *Hudson Valley Fruit School – Berry and Grape session.*
New Dates Added Regularly at: *http://enych.cce.cornell.edu/*

The Cooperative Extension Association
of Rensselaer County
Agriculture and Life Sciences Building
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