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Eastern NY Commercial Horticulture Program

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Weekly Vegetable Update

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North Country—Clinton, Essex, northern Warren and Washington counties

We had a blast of summer weather last week and this with temperatures in the 80's and high humidity; quite a shock after the relatively cool temperatures in recent weeks. Warm season crops that have been slow to ripen or sweeten made a leap with these conditions. Rain showers have been scattered and light with many fields needing irrigation. As of September 2 we still have had no confirmed cases of late blight up here, but the first confirmation on the west side of the Adirondacks, north of Canton in potatoes was just reported. Our first spotted wing drosophila was found in traps earlier this week but still no brown marmorated stink bug. There are some advantages to being so far north! One site with swede midge is continuing to experience damage, now on late season broccoli and kale. This is a pest that seems to thrive in our cooler conditions.

Fall broccoli with no head forming due to feeding damage from Swede midge. Note the distorted growth and corky damaged tissue which are characteristic of this pest. If anyone notices this kind of damage, please contact Amy Ivy or any of the ENY team.

Capital District—Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington counties

The pumpkin crop is looking great across the region. Yields are good, size is good, and plants are holding up well enough to protect pumpkin fruits. Powdery mildew pressure is very high, but regular sprays are keeping it off the handles. With downy mildew (DM) moving into the area growers are looking at switching chemistries to include DM control in addition to powdery. Mixing all applications with a protectant continues to be important.

As we move toward picking the last rounds of summer squash, it is important to disk in older plantings which harbor powdery mildew spores and can cause later plantings to develop the disease more quickly. Burying residue drastically reduces the disease pressure. While you are at it, why not put down a cover crop?

Late blight is spreading quickly throughout the region. Unprotected plantings are likely infected in most places. Keep on a tight spray schedule for tomatoes and late potatoes, and mow off potatoes as soon as they are ready to reduce the possibility of late blight moving from infected leaf or stem tissue through the soil to the tubers.

The row of cucumbers on the right shows significantly more symptoms of DM than the yellow squash and zucchini on the left.

Mid-Hudson Valley—Columbia, Dutchess, Greene, Orange and Ulster counties

There is not much new news to report. As expected, Downy mildew (DM) in cucurbits is moving around the region with new reports coming from Westchester and Columbia counties. Warmer temperatures and drier conditions this past week are likely keeping DM from going crazy for the moment, but I would keep vigilant with protecting crops as the weather for the second half of next week looks like it will change back to cool and wet.

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

Erik Schellenberg to Facilitate GAPs Programming in Eastern New York Region

Erik Schellenberg is a New York native, who recently returned after completing graduate school in Canada for natural resource management. His background in environmental impact assessment, ecological agriculture, and vegetable farming provide him with the knowledge and experience necessary to work with and relate to farmers. Erik is filling a grant funded position aimed at facilitating the GAPs certification process for vegetable farmers in the ENY Team area with special focus, reflecting the interest of the funder, in the Albany-south area, plus Sullivan, Rockland and Westchester. To that end, he will be leading educational sessions to help producers better understand and work through GAPs certification and will also be available for farm visits to help producers work through their customized GAPs plans and address any issues before the plans are audited by the state.

Need GAPS Help?

If you want help with writing your GAPs plan or need to get ready for your first inspection, contact Erik Schellenberg (jk2642@cornell.edu). He is prepared to help you take the next steps needed to get that inspection and to be GAPs certified.

This fall, we plan on having more 2-day classes, across the region for those who have yet to get started with their plans or investigating "what it takes".

Please call 845-344-1234, and ask for Erik, if you have questions or want to book an appointment with him.

Sticky Stuff on Pumpkins

Aphid populations can explode from a few to a mob riot in just a few days in late summer, especially on pumpkins. It's tricky, because they stay on the undersides of the leaves where they're hard to find in their early stages, and then hard to reach with insecticide once you reach your threshold.

Earlier in the season aphids can affect yield by stressing foliage, especially during drought conditions. If you are only finding aphids late in the season, they are unlikely to affect your yield. But they sure can create a sticky mess for your U-pick customers! Rather than chewing the leaves as caterpillars do, aphids insert their straw-like proboscis into the plant tissue and drink the fluids. Not unlike we humans when we drink too much coffee, the liquid diet of aphids means they secrete copious amounts of well, sugar poop. Honeydew is the polite term for the sugary, sticky substance they excrete. Often, a sheen of honeydew is your first clue you have aphids. Whenever you notice this on any leaf or crop, look up from the honeydew and chances are you'll find aphids.

Due to the high sugar content of the honeydew, sooty mold, a harmless but unsightly black mold, often grows on the honeydew. This doesn't damage the pumpkin or plant tissue it's growing on, but it is unsightly and can be off-putting for your customers.

Unfortunately, honeydew is truly sticky and is not easy to wash off. It is sugar based, so water will eventually dissolve it, but a little soft brushing will help. Be careful to not nick the green tissue of unripe pumpkins with this brushing; the rinds are a bit tougher once they color up.

If your aphid population is as heavy as in Figure 2, you are unlikely to control it at this point. Take note this year and make an effort next year to keep ahead of the population before it can rise to this level. As I mentioned earlier, the population can explode in a matter of days, so diligent scouting is worthwhile. *-ADI*

Figure 1. The characteristic sheen of honeydew on this green pumpkin is a clue that a hefty aphid population is present.

Figure 2. Once the aphid population builds to this level it is very difficult to stop.

Onion Fungicides....

These past couple of weeks have revealed that fungicide programs need to be rotated. There are some onion fields that are suffering premature demise due to disease that likely could have been prevented and I think that's mostly due to lack of chemical class rotation.

Below is a chart that illustrates the FRAC Codes chemicals fall under (refer to Teresa's article in Issue 7, May 29, 2014 of the Weekly Veg Update for more). It is important to rotate FRAC codes except for the ones with the M designation. Those with M designation have multi-site activity and have shown no signs of resistance build-up yet. However, they can be less effective than the others especially at controlling some of the faster-moving diseases.

This list is a re-arrangement of the information in the 2014 Cornell Vegetable Guidelines. But this, by no means, contains all of the information in the guidelines. It is just organized more for selecting based on disease complex and rotating codes. Also, it does not include ALL of the formulations. For example, I grouped all of the chlorothalanil formulations under "Bravo" if that was the only active ingredient. Also, Champ is generically listed for all of the copper hydroxide formulations. However, if a chemical has more than one active ingredient or was in another/additional class, it was listed separately e.g. Quadris and Quadris Opti. I included days to harvest (DTH) for dry bulb onions only, as it can be a significant consideration at the end of season when selecting a chemical.

For more information, refer to the Guidelines and this good website on FRAC codes:

- http://veg-guidelines.cce.cornell.edu/
- http://www.frac.info/publication/anhang/FRAC%20Code%20List%202013-final.pdf *-MRU*

Brand Name	Active Ingredient(s)	FRAC Code (s)	DTH	Labeled for			
				Botrytis	Purple Blotch	Stemphyllium	Downy Mildew
Singular Active Ingredients							
Dithane	*mancozeb*	M3	7	X	X		
Bravo & Zn	*chlorothalanil*	M5	7	X	X		X
Champ	*copper compounds*	M1	0		X		X
Rovral	*iprodione*	2	7	X	X	X	
Propimax	*propiconizole*	3	14	X	X		
Tilt	*propiconizole*	3	14	X	X		
Endura	*boscalid*	7	7	X	X		
Vanguard	*cyprodinil*	9	7	X	X		
Scala	*pyrimethanil*	9	7	X	X		
Quadris	*azoxystrobin*	11	0		X		X
Quadris Opti	*azoxystrobin+chlorothalonil*	11	7	X	X		X
Cabrio	*pyraclostrobin*	11	7	X	X	X	
Reason	*fenamidone*	11	7				X
Forum	*dimethomorph*	40	0				X
Multiple Active Ingredients							
Quilt	*azoxystrobin + propiconazole*	11 + 3	14	X	X		
Pristine	*pyraclostrobin + boscalid*	11 + 7	7	X	X	X	
Inspire Super	*difenoconazole + cyprodinil*	3 + 9	7	X	X	X	
Catamaran	*potassium phosphite + chlorothalonil*	33 + M5	7	X			
Switch	*cyprodinil + fludioxonil*	9 + 12	7	X	X		
Ridomil	*mefanoxam + copper hydroxide*	M4 + M5	7		X		
Mankocide	*mancozeb + copper hydroxide*	M3 + M1	7	X	X		

Sweet Potato Harvesting

I know in last week's newsletter we mentioned about using rowcovers on sweet potatoes that may be needed a few more weeks to size up, but I thought maybe it was also important to mention this week some simple harvesting tips to ensure the best quality roots going into storage. Not to mention from the looks of the forecast, it might be a nice week for curing as well! The one thing that I have to continue to remind myself of is that sweet potatoes are nothing like your standard Irish potatoes. In fact, they have very little in common. Sweet potatoes are much more delicate and require more attention when harvesting and storing.

Sweet potatoes can be dug at any time roots reach a marketable size. It is very important not to let the roots get exposed to cold temperatures (less then 50°F). Hopefully we are still a ways off from getting our first frosts in order for the crop to "finish out". Sweet potato vines can be hit with a light frost, but when roots are exposed to prolonged colder temperatures, they can form an internal white ring of tissue which really decreases the quality of the root. The roots will not store as long or taste as good. That is also why we recommend storing sweet potato roots at or around 55-59°F with at least 90% humidity.

One good thing about the dry weather the last couple of weeks is that it is ideal for digging sweet potato roots. Drier soil reduces the chance of soft rot bacteria invading wounds on the roots as they are dug. Mowing or cutting the vines will help make the harvest go easier, but it will not help "set" the skins or "toughen up" the skins as it does with regular Irish potatoes. You can mow and dig sweet potatoes the same day and the skins would be no different than if you cut the vines two weeks prior to harvest. One other recommendation is to stop watering about two weeks before you want to dig your roots.

If you are using a mechanical digger such as a potato digger to harvest your roots, make sure you run the chain as slow as possible and carry as much dirt up the chain as possible to reduce the amount of bouncing that occurs. The sweet potato has a thin, delicate skin that is easily broken. Any cuts, bruises, or skin abrasions will reduce quality and storability significantly. It might even be worth taking the shakers off of your digger or putting less aggressive shakers on to reduce the amount of bouncing of the roots on the rods. Adding padding to any rough edges on the digger will also help. The longer the chain, the more dirt that can sift down through the rods exposing the roots which can then allow workers to pull the roots off the digger before they are put back on the ground. This would eliminate one more potential bruising opportunity.

Sweet potato roots waiting to be picked up.
Photo by CDB

Key postharvest differences between Irish and Sweet Potatoes

- Sweet potatoes are cured warm and moist: 85°F and 90% humidity for 5-7 days
- Sweet potatoes are stored warmer— at 55°F
- Sweet potato skins are very thin and do not "set" after vine kill

If possible when picking up your sweet potatoes, use some kind of slotted crate or small bin (apple bins, milk crates etc.) that will allow air to flow through them. Instruct your workers to gently place them in these containers. If picking up with buckets and dumping into bins, reduce the distance the roots have to fall as much as possible. This again will help reduce cuts and bruises.

Do not wash your roots until you are ready to go to market with them! Remove as much dirt and debris as possible when digging, keep them dry and place directly into the harvest containers. These containers should then be taken to an area to be cured. The curing process allows any cuts, abrasions or bruises to heal which allows for better storability of roots. It is also needed for the sweet potato to achieve it's sugars and flavor. Cured roots will almost always taste better than those not cured.

Ideal curing conditions are a temperature of 85°F with 90% humidity for 5-7 days. At this time of year empty greenhouses can be an excellent place to cure sweet potatoes, but there are a couple of things that need to be done. First, floors of the greenhouse should be watered several times a day in order to keep the humidity levels at 90%. Second, make sure fans are set for 85°F and the heater is turned on and set to keep the greenhouse as close to 85°F night—that's right, you want to maintain that warm air temperature during the nighttime as well. If this cannot be done, then it will take longer to cure the roots.

Once your sweet potatoes are cured, store as close to 60°F as possible, but no lower, and maintain a high humidity. I would bring down the storage temperatures gradually to reduce the chance of condensation occurring on the roots in the bins. If done properly, sweet potatoes should easily store into January or even February. - *CDB*

Watch for Stink Bug Damage

Last week I mentioned that we've started seeing Brown marmorated stink bug (BMSB) damage in Jalapeno peppers. This past week I've seen stink bug damage on tomato as well. While we primarily see BMSB damage on peppers, several other stink bug species such as the green and brown stink bug can often be found feeding on tomatoes. Because many areas in eastern New York are on the dry side, damage from stink bugs may be greater as they seek succulent plant material, such as your irrigated tomato crop, to feed on. Later plantings are also more susceptible to damage as late season populations of stink bugs feed intensively before moving to overwintering sites.

There are no good methods for monitoring these pests. Traps are not a reliable method for detection of stink bugs in crops. Stink bugs are elusive and often go unnoticed during scouting.

Stink bug populations buildup in deciduous trees and migrate to nearby fields later in the season, so now is a good time for growers to scout field edges for cloudy spots on fruit. Also, I've noticed higher incidence of damage in weedy fields and fields with weedy borders.

There are several insecticides listed for stink bug control, though relatively few active ingredients are effective against BMSB. Knock down has been observed for a 3 day period followed by low levels of efficacy and return to crop feeding when using the less effective pyrethroid insecticides. Pyrethroids include: Baythroid XL- 0 day PHI; Warrior II -5 day PHI; Hero- 1 day PHI; and Mustang MAX- 1 day PHI and only labeled for green and brown stink bugs.

There are several natural control organisms, including egg parasitoids and ants that are important in controlling BMSB. Entomologist, Peter Jentsch at the Hudson Valley Lab in Highland is currently working on control of BMSB with the bio-fungicide *Beauveria bassiana*. *–TR*

Source: 2014 Cornell IPM Vegetable Guidelines

Severe stink bug feeding on green and red fruit. Outer skin peeled back showing spongy white area. *Photo Credit: Dr. Gerald Brust, IPM Vegetable Specialist, University of Maryland*

See more at: http://extension.umd.edu/learn/stink-bug-damage-common-tomatoes-year#sthash.d5Y5r6oJ.dpuf.

Pumpkin and Winter Squash Harvest and Storage

Winter squash and pumpkin fruit that remain in the field face a daunting list of diseases, insects and weather events that could threaten fruit quality. Early harvest and careful storage is often preferable to leaving fruit in the field. This is especially true if you know that your pumpkins or squash are in fields that are infected with Phytophthora blight (*Phytophthora capsici*).

Since the pumpkin market lasts from Labor Day to Halloween, pumpkins may need to be held for several weeks before they can be marketed. When is it best to bring them in, and when to leave them in the field? If the vines are in good condition, the foliage can protect the fruit from sunscald. If foliage is going down from powdery mildew or downy mildew, this may help with ripening and make harvesting easier, but also increases the risk of sunscald or injury to pumpkin handles. There can be extra work involved in bringing fruit in early, especially for growers who normally have pick-your-own harvest. However, we recommend that growers harvest as soon as crops are mature and store under proper conditions, if it is feasible. If you need to hold fruit in the field for pick-your-own or any other reason, using a protectant fungicide (e.g. chlorothalonil) can help protect from black rot, and some of the other fruit rots. Scout for insects feeding on the fruit and handles, which may include squash bug nymphs or

Continued on next page

Pumpkin and Winter Squash Harvest and Storage, continued from previous page

adults and striped cucumber beetle, and control them if damage is evident.

What about pumpkin stems, i.e. handles? In some cases, it's the handle that sells the pumpkin. Pumpkins may not be marketable if the handle is broken off or dried up. Ideally, if the timing is right, pumpkins would be cut from the vine one to two weeks prior to marketing. However, if they are harvested now they may sit much longer before being sold. The discussion of how early to cut handles is an old one with many different opinions. One view is that it is advisable to cut the handles from the vine to save them from advancing powdery mildew and reduce shrinkage. Whether or not handles shrink and shrivel after cutting is affected by plant stress, genetics (variety), moisture and temperature conditions, and disease. There are many diseases that can affect handles, including Powdery mildew, Plectosporium, Fusarium, Black Rot, and Alternaria. Again, proper curing and storage conditions are key.

Ideally, pumpkins should be harvested when fully mature, with a deep orange color and hardened rind. Similarly, winter squash should be harvested when mature, as indicated by corking of the stem, loss of rind surface sheen or gloss, groundspot yellowing, and die-back of the tendril nearest to the fruit. As long as pumpkins have started to turn color, they will ripen off the vine if held under the proper conditions. While not ideal, this may be preferable to leaving them in the field if conditions are not favorable. If necessary, pumpkins can be ripened in a well-ventilated barn or greenhouse. The best temperatures for ripening are 80-85 degrees Fahrenheit with a relative humidity of 80-85%. Night temperatures should not drop below the sixties. These are the same conditions as those used for curing. A period of curing is often recommended for squash or pumpkin showing non-hardened skin or surface damage. However, research on this subject has produced variable results, and shows that curing squash is not consistently beneficial when the squash shows no damage or is well matured. The curing period is typically about 10 days. During this process the fruit skin hardens, wounds heal, Butternut ready to be harvested and immature fruit ripens, all of which prolongs the storage life.

Take care to avoid subjecting squash or pumpkin to chilling injury. Chilling hours accumulate when squash or pumpkin is exposed to temperatures below 50°F in the field or in storage. Injury increases as temperature decreases and/or length of chilling time increases.

Storage life depends on the condition of the crop when it comes in and your ability to provide careful handling and a proper storage environment. All fruit placed in storage should be free of disease, decay, insects, and unhealed wounds. When harvesting squash and pumpkins, it is important to handle the fruit with care to avoid bruising or cutting the skin. Despite their tough appearance, squash and pumpkin fruit are easily damaged. The rind is the fruit's only source of protection. Once that rind is bruised or punctured, decay organisms will invade and quickly break it down. Place fruit gently in containers and move bins on pallets. Use gloves to protect both the fruit and the workers. Removal of the stem from squash (butternut, Hubbard, etc.) will also decrease the amount of fruit spoilage because the stems frequently puncture adjacent fruit, facilitating infection. These fruits need a period of curing to heal the stem scar, which can be done in windrows in the field if weather is favorable.

Growers often plan to store winter squash until January, February or March. Select fruit that are free from disease and haven't been subject to much chilling (below 50°F). Chilling injury is of particular concern with squash intended for storage because it increases the likelihood of breakdown. If squash has been exposed to chilling injury it should be marketed first and not selected for long-term storage. Remove squash from the field if temperatures are likely to drop below fifty degrees for any length of time. Be sure that storage areas have the capacity to maintain temperatures above 50°F throughout the storage space.

Pumpkins and winter squash should be stored in a cool, dry, well-ventilated storage area. Ideal temperatures are between 55° and 60° F with relative humidity of 50 - 70%. High relative humidity provides a favorable environment for fungal and bacterial decay organisms. Lower humidity can cause dehydration and weight loss. Higher temperatures increase respiration and can cause weight loss. Temperatures lower than 50° F cause chilling injury. In a greenhouse, temperature can be managed with ventilation on sunny days; heaters will be needed for storage into November and beyond. Fruit temperature should be kept as close to the temperature of the air as possible to avoid condensation, which can lead to rot. Under ideal conditions, disease-free pumpkins should have a storage life of 8-12 weeks and butternut squash up to three or four months. Even if it is difficult to provide the ideal conditions, storage in a shady, dry location, with fruit off the ground or the floor, is preferable to leaving fruit out in the field.

As you plan for storage and marketing, keep in mind that the market for pumpkins seems to get earlier every year. Fall decorative displays include pumpkins, and those displays begin showing up as Labor Day approaches. One of the best solutions to early-maturing pumpkins may be finding an early market.

Source: Ruth Hazzard, UMass Extension, UMASS Vegetable Notes, Volume 26, Number 20 August 28, 2014

Harvesting and Storing Potatoes

To store and maintain high quality tubers practice the following points. These are some of the common factors each year that lead to serious storage problems.

1. Don't begin to store potatoes until the latter part of September when tuber and air temperatures have cooled down. Greater storage problems usually occur in potatoes dug during the warmer parts of September.
2. Don't harvest and store potatoes from wet areas. Many of the potatoes from low areas are diseased or more prone to disease.
3. Proper vine-killing 2-3 weeks before harvest will help tubers set skin, making the tubers more resistant to skinning and bruising. *Editor's note: Vine killing can be done many different ways. Flail mowers, flamers and chemical desiccants can also be used. See Table 1 for a list of approved vine desiccants).*
4. Pad all deflectors and sharp points.
5. During harvest maintain proper ground speed and chain speed ratio to keep the conveyors as full of potatoes as possible. This allows for the potatoes to "flow" from one chain to another reducing rollback and the potential for blackspot.
6. Agitation chains should be minimized and excessive bouncing should be avoided.
7. Reduce the height of drops to 6 inches or less during harvest and handling of potatoes.
8. Remove all soil and debris during the harvest operation and while conveying tubers into storage. Excessive soil in the storage will prevent proper air movement and increase the chance of storage rot.

Source: Sandy Menasha, Long Island Fruit and Vegetable Update, August 26, 2010

Table 1: Labeled Potato Vine Killing Compounds for NYS

Product	Rate	PHI (Days)	REI (Hours)	Notes
Aim EC	3.2—5.8 ounces if used alone 2 –5.8 if combined with another desiccant	7	12	Used for pre-harvest desiccation of potatoes. Apply in later stages of senescence. Will also desiccate late season susceptible broadleaf weeds. Adequate desiccation is achieved within 14 days after initial treatment. Two applications may be required if crop is in active vegetative growth when desiccation is initiated. Apply in a minimum of 20 gallons per acre and use a non-ionic surfactant (NIS), methylated seed oil (MSO) or crop oil concentrate (COC). Don not use more than 11.6 fluid ounces per acre per crop season
Reglone 2L	1 –2 pints per acre	7	24	Used for pre-harvest desiccation of potatoes. May make a second application, 5 days after the first if vine growth is particularly dense. Do not exceed a total of 4 pt/A. Drought at the time of application will decrease desiccation effectiveness. Apply in a minimum of 20 gallons of water per acre and use a non-ionic surfactant at 0.06-0.5% v/v (1/2-4 pt per 100 gal) of the finished spray volume.
Rely 280	21 ounces per acre	9	12	Not for use in Nassau and Suffolk Counties. Do not split application nor apply more than one application. Do not apply to potatoes grown for seed. Canola, corn, cotton, rice, soybean, and sugar beets may be planted at any time after the application. Do not plant treated areas to wheat, barley, buckwheat, millet, oats, rye, sorghum, and triticale until 30 or more days after an application as a potato vine desiccant. Do not plant treated areas to crops other than those listed in this use precautions section until 120 or more days after application.
VidaEC	5.5 fl oz if used alone 2.75-5.5 fl. oz. if combined with another desiccant	7	12	Make 1 to 2 applications with a minimum interval of 7 days. Do not exceed 2 applications or 11 fl. oz/A per crop season. Apply with either a non-ionic surfactant or crop oil concentrate in 20-50 gallons of water/acre. Use an approved buffering agent to obtain a pH of 5.0 or less if the water source has a pH greater than 7.5. See label for additional information.

Farm Pond Maintenance Routines

By Jim Ochterski, South Central NY Agriculture Team, Published in Capital District Growing Trends, Volume 18 Issue 8 August 22, 2014

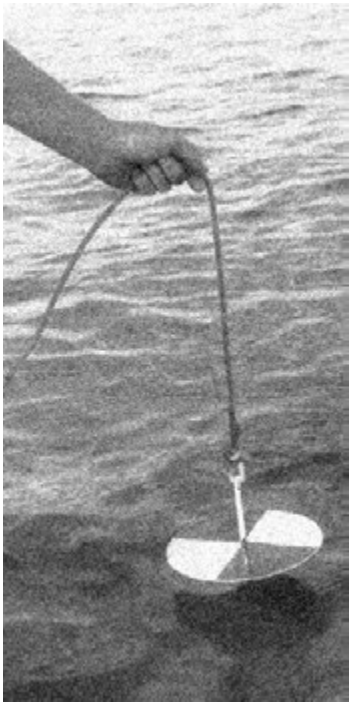
A farm pond, no matter how well built, requires sufficient maintenance in order to meet the farm operator's objectives. Even if a pond's main purpose is to enhance the appearance of rural property, it should be monitored for various problems. Ponds constructed for fishing, swimming, irrigation, wildlife, or fire suppression all require regular inspection for emerging trouble. Like other farm structures, farm ponds serve an important function for some farm operations and require a higher level of maintenance.

Pond maintenance means inspecting different areas of a pond on a regular basis for signs of erosion, water quality decline, wildlife damage, and aquatic weed control. This fact sheet offers a list of important structural considerations for pond owners and suggestions for resolving problems.

Spillways: The most significant feature of a well-constructed pond is a proper spillway - the point at which excess water exits a pond. All ponds require some type of spillway, yet dozens of New York ponds fail each year because of insufficient spillways. The spillway guides water to an area where flow can occur without compromising the pond structure. In many farm ponds, the spillway is a grassy dip in one corner of the pond. Newer ponds use pipes to collect water and discharge it at the base of the dike. Spillways and emergency spillways should always be kept clean and free of woody vegetation.

Pond bank erosion: Erosion of soil in or near a pond can create a very serious hazard for pond owners and neighbors downhill. An unexpectedly heavy rain or spring thaw can intensify a small erosion problem without warning. Steep shores without vegetation can erode to cause cloudy water conditions and pond silting. Pond owners should check the dike and sides of ponds carefully several times a year. Check especially for unusually soggy ground near the base of the dike, muddy water seeping through the dike, rills (long channels in the soil), soil slumping down the dike, and washouts.

Grass helps prevent erosion on the exposed areas near a pond. Fill eroded areas and re-seed or place sod over bare soil. The roots will retain and stabilize the soil. If it is not clear where the eroded soil is coming from, contact your local Soil and Water Conservation District office. The interior of dikes can erode if loose material or wood has been used as fill to create the dike. Also, water can seep along the outside of a spillway pipe, carrying away soil and creating a hazard. Complex problems, such as a leaking pond, may require the assistance of a licensed engineer.



Water clarity: Many pond owners strive for relatively clear water no matter how the pond is used. Pond water clarity can be measured with a black-and-white disk called a Secci disk, which is lowered under the surface until it disappears from view. The depth of disappearance is a measure of water clarity. Suspended particles are present in healthy ponds, so it is reasonable to expect several feet of underwater visibility. Depending on the location, pond water will have a natural green, olive, or brown color.

If you are concerned about cloudy water, it is important to determine the cause. Possible causes include shore erosion, pond construction or modification, silty runoff entering the pond, algae, or plankton. Fill a tall jar with your cloudy pond water and inspect it closely under bright light. Algae or plankton will appear as green flecks or tiny moving organisms. If the cloudy conditions settle in the jar after a few days, the pond likely has a siltation problem.

Several substances can be used to hasten the settling of silt particles, including agricultural lime (1000 pounds per surface acre), hydrated lime (1000 pounds per surface acre), aluminum sulfate (250 pounds per surface acre), or agricultural gypsum (300 - 500 pounds per surface acre). DO NOT use quicklime (calcium oxide). Pond supply dealers often sell bottled pond clarifiers, but these are typically too expensive for use in a large pond. Gypsum and aluminum sulfate may increase the acidity of the pond water, rendering the pond less suitable for fish. To reduce the risk of harming aquatic organisms, apply only one-fourth of the recommended amounts at a time. Wait two weeks to assess whether the desired effect can be achieved at a lower rate. You can make the most of an application by mixing the substance with clear water to form a slurry, which can then be sprayed and mixed evenly across the surface of the pond.

Discoloration in pond water can result from decomposition of vegetation, tannin (a compound that leaches from forest trees), or algal blooms caused by nutrient runoff. Many times, discoloration is caused by nutrients like nitrogen and phosphorus, which enter from fertilizer, septic beds, and manure. Make sure the runoff areas feeding the pond

Continued on next page

Farm Pond Maintenance Routines, continued from previous page

are free from these chemicals. If runoff is inevitable, build a smaller settling pond upstream from the main pond to catch and retain nutrients. This settling pond will generally appear as a shallow, swale-like feature, with lush vegetation like cattails or reed grass -- about 10 percent of the surface of the main pond. It should be positioned to capture as much nutrient-laden runoff as possible.

Wildlife damage: Muskrats can burrow holes in pond dikes, creating erosion and stability problems. Muskrat holes in non-dike areas are seldom a problem. If muskrats are damaging a dike, cover the area above and below the shoreline with tight fitting rocks or non-rusting fencing. Nuisance muskrats can be trapped out-of-season with a permit from the NY Department of Environmental Conservation (DEC).

Beavers sometimes block pond spillways and pipes with limbs and mud. These blockages can cause serious problems if the pond level rises above its intended level. A DEC permit is required to remove a beaver lodge. Beavers creating a nuisance can be trapped with a wildlife nuisance permit, also obtained from the DEC.

Aquatic weeds: Pond plants provide many benefits, including prime fish habitat, shading, erosion control, oxygenation, and scenic beauty. Pond owners should become familiar with the plants in their ponds and determine if or when a plant is overabundant. If plants are interfering with common uses of a pond (fishing, swimming, irrigation), then they should be identified and treated accordingly.

Many methods of aquatic weed control are now available. Before resorting to a treatment, determine if excess nutrients are entering the pond from a septic area, agricultural operation, or treated lawn. Substances like nitrogen and phosphorus create algae blooms and excessive plant growth. Nutrient sources should be controlled before implementing aquatic weed treatment.

Floating weeds like duckweed and algae masses can be skimmed off the surface with a skimmer or rake. Bottom barriers, hand-pulling of root systems, and grass carp can be used to reduce submerged plant growth. Additionally, most ponds can be drained partially in the winter to kill aquatic weeds near the shoreline without disrupting fish and wildlife.

Some pond owners seek quick remedies for pond plant problems. Aquatic herbicides are available for this purpose; however, pond owners should consider herbicides a last resort. The disadvantages of chemical treatments include high cost, risk of deoxygenation, the need to obtain permits, impacts to fish and swimmers, and limitations based on pond characteristics. Aquatic "shades" labeled as algaecides also require a permit for their purchase and use in New York State.

If you are concerned about pond weeds or would like to have your weeds identified, contact Cornell Cooperative Extension or your County Soil and Water Conservation District. Refer to Extension aquatic weed management publications for more details on pond weeds.

2nd Annual Hops Event

September 11, 2014 - 8am-4pm

Cornell Cooperative Extension of Dutchess County
Farm and Home Center, 2715 Route 44, Millbrook, NY 12545

Topics include:

- Lab Analysis of Hops
- Harvesting and Drying of Hops
- Pest and Diseases of Hops
- Value Added Foods with Hops/The Culinary and the Craft Beer Industry
- The Need for Small Grains Production and How to Get Started
- Marketing Panel Discussion hosted at Dutchess Hops, 1167 Noxon Road, Lagrangeville, NY

Topics are subject to change. $60/person, includes lunch.
Call 845-677-8223 ext. 115 for more information.
Email nh26@cornell.edu to register.

2013 Hops 101 Participants visiting Dutchess Hops

Sweet Corn Trap Catches for the Week Ending August 31st					
Location	ECB-E	ECB-Z	Corn Earworm	Fall Armyworm	W. Bean Cutworm
Albany	0	1	0	0	0
S. Clinton	0	0	0	7	1
Columbia	0	4	4	25	1
Dutchess	0	0	0	0	0
Fulton	0	0	0	0	1
Orange	0	2	0	7	0
Saratoga	0	0	N/A	N/A	N/A
Schoharie	0	0	0	0	0
C. Ulster	1	1	2	25	0
N. Ulster	24	0	12	N/A	N/A
C. Washington	0	0	2	0	0
N. Washington	0	2	0	0	0

2014 Weather Table—This chart is compiled using the data collected by Northeast Weather Association (NEWA) weather stations. For more information on NEWA and a list of sites, visit http://newa.cornell.edu/ This site has information not only on weather, but insect and disease forecasting tools that are free to use.

2014 Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50^{O} F			Rainfall Accumulations		
Site	2014 Weekly Total 8/25– 8/31	2014 Season Total 3/1 - 8/31	2013 Season Total 3/1 - 8/31	2014 Weekly Rainfall 8/25– 8/31 (inches)	2014 Season Rainfall 3/1 - 8/31 (inches)	2013 Total Rainfall 3/1 - 8/31 (inches)
Albany	**143.9**	**2255.8**	**2286.5**	**0.04**	**20.39**	**26.63**
Castleton	**138.7**	**2132.7**	**2244.5**	**0.07**	**21.20**	**24.65**
Clifton Park	**133.9**	**2045.5**	**2156.5**	**0.05**	**22.23**	**28.34**
Clintondale	**149.6**	**2281.7**	**2438.1**	**0.55**	**23.47**	**28.14**
Glens Falls	**130.1**	**2019.6**	**1983.0**	**0.63**	**21.56**	**22.66**
Guilderland	**130.5**	**2060.5**	**2176.5**	**N/A**	**N/A**	**N/A**
Highland	**147.4**	**2271.2**	**2413.0**	**0.00**	**23.39**	**25.52**
Hudson	**148.7**	**2275.4**	**2387.3**	**0.32**	**23.55**	**21.11**
Marlboro	**143.2**	**2183.2**	**2334.9**	**1.00**	**24.83**	**27.74**
Montgomery	**139.6**	**2218.0**	**2302.0**	**0.36**	**19.79**	**27.83**
Monticello	**106.2**	**1736.4**	**1846.0**	**N/A**	**N/A**	**N/A**
Peru	**125.5**	**1931.0**	**2025.0**	**0.01**	**18.62**	**25.36**
Shoreham, VT	**139.0**	**2027.9**	**2154.5**	**0.04**	**18.45**	**21.06**
Wilsboro	**126.5**	**1868.5**	**1982.5**	**N/A**	**N/A**	**25.40**