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Eastern NY Commercial Horticulture Program

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Weekly Vegetable Update

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The Emporium of Fantastic Vegetables: Fall Edition

As the weather gets (drastically and abruptly) cooler, it's natural for us to look at how the season has been so far, to perhaps even breathe a little sigh of relief because the cool weather often signals a slowdown in pests and diseases. So this week, as I put on my long underwear and got ready to go scout, I cheerfully expected to find woolly bears, perhaps an actual bear (it is fall in Fulton County), and hopefully some hot apple cider, because it is important to thoroughly check cider houses for Brown Marmorated Stinkbug this time of year. Alas, I found a whole different set of horticultural beasts this week. Some were amazing, some were confusing, some were a little frightening.

Fantastic Vegetable One: The Great Potato

Chuck would usually put his faith in the Great Pumpkin, but even he could not help but appreciate this beauty. Of course we know that potatoes of this size are prone to cavitation, but this grower would not let me cut this one unless I bought it, and paid by the pound. It's inside state remains a mystery.



Photo by CLS

Fantastic Vegetable Two: The Yellow Eggplant

When I got a call about yellow eggplant, I was expecting some yellowing leaves, maybe a little yellowing of over-mature eggplants (the final color of a fully mature eggplant for seeds is yellow). But no, these were YELLOW. Upon review with Dr. Reiners, we concluded that this must be a mix up by the seed company, as no commercially available eggplant are fire-engine yellow. It looks a little dangerous, if you ask me.



Photo by CLS

Fantastic Vegetable Three: The Semi-Russetted Bell Peppers

What a shock to find your whole high tunnel crop of peppers looking like the ones below. They are really something to see, as a vegetable specialist, but this is a lost crop. The culprit is **Broad Mite**, a nearly microscopic (less than .2mm) mite which is an occasional pest of ornamentals, peppers, and

Continued on next page

Fantastic Vegetables: Fall Edition, continued from previous page

tomatoes. Dr. Nault, our entomologist at Cornell, indicates that these mites do not overwinter. As this grower has a greenhouse with both ornamentals and vegetable transplants the infestation may have been present for a long time and become a serious problem towards the end of the season. Note that Cyclamen mite damage looks very similar on peppers and that Cyclamen mite does overwinter in our region and may infest subsequent crops in the field or high tunnel/greenhouse. One way to distinguish between broad mites and cyclamen mites is to examine their eggs with a 20

X lens. Cyclamen mite eggs are smooth, elliptical and about 1/2 the size of the adult female. Broad mite eggs are elliptical but are covered by small whitish bumps that look like rows of diamonds. –CLS



Upper left photo: Broad mite eggs (in the yellow circle) and adults (below circle) Image: Ohio State



“Ripening” Disorders in Tomatoes

Several physiological “ripening” disorders have been noted on farms this season. Uneven color development of the ripening tomato is common, and takes several forms: Yellow shoulder, Blotchy ripening, Internal white tissue, and Graywall.

The following article highlights the importance of providing tomato crops with balanced and adequate nutrient levels, along with proper soil and irrigation water pH, to reduce ripening disorders and improve yield and quality. –TR

Yellow Shoulder on Tomato

By Steve Bogash, and Michael Orzolek, Penn State Extension

Yellow shoulder and Blossom end rot (BER) are the two primary physiological challenges in tomato culture. Yellow shoulder is a physiological disorder of tomatoes that is characterized by discolored regions under the skin that show through and reduce the quality of the fruit. The disorder can range from very mild with some internal spotting to quite severe with large areas that are hardened and yellow to white. This wide variation in symptoms has spawned a number of names for the same primary disorder: yellow shoulder, yellow eye, green shoulder, yellow tag, gray wall, and internal white tissue. It is very important for growers to understand that yellow shoulder is not a delayed ripening, but an actual disorder of the affected tissue. Often, growers find that by focusing more closely on their nutritional program in seeking to prevent Yellow shoulders, they also reduce or eliminate BER.

The cells in the affected sectors of the fruit are generally smaller in size and have a more random arrangement than that of normal cells. Green chlorophyll in these regions fail to develop red pigment. This happens very early in fruit development, which makes early plant tissue



Yellow shoulder- describes fruit discolored with green-yellow patches on the shoulders and may be accompanied by coarsely-textured fruit walls.

Photo credit: Timothy Coolong, University of Kentucky



MB Dicklow, University of Massachusetts.

Blotchy Ripening- The patches do not turn red, but remain gray or turn yellow. When fruit are cut, the vascular tissues may appear brown and rotted.

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“Ripening” Disorders in Tomatoes, continued from previous page
analysis extremely important in prevention, as uniform color requires more K⁺ than the amount required to sustain yield.

The cause of the yellow shoulder disorder in tomato fruit has baffled scientists for the last 30 years. Many scientists believe there are several causal factors for yellow shoulder including: environment (specifically, high temperature >90°F), nutrition, genotype (cultivar) and virus. The interaction of these factors under field conditions is very difficult to evaluate.

This disorder can be triggered by insufficient exchangeable K⁺, excess magnesium in relation to calcium, and pH above 6.7. Management options to reduce yellow shoulder include increasing K⁺ to above 3% by dry matter before the fruit is larger than 1", adjusting the soil pH to 6.4-6.7 and increasing the Mg/Ca ratio to 1/6 or better (1/4 is ideal). Tissue analysis at the first flower initiation is extremely important in preventing yellow shoulder as once fruit is hanging and damaged it will not improve. Also, certain cultivars are less susceptible and others at higher risk, so cultivar selection is integral to a program to manage this color disorder. Certain processing varieties have been identified as less susceptible, but much research remains to be done on fresh market varieties in order to identify those that are more or less susceptible. Some growers have anecdotal reports of cultivars that are more or less susceptible, but minimal research has been done to conclusively identify those cultivars.

The practice of letting the fruit hang longer in order to “color up” does not work and has the potential to increase the danger from fruit rots. Increasing K⁺ through the drip lines once there is abundant fruit hanging is also unlikely to lessen symptoms as this disorder shows up very shortly after fruit set.



Internal Whitening- White, pithy tissue develops next to the outer fruit wall or near the core.

Quite a bit of work has been done by UC Davis and Ohio State on prevention of this disorder in processing varieties. They have developed the Hartz formula for anticipating the risk of yellow shoulder. You will need recent soil and leaf analysis results in order to use the formula.

For most growers the best practices to prevent yellow shoulder will be to intensively tissue test tomatoes from first flower cluster for Ca, K⁺ and Mg levels. From this information, a grower could apply Potassium Nitrate, Sulfate of Potash, Potassium Carbonate, Calcium Nitrate, Calcium Chelate, and Magnesium Oxide to reduce the potential for this disorder. Experience has proven that both fertigated and foliar applied nutrients are necessary to prevent Yellow shoulders.

Many growers have been able to increase tomato plants uptake of potassium through adjusting the pH of their drip irrigation water. Keeping the irrigation solution pH at 6.2-6.5 will greatly improve tomato plants ability to move potassium from the soil to plant tissue. Most conventional growers use Sulfuric acid to reduce pH, while many organic growers use powdered Citric acid for this purpose.



Graywall- Internal fruit wall tissues turn brown to black and die. The result is that the outer fruit skin breaks down, becomes wrinkled and soft, and develops a gray color.

Photo credit: University of Maryland Extension

Fruit Blemishes on Tomatoes

As tomatoes ripen, a number of problems can become apparent. Even though it's too late to do anything this year, knowing what causes various problems can help growers take steps next year to prevent or lessen the problem. -ADI



Anthrachnose usually doesn't show up until after the fruit colors up. It causes flattened spots on the fruit which eventually develop dark centers.

Photo credit: www.longislandhort.cornell.edu



These distinct spots are Bacterial Speck. Sanitizing stakes and anything that came into contact with these plants will help reduce problems next year.

Photo credit www.vegmdonline.cornell.edu by T.A. Zitter



Various creatures can chew tomatoes. Slugs come out at night and are usually gone by day. Tomato hornworms will also chew large holes in the fruit. Sometimes birds will peck at ripening fruit. This photo shows slugs at work.

Photo credit www.extension.umn.edu



Nothing else on tomatoes looks quite like late blight. Note the white fuzzy spores on the right, best seen in the morning in the field.

Photo credit: www.longislandhort.cornell.edu



Stinkbugs cause this characteristic damage to tomatoes. Photo credit www.ca.uky.edu/entomology

From Recipe to Market: A Seminar for Future Food Entrepreneurs

Saturday, October 18
Madison Barracks
85 Worth Road, Sackets Harbor, NY
Jefferson County
8:00am to 4:00pm

*To register for this location
contact Steve Ledoux at
315-788-8450 or
email swl73@cornell.edu.*

Sunday, October 19
Whallonsburgh Grange,
1610 State Route 22, Whallonsburgh, NY
Essex County
8:30am to 4:30pm

*To register for this location
contact Laurie Davis at
518-962-4810 x404 or
email lsd22@cornell.edu.*

Is your recipe ready to go to market? If your goal is to launch a specialty food business, then this program is for you. Bob Weybright, an Extension Agricultural Development Specialist with the Eastern New York Commercial Horticulture program, will present this one-day seminar providing future food entrepreneurs with instruction in food business basics and knowledge of the critical issues to consider before starting a food processing business.

Topics include:

- Food Business Basics
- Marketing: Developing a Strategy, Objectives, Research, and Communication Plan
- The NYS Food Venture Center
- Market Trends and Product Development
- Regulatory Agencies and Requirements
- Food Safety, Processing, Packaging and Labeling



Bob Weybright has a strong agricultural economic development and marketing background. After receiving his undergraduate degree from Michigan State University and his graduate degree from California State University in New Business / Small Business Management, Bob has been actively involved in a number of development projects. He has experience in all phases of agriculture, including production, processing, marketing and sales. He is engaging in methods that help producers develop innovative new products and increase their marketing opportunities, especially in the local foods area.

Cost is \$75 and includes lunch and all educational materials.

Deadline for registration is October 15.

Presented in collaboration with Cornell Cooperative Extension Associations of Jefferson and Essex Counties, The Eastern New York Commercial Horticulture Program, the New York State Food Venture Center, and the Whallonsburgh Grange.

Sweet Corn Trap Catches for the Week Ending September 14th					
Location	ECB-E	ECB-Z	Corn Earworm	Fall Armyworm	W. Bean Cutworm
Albany	0	0	3	0	0
S. Clinton	0	0	26	37	0
Columbia	0	0	25	30	0
Fulton	0	0	0	0	0
Saratoga	0	0	N/A	N/A	N/A
Schoharie	0	0	2	0	0
C. Ulster	0	0	2	57	N/A
N. Ulster	3	0	56	N/A	N/A
C. Washington	0	0	1	1	0
N. Washington	0	0	24	1	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 ⁰ F			Rainfall Accumulations		
Site	2014 Weekly Total 9/8 - 9/14	2014 Season Total 3/1 - 9/14	2013 Season Total 3/1 - 9/14	2014 Weekly Rainfall 9/8 - 9/14 (inches)	2014 Season Rainfall 3/1 - 9/14 (inches)	2013 Total Rainfall 3/1 - 9/14 (inches)
Albany	72.7	2500.7	2519.5	0.46	21.02	30.36
Castleton	66.0	2359.8	2492.6	0.37	22.81	26.90
Clifton Park	60.8	2262.4	2370.3	0.45	22.99	31.16
Clintondale	85.3	2541.6	2683.1	0.24	24.14	30.16
Glens Falls	60.5	2229.2	2173.5	0.34	22.46	24.39
Guilderland	65.5	2284.0	2393.0	N/A	N/A	N/A
Highland	88.0	2529.3	2653.6	0.19	24.15	28.99
Hudson	78.7	2527.4	2631.2	0.21	24.27	22.53
Marlboro	85.4	2432.1	2571.5	0.21	25.24	29.22
Montgomery	85.7	2468.0	2544.5	0.31	20.11	28.52
Monticello	62.1	1933.6	2029.5	N/A	N/A	N/A
Peru	52.8	2129.7	2215.4	0.20	19.12	23.80
Shoreham, VT	62.5	2244.9	2358.9	0.14	19.69	26.48
Wilsboro	57.1	2059.1	2171.4	N/A	N/A	N/A

Cornell Cooperative Extension and the staff assume no liability for the effectiveness of results of any chemicals for pesticide use. No endorsement of any products is made or implied. Every effort has been made to provide correct, complete, and current pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly and human errors are still possible. These recommendations are not substitutes for pesticide labeling. Please read the label before applying any pesticide. Where trade names are used, no discrimination is intended and no endorsement is implied by Cornell Cooperative Extension.

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