

The Vegetable & Small Fruit Gazette

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Quote for Thought from [Pete Ferretti](#)

*Now I see the secret of the making of the best persons,
It is to grow in the open air and to eat and sleep with the earth.
- Walt Whitman, Leaves of Grass*

Topping Sweet Corn

[Tim Elkner](#), Extension Educator, Lancaster County

I had the opportunity to visit with Gary Sweet (Sweet’s Gourmet Sweet Corn, Ohio) at the Hershey meetings this winter to discuss the practice of topping sweet corn. I was curious about this practice after seeing an article in a trade magazine where Gary discussed the advantages of topping. I was most interested in the ability to advance ear maturity as I thought that this might be very useful to Pennsylvania sweet corn growers.

Gary stated that in his experience all varieties of sweet corn respond the same to topping. Stalks should not be topped until no more pollen is falling. Gary knows the parts of his fields where the stalks always mature the latest. He checks those areas to determine when topping can start. Gary cuts the stalks with a sickle bar mower for speed but roadside market growers could certainly cut small fields by hand.

To advance ear maturity by three days, Gary tops immediately after pollen stops falling. Topping three days after pollen stops falling will advance ear maturity about two days. Gary’s goal with topping is to have “just right” corn every day. Gary says that for him, su varieties are “just right” for 2 days, se’s for 3 days while sh₂’s will hold in the field for 7 days.

Other advantages Gary listed for topping corn are:

- a) workers prefer harvesting topped fields
- b) missed ears are easy to spot from the tractor
- c) corn usually stands in storms
- d) bird damage is reduced
- e) early topped corn results in better spray coverage

If you expect that you might have too much sweet corn ready at one time, I encourage you to experiment with topping some of your fields to spread ear maturity. The potential advantages of this practice certainly seem worth a try on the farm this summer.

Lexar is Also Now Registered for Sweet Corn

[David H. Johnson](#), Penn State Southeast Research and Extension Center

Last month I wrote that Lumax and Camix, two soil-applied herbicides that have been labeled in field corn for the past few years, are registered for sweet corn. An additional similar product, Lexar, is also now registered for sweet corn. All three contain mesotrione (also the active ingredient of Callisto, a postemergence herbicide which was registered for sweet corn last year), and s-metolachlor, the active ingredient in Dual II Magnum. Lumax and Lexar also contain atrazine, and therefore are restricted use herbicides and you must have a valid pesticide license to purchase and use them. Camix is not restricted use. The main difference between Lumax and Lexar is that Lexar has more atrazine than Lumax. Normal use rates for most Pennsylvania soils will be 2.5 qt/acre of Lumax and 3 qt/acre for Lexar. These rates will give 0.62 and 1.3 lb atrazine/acre. While I don't have any personal experience with Lexar, the added atrazine should give better control of some broadleaf weed species such as ragweeds and cocklebur. Those of you who have been adding atrazine to Lumax might want to consider Lexar as an alternative. Growers must be mindful of rotational crop restrictions with atrazine products.

To review what I wrote last month, these products can be used **preemergence** only on sweet corn to control annual grass and broadleaf weeds. The labels warn that they should not be used after the sweet corn has emerged, or severe injury may result. There are no restrictions on the types of sweet corn that it can be used on, nor are there any insecticide restrictions. They give residual control of a broad spectrum of annual weeds, including grasses and broadleaves. Since these products are applied to the soil surface, they need to be activated by rainfall or irrigation soon after application for best weed control. If no rainfall occurs, a light cultivation can help activate the products.

Sap Beetles – A Frequent Strawberry Pest

[Tim Elkner](#), Extension Educator, Lancaster County

Sap beetles are a common pest in horticultural crops including raspberries, melons, some apples, sweet corn and tomatoes. Under the right conditions they can become a major pest of strawberries. Besides their feeding damage, these insects also cause additional crop loss by spreading fungi and microorganisms. Symptoms of sap beetle feeding include small holes and tunneling into ripe or nearly ripe fruit, especially where the fruit touches the ground.

There are two types of sap beetles commonly found on strawberries in Pennsylvania. The most common is the strawberry sap beetle, a small (<1/8 inch), brown oval beetle with flattened antennae ends. The second is the picnic beetle which is slightly larger than the strawberry sap beetle and which has four orangish blotches on its back. The picnic beetle is mainly attracted to overripe

berries while the strawberry sap beetle will feed on nearly ripe as well as ripe fruit. Both species overwinter as adults and move into strawberry fields in May and June as strawberries ripen. They bore into ripe fruit or decaying fruit and lay eggs. The larvae feed on the fruit and when mature, leave the fruit and pupate in the soil. They then emerge as adult beetles a short time later and move on to other crops.

The main method of controlling both of these pests is sanitation. Be sure to harvest all mature fruit from the field and remove rotted or damaged fruit from the field as well. Strawberries left in the field are a common problem in pick-your-own operations. Growers need to be sure that they can completely harvest their fields in a timely manner or consider reducing acreage in the future if this cannot be done. Renovating fields as soon after harvest as possible will also help with beetle control by both destroying remaining fruit and disturbing pupating beetles in the soil. Heavy mulching encourages high beetle populations and can result in strawberry damage even when there is not a large amount of ripe fruit. Letting beetles mature in other horticultural crops can also cause a problem in strawberries so practice good sanitation on the entire farm.

Chemical control of sap beetles should be the last option as it is not 100% effective. Labeled materials include Brigade WSP at 6.4-32 oz (0 day PHI) and Danitol 2.4EC at 16-21.3 oz (2 day PHI). Practicing good sanitation is the best control measure and can prevent the need for using chemicals to control these pests.

“Grower to Grower” Meetings

Submitted by [Mike Orzolek](#), Department of Horticulture

Haygrove Tunnels will co-host “Grower to Grower” meetings at farms in eleven US states and Ontario. The Canadian meeting is the big one, featuring 22 acres of Haygrove tunnels covering tomatoes, raspberries, strawberries - and a barbeque. The meetings are scheduled during the growing season, so growers can see for themselves just how much difference Haygroves make, and they start at 6 PM unless otherwise noted.

- June 15 Hellers Orchard, Wapwallopen PA, cherries
- June 18 Strawberry Tyme, Simcoe Ontario, tomatoes, raspberries, strawberries (2 PM)
(call 519-426-3099 to register free *before* June 9 -- \$20 late registration fee)
- July 6 Michigan State University, Clarksville MI, cherries (11:30 AM)
- July 11 Schacht Farm, Canal Winchester OH, tomatoes, strawberries
- July 14 Cedar Meadow Farm, Holtwood PA, tomatoes, raspberries (2:30 PM)
(Haygrove meeting in conjunction with a no-till and cover crop field day)
- July 14 Riverview Produce, Leola PA, heirloom tomatoes, various trial crops
- July 19 Penn State University, Rock Springs PA, PSU high tunnel day (all day)
(no Haygroves -- poly trials, Haygrove’s Luminance poly vs. others)
- July 24 Kansas State University, trials of various crops
- July 25 Four Corners Farm, South Newbury VT, strawberries, raspberries
- July 25 Biver Farms, Edwardsville IL, tomatoes, raspberries
- July 26 Michigan State University, SW Research Farm, Benton Harbor MI,
numerous crops including tomatoes, strawberries, cherries, raspberries

July 27 Stuckwisch Farms, Vallonia IN, tomatoes, specialty peppers
July 28 Elmwood Stock Farm, Georgetown KY, various crops
Aug 2 Peregrine Farm, Graham NC, heirloom tomatoes, cut flowers
Aug 3 Weyanoak Farms, Charles City VA, cut flowers, strawberries
Sept 7 Oyster Pond Farm, Orient NY (Long Island), raspberries, strawberries
Sept 12 Mutual Farm Mgmt., Traverse City MI, wine grapes, includes wine tasting
Oct 11 U. of KY, Lexington KY, colored peppers, tomatoes, strawberries (3 PM)
Nov 8 Virginia Tech, SPAREC Blackstone VA, strawberries (9 AM)

Call 866-HAYGROVE for directions to the meetings.

That's a Berry Good Question!!!

[Kathy Demchak](#), Department of Horticulture

Q. I'm noticing a lot of misshapen strawberries in my field this year. Is this happening in other places, or just on my farm? Do I perhaps need to bring in different pollinators? (Anon.)

A. If this is any comfort, it's happening out in our research plots, too, but only in the field - not the tunnels - even though the cultivars are the same, so in our case I'm attributing the problem to frost injury. There are a number of causes of misshapen berries; specifically, poor pollination, low boron, frost injury, and tarnished plant bug injury. Misshapen berries also are more likely in certain cultivars. Here are the symptoms, and some ways to sort things out.

First, with frost injury, sometimes only a part of the flower is damaged, so berries may grow unevenly. If the very tip of the flower was damaged, sometimes the stigmas (which appear as hairs on the berry) remain, but there are no seeds associated with them, so there is a hairy rounded tip to the berry without excessive seediness. The berry can also grow unevenly and have a folded over appearance. I've read that frost damage can cause the berries to split open, though I've noticed that with cultivars that are large and have a hollow core, this tends to happen anyway, so there may be more than one cause of split berries. In any event, if frost damage is the problem, hopefully it occurred during only one or two frost events when certain blossoms were open, so berry shape normally improves quickly.

Tarnished plant bugs also cause berries that are misshapen primarily at the tip, but here parts of the berry appear seedy because the problem was occurring after pollination and initial seed development. So, if the berry is misshapen and seedy, look for tarnished plant bugs. They're fast, so you'll have to be quick to see them. Nymphs can be shaken out onto a light surface, while adults can fly, so brush the foliage, watching for flying insects. Once you see where they land, you can figure out what they are more easily. Usually tarnished plant bugs are a greater problem later in the season, though if you have a weedy field, they can be a problem anytime because they multiply on the weeds.

With poor pollination and low boron, symptoms are identical because the low boron negatively affects pollen tube growth, causing poor pollination. Usually I think of berries that were poorly

pollinated as having a bumpy appearance all over the fruit, with no particular pattern to the shape. The problem may be a lack of pollinators, a period of damp rainy weather or very windy conditions causing pollinators to be discouraged during bloom, or a lack of boron. In this case, think back over the season and see if you can correlate the timing that the berries would have been blooming (about 30 days previous to the time that they are ripening) to a spell of rainy or windy weather. If you can, the problem may have been the weather.

Low boron is more frequently a problem on sandy soils, but having the boron levels checked in the soil and/or tissue is always a good idea anyway. If you have a tissue analysis done, you'll get information on a variety of nutrients. Boron levels in the soil should be above 1.5 pounds per acre, or 0.75 ppm, and tissue levels should be between 30 and 70 ppm.

If none of the above seems to explain the problem, or you haven't found many pollinators out in your field, then it probably is time to check into bringing additional pollinators in. More pollination usually results in bigger fruit, even if you think you already have enough pollinators. Each blossom should receive 16 to 25 bee visits for complete pollination.

Got a question? Chances are that someone else has the same question, but isn't asking! Send your question to Kathy Demchak, at 102 Tyson Bldg., University Park, PA 16802, or via email to kdemchak@psu.edu. You will be credited with the question, or can remain anonymous, as you wish.

The Organic Way – Are Spent Mushroom Substrate and Mushroom Compost the Same Materials??

[Elsa Sánchez](#), Department of Horticulture, Penn State University, [Joseph Poppiti](#), Hy-Tech Mushroom Compost, Inc/Needham's Mushroom Farm, Inc. and [Emily Cook](#), Department of Horticulture

This season we are beginning a study to evaluate allowable organic composts on a bell pepper crop. The three types of compost we're evaluating are mushroom compost, dairy manure compost and leaf litter compost. The dairy manure compost will be spread on field plots at application rates of 100% of recommended¹ nitrogen, 100% of recommended¹ phosphorus, and 20 tons per acre. The mushroom and leaf litter composts will be applied at a rate of 100% of recommended¹ nitrogen.

Green bell peppers will be grown on black plastic, and data will be collected on marketable yield, pepper quality and soil properties. Leaf tissue analysis will be conducted at several stages of crop development to determine nutrient uptake from the different composts by the plants. The varying application rates will be used to improve recommendation guidelines.

As we sourced mushroom compost we came across "spent mushroom substrate." This led us to the question, "Are spent mushroom substrate and mushroom compost the same or different materials?"

Mushroom compost is made by composting a specific combination of hay, straw-bedded horse manure, chicken manure, cotton seed hulls, cocoa shells and gypsum for about 3 weeks. The compost is then filled into environmentally controlled rooms, pasteurized, cooled, seed (spawn) is

planted, and a crop of mushrooms is grown. Compost is in these rooms for about 11 weeks, 3 of which is for actual harvesting of the mushrooms. After harvesting, the mushroom compost is pasteurized again, cooled, and then removed from the rooms. It can now be referred to as spent mushroom substrate, recycled mushroom compost or mushroom soil. At Needham's Mushroom Farm, Inc., 6 rooms are filled and emptied each week; it is a continuous cycle. Those 6 rooms generate about 1000 cubic yards of spent mushroom substrate each week.

Upon removing mushroom compost from the mushroom growing rooms, it can be called fresh spent mushroom substrate. Fresh spent mushroom substrate is commonly composted further before it is delivered to growers, nurseries, landscapers, mine reclamation sites, etc. In that case, it can be called weathered spent mushroom substrate.

For crop production, the terms spent mushroom substrate, mushroom compost, recycled mushroom compost and mushroom soil are used interchangeably. Mushroom compost has a restricted status (OMRI Generic Materials List²) and can be used as a fertilizer or soil amendment as long as it is from a certified organic mushroom production system or has not been contaminated with prohibited substances.

Spent mushroom substrate has a high organic matter content and moisture and nutrient holding capacities (www.mushroom-sms.com). It is also generally free of weed seeds. It has between 1.5 and 3% nitrogen (dry weight basis), 0.5 – 2 % phosphate, 1 – 3% potash, 3 – 6 % calcium and 0.4 – 1% magnesium (<http://spentmushroomsubstrate.turfgrass.psu.edu/pubs/spentmushroomsubstrate.cfm>). The pH of spent mushroom substrate ranges between 6 and 8 and soluble salt levels can be high. Because spent mushroom substrate has variable properties depending on the combination of source materials, the mushroom type grown, mushroom growing procedures and handling, compost testing is recommended prior to using it as an amendment, for long-term soil health.

Spent mushroom substrate or mushroom compost may not be entirely finished when sold. Compost is technically a finished product with a stable temperature. While partially composted materials offer more soluble nutrients, intermediate breakdown products can be harmful to germination and early growth of some crops.

The mushroom farm community has a website on this material at www.mushroom-sms.com.

¹Recommendations based on Penn State University's 2006 Commercial Vegetable Production Guidelines.

²OMRI Generic Materials List with National Organic Program Rule and National Organic Standards Board Appendices. June 2004. Organic Materials Review Institute, Eugene, OR.

Upcoming Meetings

If you have a meeting you would like to announce, please send the meeting title, date, location and contact information to esanchez@psu.edu.

Local

August 8, 2006. Bramble Disease Management Field Day, Horticulture Farm, Rock Springs, PA. For more information contact the Pennsylvania Association for Sustainable Agriculture (PASA) at 814-349-9856 or at www.pasafarming.org.

August 26, 2006. Workshop for Training Master Gardener's on High Tunnel Technology, the Penn State High Tunnel Research and Education Facility, Horticulture Farm, Rock Springs, PA. For more information contact Bill Lamont, wlamont@psu.edu or Becky Grube becky.grube@unh.edu, or George W. Hamilton george.hamilton@unh.edu.

Regional

July 1, 2006. Workshop for Training Master Gardener's on High Tunnel Technology, Woodman Farm, University of New Hampshire, Durham, New Hampshire. For more information contact Bill Lamont, wlamont@psu.edu or Becky Grube becky.grube@unh.edu, or George W. Hamilton george.hamilton@unh.edu.

July 19, 2006. 2006 Vegetable and Small Fruit Field Day, Rock Springs, PA. For more information contact Mike Orzolek at 203 Tyson Bldg, The Pennsylvania State University, University Park, PA 16802 or by phone at (814) 863-2251 or e-mail at mdu1@psu.edu.

National

International

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The newsletter is also posted within three days on the Department of Horticulture Vegetable program website at: <http://hortweb.cas.psu.edu/extension/veg crops/newsletterlist.html>.

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