

The Vegetable & Small Fruit Gazette

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Quote for Thought from **Pete Ferretti**

*I learned long ago never to wrestle with a pig. You get dirty, and besides, the pig likes it.
~ Cyrus Ching from The Harper Book of Quotations*

Pumpkin Variety Trial Results – 2007

Tim Elkner, Penn State Regional Horticulture Educator, Lancaster County

A pumpkin variety trial was conducted at three sites in the state in 2007. Lancaster County had the greatest number of varieties (59) while 53 were grown in Centre County and 36 in Montgomery County. Powdery mildew infections ratings were collected at each site while detailed fruit quality information was collected at Lancaster only.

The following is information on the better performing varieties in each size group:

Small (Up to 8 lbs.)

8412 (Outstanding Seed) – average fruit weight (AFW) 4.6 lbs., good color, handles, yields, and powdery mildew (PM) resistance.

Cannonball (SeedWay) – AFW 4.3 lbs., good color, handles and yields, some PM resistance.

Ironman (SeedWay) – AFW 3.5 lbs., good color, handles, yields and PM resistance.

Pure Gold (Meyer Seed) – AFW 4.1 lbs., good color, handles and yield. Has not performed as well in cool, wet seasons.

Hybrid Pam (SeedWay) – AFW 4.5 lbs., good color, handles and yields. Also has not performed as well in cool, wet seasons.

Medium (9-24lbs.)

Magic Lantern (Harris Moran) – AFW 11.7 lbs., good color, handles and yields. Some mildew resistance. Fruit size was low for this group.

Magician (SeedWay) – AFW 11.2 lbs., good color, handles, yields and mildew resistance. Fruit size was low for this group.

Scarecrow (Meyer Seeds) – AFW 11.1 lbs., good color, handles, and yields. Some mildew resistance. Fruit size was low for this group and this variety has not performed as well in cool, wet weather.

Charisma (Johnny's Selected Seeds) – AFW 13.2 lbs., good color handles and yield. Some mildew resistance. Previous trials indicate that this variety is susceptible to sunburn.

20 Karat Gold (Rupp Seeds) – AFW 14.5 lbs., good color, handles and yields. Not mildew resistance.

Large (25+ lbs.)

Aladdin (SeedWay) – AFW 22.8 lbs., good color, acceptable handles, good yields with some mildew resistance.

Mr. Wrinkles (Stokes Seeds) – AFW 21.3 lbs., good color and yields. Some handles were poor. Some mildew resistance.

Gold Medal (Rupp Seeds) – AFW 22.7 lbs., good color, handles and yields. Consistent performer but, no mildew resistance.

HMX6686 (Harris Moran) – AFW 16.7 lbs., good color, handles, yields and mildew resistance. Size was small for this group.

Gladiator (Harris Moran) and **Superior** (Outstanding Seed) – AFW 15.4lbs. and 14.6 lbs. Both varieties had good color and handles but, fruit size was small for this group. Yields were low for this group but might be higher if planted at medium group spacing (8ft x 4ft) versus large spacing (8ft x 8ft). Excellent mildew resistance.

Complete results can be found at <http://capitalhort.cas.psu.edu/Default.html>. Select “Research/Variety Trials”. Those without internet access can contact Tim Elkner at 717-394-6851 for a printed copy of the trial results.

Grafting Watermelons – An Old Technique with a New Application

Guoyang LIN, Penn State Horticulture

The benefits of using rootstocks for improving plant characteristics were reported many decades ago. Utilizing grafted rootstocks has resulted in increased yields, increased fruit quality, and an increased tolerance to abiotic and biotic stresses. Grafting to generate a somatic hybrid will significantly reduce the duration and the cost of traditional plant breeding due to evaluating and breeding rootstocks independently. This technique will also adopt quickly to meet the challenges from new and constant mutations of soil borne disease pathogens. However, this crop improvement technique has been limited in the past to perennial fruit trees, forest trees and ornamental plants.

There has been limited research on annual vegetable crops until the last few decades when the grafting vegetable crops movement started in Asia and Europe. In 1990, in Japan, which utilizes extensive grafting in their vegetable industry, 59% of the production area of watermelon, cucumber, melon, tomato and eggplant used grafted transplants in their field production. The percentage went up to 92% for watermelon in 1999. Asian researchers have demonstrated success in overcoming tissue damage and/or plant mortality caused to vegetable crops by *Fusarium* wilt (there are some varieties resistant to Race 0 and 1, but there is no commercial variety resistance to Race 2 and 3), *Verticillium* wilt and bacterial wilt as well as nematodes.

Unfortunately, there are very few reports of using vegetable rootstock grafting techniques in the United States. One report from the USDA-ARS discussed the effect of grafted rootstocks on watermelon fruit quality and resistance to the soil borne fungi *Fusarium*. Some preliminary reports have shown a potential increase of up to 30% lycopene content in some grafted seedless watermelons. However, there is an emerging interest in the United States in grafting vegetables in recent years. King and Davis (2007) discussed grafting in “hot topics for watermelon research: A survey of the industry” in which growers prioritized grafting as the second priority just below Gummy Stem Blight.

Another great potential benefit of grafting watermelons is to improve adaptation to cold soil temperatures and to recover from transplant shock quickly. In Pennsylvania and the Northeast US, all transplants grown in greenhouses are acclimated to the outdoor environment before being planted in the field. However, the ability of transplants to recover from transplant shock plays an important role in the expression of important horticultural traits in plants such as yield and quality. It is also very important to develop and identify rootstocks that can withstand low temperature stress and recover rapidly from transplant shock. There are several companies and research groups working on this issue including Syngenta Seeds, Oklahoma State University, USDA-ARS, Abbott & Cobb Seed Co., and Speedling, Inc.

Grafted watermelon transplants will cost about \$700/acre more than non-grafted plants, based on a rate of 1500 plants/acre. However, grafted watermelons will have a potential higher market value and higher economic return per unit area for growers compared to standard commercial transplants that

are currently being produced. Their use can also reduce or eliminate the use of pesticides (especially fumigants, estimated cost of \$350/acre for the fumigant alone) because the rootstocks will provide tolerance to many soil borne disease and insect pests. This is definitely of interest for organic growers and greenhouse and tunnel growers. This increased farm income will help stabilize and retain family farms now and in the future. Moreover, this technique can increase the efficiency of water and nutrient uptake by vegetable plants through the use of rootstocks with larger root systems that will utilize fertilizer more efficiently and increase plant tolerance to drought stress. This will enable growers to reduce their cost of fertilizers, but also reduce leaching of nutrients into groundwater.

Laudis and Define Now Registered for Sweet Corn

[Dave Johnson](#), PSU Southeast Research and Extension Center

Sweet corn growers' toolbox for weed control continues to increase! After recent registrations of Callisto (2005), Lumax, Lexar, Camix, and Impact (2006), and earlier this year the acetochlor products (Keystone, TopNotch, FulTime, Surpass, Harness, and Harness Extra), Bayer has just received registration for Laudis and Define in sweet corn.

Laudis is newly registered for all types of corn, and contains the active ingredient tembotrione, which is in the same class of chemistry as topramezone (Impact) and mesotrione (Callisto). This herbicide acts to destroy susceptible species' ability to protect chlorophyll (the green pigment in plants) from photodegradation, resulting in a "bleached" or white color of tissue and a cessation in photosynthesis. Once photosynthesis stops, growth processes cease and the plant dies.

Laudis is applied postemergence, and controls annual grass and broadleaf weeds. A single application of 3 oz/acre may be made to sweet corn. Surfactants recommended are methylated seed oil or crop oil concentrate (1% v/v), plus urea ammonium nitrate (1.5 qt/acre) or ammonium sulfate (8.5 lb/100 gallons). The label states that tolerance of some sweet corn varieties is unknown, and growers should consult with their Bayer representative or other ag professional (e.g. seedsman, county educator) for advice before application. It can be applied to sweet corn that has up to 7 leaf collars.

While Laudis can be applied alone, the company recommends that atrazine at 1 pt/acre (0.5 lb ai/acre) be included to speed up burndown, broaden the weed spectrum, and increase consistency of control. If atrazine is used, there is a 12-inch maximum height restriction on application to any type of corn.

Laudis controls several important annual broadleaf weeds such as common lambsquarters, pigweeds, smartweeds, eastern black nightshade, common cocklebur, and velvetleaf. Annual grass weeds controlled include foxtails (giant and yellow), large crabgrass, barnyardgrass, and shattercane. Refer to the label for information such as maximum weed height for control. The label also claims Canada thistle control when Laudis is mixed with atrazine. Laudis has performed well in PA Vegetable Growers Association-sponsored sweet corn weed control research conducted at Penn State.

The label states that Laudis should be applied by ground only (no air or chemigation application), and is rainfast in 1 hour. Control may be less if weeds are stressed or covered with dust or the foliage is

wet (dew). Growers must be careful of drift to adjacent fields and take care to thoroughly clean their sprayers after use.

Like other products in this class of chemistry, Laudis has some rotational crop restrictions. Small grains can be planted 4 months after application, soybeans 8 months, and vegetables such as tomatoes, peas, snap beans, and potatoes 10 months after application. All other crops, including cucurbits, can be planted 18 months after application. Of course, if a tank-mix partner such as atrazine is used, rotational restrictions may be different than what is listed above. Consult product labels for guidelines.

Define contains the active ingredient flufenacet, and has been available for a few years for field corn and soybeans. It controls many annual grass weeds, including foxtails and fall panicum, and a few broadleaves. Flufenacet acts similar to the chloroacetamides (metolachlor, dimethenamid, acetochlor, etc), by inhibiting growth processes in susceptible plant meristematic tissue. It can be used soil applied or early postemergence (up to 5 collar corn), but **does not** control weeds that have already emerged. It needs rainfall for activation, and corn should be planted at least 1.5 inches deep, which may be an issue for sweet corn growers.

Define use rates depend on soil texture and organic matter content, and for corn vary from 15 to 25 oz/acre. See the label for specific rate recommendations. It can be tank mixed with other sweet corn herbicides such as atrazine, Prowl, and 2,4-D. Best use for this product would probably be as a preemergence spray, tank mixed with atrazine and/or Prowl, followed by other products postemergence for control of escaped weeds. Define has a few rotational crop restrictions. Potato can be planted 1 month after treatment, peppers, radish, lettuce, and other leafy vegetables at 4 months, and all other crops 12 months after application. Rotational restrictions may change depending on tank mix or sequential products used.

Sweet corn growers have done well over the past few years in receiving registrations for effective new weed control products. Postemergence grass weed control is now easier than ever before, and the new grass products also control several important broadleaves. Growers should always follow integrated pest management practices, utilize soil-applied herbicides to give their crop a head start, and always follow the product labels.

**Ever wonder what plant-parasitic nematodes do to your crops and profitability
or how you can manage them on an as-needed-basis?**

Then please join us for a day long “training-the trainers” workshop on the:

Diagnosis, Visual Assessment and Management of Plant-Parasitic Nematodes of Vegetables and Small Fruit in the Northeast

Monday January 28, 2008

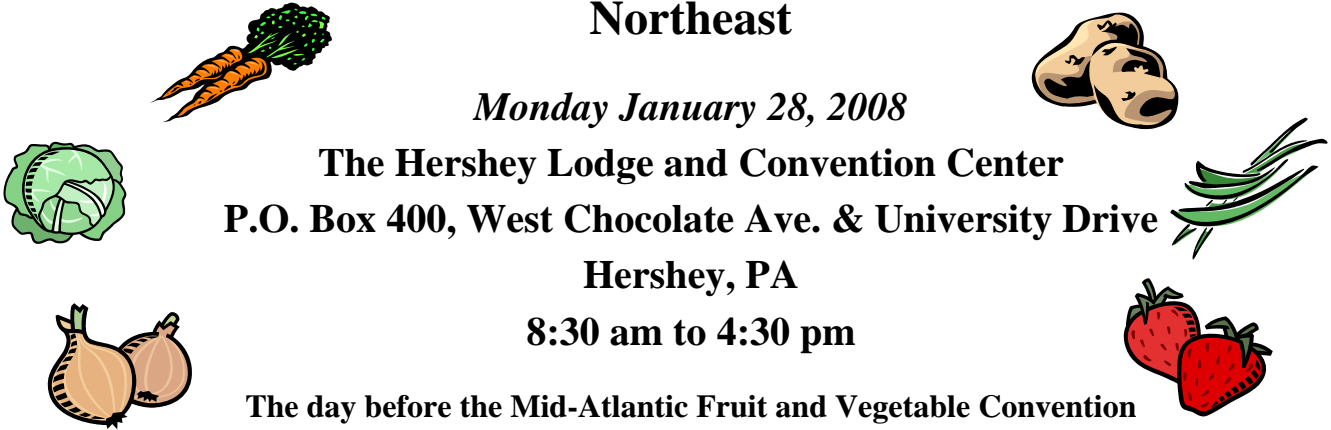
The Hershey Lodge and Convention Center

P.O. Box 400, West Chocolate Ave. & University Drive

Hershey, PA

8:30 am to 4:30 pm

The day before the Mid-Atlantic Fruit and Vegetable Convention



Through funding from NE-SARE, this workshop has been designed to train participants throughout the Northeast (county extension educators, regional specialists, crop consultants, IPM practitioners, interested growers and other agricultural service personal) in nematode diagnosis and management and to provide resources that can be used on-the-farm and in various outreach activities.

Topics to be covered include:

- Nematode biology and ecology
- Signs and symptoms of nematode damage in the field and on crops
- Soil nematode assessment with a focus on on-farm methods
- Management options and managing nematodes on an as-needed basis

All participants will receive a:

- 3-ring binder containing printed resources
- CD-ROM containing PowerPoint slides, fact sheets, etc. for use in future programming
- Soil nematode assessment kit
- Certificate of completion

Although there is no fee to attend (and lunch and breaks are provided), **pre-registration is requested** for planning purposes. You can register for either workshop by contacting Beth Gugino at (315) 787-2412 or bkg9@cornell.edu. The deadline for registering for the workshop in Hershey, PA is January 18th. This workshop is expected to fill-up quickly so sign-up early.

Pre-workshop accommodations (if needed) can be made through the Mid-Atlantic Fruit and Vegetable Conference. To receive the reduced conference rate of \$108.00 please complete and submit the hotel reservation form that is available from the Convention website at www.mafvc.org.

The Hershey Lodge
P.O. Box 400, West Chocolate Ave. and University Drive
Hershey, PA 17033
Phone: 717 533-3131

Hotel website: http://www.hersheypa.com/accommodations/hershey_lodge/location/index.html

Deadline for special rate: December 13th so make your reservation NOW!

If no rooms are available, there are many other hotels near the convention center.

WORKSHOP FACILITATORS INCLUDE:

George Abawi: Professor of Plant Pathology at Cornell since 1972. His research and extension responsibilities deal with the biology and management of root diseases of vegetables caused by plant-parasitic nematodes and pathogenic fungi.

James LaMondia: Chief Scientist and Plant Pathologist at The Connecticut Agricultural Experiment Station Valley Laboratory in Windsor, CT. His research responsibilities include the management of nematode and fungal pathogens in small fruit crops and the development of non-chemical management systems using resistant cultivars, non-host rotation crops and antagonistic crops.

Deborah Neher: Chair and Associate Professor of Plant and Soil Science at the University of Vermont since 2004. She is trained as a plant disease epidemiologist and soil ecologist. Her research responsibilities deal with soil nematodes and microarthropods.

Beth Gugino: Postdoctoral Research Associate in Plant Pathology at Cornell University, Geneva. Her background and experience is in soil microbiology, root diseases of vegetables and general disease management.

NOTE: If you are unable to attend either of these two dates, 10 additional workshops will be held across the Northeast during 2008 and 2009.

For additional information or if you have questions regarding this workshop or those to be held on future dates (to be determined) in Maine, Vermont, Massachusetts, Pennsylvania, New Jersey, New York and Virginia please contact Beth Gugino and/or visit

<http://www.nysaes.cornell.edu/hp/events/index.php>. Several of the workshops will be held in conjunction with other larger state and regional meetings.



Funding for these nematode workshops is being provided through a grant from Northeast Sustainable Agriculture Research and Education (NE-SARE) Professional Development Program.

Radiant SC: New Insecticide

Steve Bogash, Penn State Extension and [Shelby Fleischer](#), Penn State Entomology

The EPA has granted Dow Agro Sciences a label for a new active ingredient (AI) spinetoram. This new AI is in group 5, the same group as spinosad (SpinTor, Entrust and Conserve). Dow is marketing this product as Radiant SC in vegetables and Delegate WG in fruit.

All of these products are derived from the fermentation of *Saccharopolyspora spinosa*, a naturally occurring soil bacterium. When this bacterium is grown in fermentation culture, it releases a group of related metabolites called spinosyns. Two of the spinosyns (spinosyn A and spinosyn D) are made into the products called SpinTor, Entrust and Conserve. What Dow has done differently for the new products, Radiant and Delegate, is make small chemical modifications to the spinosyn molecules to achieve greater efficacy or residual activity. You can consider this a “second generation” form of spinosad much like the development of the pyrethroid class of insecticides in past years. Warrior is considered to be a 3rd generation pyrethroid. All of the spinosyn-based insecticides have the same mode of action, so a grower cannot rotate between Radiant and SpinTor for resistance management. Unlike spinosad, spinetoram will not be developed as an OMRI (organic) approved option.

Spinetoram is a broad spectrum insecticide providing control of Lepidoptera larvae (caterpillars), beetles, leafminers, thrips, and psyllids. It is also labeled for suppression of flea beetles and grasshoppers. The current label covers: asparagus (asparagus beetles), garlic, leeks, onions, cole crops, sweet and popcorn, cucurbits, peppers, tomatoes, eggplants, tomatillo, herbs, leafy vegetables, legumes, mint, potatoes, sweet potatoes, beets, strawberries, and most root vegetables.

Radiant SC is considered safe when used as directed for beneficial insect populations, but is toxic to bees. Do not use *acidifying* buffering agents or adjuvants with Radiant SC or with any of the spinosyn-based materials. REI is 4 hours and PHI is 1-3 days for most vegetables, but varies widely with the specific crop.

Benchmark Survey is about to Start

[John Berry](#), Penn State Extension

PaFarm, the Northeast Center for Risk Management Education, and Penn State Cooperative Extension are teaming together for the early winter launch of an historical retail farm marketing benchmark study.

For those people considering the establishment of a retail farm market, those people with a retail market wondering about their effective use of resources, and those with a retail market considering an expansion there is little information available to support the management process. How many employees will I need? How big should my facility be? What are good hours of operation? What products might we carry? These are some of the questions commonly asked that find no answer. There is no useable data available on this industry.

The upcoming survey is a two part project. Part one is a general survey to get some baseline data on the current state of retail farm markets. Part two is a more detailed study that will build on what is learned in part one and collect more detailed data on farm market business benchmarks. This coming winter the survey to collect data needed for part one will be rolled out across Pennsylvania.

This survey is an opportunity for retail farm market operators to participate in a data collection effort that will benefit the industry on a whole. The survey is designed to make data collection relatively easy for markets of all types and sizes. There will be several chances to access the survey over the coming months. Market managers are being asked to participate as best they can as we strive to establish business guidelines for this significant and growing sector of Pennsylvania's agriculture industry.

Compliance Assistance Visits and the Worker Protection Standard

Jim Harvey, Penn State Office of Rural Health

The Worker Protection Standard (WPS) is a federal Environmental Protection Agency (EPA) regulation that applies to growers and commercial applicators who apply pesticides to production agricultural crops where employees outside of the immediate family are applying the pesticides (restricted use or general use) and working in those areas within thirty days after the end of the Restricted Entry Interval.

In the past, enforcement of the WPS has not been very strict but that has been changing in the past few years. The Pennsylvania Department of Agriculture has dramatically increased the number of WPS inspections and strictness of the inspection.

The good news is that the WPS is fairly easy to comply with and Penn State can even offer you a WPS specialist who can come out to your operation to go over the WPS with you and try to spot problems with your compliance so that problems can be corrected before a PDA inspector shows up. To schedule a compliance assistance visit you can contact the specialist at jdh18@psu.edu or call Jim at 814-863-8214 or write him at Jim Harvey, PORH Office, 202 Beecher-Dock House, University Park, PA, 16802.

OMRI Removes Products from List

Elsa Sánchez, Penn State Horticulture

A couple of emails from OMRI that I received indicated that the products below have been removed from their product list. It's best to check with your certifying agency before using these or any products.

Product Name	Company Name	Date Removed
BioVigor	Global Organics, LLC	Dec 3, 2007
CheckMate (R) CM-WS	Suterra, LLC	Dec 3, 2007
Cockadoodle DOO(R) pH + Plus	Pure Barnyard, Inc.	Dec 3, 2007
Eco-Poly 21	Eco-Nutrients, Inc.	Dec 3, 2007
FOAM BLAST(R) ORG 31	Emerald Performance Materials, LLC	Dec 3, 2007
FOAM BLAST(R) ORG 50	Emerald Performance Materials, LLC	Dec 3, 2007
FOAM BLAST(R) ORG 51	Emerald Performance Materials, LLC	Dec 3, 2007
Garden Treasure Fulvic Acid	Absorbent Products Ltd.	Dec 3, 2007
Hoof Mate	Hux, Inc.	Dec 3, 2007
IoGold Recharge	IoGold Systems, Inc.	Dec 3, 2007
Isomate(R) - M 100	Pacific Biocontrol Corp.	Dec 3, 2007
Kocide (R) 2000	DuPont	Nov 30, 2007

Fungicide/Bactericide		
Kocide (R) 3000 Fungicide/Bactericide	DuPont	Nov 30, 2007
Mallard Mulch	Sonoma Compost Co.	Dec 3, 2007
Organic Adhesive Adjuvant	Monterey AgResources	Dec 3, 2007
Organic BioLink(R) All- Purpose Fertilizer 5-5-5	Westbridge	Dec 3, 2007
Organic BioLink(R) Phosphorus Fertilizer 0-12-0	Westbridge	Dec 3, 2007
Petrel Brand Calcium Phosphate Fertilizer	Petrel Mark International, Inc.	Dec 3, 2007
Rhizogen Ag-GRO 3-4-3	Rhizogen	Dec 3, 2007

The Convention that Berry Growers Won't Want to Miss

[Kathy Demchak](#), Penn State Horticulture

Just wanted to make that everyone knows about this one.... If you're a berry grower, this is the year that you'll especially want to attend the MidAtlantic Fruit and Vegetable Convention in Hershey, Jan. 29-31. The North American Berry Conference, a joint meeting of the North American Strawberry Growers Association (NASGA) and North American Bramble Growers Association (NABGA), will be meeting jointly with the MAFVC. This is a wonderful opportunity to gain some new perspectives, and network with strawberry and bramble growers from both within and outside the MidAtlantic Region. On Tuesday, there will be all-day workshops (extra fee involved) for interested growers who are new to berry production, or who have been in production a while but want to brush up on their berry knowledge. The workshops will be lead by Marvin Pritts and Cathy Heidenreich from Cornell University and David Handley from the University of Maine. On Wednesday and Thursday, there will be berry grower showcases highlighting Susan Lynn of Sand Hill Berries in Mt. Pleasant, PA, and Charlie O'Dell of Crows Nest Farm, Blacksburg, VA. Following the grower showcases, strawberry sessions will run for the rest of the day Wednesday and Thursday, with bramble sessions also on Wednesday and Thursday morning. Session themes include day-neutral strawberry production, soil health in berry plantings, bramble varieties, and brambles in protected culture, in addition to talks and panels on pest control and strawberry weed management. Grower talks and panels will feature John Cooper of Strawberry Tyme Farms, Ontario; David Pike, Farm-to-You, Maine; Dean Henry, The Berry Patch Farm, Iowa; Shirley Kline, Happy Valley Berry Farm, NJ; Chuck Geyer, Westmoreland Berry Farm, VA; Ervin Lineberger, Lineberger's Killdeer Farm, NC; Donnie Fulks, Belvedere Plantation, VA; and Steve Groff, Cedar Meadow Farm, PA. Industry speakers include Janice Honigberg of Sun Belle, Inc., IL and Tim Nourse of Nourse Farms, MA. University and government speakers, beside those also already listed for the workshops include Courtney Weber, Cornell Univ.; Pam Fisher, Ontario Ministry of Agriculture, Food and Rural Affairs; Doug Doohan, Ohio State Univ.; Gail Nonnecke, Iowa State Univ.; Fumi Takeda, USDA-ARS; Gina Fernandez, North Carolina State Univ.; Kathy Demchak, Penn State Univ.; Doug Pfeiffer, Virginia Tech, and Van Starnier, IR-4. A blueberry session will be held Thursday afternoon with Gary Pavlis, Dean Polk, Cesar Rodriguez, and Bill Sciarappa, all from Rutgers Univ. Extra berry-related activities available are an all-day tour on Tuesday (fee involved), a berry film festival on

Wednesday evening, and a silent auction of berry-related items. You'll also have an opportunity to visit with the folks who "run" NASGA and NABGA if you're considering joining or renewing a membership in these associations. The entire MAFVC program, registration forms, and meeting information are available on the Web at www.mafvc.org.

Calculating How Much Compost to Apply to Meet Nitrogen Needs of Vegetables

Elsa Sánchez, Penn State Horticulture

Two basic methods for calculating compost application rates exist. The first method is presented below and *the second method will be in the next issue of the Gazette*. Both methods require knowing the nitrogen content (the organic and ammonium nitrogen) of the compost. If the nitrogen content needs to be determined, compost analysis kits are available through your local extension office. The second piece of information needed is the nitrogen requirement of the crop to be grown. This information can be found on soil test results or in the Commercial Vegetable Production Recommendations guide.

Method 1

Step 1 – Determine the nitrogen (N) content of the compost in pounds per ton.

The two values you'll need from your compost analysis report are organic nitrogen and the ammonium nitrogen (NH₄-N) from the "as is basis" column. If Penn State's Agricultural Analytical Services Laboratory performed the analysis, organic N will be given as a percent (%) and ammonium N will be given as mg/kg. Convert organic nitrogen from % to pounds per ton by multiplying by 20. Convert ammonium N from mg/kg to pounds per ton by multiplying by 0.002.

Organic nitrogen (%) = _____ x 20 = _____ lbs N/ton of compost

Ammonium N (mg/kg) = _____ x 0.002 = _____ lbs NH₄-N/ton of compost

Example:

Organic nitrogen (%) = 1.1 (from compost analysis report) x 20 = 22 lbs N/ton of compost

Ammonium N (mg/kg) = 1600.0 (from compost analysis report) x 0.002 = 3.2 lbs NH₄-N/ton of compost

Step 2 – Determine how much of the nitrogen that is in a ton of compost will be available to the plants.

Organic nitrogen is not directly available for plant uptake. Organic N is converted into inorganic nitrogen for plant uptake as compost is broken down by soil microorganisms. This process is called mineralization. Mineralization rate is influenced by many factors and varies between 10 and 50% a year. Commonly, mineralization rates between 10 and 20% are assumed. However, if conditions favor mineralization, for example 1) if soil temperatures are high because of the use of black plastic, 2) soil moisture is high from irrigation and/or rainfall, 3) soil is frequently tilled and/or 4) the organic matter content of the soil is high, consider assuming higher rates of mineralization. For this step multiply the amount of organic nitrogen in lbs N/ton by an assumed mineralization rate. Add the amount of ammonium N in lbs/ton from step 1 to the result.

Organic nitrogen (lbs N/ton of compost) _____ x percent mineralization rate = _____
_____ lbs available N/ton of compost

_____ lbs available N/ton of compost + _____ lbs NH₄-N/ton of compost = _____ lbs
available N/ton of compost

Example:

Organic nitrogen (lbs N/ton of compost) 22 x 0.20 (or 20%) assumed percent mineralization rate = 4.4
lbs available N/ton of compost

4.4 lbs available N/ton of compost + 3.2 lbs NH₄-N/ton of compost = 7.6 lbs available N/ton of
compost

Step 3 – Determine the amount of compost to apply

For this step first determine the nitrogen needs of the crop in pounds per acre. This information can be found on soil test results or in the Commercial Vegetable Production Recommendations guide. If you have residual nitrogen in the soil from previous nutrient applications or green manure crops, subtract that value from the recommended rate. Then, divide the remaining amount of nitrogen required by the pounds of available nitrogen per ton of compost.

_____ lbs N recommended/acre minus any residual nitrogen ÷ _____ lbs available N/ton
of compost = _____ tons of compost to apply per acre

Example:

75 lbs N recommended/acre (from soil test recommendations or the Commercial Vegetable
Production Recommendations guide and assuming no residual nitrogen) ÷ 7.6 lbs available N/ton of
compost = 9.9 tons of compost to apply per acre

If you are using a front end loader or manure spreader with a scoop, you can figure out how many 5 gallon bucketfuls fit in your scoop, weigh a 5 gallon bucket of compost, and multiply to determine the weight of compost you are applying per scoop.

The above method will have some built-in inaccuracy because it does not account for differences in weight due to how the compost is packed, or moisture level. A second, more accurate method requires that the bulk density of the compost be determined. It is a more accurate method because it accounts for the moisture level of the compost, and packing. The final value for how much compost to apply is expressed in cubic yards per acre which can be an advantage if a manure spreader or front end loader is used to spread the compost. This method will appear in the next issue of the Gazette.

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

- ✓ January 5 – 12, 2008. **Pennsylvania Farm Show**, Harrisburg, PA. For more information visit www.agriculture.state.pa.us/farmshow.
- ✓ January 18, 2008. **Susquehanna Fruit & Vegetable Meeting**. Location TBA. For more information contact John Esslinger at (570) 963-6842 or cje2@psu.edu.
- ✓ January 21, 2008. **New Holland Vegetable Day**, New Holland, PA. For more information contact Tim Elkner at (717) 394-6851 or tee2@psu.edu.
- ✓ January 22, 2008. **Northeast Regional Vegetable Growers' Meeting**, Newton Fire Hall, Clark Summit, PA. For more information contact John Esslinger at (570) 963-6842 or cje2@psu.edu.
- ✓ February 15, 2008. **Vegetable Growers Meeting**, Fleetwood, PA. For more information contact John Berry at (610) 391-9840 or jberry@psu.edu or Mena Hautau at (610) 378-1327 or mmh10@psu.edu.
- ✓ February 18, 2008. **Tri County Vegetable, Small Fruit and Greenhouse Growers' Meeting**, Shippensburg, PA. For more information contact Steve Bogash at (717) 263-9226 or smb13@psu.edu.
- ✓ February 14, 2008. **Vegetable Production Day**, Lebanon Expo Center, Lebanon, PA. For more information contact Ginger Pryor at (717) 270-4391 or gmp4@psu.edu.
- ✓ February 19, 2008. **Crops Conference**, Madisonburg, PA. For more information contact Tom Butzler at (570) 726-0022 or tmb124@psu.edu.
- ✓ February 21, 2008. **Crops Conference**, Warriors Mark, PA. For more information contact Tom Butzler at (570) 726-0022 or tmb124@psu.edu.
- ✓ February 25, 2008. **Central Pennsylvania Crops Conference**, Ramada Inn in Blair. For more information contact Tom Ford at (814) 940-5989 or tgf2@psu.edu.
- ✓ March 6, 2007. **KPA Study Circle**, Fleetwood, PA. For more information contact Mena Hautau at (610) 378-1327 or mmh10@psu.edu or John Berry at (610) 391-9840 or jberry@psu.edu.
- ✓ March 6, 2008. **Southeastern Pennsylvania Vegetable Day**. For more information contact Scott Guiser at (215) 345-3283 or sxg6@psu.edu.

- ✓ March 11 or 13, 2008. **Vegetable and Small Fruit Meeting.** Location TBA. For more information contact Andy Muza at (814) 725-4601 or ajm4@psu.edu.
- ✓ March 12, 2008. Meeting title TBA. Warren, PA. For more information contact Andy Muza at (814) 725-4601 or ajm4@psu.edu.
- ✓ July, 2007 (date TBD). **Summer Vegetable Growers Meeting,** Kutztown, PA. For more information contact Mena Hautau at (610) 378-1327 or mmh10@psu.edu.
- ✓ November 18, 2008 (tentative date). **Western Pennsylvania Vegetable & Berry Seminar,** Butler, PA. For more information contact Eric Oesterling at 724 837 1402 or reo1@psu.edu or Lee Young at (724) 228-6881 or ljs32@psu.edu.

Regional

- ✓ Jan 15-17, 2008. **NJ Annual Vegetable Meeting** at the Taj Mahal in Atlantic City. For more information contact Mel Henninger at henninger@aesop.rutgers.edu.
- ✓ Jan 29-31, 2008. **2008 Mid-Atlantic Fruit and Vegetable Convention,** Hershey Lodge and Convention Center, Hershey, PA. For more information contact William Troxell at 717-694-3596 or visit www.mafvc.org
- ✓ Feb 7-9, 2008. **Pennsylvania Association for Sustainable Agriculture (PASA) 17th Annual Farming for the Future Conference.** Penn Stater Conference Center, State College, PA. For more information visit www.pasafarming.org.

National

- ✓ Jan 23-26, 2008. **Ecological Farming Conference.** Asilomar Conference Grounds, Pacific Grove, CA. For more information visit www.eco-farm.org or call (813) 763-2111.

International

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