The Vegetable and Small Fruit Gazette

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Horticulture Department
The Pennsylvania State University

In this Issue:

Tip for the Month: "Do the best you can, where ever you are, with what you have." Teddy Roosevelt

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Comments from the Editor

Bill Lamont, Department of Horticulture

The level of activity is increasing at the Horticulture Farm with each passing day. The high tunnels are buzzing (literally) with activity. There are cool season crops being harvested, crops being planted, construction is underway of two commercial sized (17' by 96') high tunnels, and we are working with county agents on erecting the remaining high tunnels out the counties that make up the extension high tunnel network. Throughout the Commonwealth spring is a time for preparing the land and planting crops that will be nurtured and later harvested (hopefully) for a profit. I want to remind agents to check the schedule listed below to make sure that they prepare an article for the month that they signed up for at the Agent Roundtable. I didn't receive articles for April or May. If you didn't send your article in and still want to submit one please go ahead and send it in to me. Tom Butzler is on deck for June. As always, the Vegetable and Small Fruit Gazette Team encourages your feedback so that we can better serve your needs and address your concerns.

Schedule for Agent Articles

Bill Lamont, Department of Horticulture

June	Tom Butzler
July	Dwane Miller and Jim Welshans
August	Eric Oesterling
September	Ron Hostetler
October	Mary Concklin
November	John Esslinger
December	Andy Muza

2001 Sweet Corn Weed Control

Mike Orzolek, Department of Horticulture

Weed management in the 2001 sweet corn crop should include both cultural and chemical considerations. Cultural considerations would include: choosing a field with minimal weed pressure (especially perennial weeds) from the previous year, utilizing plant spacings that optimize early plant canopy development (specifically with the very early maturing sweet corn varieties less than 68 days) and no-tillage. The date of planting will also dictate the weed management strategies since very early sweet corn production under plastic will enhance growth of sweet corn before many of the annual weed seeds begin to germinate (late May) or an extremely late crop (October) when seeds of many of the summer annuals will not germinate or be competitive with sweet corn in the field. However, production of sweet corn under clear plastic mulch will still require the application of a pre-emergent herbicide to control early grass and broadleaf weeds emerging with the sweet corn under the plastic. With conventionally grown sweet corn, the following herbicides are suggested for either pre-emergence or post-emergence application.

Pre-emergence

MicroTech (alachlor) applied at the rate of 1.5 to 3.0 quarts/A. Will provide good control of annual grasses and some broadleaf weeds including pigweed, nightshade and galinsoga. MicroTech does suppress yellow nutsedge if preplant incorporated. Weak on lambsquarters. Combine with either atrazine or Extrazine (combination of Bladex and atrazine) to improve control of other broadleaf weeds.

Dual II Magnum or Dual Magnum (metolachlor) applied at the rate of 1.3 to 1.7 pts/A. Will provide good control of annual grasses and some broadleaf weeds including carpetweed, pigweed, nightshade and galinsoga. Dual II Magnum will also suppress yellow nutsedge. Weak on lambsquarters. Combine with either atrazine or Extrazine (combination of Bladex and atrazine) to improve control of other broadleaf weeds.
Atrazine 4L (atrazine) applied at the rate of 1.0 to 1.5 quarts/A. Will provide good control of mainly broadleaf weeds. Suggest combination with grass control herbicide (Dual Magnum, MicroTech, or Sutan+) to improve control of annual grasses. Use the lowest recommended rate of atrazine when combined with an annual grass herbicide or to reduce the risk of herbicide residues which may affect triazine sensitive crops planted the following year.

Post-emergence
Aim (carfentrazone) applied at the rate of 0.3 ounces/A. Will provide good control of broadleaf weeds including common lambsquarters, morninglories, Eastern Black nightshade, redroot pigweed and velvetleaf. Aim will also suppress the following weeds: cocklebur, common ragweed, field bineweed, jimsonweed, kochia, Pennsylvania smartweed, smooth pigweed, smooth ground cherry and waterhemp. This material was developed by FMC.

Sempra CA (halosulfuron-methyl) applied at the rate of 0.66 ounces/A. Will provide good control of broadleaf weeds including cocklebur, Philadelphia fleabane, kochia, Venice mallow, passionflower, redroot pigweed, common pigweed, common pokeweed, common and giant ragweed, Pennsylvania smartweed common sunflower and velvetleaf. This material was developed by Monsanto.
Basagran 4SC (bentazon) applied at the rate of 1.5 to 2.0 pts/A. Will provide good control of broadleaf weeds and partial control of yellow nutsedge. Best results with Basagran when applied to weeds at the 2-4 leaf stage of growth. Basagran will not control grasses. Basagran works mainly as a contact material; therefore, weeds must be thoroughly covered with spray. Labeled crops are tolerant to Basagran; some leaf-speckling and leaf bronzing may occur under certain conditions, but crops generally outgrow this condition within 10 days.
2,4-D Amine applied at the rate of 0.5 to 1.0 pt/A of the 4EC formulation. Apply after sweet corn and weeds emerge. Use drop nozzles when corn is over 8 inches tall to avoid spraying the foliage or into the whorl of the corn. Warm, wet weather at application may increase the possibility of crop injury. Delay cultivation 8 to 10 days after application to avoid damaging sweet corn due to temporary stem brittleness sometimes caused by 2,4-D. . Sweet corn varieties may differ in their tolerance to 2,4-D. USE WITH CAUTION ON NEW VARIETIES. In addition, other vegetable and fruit crops nearby may be sensitive to 2,4-D application.

Pennsylvania Vegetable Growers Association- Recent EPA and Pesticide Registrant Actions

Bill Hoffman- Manager, Penn State Pest Management Information Center

The Environmental Protection Agency (EPA) and chemical manufacturers took several actions recently that may affect the future pest management decisions of vegetable growers. These

decisions are in response to new safety standards put in place by the Food Quality Protection Act.

Chlorpyrifos (Lorsban, Dursban):

The EPA recently released details of the agreement between the agency and manufacturers of chlorpyrifos (Lorsban, Dursban). Chlorpyrifos use on tomatoes will be eliminated as a result of this agreement. Also, labels of products containing chlorpyrifos must contain the statement: "Post-Bloom use on apple trees is prohibited." This is in addition to wide sweeping eliminations of and restrictions on termite, home lawn, and other non-agricultural uses. All emulsifiable concentrate formulations will become restricted use, as will liquid formulations packaged in less than 15 gallon containers, granular formulations packaged in less than 50 pound containers, and all other dry formulations packaged in less than 25 pound containers.

Diazinon (Diazinon, Dzn):

On 12/5/2000, the EPA announced details of an agreement with manufacturers of diazinon. In addition to elimination of and restrictions on some non-agricultural uses, roughly one third of the agricultural uses have been proposed for cancellation. These include some Pennsylvania grown crops including cucumbers, potatoes, strawberries, sweet potatoes, and tomatoes. For a full list of proposed diazinon cancellations, see http://www.pested.psu.edu/breg22.html.

Oxamyl (Vydate):

On 12/15/2000, the EPA announced a decision regarding the carbamate insecticide Oxamyl (Vydate). The decision places new limits on maximum soil application rates, chemigation rates, and aerial application rates. Additionally, the decision reduces seasonal maximum applications for all crops to 8 per crop and requires that all ground-boom soil treatments be incorporated by water or mechanical means. Prior to this decision, the registrant decided to voluntarily cancel uses on yams (seed piece dip), soybeans, and soil broadcast treatments for cotton. Important crops to Pennsylvania that remain on the label include apples, nonbearing fruits, pears, cantaloupes, pumpkins, potatoes, and tomatoes.

Disulfoton (Di-Syston):

On 2/7/2001, the EPA announced that Bayer Corporation submitted a request to remove four different uses (corn, oats, pecans, and tomatoes) from labels of its Disulfoton compounds: Di-Syston 68%, Di-Syston 15%, and Di-Syston 8.

Pyrethrin & Rotenone premix product Pyrellin E.C.:

On 2/7/2001, the EPA announced that Wright Webb Corporation submitted a request to remove certain uses from the labels of its Pyrethrin & Rotenone premix product, Pyrellin E.C. These uses include tomatoes, fruit, and grain, in addition to some livestock associated buildings.

For more information on how these and other actions may effect your operation, consult your county extension office.

Bug vs. Bug--Biological Control of Aphids with *Aphelinus abdominalis*

Cathy Thomas, Integrated Pest Management
Bureau of Plant Industry, Pennsylvania Department of Agriculture

The aphid that is usually found to infest vegetable crops, especially tomatoes (Solanaceae crops) is potato aphid (Macrosiphum euphorbia). Aphid nymphs and adults feed on plant sap, stopping plant growth. Signs of aphid feeding are curled leaves, yellow spots and the presence of sticky honeydew excreted by the aphid. A black sooty mold will develop on the honeydew, affecting photosynthesis and possibly reducing plant yields. Aphids may also transmit viruses. Other aphid species such as green peach or melon aphid are also pests, especially if tomatoes are grown with ornamental crops.

In the last issue I discussed *Aphidius ervi*, a parasitic wasp that attacks larger species of aphids. Another parasite that can be used alone to control potato aphid or in combination with *Aphidius ervi* is *Aphelinus abdominalis*. In addition to tomatoes, *Aphelinus* can be applied on crops such as sweet pepper, tomato, eggplant, bean, roses and chrysanthemums. Remember - aphid parasites are host species specific. For effective control, identify the aphid species attacking your crop before ordering a biocontrol!

Aphelinus abdominalis can be introduced as preventative method when crop is installed, or begin introductions as soon as aphids appear. *Aphelinus* has a long-lasting but slower activity compared to *Aphidius ervi* which goes to work immediately, however, *Aphelinus* adults may persist for up to eight weeks after they are introduced. Start crop monitoring for pest and disease development at the seedling stage and continue weekly until the end of the crop cycle. Detect and treat hot spots on a timely basis to prevent rapid colonization of aphids. Always initiate biocontrols when pest populations are low. Biological control is not a rescue treatment.

Life cycle of *Aphelinus abdominalis* This wasp is very tiny, about 3mm long, has short legs and short antennae. The female wasp has a black thorax and a yellow abdomen. When the female wasp finds an aphid she injects her ovipositor depositing an egg. *Aphelinus* can parasitize any aphid stage including winged aphids. The parasite larva develops inside the aphid body and transforms it into a black mummy. The new wasp will emerge through a hole chewed in the aphid exoskeleton. *A. abdominalis* will also feed on aphids that she does not parasitize.

Application

- Reduce or eliminate the use of toxic or residual pesticides before introducing *Aphelinus* or any other natural enemy. (Consult biocontrol supplier for information on pesticide residues)
- Release *A. abdominalis* on a preventative basis or introduce at a higher rate (curative) when aphids are first found.
- When aphids are first observed introduce *Aphelinus* at a curative rate for 3 introductions at 1 week interval.
- Monitor weekly for the development of black, mummifed aphids. When 80% of the aphids are parasitized a parasite/ prey balance has been achieved and no further introductions are needed. Augment with further introductions as required since aphid migration from outside may occur in warmer months.

- When pruning leaves, check for parasitized aphids (black mummies). If mummies are present keep these leaves in the greenhouse until new parasites hatch.
- Discuss release rates with your biocontrol advisor.
- When aphid populations are heavy, the production of honeydew can interfere with the searching ability of the parasite. Heavy aphid populations can be reduced with soft, compatible compounds or by using ladybeetles.
- Tap wasps onto leaves (or near hot spots) of the infested plants in the morning or evening, not in direct sunlight. This wasp is not very mobile so placing it close to infestations will increase the effectiveness.
- Protect parasites from ants. Ants feed on honeydew and thus protect the aphid colonies from natural enemies. Install traps for ants.
- Activity of parasites is reduced at high temperatures (above 86? F).
- A. abdominalis can be stored up to two days at 47 - 50? F, in the dark, however it is best to distribute parasites immediately.

Aphelinus abdominalis products

Aphelinus abdominalis is usually shipped as adults or mummies.

Trade names for *Aphelinus* products are:
Kopperts Aphilin, www.koppert.nl , 734-641-3763
Biobest Aphelinus system, www.biobest.be or www.bugsandbees.com , 303-661-9546
Syngenta Aphiline ab, Syngentabioline.com, 805-986-8265
This parasite can be obtained through most biological control distributors.

Benefits

- Long lasting form of aphid control
- Black parasitized aphids are easy to recognize
- Parasitize and feed on aphids

Next months issue of Bug vs Bug will discuss the life cycle and application of the aphid predator *Aphidoletes aphidimyza*.

Please phone or email me if there are specific issues you would like me address in this column.
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Penn State Vegetable Crops Research Documents Herbicide Persistence in Compost

Eric Burkhart, Graduate Student
Department of Horticulture

Vegetable and small fruit growers generally consider compost to be a beneficial soil amendment that can increase organic matter, stimulate biological soil processes, and provide nutrients. What many growers do not realize, however, is that compost traits can vary considerably according to how they were manufactured and what materials they are derived from (feed-stock). It seems that the predominant notion among many compost users is that composting is a process that can only be favorable, regardless of the methods and materials used. Unfortunately, this is where many are mistaken, and at the risk of jeopardizing crop and soil health.

In many instances, particularly with on-farm compost producers, the quality of a finished compost product is determined using observational criteria alone. That is, if it looks good and smells good, it usually qualifies for compost. Larger-scale compost manufacturers are often more meticulous about their product. They may follow methods that utilize rigorous blending and aeration, along with temperature tracking. When compost is deemed mature, quality may be further assessed through laboratory testing or bioassays. If the operation is well managed, the process generally results in a high quality product that is consistent from batch to batch. Both methods by which compost quality and maturity can be judged---observation and analyses---can be used with a great deal of accuracy. Both methods, however, fail to consider one of the more recent compost quality issues to surface: herbicide persistence.

Recent reports of herbicide residues in finished compost products have raised troubling new questions about pesticide persistence following composting. Since the summer of 2000, Penn State researchers have been documenting widespread contamination in finished compost products manufactured by the University. This is only the third confirmed case from North America, following two others from Washington State. Efforts to determine the source of herbicide contamination have brought to light some critical questions regarding the use of certain feedstock materials in compost manufacture.

Background: Washington State
Investigators in Washington State have recently documented two separate incidences where herbicides were able persist through the composting process. In both instances, the discovery occurred after growers observed damage to their crops following compost applications. Both composts were produced at facilities that utilize rigorous blending and management and so the products in question were otherwise considered to be of high quality. Laboratory analyses were able to detect minute yet significant traces of two herbicide compounds: picloram and clopyralid. Both chemicals belong to a class of compounds known as the Pyradines. They are considered to be growth regulator herbicides and are systemic in nature. Plant damage resembles that caused by Phenoxy Acetic Acid (e.g. 2,4-D), and is expressed most readily as growing shoot abnormalities.

In both composting operations, it is believed that the source of the herbicide

contamination was from the feedstock materials used in the manufacture of the windrows and piles. Picloram is an active ingredient found in products currently labeled for use in hay crops. The harvested forage, when ingested by livestock, introduces the herbicide compound into the digestive tract of the animal where it is quickly passed via excrement. Any manure or manure saturated bedding that is used in the manufacture of the compost then appears to serve as a source of contamination.

Clopyralid, on the other hand, is found in several products used for broad-leaf control in turf-grass maintenance and row crop production. Collected plant residues---grass clippings, grain stubble---are mostly likely to be the primary source of contamination with this compound.

Recent Findings: Pennsylvania

In October 1999, a multiple year vegetable crop study was begun at The Pennsylvania State University with the goal of documenting the influence of compost applications on soils and crops. Following applications of two different rates of compost, nine plots of bell peppers were grown using high tunnels in the summer of 2000. The compost utilized in this research was produced by the University and was derived from campus yard waste (except grass clippings), animal manure, and food scraps from the student dining halls.

Soon after transplanting, symptoms resembling phenoxy-acid herbicide damage were observed. Plants exhibited obvious growth abnormalities such as leaf cupping and strapping. This was most severe in the growing shoots and persisted for several weeks, becoming less conspicuous with plant age. Because no herbicides had been applied in or around the pepper plots, the appearance of these irregularities was puzzling. Soil analyses from these plots revealed high salts and a less than ideal pH, but no obvious nutritional imbalances. Tissue nutrient analyses were also inconclusive.

It was not until after the growing season had ended that the Washington State experiences came to the attention of researchers at Penn State. This served as the catalyst for a series of laboratory tests that confirmed that the compost utilized in the Penn State research had been contaminated. The culprit in this instance was clopyralid, and was detected at concentrations much higher than the minimum activity threshold of 1-2 parts per billion (ppb). Subsequent testing of additional compost batches has confirmed contamination in every one. The range in concentration between different batches has been from 17 to 74.5 ppb. Clearly, these concentrations are much too great to yield a desirable product.

Current research: Penn State

Since the discovery of herbicide contamination at Penn State, several meetings have taken place and certain facts have been established. For example, it was determined that two products, Millenium and Confront (DowAgro), are being used on campus for broad-leaf weed control. Both of these herbicide formulations contain clopyralid as an active ingredient.

Because grass clippings are not collected for composting by the University, the timing of applications has been crucial to further documenting the pathway of herbicide contamination. With this information, researchers initially hypothesized that the most likely source of contamination were tree leaves, which are collected and used for compost production. It was speculated that herbicides were inadvertently being applied to fallen leaves during a two-week period in October, prior to their being collected. To date, this hypothesis has been partially corroborated by laboratory analyses of leaf samples. For example, several samples that have been tested were found to contain clopyralid residues at concentrations ranging from 200-400 ppb.

Most recently, however, this hypothesis has been refined by the discovery that there are actually two different sources of contamination within leaf feedstock. By collecting tree leaf samples and then separating the materials into "leaves" and "grass debris," it was found that clopyralid was present at 36 ppb in the former and at 573 ppb in the latter. This suggests that the primary source of herbicide residue is the grass debris that is being mixed with the leaves when it is collected. This occurs unintentionally through the use of leaf vacuuming equipment on campus. While the tree leaves are still a concern (they tested positive), these findings indicate that they are probably not the main problem.

Conclusions: Recommendations to growers

These recent discoveries continue to alarm compost users and producers in Pennsylvania, Washington, and beyond. Many growers rely heavily on compost in order to maintain and improve soil fertility. Given the utility and value of compost products, as well as their role in waste disposal, the solution is not to avoid the use of compost; rather, it is to give careful attention to feedstock sources. Growers who utilize compost in their operations must first be certain of the origins of the material they are applying. That is, where does the compost producer obtain feedstock materials? Is the producer aware of the herbicide contamination issue? Is anything being done differently to address the possibility of such contamination?

Where on-farm composting is practiced, these questions can be easily examined. Any feedstock that originates on the farm, or from farms in the vicinity, should be investigated to determine any potential sources of contamination. For example, are herbicides containing picloram or clopyralid being used in any fields or pastures where feedstock is also collected? If so, one should consider using a different material such as 2,4-D, which has been found to be much less persistent.

On the other hand, growers who purchase or otherwise obtain their compost from municipal or commercial operations will have a more difficult time addressing the possibility of herbicide contamination. Municipal waste composting operations are especially vulnerable since they collect large amounts of residential grass and leaf materials for use in compost manufacture. Growers who rely on compost from municipal or commercial producers should inquire as to what the operation is doing to address the possibility of contamination? If the answer is nothing, then the issue should be raised.

Perhaps the best effort a grower can take to determine whether or not a product is contaminated, is to conduct a preliminary evaluation before applying. This can be done in two ways: (1) a sample can be sent to a laboratory for residue analysis or (2) an on-farm bioassay can be done. The former method is expensive (about $250.00 per sample) and requires that one locate a suitable laboratory.

A bioassay, on the other hand, is conducted on the farm and is inexpensive. With this technique, sensitive plants such as cucumbers, tomatoes, and peas are grown in potted containers using the compost as a medium. The plants are evaluated over several weeks for injury symptoms. If no obvious abnormalities occur, then the compost is most likely not contaminated and can be used. It should be noted that injury is sometimes observed resulting from poor compost quality or immaturity. These symptoms will not resemble those caused by herbicide toxicity, however.

And finally, all compost users should have the compost that they use or produce analyzed by an agricultural laboratory in order to determine pH, nutrients, soluble salt content, and carbon to nitrogen ratio. Perhaps the biggest mistake that compost users make is to rely on intuition alone. Composts can be difficult to work with, largely because consistency can vary greatly from batch to batch. The notion of "the more the better" can wreak havoc on soil and plant health, and at the expense of profitability. Nevertheless, if the product is of high quality, and appropriate application rates are followed, composts can be an important component of farm productivity.

The author would like to hear from those who believe that they may have an herbicide persistence problem. Questions and inquiries should be made to epb6@psu.edu.

That's a Berry Good Question

Kathy Demchak, Department of Horticulture

Q. For Nova 40W on small fruit crops, the label states "Applications may be used up to the day of harvest". However, the section of the Nova label pertaining to vegetables states "Applications may be used up to, and including the day of harvest". For small fruits, does this in fact mean a 0-day PHI, or was a 1-day PHI intended? (Anon.).

A. The label was intended to convey the meaning of a 0-day PHI on small fruit, according to Harvey Yoshida of Rohm and Haas, and John Lake of PDA.

Got a question? Send it to Kathy Demchak, at 102 Tyson Bldg., University Park, PA 16802. You will be credited with the question, or can remain anonymous, as you wish.

Select 2EC Herbicide for Strawberries

Kathy Demchak, Department of Horticulture

The following article appeared in "Facts for Fancy Fruit", the Purdue University Fruit Growers Newsletter, April 11, 2000. One introductory note is that Select would be used for essentially the same uses as Poast, but may have better activity against perennial grasses. Here's the article: Select 2EC Herbicide Supplemental Label for Strawberry: Source: Richard C. Funt, Extension Small Fruit Specialist, Ohio State University, Columbus. Previously, Prism, which is a post-emergence, selective herbicide for non-bearing strawberry production, was to be applied no later than one year before harvest. Now Select 2EC (same product as Prism) has been labeled for bearing strawberries and can be applied within 4 days of harvest. At the rate of 6 to 8 ounces per acre, Select 2EC plus a non-ionic spreader can control such grasses as quackgrass, crabgrass, foxtail, and barnyard grass. Generally, grasses need to be 4 to 6 inches or taller for maximum absorption. Grasses should be actively growing, which indicates good soil moisture and temperatures above 55 F. Repeat applications may be necessary. Select can be effective if applied one hour before rainfall. The supplemental label indicates that the use of crop oil with a 17% emulsifier is to be added to the tank mix. Crop oil can cause some injury to strawberry plants at certain temperatures (below 45 F or above 80 F). Ohio State specialists generally recommend a non-ionic spreader rather than crop oil. A non-ionic spreader can be just as effective as crop oil, with less risk of leaf damage; however, Valent Corporation indicates that crop oil can be more effective on weed control and will not accept responsibility for the use of a non-ionic spreader, if control is unsatisfactory to the grower.

Orange Rust on Black Raspberries and Blackberries

Kathy Demchak, Department of Horticulture

In last month's newsletter, I promised additional information on orange rust. Especially now that there is a material that can be used for orange rust control (Nova), it's important to understand the biology of the fungus, in order to use the material when it will be effective. Use at other times would not only be a waste of the material, but could also contribute to resistance buildup. It is important to realize that Nova will not cure plants that already have systemic infections (i.e., the plants that show the bright orange spores). Its use is to prevent clean plants from becoming infected. The following information is condensed from the Compendium of Raspberry and Blackberry Diseases and Insects orange rust section written by Bill Kleiner (yes, as in Adams Co. Coop. Ext.) and Jim Travis, and from Mike Ellis of Ohio State.

Orange rust sporulation and infection is greatest during periods of cool, wet weather. There are two different periods when different types of infection occur. The first is in the spring, when the bright orange spores (called aeciospores) are produced. The spores released at this time cause localized infections on the leaves. In 21 to 40 days, another type of spore (called teliospores) form on the underside of these newly infected leaves, and produce basidiospores that actually cause the sytemic infections. These sytemic infections usually take place when temperatures are cool in the late summer and fall. Therefore, there are 2 periods when a fungicide should be used. The first is starting in the spring when the bright orange spores are forming (early to mid May) on a 10-14 day schedule until the infected leaves die and dry up in early summer. The second period is starting when temperatures start to decline in late summer to early fall through the first killing frost. There is a good chance of resistance development, however, so overuse should obviously be avoided. Also, cultural controls, such as removing wild brambles from areas near

the planting, and removing any infected plants from the planting early in the season should be used to the greatest degree possible. Improving air circulation by controlling weeds, and using good pruning practices will decrease the durations of leaf wetness necessary for leaf infection.

Potato Musings

Potato Sessions at the Mid-Atlantic Fruit and Vegetable Meeting

Bill Lamont, Department of Horticulture

I firmed up topics and speakers for the potato sessions at next year's Mid-Atlantic Fruit and Vegetable Convention as January 29, 30 and 31, 2002 while I was attending the Annual Meeting of the Potato Association of America. The potato sessions will be organized similar to this year starting at 1:30 PM on January 29th and then running all day on January 30th. See you next year in Hershey.

Upcoming Meetings

Bill Lamont, Department of Horticulture

Regional

January 29-31, 2002: Mid-Atlantic Fruit and Vegetable Growers Convention, Hershey, PA. Contact Bill Troxell (717) 694-3596.

July 20, 2002: Pennsylvania Association for Sustainable Agriculture (PASA) Fruit Day, Horticulture Research Farm, Penn State University, Rock Springs PA. Contact Kate Francis (814) 349-9856.