

VEGETABLE AND SMALL FRUIT GAZETTE

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Tip for the Month: I have included Teddy Roosevelt's quotation in my comments from the editor.

Comments from the Editor
Bill Lamont, Department of Horticulture

I thought those on the front lines of agriculture would enjoy this quote: "It is not the critic who counts, not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, and comes short again and again, because there is no effort without error and shortcomings; but who does actually strive to do the deeds; who knows the great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worse, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who know neither victory nor defeat." To assist those who feed and beautify the world is indeed a noble and worthy profession, one of the best, and the Thanksgiving Holiday is certainly a time to count the many blessings that we have as individuals and as a nation.

Reminder that the Vegetable and Small Fruit Roundtable is scheduled for Thursday, November 16th at 2:30 PM in Room 10 Tyson. There will be dinner beginning at Dr.

Lamont's house beginning at 6 PM where discussions can continue. There will be a small charge for the dinner and refreshments of \$8.00 collected at the door. As always, the Vegetable and Small Fruit Gazette Team encourages your feedback so that we can better serve your needs and address your concerns.

Bug Against Bug

Using The Parasitoid *Eretmocerus Emericus* To Control Silverleaf Whitefly
Cathy Thomas, Integrated Pest Management Program
PA Dept of Agriculture

The most common whitefly found in PA greenhouse vegetable crops is Greenhouse whitefly, however there is another species, Silverleaf whitefly (SLWF) that can infest vegetable crops. Silverleaf whitefly has an enormous number of host plants. In PA greenhouses, this species is most commonly found as a pest of poinsettias. In addition to causing damage by sucking the leaf tissue and secreting honeydew, SLWF is an important carrier of damaging viruses, transmitting more than 25 viruses and many other virus-like diseases. Avoid colonization of this pest in vegetables by separating vegetable and ornamental crops. If you produce your own vegetable transplants, and also grow ornamental crops, isolate a separate area for vegetable transplant production.

Eretmocerus eremicus is a fairly new product for whitefly control and is more effective in controlling SLWF than *Encarsia formosa*. It will also parasitize greenhouse whitefly. Generally, *Eretmocerus* is more resistant to pesticides than *Encarsia formosa*. The biological supplier - Biobest is currently carrying out numerous experiments to determine the side effects of pesticides on this parasitoid.

Biology of *Eretmocerus eremicus*

The adult female wasp is lemon-colored with thick antennae. *Eretmocerus* can develop in any larval stage of the whitefly, but it prefers the second and early third stage. This wasp will also feed on whitefly larva. *Eretmocerus eremicus* lays its eggs under the whitefly larva.

How do I know if *E. eremicus* is killing the whiteflies?

Two weeks after the egg is laid in the whitefly larva, the pupa stage of the whitefly will turn yellow, not black as is the case for *Encarsia*. In order to exit the host, *Eretmocerus* will make a small round hole in the top of the whitefly pupa and emerge. The complete life cycle takes 17 to 20 days, depending on temperature and the larval stage of the whitefly. Whitefly levels must be monitored each week of the crop cycle by inspecting the larvae on the foliage to determine if it has been parasitized. A 16 – 20x hand lens is required.

Application

Eretmocerus is introduced weekly at curative levels when whitefly stages are found until sufficient parasitism is reached. If at least 80% of the whitefly pupae are parasitized (brown in color for greenhouse and silverleaf whitefly), parasitism levels are high enough to cease introductions. It is important to continue to monitor the whitefly populations after introductions are stopped.

Consider these points when using *E. formosa*.

- At temperatures above 70°F, it is recommended to introduce curatively about 6 parasitic wasps/m₂ for several weeks (whitefly larva needs to be present to introduce *Eretmocerus eremicus*).
- In some cultures, introduction can begin at first signs of infestation (e.g. eggplant cultures), in other crops (e.g. tomato) start the introduction when daytime greenhouse temperatures are at least 70°F. Introduce 1 *Eretmocerus eremicus*/m₂ weekly, until parasitism is sufficient.
- When leaf pruning, examine leaves for the development of parasitism. These leaves should be left in the greenhouse so the new generation of parasitoids can emerge. All employees should be trained in recognizing parasitized whitefly pupae.

Methods of Distribution

Eretmocerus eremicus is supplied by two different methods. The parasitic wasps are supplied as pupae glued on cards or as loose pupae packed in tubes. Both systems have their own specific use in practice. Introduce biocontrols immediately into the greenhouse when they arrive. Place cards underneath plant canopy, out of direct sunlight. Most suppliers ship biocontrols via overnight delivery.

Advantages

- *Eretmocerus eremicus* is more tolerant to pesticides than *Encarsia formosa*.
- *Eretmocerus eremicus* can tolerate high temperatures.
- Both greenhouse whitefly and silverleaf whitefly can be parasitized by *Eretmocerus*.
- Parasitized pupae are very easy to recognize due to their yellow color.

REMEMBER: Consult your biocontrol supplier for introduction rates for each specific crop. It is critical to accurately identify the pest you wish to control with a natural enemy. Consult a pest identification manual, the extension service or the Dept of Agriculture to determine the species of whitefly infesting your crop.

Please contact me if there are specific issues you would like to see addressed in this column.

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Vegetable and Small Fruit *Agricultural Alternatives* Publications Updated
Jayson Harper and George L. Greaser, Department of Agricultural Economics and Rural Sociology

Since the beginning of this year, 12 publications in the *Agricultural Alternatives* series of interest to vegetable and small fruit growers have been revised. These include fruit and vegetable marketing, sweet corn, broccoli, cantaloupes, snap beans, tomatoes, pumpkins, bell peppers, strawberries, onions, asparagus, and cucumbers. Revised versions of beekeeping, red raspberries, and highbush blueberries are being edited and will be available by the end of the year. Irrigation of fruits and vegetables is currently being revised and will be available early next year. Several new publications are underway including potatoes, blackberries, apples, and peaches/nectarines. Copies of publications in the *Agricultural Alternatives* series can be obtained through your local cooperative extension office or from the Publications Distribution Center, 112 Agricultural Administration Building, University Park, PA 16802-2602.

The Agricultural Alternatives website (<http://agalternatives.cas.psu.edu>) is also available to people interested in the publications. The site is currently undergoing a major facelift. A major change will be to make all the publications available in .pdf format (readable with Adobe Acrobat). Another change will make Excel spreadsheets of the budgets available so users can easily adapt the cost estimates to their individual production conditions. More extensive links to other small and part-time farming resources and producer associations will also be provided. We hope to have these changes operational by early next spring. Copies of many of the publications are also available in .pdf format at <http://pubs.cas.psu.edu/alternatives.html>.

Publications in the *Agricultural Alternatives* series:

UA249 Emu Production
UA250 Ostrich Production
UA251 Rhea Production
UA252 Spring Lamb Production
UA253 Off-season and Holiday Lamb Production

UA254 Accelerated Lamb Production
UA256 Feeder Lamb Production
UA257 Milking Sheep Production
UA258 Enterprise Budget Analysis
UA259 Earthworm Production
UA260 Dairy Goat Production
UA261 Swine Production
UA262 Fruit and Vegetable Marketing for Small-Scale and
Part-time Growers (revised 9/00)

UA263 Pheasant Production
UA264 Veal Production
UA265 Highbush Blueberry Production
UA266 Bison Production
UA273 Boarding Horses
UA274 Rabbit Production
UA275 Dairy Heifer Production (revised 10/00)
UA276 Red Deer Production
UA278 Sweet Corn Production (revised 4/00)
UA280 Broccoli Production (revised 6/00)
UA281 Fallow Deer Production
UA282 Irrigation for Fruit and Vegetable Production
UA284 Elk Production
UA285 Red Raspberry Production
UA286 Financing Small-scale and Part-time Farms
UA287 Cantaloupe Production (revised 6/00)
UA288 Bell Pepper Production (revised 6/00)
UA289 Snap Bean Production (revised 6/00)
UA290 Strawberry Production (revised 9/00)
UA291 Tomato Production (revised 6/00)
UA293 Pumpkin Production (revised 6/00)
UA296 Dairy Beef Production
UA297 Introduction to Aquaculture
UA298 Feeding Beef Cattle
UA299 Beef Backgrounding
UA300 Bobwhite Quail Production
UA304 Beef Cow-Calf Production
UA310 Beekeeping
UA312 Onion Production (revised 6/00)
UA313 Asparagus Production (revised 6/00)
UA314 Cucumber Production (revised 6/00)
UA319 Partridge Production
UA335 Small-scale Egg Production
UA340 Meat Goat Production (new 7/00)

Thoughts on My Field Research in 2000

M. D. Orzolek, Department of Horticulture

Since the year is drawing to a close, I'm sitting in my office reflecting on the field research I initiated and/or completed in 2000. I conducted field research in three distinct areas; variety trials, weed control and plasticulture. Ironically, May was very warm and this allowed me to lay plastic film early and transplant tomato, pepper and cantaloupe about 2 weeks earlier than normal. The transplants grew rather rapidly in May but slowed down during July and August (wet, cloudy and cool days). I harvested extremely high yields of tomato and cantaloupe, but the peppers on silver mulch formulations never did establish and develop normally and uniformly in the research plots. The poor pepper growth wasn't strictly related to nutrition, but appeared to be due to chemical carryover from the previous year. I was able to apply 10 formulations (types) of paper mulch, but some of the paper formulations degraded at the soil line and when windy, the paper lifted and in some cases was torn completely off the raised bed. In some cases, the paper was only on the raised bed for approximately 30 days, but I did record a yield response with cantaloupes in that short period of time compared to the no paper mulch checks. I also evaluated in 2000 about 10 photodegradable plastic mulch formulations. The tomato growth was phenomenal on the plastic films and some of the films were degrading in the field 35-40 days after application in the field. The negative side of the early plastic degradation was loss of weed control on the beds and a dramatic reduction in fruit quality and yield. I also transplanted some "Millionaire" seedless watermelon on IRT mulch (2 different manufacturers) on June 2 at the Horticulture Farm, Rock Springs, PA. To my amazement, the raised beds were covered over with watermelon vines by July 15 and we harvested the melons on August 25. The pollinator for this crop was "Crimson Sweet". The snap beans in the variety trial grew rather rapidly but never developed into excessively large plants during the growing season. We hand harvested each variety at least 4 times with total marketable yields of pods reaching 4.5 T/A in some of the highest yielding varieties that were in the trial. The tomato variety trial was transplanted around the last week of May; expecting initial harvest of early varieties in mid-July. Because of the cool, damp weather in June and July, I didn't do any harvesting of tomato fruit until the middle of August. Fruit quality was good to excellent in some varieties and fair in others because of catfacing and misshapen fruit. However, there was no serious blossom end rot problems on tomato fruit in the trial this year. The pumpkin variety trial on bare ground surprisingly had the best weed control in the last 10 years. Application of Command and Dual Magnum prior to transplanting resulted in excellent weed control of both grasses and broadleaf weeds for at least 8 weeks before supplemental weed control (hoeing) was necessary. Almost all of the pumpkin varieties produced high quality fruit with very few postharvest problems. Even with the wet summer, we had no pollination problems or low fruit set of pumpkin in 2000 in Central PA. For processing sweet corn only, the use of Accent postemergence looks very good for season long weed control. The four processing sweet corn varieties that I evaluated in the Accent trial were: Bonus, Sterling, Early Cogent, and GSS 9299. None of the varieties were affected by the postemergence application of Accent. Application of Dual Magnum over the top of transplanted tomatoes caused no serious problems at the 1.0 lb ai/A rate. Control of grasses and several broadleaf weeds in 2000 was better than I have seen in

the last 10 years. The reformulation of Dual has made a difference in short term control (preemergence) of weeds in many crops.

Treated Seed For Flea Beetle And Stewart's Wilt Management In Sweet Corn Shelby Fleischer, Department of Entomology

Most of you are aware of the insecticide Admire or Provado (active ingredient is imidacloprid), for control of Colorado potato beetle and striped cucumber beetle. There is another beetle group - the flea beetles - on which this material is quite active. Several flea beetles (corn flea beetle, pale striped flea beetle, western black flea beetle, toothed flea beetle, sweetpotato flea beetle, the smartweed flea beetle) transmits the bacteria *Erwinia stewartii*, which caused bacterial wilt or Stewart's wilt in sweet corn. Choosing sweet corn cultivars with good host plant resistance is an important management tool for this disease. We may now have another tool.

Gustafasson is developing imidacloprid as a seed treatment in sweet corn. The seed treatment formulation is called Gaucho. Gaucho-treated seed will absorb the insecticide, which is systemic, and help control flea beetles during early growth stages, which helps with both insect and disease management.

Gaucho is *not* available for farmers to treat their own seed. The company is concerned about phytotoxicity by overdosing, and lack of efficacy due to an insufficient dose. Furthermore, absorption by the seed even during storage can affect vigor and germination. However, the seed producers are developing Gaucho as a seed treatment for certain cultivars.

As of this writing, a full federal EPA label to allow Gaucho treatment of sweet corn seed is pending. I cannot predict if it will be ready by the next field season. However, the major seed producers are expected to be able to treat seed under a temporary Section 24-C label in Idaho, Colorado, or Minnesota (where most of the seed treatment would occur) and then sell it in certain states. Alan MacNab and I worked to ensure that Pennsylvania is on the list of included states for last field season, where it was mostly relevant to processing cultivars. We hope the temporary label will be extending for the next field season, and the cultivar list be extended into fresh-market cultivars. Pennsylvania will again be included. Therefore, you can request to buy Gaucho-treated seed as part of a flea beetle and Stewart's wilt management program in sweet corn. However, you will need to request this from your seed supplier.

Any systemic will not work forever, and issues that effect uptake (temperature, soil moisture) might influence how well the material works. Be prepared to treat susceptible varieties with a foliar insecticide if there are 6 or more beetles per 100 plants. A banded application just over the plants should work. Keep scouting even after a spray, to make sure more beetles do not move in. The overwintering adults will feed on weeds and move into corn plants throughout May and June. Beetles tend to be more abundant on outer rows. Scouting on calm, sunny days works best – the beetles

are most active then, and although they will jump away from you, it will be easier to spot them because of this activity.

Although you should not overly rely on a systemic, data from Illinois suggest that Gaucho-treated seed can be a highly valuable component of management, with greater value on the more susceptible cultivar. And remember, if you are interested in Gaucho-treated sweet corn seed, you will need to request this from your seed dealer.

Food Safety Publication

Kathy Demchak, Department of Horticulture

Given some situations over the past couple of years concerning problems with food safety and small fruit, growers understandably want to know how these events happened and what they can do to avoid 'making the news'. Cornell's Good Agricultural Practices Program has an excellent, easy-to-read new publication called 'Food Safety Begins on the Farm - A Grower's Guide'. At 28-pages, it explains the sources of food-borne illnesses in some past outbreaks, talks about potential sources of food contamination, and describes ways to minimize risks from before planting through post-harvest handling of fresh fruits and vegetables. If you'd like a copy, please contact your county agent, and allow some time. I'm sending information on obtaining this publication to agents who typically cover small fruit. Hopefully, they can consolidate orders to make the work load easier on the person sending out this publication. Cornell also will be producing a smaller pamphlet that covers some of the same information in a briefer style. One of the authors, Betsy Bihn, will be speaking in the small fruit session at the Mid-Atlantic Fruit and Vegetable Conference. Copies of both of these publications will be available there as well.

Section 18 for Goal 2XL on Strawberries Approved for 2000

Kathy Demchak, Department of Horticulture

The EPA has granted an exemption under the Section 18 provisions of FIFRA for the use of Goal 2XL (oxyfluorfen, 22% a.i., Rohm and Haas) to control broadleaf weeds in strawberries in Pennsylvania. Copies of the notification from EPA, a copy of the supplemental label, and a copy of the usage reporting form is being sent to each county extension office; therefore, your county agent should be able to provide you with these. The application rate is 1-2 pt of product/acre (0.25-0.5 lb ai/acre) in a minimum of 20 gal. of water/acre. The material should be applied postemergence between October 15 and December 15, 2000. Only one application may be made. Strawberry plants must be dormant at the time of application; therefore, wait until at least one hard frost has occurred. Applications can be made with ground equipment only. Use flat fan nozzles at 20-40 psi. Applications may be made to the entire field as a broadcast spray or as a spot treatment to target areas. Application through any type of irrigation equipment is prohibited. A 123-day preharvest interval must be observed. All applicable directions, restrictions, and precautions on the product label must be followed. It is requested that all

growers who use this product in this manner fill out and send to PDA the form mentioned above documenting the usage. The usage form will also be made available in the Small Fruit sessions of the Mid-Atlantic Fruit and Vegetable Conference.

EPA has stated that this is the last year that a Section 18 for Goal will be granted. Therefore, if you have any weed problems that you need to clean up with Goal, this is the year to make sure it gets done.

That's a Berry Good Question!!!

Kathy Demchak, Department of Horticulture

I get asked this question periodically, and, though it wasn't asked specifically for this column, here's the answer since a number of people wanted to know.

Q. What's happening with Stinger for strawberries?

A. Stinger was at IR-4 for some time while the data from residue studies were being reviewed and a petition for this use was prepared. This package was just very recently submitted to EPA, so potential registration is moving forward, even if slowly. This is good news, as compared to that for Goal, which pretty much stopped dead as it became apparent that there were problems with the product unrelated to the submission of residue data. After data packages are submitted to EPA, they are put on EPA's review schedule. A minimum of 9 months passes before a label is granted, so we're probably looking at late next year for a label at the earliest.

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.

Potato Musings

Quarantine Placed On PEI Potatoes Because Of Potato Wart
Bill Lamont, Department of Horticulture

Several days ago potato wart virus, a quarantine pest, was discovered on potatoes coming from a field in Prince Edward Island in Canada, according to the National Potato Council's (NPC) Insider Report.

USDA-APHIS responded by sending a team to the area to investigate. In the meantime, USDA proceeded to require that any Canadian tablestock or seed from PEI move only through one border crossing in Maine. At that point 300 tubers would be sampled out of any fresh shipment and 600 out of any seed shipment. In the meantime, Canada would undertake further soil samples

and tests. However, the NPC did not feel that this was adequate to protect U.S. potatoes from this disease and appealed to USDA to initiate a complete quarantine of fresh or seed potatoes from PEI until the testing was completed. Deputy Administrator Richard Dunkle, after a review of the reports, agreed with the NPC concerns and has approved such a border quarantine effective immediately and until further notice.

For the complete story go to:

<http://www.vegetablegrowersnews.com>

Potato Grading Complete

Potato grading is complete and the potatoes are being placed in different storage temperatures in the potato cellar in back of Tyson. The next step will be to determine specific gravities, and determine the culinary characteristics for the different varieties in our potato processing laboratory in cooperation with Dr. Luke Laborde, Department of Food Science. Will be providing updates in future issues.

Potato Sessions at the Mid-Atlantic Fruit and Vegetable Convention

The following is the schedule for the potato sessions January 30-February 1, 2001. Please start to advertise this meeting to your growers.

Session E

Potatoes

Tuesday, January 30, 2001, PM

Topics and Speakers

Presiding: Bob Leiby, Lehigh County Cooperative Extension

1:30 PM The Need for Innovative Marketing in Potatoes- Joseph Sieczka, Cornell University 516-727-3595

2:00 Marketing Fresh Market Potatoes-How Do We Do It?-A Panel

Keith Masser- Grower, Schuylkill County

Jim Benshoff-Grower, Cambria County

Smoky Wessner-Grower, Lehigh County

Mike Huya-Grower, Crawford County

Roger Springer- PA Potato Grower Cooperative

Weis: Charlie Brenneman

Giant: Dan McCullough

Acme:Bob Quigley

3:00-3:15 Industry Show and Tell

3:15 Cornell Potato Breeding Program- Expectations in the Future- Dr. Walter DeJong, Department of Plant Breeding, Cornell University, Ithaca, NY 14853

4:00 Marketing Specialty Potatoes- Wayne Snyder, RD 2 Box 158, Delhi, NY 13753

4:30 Adjourn

Session E

Potatoes

Wednesday, January 31, 2001, AM

Topics and Speakers

Presiding: Ron Hostetler. Cambria County Cooperative Extension

9:00 AM Timing Nitrogen Applications- Dr. Carl Rosen, Department of Soil, Water and Climate, University of Minnesota

9:30 Role of Calcium in Potato Production-Dr. Carl Rosen, University of Minnesota

10:00-10:15 Industry Show and Tell

10:15 Comparison of Fungicide Seedpiece Treatments on White Potato Cultivars-Dr. Stephen Johnston, Extension Plant Pathologist, Rutgers University

11:00 Controlling Pathogens in Potato Storages -Dr. Randy Rowe, Department of Plant Pathology, The Ohio State University

11:30 Interactions Between Manure and Potato Production- Dr. Keith Kelling, Department of Soil Science, University of Wisconsin-Madison

12:00-1:30 PM Lunch and Visit with Exhibitors

Session B

Potatoes

Wednesday, January 31, 2001, PM

Topics and Speakers

Presiding: Tom Butzler, Clinton County Cooperative Extension

1:30 PM Potato Scab and Silver Scurf-What Do We Know- Dr. Randy Rowe, Plant Pathology, Ohio State University

2:00 White Potato Insect Management-What's New? -Dr. Gerald Ghidui, Extension Entomologist, Rutgers University

2:30 Stress Effects During Potato Development that Influence Post-Harvest Processing Quality- Dr. Joe Sowokinos, Department of Horticultural Science, University of Minnesota

3:00-3:15 Industry Show and Tell

3:15 The Use of CMM (Chemical Maturity Monitoring) to Extend Chipping Quality in Storage--Dr. Joe Sowokinos, University of Minnesota

4:00 Questions for Panel on Storage of Potatoes for Chip Market

Glen Hetherington-Hetherington Farms (Chip Market)

Bob Hite- (Chip Market)

Dr. Joe Sowokinos , University of Minnesota

Dan Sharretts-Synder of Berlin

Mitch Kinney-Utz Potato Chip Company

4:30 Adjourn

Upcoming Meetings

Bill Lamont, Department of Horticulture

Local

December 5, 2000: Western Pennsylvania Vegetable & Berry Growers Seminar, Days Inn, Butler, PA. Contact: Eric Oesterling, Westmoreland County Cooperative Extension, (412) 837-1402.

Regional

January 30-Feb. 1, 2001: Mid-Atlantic Fruit and Vegetable Growers Convention, Hershey, PA. Contact: Bill Troxell (717) 694-3596.

National

