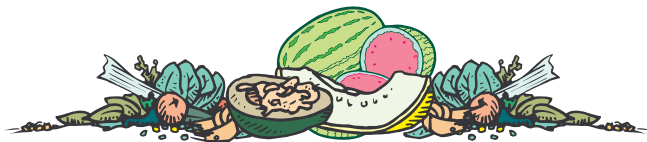


VEGETABLE CROPS HOTLINE

A newsletter for commercial vegetable growers prepared by the
Purdue University Cooperative Extension Service

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WELCOME 2001 - (Dan Egel) -

Those of us in vegetable extension at Purdue University wish all of you a happy and prosperous new millennium. There are some big changes to report in this issue of the *Hotline*, including new personnel that have been added to the Purdue University vegetable research and extension team.

Subscribers are reminded that in order to receive the new *Vegetable Crops Hotline-BULLETIN* it is necessary for us to have your e-mail address or FAX number. The *BULLETIN* is a new service whereby growers may receive pest information without having to wait for the regularly scheduled *Hotline* issue.

To subscribe to the 2001 *Vegetable Crop Hotline and BULLETIN* please see the form on page 4 of this issue or contact Dan Egel <egel@purdue.edu>, phone (812) 886-0198 or fax (812) 886-6693. (For those who have not subscribed to the 2001 *Vegetable Crops Hotline and BULLETIN*, this will be the last issue you receive.)



WELCOME CHRIS GUNTER - (Ed Ashworth) - Purdue University is pleased to have Dr. Chris Gunter join the vegetable research and extension team at the Southwest Purdue Agricultural Center. Chris is a native of Indiana and received a BS in horticulture from Purdue University. He received his graduate training in the Department of Horticulture at the University of Wisconsin. Chris worked on calcium nutrition of potatoes while in Wisconsin. He demonstrated that the calcium level in the potato seed piece had a dramatic effect on plant performance and subsequent tuber yield. Chris's knowledge of soil

fertility and plant nutrition and his experience in applied field research will make him a valuable addition to the melon research and extension program. Growers interested in contacting Chris can reach him at SWPAC by phone (812/886-0198) or by e-mail <gunter@hort.purdue.edu>.

Chris and his wife Ann Marie, who is also a native of Indiana, live in Washington. Ann Marie works for the Loogootee School District as the French teacher. When not working, Chris enjoys cheering for the Boilermaker football and basketball teams and fishing.

Please join the Department of Horticulture and Landscape Architecture and the Purdue Cooperative Extension Service in welcoming our new horticulturist, Chris Gunter back to Indiana.



VINE DECLINE POSITION - (Dan Egel)

- Last fall, the Botany and Plant Pathology Department of Purdue University received funds for research into mature watermelon vine decline (MWVD). Part of those funds have been used to hire a full time scientist to work on determining the causes and possible management strategies for MWVD. That scientist has been hired as of 2 January. His name is Dr. Hari Krishnan Ramasubramaniam. Dr. Ramasubramaniam or Hari, is stationed at the Southwest Purdue Agricultural Program in Vincennes. Hari received his Ph.D. from Iowa State University working with soilborne diseases. Along with Dan Egel and Chris Gunter at the SWPAC and several members of the Botany and Plant Pathology Department on campus, Dr. Ramasubramaniam will be part of a team that will be working on MWVD. Spring greenhouse experiments on MWVD are continuing, this time with Dr. Ramasubramaniam's help. The MWVD "team" is planning several field experiments for this summer's field season.

Please join all of us at Purdue University in welcoming Hari to Indiana.



WHAT'S NEW? - (Dan Egel and Rick Foster) - The *Midwest Vegetable Production Guide for Commercial Growers 2001* (ID-56) has arrived! The *Guide* contains information essential to growing vegetables in the Indiana. Included among the pages is weed, insect and disease management information. Pesticide rate and use information is listed by crop. This year's update has many new and revised sections. Some of the changes are listed below.

• **New sections** - Tables listing pesticides have been modified to show pre-harvest intervals and re-entry intervals for each pesticide. A new table has been added summarizing disease management strategies.

• **New varieties** are listed for muskmelons, peppers, pumpkins and tomatoes.

• **Disease management** - Quadris and Nova fungicides have expanded labels for several crops. Disease sections have been added to several vegetable crops. For example, the pumpkin section now has information on microdochium blight. As always, many changes have been made to fungicide labels. These changes are listed in the 2001 *Guide*.

• **Weed management** - Aim and Shadeout have been labeled for processing sweet corn and processing tomatoes respectively. Many new glyphosate products have been added.

• **Insect management** - Several insecticides have expanded and/or new labels including Admire (cucurbits), SpinTor (beans and peas), Proclaim (lettuce and celery), Fulfill (potatoes and sweet potatoes) and Avaunt (several vegetable crops).

In many instances, when growers ask us questions we refer them to the current issue of the *Guide*. We use the *Guide* ourselves to keep track of a broad array of facts. Commercial growers should always keep a copy of the *Guide* handy. At \$8.50, it is well worth the investment. The ID-56 *Guide* can be ordered from: Agricultural Communication Media Distribution Center, 301 South 2nd Street, Lafayette, IN 47901-1232, PH: 1-888-398-4636 or FAX: 765-496-1540. It is also available on the web at: <<http://www.entm.purdue.edu/entomology/ext/targets/publicat.htm>>.



CALCIUM AND POTATOES - (*Chris Gunter*) - Why is calcium important to plants? Calcium plays an important role in holding cells together. It also helps plants sense changes in its growing environment and acts like a switch turning on and off proteins.

Why is calcium important to potatoes? Botanists say potato tubers are underground stems. We know tubers with higher calcium are less likely to rot in storage and shipping because higher calcium tubers are healthier. Calcium is very important in developing a healthy crop.

Can tuber calcium be increased? Knowing that calcium is so important to the potato, it would be great to increase tuber calcium potatoes growing in the field. Early on it was found that there are small roots growing directly from the potato tubers. These roots were tested to see how they helped in the growth of the potato. In these tests, water-soluble dye was fed either to the main root system or these new tuber roots of potatoes growing in the field. Only dye given to the tuber roots went into the tuber. Dye given to the main roots of the plant only went up to the leaves. This is important because we know that calcium moves with water through the plant. In a greenhouse experiment the main roots of the plant was separated from the growing tubers by a plastic barrier. Calcium could be given to the main roots or the growing tubers. Only when calcium was given to the tuber area did calcium in the tuber go up.

In field growing plants, calcium put on the top of the hill when the tubers were growing increased the calcium in these cultivars: Russet Burbank, Atlantic, Dark Red Norland Superior and Snowden. It was best to split the calcium into smaller doses given at regular times (spoon-feeding) at hilling and in the weeks following hilling, when tubers were growing. This works on sandy soils with low calcium contents and in silt loam soils with high calcium contents. On both soils, supplemental calcium increased the tuber calcium.

What are the benefits of higher calcium seed potatoes? In Snowden, there was an increase in yield for seed potatoes treated with calcium while the tubers were growing, but this didn't happen in every cultivar. Also, in both Russet Burbank and Snowden, there were more 4-16 oz tubers after calcium was applied during the growing season. The plants had fewer stems if the seed tubers were grown with supplemental calcium. Fewer stems mean a younger, healthier seed tuber, which usually has better size and uniformity than an older seed tuber.



NATIONAL ORGANIC RULE PUBLISHED - (*Liz Maynard*) - Last month the final rule for national organic standards was published, paving the way for full implementation of the Federal Organic Foods Production Act of 1990. A decade in the writing, the rule spells out in detail what is and is not allowed in certified organic production. Indiana's Organic Standards Rule is not far behind. The Lt. Governor has signed it, and signatures from the Attorney General's Office and the Governor are expected soon. After that the Indiana Organic Certification Accreditation Act of 1993 (IC-15-4-12) will be implemented. The state and federal acts require that food marketed as organic be grown, processed and handled following the standards; and that producers, processors and handlers of organic products be certified by an accredited certifying agent.

The national law is scheduled to be fully implemented by late summer, 2002. As implementation begins later this winter and spring, organic growers should confirm that their certification agent is beginning the process of accreditation at the national and state levels. Growers who have in the past sold produce as organic but have not been certified should either become certified, or describe their production practices

using words other than organic. A list of certifiers operating in the state of Indiana is available from Neil Bloede of the Office of the Commissioner of Agriculture (317-232-8770; <nbloede@commerce.state.in.us>, or Cissy Bowman, Chair of the Organic Peer Review Panel (317-539-4317), or myself (219-785-5673; <emaynard@purduenc.edu>.

The National Rule may be purchased by contacting the Government Printing Office at (202) 512-1800. Ask for Federal Register, Vol. 65, No. 246, Dec. 21, 2000. An electronic copy of the rule is available through the USDA web site at: " <<http://www.ams.usda.gov:80/nop/>>. Included in the rule is the National List of allowed and prohibited substances. Indiana's Proposed Organic Standards Rule is available from the Office of the Commissioner of Agriculture (317-232-8770) or on the web at: <<http://www.ai.org/oca/organic/altman.html/>>



EUROPEAN CORN BORERS IN BELL PEPPERS - (*Rick Foster*)

- During the last two summers we have been looking at the timing of insecticide sprays for control of European corn borers in peppers. The method that we used was to artificially infest the plants with corn borer egg masses. The reason we do this is because at times we don't get enough natural infestation to really measure differences between treatments. In 1999, we apparently overdid the artificial infestation, because even with our best treatments we still had 30% of the fruit infested. We did better in 2000, although the numbers are still higher than you would expect to see from natural infestations. Sprays of Pounce were applied 21, 14, or 7 days before harvest (dbh). There was also a treatment that was sprayed on all three dates and one that was not sprayed at all. In 1999, the treatment sprayed only 21 dbh had similar damage rates as the plots sprayed three times. Plots treated either 14 or 7 dbh had similar levels of damage as the untreated plots. In 2000, the results were similar. The sprays applied 14 or 7 dbh provided little improvement in the level of control. The conclusion we can draw from these data is that the most important time to protect fruit from corn borer infestations is about 3 weeks before harvest. Growers should monitor moth activity to determine the need for treatment. If moths are active 3 weeks before harvest then insecticide treatment is in order. This gets a little more complicated because most of you pick peppers many times, so there are usually some fruit that are 3 weeks from harvest. Knowing the proper timing of sprays may be most helpful at the beginning and end of the harvest period.

Effect of spray dates (Pounce 3.2 EC) on percentage of bell pepper fruit damaged by European corn borer.

Spray dates	% Damaged Fruit	
	1999	2000
21, 14, 7 dbh	30.2	5.5 a
21 dbh	28.7	6.3 ab
14 dbh	47.1	8.7 ab
7 dbh	55.6	9.6 b
None	44.7	10.2 b



APHIDS AND VIRUS TRANSMISSION - (*Rick Foster and Dan Egel*)

- One of the first lessons field researchers learn is that experiments don't always work the way you plan for them to go. Last spring, we decided to conduct an experiment in which we looked at several insecticides applied at planting to early season muskmelons to see how they would control seedcorn maggots. Unfortunately, the experiment was completely destroyed by another early season problem, frost. We immediately replanted and retreated the study, but by that time soil temperatures had warmed to the point

that seedcorn maggot were no longer a threat. Being opportunists and not wanting all our work to be for nothing, we decided that we would turn the study into a striped cucumber beetle study. Unfortunately, no striped cucumber beetles showed up in our plots. Finally, we noticed that we had a considerable population of green peach aphids in some of the rows, so it became an aphid study.

Significant aphids infestations were detected in two treatments: Trigard 75 WP and the untreated plots. Platininum 2SC (a new material from Syngenta that has not been labeled yet), Admire 2F and Furadan 4F all controlled aphids to the point where we were not able to detect aphids in these treatments. Not only were we able to detect aphids in the plots, we also observed a virus disease. Aphids transmit the virus disease, yet we calculated equal amounts of virus disease on plants where we observed aphid infestations and plants where we did not see aphids.

The point here is that it is not possible to control virus diseases in cucurbits by applying insecticides. The virus particle is transmitted too quickly to be affected by whether the aphid dies or not. How could the virus disease be transmitted to plants that did not have aphids? Clearly, at some point, aphids landed on all the plants and transmitted the virus. On the plants with insecticide, the aphids landed, tasted the plants and either flew off in search of tastier plants or died. Yet that "taste" was enough to transmit the virus. And plants with lots of aphids had just as much virus as those plants with few aphids.

These results clearly demonstrate what we have said, that even good aphid control does not reduce the level of virus.



NW INDIANA VARIETY TRIAL SUMMARY - (Liz Maynard)

- Se sweet corn, tomatoes, and pumpkin cultivars were evaluated in Northern Indiana this past season.

Sweet Corn: The sweet corn trial included 28 bicolors, 9 yellows, one white, and one red. Of the bicolors, the most promising included (from earliest to latest) Bon Appetit TSW, EX 8414837, EX 8410307, Jackpot, and Serendipity. Friendship and EX 8313857 also performed fairly well. Promising yellow cultivars included Tuxedo, Honey Select, and Kandy Plus. The white line, EX 8415187, performed well except for below-average emergence. The red cultivar, Sweet Scarlet, had vigorous plants with good ear quality. The kernel color at harvest varied from red and yellow mix to red as the ear matured. After cooking, kernels turned a purplish color.

• Tomatoes: The tomato trial included 9 beefsteak cultivars and 1 roma cultivar. The best-performing beefsteak cultivars are mentioned here. Mt. Fresh has consistently yielded well and produced very good quality fruit in our trials. This year was no exception, with Mt. Fresh producing the highest yield of USDA No. 1 fruit. Sunsation and EX 1703292 produced yields and fruit size similar to Mt. Spring, but slightly earlier. PX 771297 produced yields similar to Mt. Spring at about the same time, but fruit size was slightly smaller. Floralina produced yields comparable to Mt. Spring, but somewhat later and with smaller average fruit size. Florida 91, another later variety, was notable for its very large fruit and good quality. EX 1703302 was the earliest cultivar, slightly ahead of SunChief, and produced the smallest fruit in the trial. Fruit quality for these two earliest cultivars was not as good as for later cultivars.

• Pruning Effects on Yield and Fruit Size. The tomato cultivars were evaluated with and without pruning. On pruned plants, 3 branches were left on the mainstem below the first flower cluster. Similar to results reported last year, for beefsteak types, pruning reduced yield of USDA No. 1 fruit (all sizes combined) by 38%, and increased fruit size by 25%. The percentage of No. 1 fruit in the "maximum large" size category was 59% for

pruned plants and 37% for unpruned plants. Three cultivars were subjected to additional pruning treatments leaving either 1 or 6 branches below the first flower cluster. Results from these treatments showed that in general, the more branches removed, the greater the size of the tomatoes and less the yield.

• Pumpkins - Jack-o-Lantern, Pie, and Specialty:

Pumpkin cultivars were compared at County Line Orchard, with the assistance of grower D. McAfee. The most promising of 16 jack-o-lantern types were: Howden Biggie, Trojan, Appalachian, Jumpin Jack, Pro Gold 200, Ol Zeb's, Magic Lantern, Howdy Doody, and Gold Fever. The last two mentioned averaged less than 15 lb. per pumpkin, making them suitable for markets desiring smaller jack-o-lanterns. Magic Lantern is advertised as powdery mildew tolerant, and was noted to have less powdery mildew than many other cultivars.

Of the 7 pie pumpkins, Hybrid Pam, Mystic, and the powdery mildew tolerant HMX 6688 (Mystic Plus) stood out with good quality and yield. Baby Bear, with small, flattened, attractive pumpkins averaging 1.8 lb. each, produced yields similar to Mystic, Snack Jack and touch of Autumn both produced pumpkins averaging under 3 lb. apiece.

Six specialty pumpkins were included in the trial. For growers serving markets with a strong interest in fall decorations, these cultivars are of particular interest. The flattened and highly ridged shape of Fairytale, combined with its deep tan color at maturity results in an old-fashioned and fairytale look that should attract a lot of attention. Another tan cultivar, Buckskin, was reminiscent of an acorn, being taller than wide and with a tapered blossom end. It does not stand up by itself, but the 10-lb. fruit would make a unique contribution to fall arrangements. The color of Jarradale - dull blue-green like the hubbard squash - combined with its flattened and ridged shape, makes this cultivar unmistakable and a valuable addition to a line of decorative pumpkins and/or squash. Rouge Vif d'Etampes is the standard when a 'cinderella' pumpkin is desired: flattened, ridged, and bright red-orange, it brings the children's fairytale to mind in an instant. Lumina, a creamy-colored flattened fruit, combines well with the other decorative squash in displays.

For More Information: This summary represents just a fraction of the information available on varieties trialed last year. For reports of trials throughout the Midwest, see the Midwest Vegetable Variety Trial Report for 2000, Bulletin No. 798, Purdue University. Available from: J. Slipher, Dept. of Horticulture and Landscape Architecture, Purdue University, 1165 HORT, W. Lafayette, IN 47907-1165. Price is \$10 + \$2 (p & h), payable by check to Purdue University.



UPCOMING EVENTS - Out-of-State:

February 7-9, 2001 - Ohio Fruit and Vegetable Growers Congress, SeaGate Centre, Toledo. Including sessions on fresh, processing and greenhouse vegetables. For more information call: 614-248-2424.

February 12-15, 2001 - New York State Vegetable Conference, at the Holiday Inn Syracuse & Convention Center on Electronics Parkway, Liverpool, NY. For a detailed program or more information, contact: Jean Warholc, NYS Vegetable Growers Association, P.O. Box 4256, Ithaca, NY 14852-4256 (tel 607-539-7648, fax 607-539-3150).

February 22, 2001 - Phytophthora Workshop, 9:30 a.m. to 4:30 p.m. Southwest Michigan Research and Extension Center, 1791 Hillandale Rd., Benton Harbor, MI. \$35/person (\$20 each additional person). To register, send check payable to Michigan State University to Phytophthora Workshop, Attn: Ron Goldy, 1791 Hillandale Rd, Benton Harbor, MI 49022.

2001 Vegetable Crops Hotline Subscription Form

The *Vegetable Crops Hotline* newsletter provides the commercial vegetable grower with timely information about disease, insect and weed pests, fertility practices, post-harvest problems, pesticide label changes, meetings and much more. Each year, the Hotline is published 13 times during the growing season with off-season issues in November and January.

This year, in addition to receiving the regularly scheduled *Hotline* issues, subscribers may also receive the *Vegetable Crops Hotline - BULLETIN* either by e-mail or FAX. This will require that subscribers to the 2001 *Hotline* indicate how they want to receive the updates, please complete the form below. The *BULLETIN* articles will also appear in the next regularly scheduled *Hotline* issue along with other pertinent articles written by the Purdue staff.

To subscribe, please fill in your name and address below, and send this form and a check for \$15.00 made payable to **Purdue University** to:

Dr. Daniel S. Egel
Southwest Purdue Agricultural Program
4369 N Purdue Rd
Vincennes, IN 47591

***Indiana Vegetable Growers Association members are automatically signed up for the *Vegetable Crops Hotline* at no additional charge.**

=====
____ Yes, I would like to subscribe to the 2001 *Vegetable Crops Hotline*. Enclosed is a \$15 check made payable to **Purdue University**.

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