VEGETABLE CROPS HOTLINE

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

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IN THIS ISSUE

- LOOKING FORWARD TO 2002
- ACTIGARD AND MESSENGER
- NEW VARIETY TRIAL REPORT
- THE LATEST PRODUCTION GUIDE
- ORGANIC CERTIFICATION UPDATE
- NW INDIANA VEGETABLE TRIAL SUMMARY
- UPCOMING MEETINGS
- WEB CORNER
- SW INDIANA VARIETY TRIAL 2001
- NEW PRE-MIX HERBICIDE FOR CUCURBITS

LOOKING FORWARD TO 2002 - *(Chris Gunter)* - Welcome to the first issue of the *Vegetable Crops Hotline for 2002.* This year the *Hotline* has a new editor as Dan Egel passed the red pen over to me. Dan has been the editor of the *Hotline* for three years and has done a fantastic job. I will try hard to maintain his level of excellence during my tenure as editor. In the coming year, we will continue to offer you the most up-to-date information possible in both the *Vegetable Crops Hotline-Newsletter* and the *Hotline-Bulletin*. As always, your comments and suggestions on how to make the *Vegetable Crops Hotline* better are welcome and appreciated. The Purdue University Extension vegetable team wishes you all a happy and prosperous new year.

ACTIGARD AND MESSENGER - *(Dan Egel)* - Plant pathologists have known for several years that under specific circumstances, plants exposed to various chemicals, microorganisms or physical injury are better able to withstand plant diseases. This phenomenon is known as Systemic Acquired Resistance. Today, there are two pesticides that induce Systemic Acquired Resistance in vegetable plants: Actigard and Messenger. Neither of these pesticides affects the fungi, bacteria or viruses that cause plant disease directly. Instead, these pesticides seem to cause an increase in the plant's ability to fight plant diseases.

There is still much to be learned about Systemic Aquired Resistance in general and about Actigard and Messenger in particular. At this point, we can make several observations:

- Both pesticides should be used as part of a general overall program to manage plant diseases. Such a program should be developed from the cultural and pesticide management options listed in the *Midwest Vegetable Production Guide for Commercial Growers, 2002 (ID-56)*. Do not use either Actigard or Messenger as an act alone pesticide.
- It takes some time for both Actigard and Messenger to affect any changes in plants. Therefore, application of both pesticides should begin early, before the plants become diseased.
- These pesticides act by a novel mode of action and therefore have a relatively novel set of instructions. As always read and follow the label carefully.

Actigard - Labeled for Tomatoes for bacterial spot and bacterial speck, and for spinach for downy mildew and white rust. Some positive results have been obtained with Actigard, particularly with bacterial spot of tomato. Actigard has been associated with yield loss in some situations. Therefore, follow precautions on the label carefully. For example, avoid applying Actigard to plants that are stressed by drought, heat, etc.

Messenger - Labeled for several different vegetable crops including greenhouse use. Instructions for some crops include mention of specific diseases, while for other crops Messenger is said to "boost overall vigor and to aid in the management of disease." Since Messenger is a relatively new pesticide with a new chemistry, little work has been done by University personnel to test its effectiveness. Therefore, Messenger is not listed under individual crops in the *Midwest Vegetable Production Guide for 2002 (ID-56)* <http://www.entm.purdue.edu/entomology/ext/targets/ID/index2002.htm>.

NEW VARIETY TRIAL REPORT - *(Chris Gunter)* - The new *Midwestern Vegetable Variety Trial Repo*rt for the 2001 growing season has been published! This bulletin comes from the Department of Horticulture and the Office of Agricultural Research Programs of Purdue University. Inside you'll find a collection of the vegetable variety trials from across the midwest. Crops tested include asparagus, beans, carrots, eggplants, muskmelon, peppers, pumpkin, squash, sweet corn, tomato, and watermelon among others. This bulletin gives you the chance to look at vegetable performance under different growing conditions and production methods. The best part of this publication is the chance to see how new cultivars stack up against the old standards and what is coming in the breeding pipeline for the future. Seed companies submit varieties to be tested in these trials and all of that information is available to you to make management decisions. This bulletin (Number 808) is available by calling 1-888-EXT-INFO (1-888-398-4636).

THE LATEST PRODUCTION GUIDE - *(Dan Egel, Rick Foster and Liz Maynard)* - Now showing at a Cooperative Extension Office or winter meeting near you: *The Midwest Vegetable Production Guide for Commercial Growers 2002 (ID-56). T*he *Guide* contains much of the information you will need in the 2002 season to make decisions on pesticide updates, varieties, fertility and much more. The *Guide* goes through a rigorous updating process each year. So if you were thinking of using the 2001 version instead of buying the new 2002 book, below are some of the changes you will miss.

- New Sections - The section on Nematode management has been updated, revised and consolidated. A new section on chemigation illustrates this growing practice.
- Disease management - The fungicides/bactericides Actigard 50WG, Flint WDG, Omega 500F and Switch 62.5 WG have expanded labels. Messenger is now labeled for several vegetable crops. A new section describing Messenger, Actigard 50 WG and Systemic Acquired Resistance appears with the Disease Management Section (note the

accompanying article). Several new formulations of Chlorothalonil are listed and the REI has changed from 48 to 12 hours with some restrictions. The section on pea diseases has been expanded.

- Weed management - Command 3ME has been labeled for preplant, pretransplant or between-row application in cabbage, cucumber, muskmelon, snap bean, squash, sweet potato and watermelon. Note the low use rates for many of these crops which will suppress but not completely control weeds that are controlled at higher rates. Note also this material is not labeled for use on jack-o-latern pumpkins. Select (clethodim) is labeled for postemergence grass control in carrot, cucumber, eggplant, muskmelon, pepper, potato, pumpkin, radish, squash, sweet potato and watermelon.
- Insect management - New insecticides labeled include Confirm 2F, Platinum 2S and Actara 25WDG. In addition, there are many PHI changes for older insecticides.

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 $10.00, it is well worth the investment. The *ID-56 Guide* can be ordered from: Agricultural Communications Media Distribution Center, 1187 Service Bldg., South University Street, West Lafayette, IN 47907-1187, Ph: 1-888-398-4636 or FAX: 1-765-496-1540. It is also available on the web at: <http://www.ces.purdue.edu/extmedia>.

ORGANIC CERTIFICATION UPDATE - *(Liz Maynard)* - Growers thinking about organic certification for this growing season should begin the process now. 2002 marks the second growing season since publication of the National Organic Rule in December, 2000, and the first season for wide-scale implementation of the rule. Beginning Oct. 21 of this year, producers and handlers must be certified by a USDA-accredited certifying agent to sell, label, or represent their products as “100 percent organic,” “organic,” or "made with organic ingredients". Producers with gross agricultural income from organic sales totaling $5,000 or less annually are not required to become certified, but must still comply with the Organic Foods Production Act of 1990 and the national standards, and keep records demonstrating their compliance.

The first step in certification is to contact a certification agent. These organizations will provide you with a copy of their standards, fee schedule, application forms, and a description of their certification process. The agents must be accredited by the USDA. Organic certification agents operating in Indiana that have applied for accreditation from the USDA program include: Indiana Certified Organic, Inc.
Val L. Carr
8364 SSR 39, Clayton, IN 46118
(317) 539-4317 e-mail: cvof@inquest.net
and
Ohio Ecological Food and Farm Association
Stephen F. Sears
9665 Kline Road, West Salem, Ohio 44287
(419) 853-4060 e-mail: organic@oeffa.com

If you are not ready for certification this year, but are thinking about getting certified in the near future, it is not too early to contact a certification agent. It will help you to become familiar with their standards and certification process. Some agents will inspect an operation in transition to organic production and document that the operation is following organic practices.

For more information, see the National Organic Program web site at: <www.ams.usda.gov/nop>. The link to frequently asked questions (FAQ) on the left side of the page is a good place to start, as are fact sheets found at <www.ams.usda.gov/nop/facts>. The Indiana Organic Rule follows the national rule closely. It is available on-line at <www.IN.gov/oca/other/organicrule.html>. Another good resource for information about organic rules and certification is Hoosier Organic Marketing Education, 317-539-4317.

NW INDIANA VEGETABLE TRIAL SUMMARY - *(Liz Maynard)* - Sh2 sweet corn, tomatoes, and pumpkin cultivars were evaluated in Northern Indiana this past season.

Sweet Corn - The sh2 sweet corn replicated variety trial included 22 bicolors, 10 yellows and one white. Of the bicolors, the most promising included (from earliest to latest) Extra Tender 275 A, Gourmet Sweet 275 A, Gourmet Sweet 276 A and Attribute BSS 0977. Promising yellow cultivars included Cronus and Attribute 0966.

Tomatoes - One replicated tomato trial compared red yellow, green, orange, and white-fruited varieties to identify five or six varieties that could be sold to restaurants for use in multi-colored tomato salads. A total of 16 open-pollinated and hybrid varieties were included. The same varieties were also trialed at Rhoads Farm in Brown County. Varieties with acceptable marketable yield and appearance included Big Beef (red beefsteak), Super Marzano (red roma), Lemon Boy (yellow globe), Banana Legs (yellow roma), Carolina Gold (orange-yellow beafsteak), Tangella (orange, 1.6-oz. fruit), Italian Gold (yellow-orange roma), and Orange Banana (orange roma). Tangella was noted for its exceptional flavor and small size. Green Zebra (green striped globe) was another very attractive and flavorful cultivar, but yields were relatively low. White cultivars, Great White and White Queen (white/ivory beefsteak), produced soft fruit with a tendency to catfacing, but could be recommended if a white-fruited cultivar is desired.

Tomato varieties were also observed in unreplicated plots. Cultivars not previously trialed in NW Indiana included JTO 99197 and JTO 99203, both producing red beafsteak fruit on semi-determinate plants. JTO 99197 averaged 0.45 and JTO 99203 averaged 0.50 lb. per fruit, compared to Mt. Spring in the same trial at 0.50 lb. per fruit. JTO 99197 was earlier than Mt. Spring and JTO 99203 was similar to or slightly later than Mt. Spring in maturity. The JTO cultivars are reputed to have some resistance to early blight, but conditions in the trial did not allow detection of any resistance. Three grape-type cultivars were observed: Tami-G, red fruit on an indeterminate plant; Chiquita, light red fruit on a semi-determinate plant; and Sweet Olive, red fruit on a semi-determinate plant. All three cultivars produced attractive flavorful fruit and vigorous plants.

Pruning Effects on Tomato Yield and Fruit Size - Effects of pruning on tomatoes grown in a stake and weave system were evaluated in field trials for the third year. Cultivars Mt. Spring and Florida 91 were grown with no pruning, or pruned to leave 0, 1, 2, 3, or 4 branches below the first main-stem flower cluster. Pruning was done when flower clusters were about to open or had just opened, before branches were large. For Mt. Spring, average fruit size decreased as the number of branches left on the plant increased. Each branch remaining on the plant reduced average fruit size by 0.4 oz. For Florida 91, pruning did not consistently influence fruit size. For both cultivars, the greatest marketable yield (USDA No. 1 and No. 2, all sizes) came from unpruned plants. If only maximum large USDA No. 1 fruit is considered, plants with 2 or 3 branches produced the greatest yield for both cultivars. A similar trial was conducted this year by R. Goldy at the SW Michigan Research and Extension Center. He concluded that yield of number 1 fruit (>2-5/8 inch diameter) was greatest when Mt. Spring had 2 or 3 branches, and Florida 91 had 3 or 4 branches.

Pumpkins (Jack-o-Lantern and Pie) - Pumpkin cultivars were compared at Coulters Farm, with the assistance of the Coulters. Based on pumpkin appearance, yield per plant, and stem appearance the most promising of 21 jack-o-lantern types were: Gold Medal, Trax Field, Trojan, RSX 1001, Gold Strike, Gold Standard and Howdy Doody.

Among three pie pumpkins in the 5 to 6 lb. range, Hybrid Pam and Pik-a-Pie performed the best. Mystic Plus had attractive fruit but maturity was late for this trial. Two smaller cultivars, Pro Gold 100 and Touch of Autumn, produced similar yields of fruit just under 3 lb. apiece.

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 *Midwestern Vegetable Variety Trial Report for 2001*, Bulletin No. 808, 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 postage and handling, payable by check to Purdue University. Selected reports are also available on the web at <www.hort.purdue.edu/hort/ext/veg>. Follow link to "Research Reports on Line."

Upcoming Meetings:

February 6-7, Southwest Michigan Hort Days Mendel Center, Lake Michigan College, Benton Harbor, MI. For information, contact: Bill Shane, (616) 944-1477.

February 6-8, Ohio Fruit and Vegetable Growers Congress and Ohio Roadside Marketing Conference, SeaGate Center, Toledo, OH. For information, contact: John Wargowsky, (614) 249-2424.

February 9, Greenhouse Vegetable Culture: Hydroponic Production of Greenhouse Tomatoes, Lettuce and Mushrooms, Ramsey, IN. For information, contact: Roy Ballard, (812) 948-5470.

February 12, Starlight Vegetable Growers Meeting Safe and Profitable Vegetable Production Tools and Techniques, Starlight, IN. For information, contact: Roy Ballard, (812) 948-5470.

March 15, Southwest Indiana Melon and Vegetable Growers Association Annual Meeting, Quality Inn, 600 Old Wheatland Road, Vincennes, IN. For information, contact: Craig Williams, (812) 745-3766.

March 15-16, Illiana Watermelon Association Annual Meeting, Quality Inn, 600 Old Wheatland Road, Vincennes, IN. For information, contact: Stephanie Nowaskie, (812) 886-1051.

Web Corner - *(Chris Gunter)* - With all the information on the Internet these days, it's almost impossible to separate the useful from the useless. In this feature, we'll be poking around in the corners of the World Wide Web uncovering and reviewing web sites that may be of interest to you. Let us know if you have a site that you find useful and we'll feature it in the Web Corner.

The commercial vegetable and specialty crops home page is <http://www.hort.purdue.edu/hort/ext/veg>. This site has links to important bulletins, newsletters and research reports including the *ID-56 Midwest Vegetable Production Guide, 2002* and the *Midwest Variety Trial Reports, 2001* for selected Indiana variety trials. There is also a calendar of upcoming events, a good selection of weather links to let you know when to stay out of the rain and links to market prices through the USDA. There is a list of grower associations, to help you keep in touch, and links to pesticide information, including sources of label information and a link to the Purdue Pesticide Program. Here you will also find links to the New Crops home page and the Aromatic and Medicinal Crops home page. Check this link out, it contains a huge amount of information of interest to vegetable producers.

SW Indiana Variety Trial 2001 - *(Chris Gunter)* - Indiana remains a major watermelon and muskmelon producer for the Midwest. With the proliferation of new varieties, the increased competition and the need to maximize profitability/unit area, the identification of new varieties that are of high quality, high yielding and disease resistant as well as meet market expectations, is of importance to commercial growers. These trials provide an objective and independent comparative assessment of new watermelons and muskmelon varieties for the commercial industry. This year's study included 12 seeded watermelon, 24 seedless watermelon, and 10 muskmelon varieties.

Results: *Seeded Watermelons:* Yields ranged from 25.2 to 36.7 tons/acre with 2,079 to 3,135 fruit/acre harvested across all the entries. Yields were generally higher in this year's trial, compared to the 2000 trial. The average fruit weight was 25.2 lbs./fruit, with a range of 16.2 to 27.9 lbs./fruit. Highest yielding cultivars were: Fiesta, Mardi Gras, Sangria, SF #800, RWM 8114-VP and ACX 5451. Most of the fruit in this trial was oblong in shape with medium or thick rinds. Sangria and Celebration were both noted to have slightly tapered ends. Mardi Gras and ACX 5451 both showed slight cracking. The best tasting melons in the trial were: Mardi Gras, which also had the highest percent soluble solids; RWM 8114-VP; Crimson Sweet; and 790; also notable were SF #800; RWM 8110-VP; and Celebration. Seeded watermelon selection should be in large part based upon the size, shape and class of fruit to which your market is focused.

Seedless Watermelons: Yields ranged from 31 to 46 tons/acre with 3,102 to 4,554 fruit/acre harvested across all entries. The average weight of seedless fruit was up this year to 20.5 lbs./fruit with a range of 16.8 to 24.0 lbs./fruit. Smaller weight per fruit led to the higher number of fruit per acre in general. Highest yielding in this trial was; 7,167; Trillion; RWT 8096-VP and 8238. Most of the fruit in this year's trial were round to oval and medium sized. Notable melon varieties exhibiting good internal qualities include HMX 8913, Tri-X Palomar, Tri-X Shadow and Tri-X 313. In addition, RWM 8023 was noted as a visually appealing melon by all evaluators. This year three orange fleshed varieties were submitted and of these Orange Sweet was rated the highest during this evaluation. Seedless watermelons should be a part of your melon production strategy as long as you have a market that will purchase the fruit at a higher price than the seeded watermelons.

Muskmelon: The average yield was 24.0 tons/acre with a range of 21.3 to 26.7 tons/acre. The mean fruit weight was 6.2 lbs./fruit with a range of 4.8 to 7.9 lbs./fruit. This translated to 5,676 to 9,768 fruit/acre with a mean fruit number of 7,964 fruit/acre. Odyssey had the highest yield in this year's trial followed by HMX 9598, EA 70, EA 2120 and EA 2140. The earliest fruit in this trial was from EA 2120 at 78 days followed by HMX 8593, EA 70, and EA 2140. Quality ratings of each tested variety or advanced experimental line showed variability in soluble solids, shape, size, uniformity, flavor, netting and the degree of ridges on the fruit surface. Selected comments noted during quality evaluation are mentioned here: Odyssey, HMX 9598, EA 2120, EA 2140 and EA 60 all had soluble solids measured above 11% (brix). The highest flavor ratings in this trial were Ody-sey, HMX 9598, and HMX 9597. Most fruit were medium sized with good uniformity. Heavy netting and a thick rind are also desirable characteristics and HMX 9598 exhibited both of these characteristics. EA 2120 is a western type, which was rated pleasing to the eye by evaluators.

New Pre-Mix Herbicide for Cucurbits - *(Liz Maynard)* - Strategy from UAP Platte is a combination of clomazone (0.5 lb./gallon), the active ingredient of Command, and ethalfluralin (1.6 lbs./gallon), the active ingredient of Curbit. Strategy is labeled for cucumbers, melons, pumpkins, summer squash, winter squash and watermelons. To my knowledge, this is the only herbicide containing clomazone that is currently available for use on jack-o-lantern pumpkins, aside from the old Command 4EC. Weeds listed on the Strategy label include many annual grasses; small-seeded broadleaves such as lambsquarters, pigweeds, carpetweed, common purslane; and weeds in the mallow family including velvetleaf, spurred anoda, prickly sida, and venice mallow. Strategy may be applied after seeding and before the crop emerges, or as a banded spray between rows after the crop emerges or after transplanting. Rainfall (1/2-inch) or overhead irrigation is required for effective herbicide action. There is potential for crop injury if the product is not used properly or if heavy rains follow application. Measure and apply carefully and follow label directions closely. Especially, do not use under plastic mulch, row covers, or hot caps and do not apply over the top of plastic mulch. The product is not recommended for use on early plantings when soil and air are cool. Strategy has a 24 hour re-entry interval and for cucumbers and squash, a 45 day preharvest interval. Table 1 shows the amount of Curbit and Command that contain quantities of the active ingredient equivalent to the recommended rate of Strategy.

Table 1. Amounts of clomazone and ethalfluralin applied with Strategy herbicide, and rates of Command or Curbit that supply equivalent amounts of those active ingredients.

Strategy Application Rate (pints per acre)	Active IngredientsApplied (lbs. per acre)		Equivalent amount of clomazone (Command) or ethalfluralin (Curbit) (pints per acre)		
	clomazone	ethalfluralin	Command 3ME	Command 4EC	Curbit 3EC
3	0.1875	0.6	0.50	0.375	1.6
4	0.25	1.8	1.67	0.5	2.13

Post-emergence Broadleaf Herbicide for Dry Beans - Raptor (imazamox) from BASF has received a label for use post-emergence on dry beans. Raptor will control or suppress many broadleaf weeds. It should be applied after beans have at least one fully expanded trifoliate leaf and before they bloom, and when most weeds are 1 to 3 inches tall. Raptor has a 4 hour re-entry interval and a 60 day preharvest interval. Most vegetables can be rotated into a Raptor treated bean field 9 months following treatment.

Pesticide Labels on the Web - Most pesticide labels and material safety data sheets (MSDS) are available on the web. Sites with labels from many companies include:

Crop Data Management Services <www.cdms.net>
C&P Press - Greenbook <www.greenbook.net>
EPA Pesticide Label System <www.epa.gov/pesticides/pestlabels>

The first two sites provide specimen labels and MSDS in pdf format, readable by any computer with Acrobat Reader software installed. The EPA site provides images of the actual label submitted to and approved by EPA, in a multi-page tiff format. The web site provides information on software required to view the labels.

Company web sites are another location to look for labels. If you don't know the company web site address, try typing the name of the company into an internet search engine. One of the found sites will probably be the company home page.

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