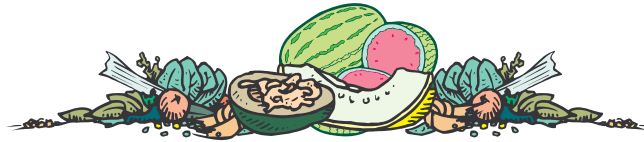


VEGETABLE CROPS HOTLINE

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

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<http://www.entm.purdue.edu/entomology/ext/targets/newslett.htm>

IN THIS ISSUE

- MIDWEST VEGETABLE PRODUCTION GUIDE 2004
- A PRELIMINARY RESULT OF AN ALTERNATIVE METHOD FOR THE SAMPLING OF CUCUMBER BEETLES ON MUSKMELONS
- ALTERNATIVE FUNGICIDES
- ANNOUNCEMENTS
- ALSO INCLUDED - 2003 VCH ARTICLE INDEX

MIDWEST VEGETABLE PRODUCTION GUIDE 2004 - (Dan Egel) - Vegetable growers interested in the latest pest management techniques or a pesticide update will want to pick up a copy of the Midwest Vegetable Production Guide for Commercial Growers 2004 (ID-56). Still priced at \$10, these books can be purchased at many winter meetings and from the Media Distribution Center (888) 398-4636. In addition, the Midwest Vegetable Production Guide 2004 may be found at this website for on-line growers <<http://www.entm.purdue.edu/entomology/ext/targets/ID/index.htm>>. The following is a brief description of what's new in this year's publication.

New and Revised Sections

- Garlic and leek added to bulb section.
- Cucumbers, muskmelon, pumpkin, squash and watermelon have been combined into a new cucurbit section.
- Weed control materials grouped by general classes of weeds controlled and time of application.

Varieties

- Broccoli: Triathlon
- Brussels Sprouts: Jade Cross
- Cucumbers, Burpless: Tasty Green, Tasty Jade, Burpless 26
- Lettuce: Tango
- Muskmelon: Vienna
- Peppers: Lafayette (Yellow Bell)
- Potatoes, Specialty: Russian Banana
- Tomatoes: Amelia; Roma: BHN 411 and Plum Dandy; Grape: Santa, Sweet Olive, Jolly Elf

Disease Management

- The label for Acrobat 50WP has been expanded. See bulb vegetables, cucurbits and lettuce.

- Agri-Fos 400 is labeled for use on asparagus, brassicas, bulb vegetables, cucurbits, leafy vegetables, potatoes and tomatoes.
- Amistar 80WP, a new fungicide with the same active ingredient as Quadris, is labeled on many crops.
- Endura 70WG is a new fungicide labeled for the control of diseases of beans, bulb vegetables, carrots, eggplant, peppers potatoes and tomatoes.
- Gem Flowable has been labeled for use on potatoes.
- Pristine, 38WG is a new fungicide labeled for use on bulb vegetables, carrots and cucurbits.
- Quadris 2.08SC has been added to many legume crops including snap beans, dry beans and peas.
- Tanos 50WDG is a new fungicide labeled for use on cucurbits, head lettuce, peppers, potatoes and tomatoes.
- Several fungicides have new resistance management instructions.

Weed Management

- Herbicide recommendations are grouped by categories of weeds controlled and time of herbicide application.
- Stinger (clopyralid) now has IR-4 supplemental labels for post broadleaf control in cole crops, collards, spinach, garden beets, mustard greens, turnips (roots and greens) and sweet corn.
- Sandea received label in 2003 for asparagus, beans, cucurbits, eggplant, peppers and tomatoes.
- Some premixes have been listed in crop sections.

Insect Management

- Entrust (spinosad) is a new Naturalyte insect control product formulated for the organic and regular grower for the control of caterpillars, leafminers and thrips in asparagus, sweet corn, cucurbits, fruiting vegetables, leafy vegetables and leaves of root and tuber and legume vegetables, potatoes and tuberous and corn vegetables, succulent and dry beans and peas and other miscellaneous crops.



A PRELIMINARY RESULT OF AN ALTERNATIVE METHOD FOR THE SAMPLING OF CUCUMBER BEETLES ON MUSKMELONS - (Frankie Lam) - Currently, the recommended procedure to determine cucumber beetle density in the field is: for

each 20-acre field, 5-10 plants at 10 locations have to be scouted. For early-planted muskmelons, this sampling procedure has to be conducted 2-3 times per week for at least 4-6 weeks after the melons transplanted into the field. Sampling the number of active insects on plants, such as cucumber beetles, can be difficult and time-consuming. In addition, the most active period for cucumber beetles during a day is not known; the best time of day to sample for the beetle in fields is still a mystery for growers. Last summer I conducted a study to develop a sticky trap sampling technique and to determine the optimal sampling time for the beetles on muskmelons in Indiana.

A field study was conducted at Southwest Purdue Agricultural Center near Vincennes, Indiana in 2003. The experimental design had seven rows, including five center rows for insect scouting and two guard rows. A randomized complete block design with six replications was studied. Muskmelons (variety 'Eclipse') were transplanted to the field on April 28. The densities of cucumber beetles were sampled immediately after the crop transplanted in the field through mid-July. On each sampling date, two yellow sticky traps (Pherocon® AM yellow sticky trap, Trece Inc., Adair, OK) were placed randomly in between the center rows of each replication (Figure 1). One sticky trap was placed vertically with the lower edge even



Figure 1. Sticky traps were placed in between rows of muskmelons. A sticky trap was placed vertically (left) with the lower edge even with the top of canopy and another sticky trap was placed horizontally (right) even with the top of canopy. (Picture by F. Lam)

with the top of canopy, and the other one was placed horizontally even with the top of canopy. After the sticky traps were placed in the field, the number of beetles on plants was counted directly from 8 AM through 4 PM on the following day. For each 2-hour interval (8 AM, 10 AM, 12 PM, 2 PM, and 4 PM), 10 plants in one of the five center rows in each replication were randomly selected for beetle counting. After 48-hours in the field, the sticky traps were removed and the numbers of cucumber beetles adhering to the sticky trap were counted.

The cucumber beetles sampled in the field and collected by the sticky traps were the striped and spotted cucumber beetles. The means of cucumber beetles per plant sampled at different times during a sampling date through the season is presented in Table 1. The numbers of beetles sampled were significantly higher at 10 AM, 12 PM, and 2 PM, with the highest

Table 1. Means of cucumber beetles per plant sampled at different times during a sampling date (2003).

Sampling time	Mean of cucumber beetles per plant ^a
8 AM	0.695 c
10 AM	0.819 abc
12 PM	0.904 a
2 PM	0.859 ab
4 PM	0.714 bc

^a Means within a column followed by the same letter are not significantly different.

number at 12 PM. Thus, the results indicate that the beetles were most active from 10 AM to 2 PM; this is the optimal period of a day to direct sample the beetles on muskmelons.

Cucumber beetles were collected on both sticky traps that were placed either vertically or horizontally. However, more beetles were collected on the vertical traps than that on the horizontal traps. The average numbers of beetles sampled during a date had relatively low correlation with the numbers of beetles on the horizontal sticky traps. This result showed that placing the sticky traps horizontally was not an effective method for sampling cucumber beetles.

The correlation between the numbers of beetles sampled at different times and those on the vertical sticky traps are presented in Table 2. The results indicated that at the five sampling times the beetle numbers that sampled directly on plants and those on the sticky traps had relatively high correlation. Since the economic threshold of cucumber beetles on muskmelons is one, by substituting $y = 1$ into the equations, the x values, which is the number of beetles on sticky traps, were calculated and are presented in the last column of Table 2.

The number of beetles sampled at 10 AM, 12 PM, and 2 PM were significantly higher than those at 8 AM and 4 PM (Table 1). By pooling the sampling data from 10 AM through 2 PM, the correlation between the numbers of beetles sampled directly and number of beetles on the trap was obtained ($y = 0.0394x + 0.1571$). By substituting $y = 1$, x was calculated and equaled to 21.4. This means that if the average number of beetles on the sticky trap was >21 , the density of the pest in the field was 1 beetle per plant.

Table 2. Correlation between numbers of beetles per plant sampled directly and beetles on vertical sticky traps (2003).

Sampling time	Correlation	R ²	P	x(y=1)
8 AM	y=0.0286x+0.1865	0.6028	<0.01	28.4
10 AM	y=0.0403x+0.0998	0.7229	<0.01	22.3
12 PM	y=0.0372x+0.2408	0.7052	<0.01	20.4
2 PM	y=0.0405x+0.1342	0.8225	<0.01	21.4
4 PM	y=0.0302x+0.1756	0.7322	<0.01	27.3
10 AM to 2 PM	y=0.0394x+0.1571	0.7860	<0.01	21.4

The preliminary results of this study demonstrated that yellow sticky trap could be an alternative method to sample the cucumber beetle densities on muskmelons and the optimal time for sampling the beetles directly during a day is from 10 AM through 2 PM. However, based on one-year data it is too early to draw conclusions for the application of this tactic for the management of cucumber beetles on muskmelons. Further investigation on this sampling tactic will be conducted in the coming season.



ALTERNATIVE FUNGICIDES - (Dan Egel) - This past summer I conducted a study to look at “alternative fungicides” for Alternaria leaf blight control on muskmelon (Table 1). This study is supported by a grant from the USDA and involves scientists from all over the Eastern U.S. The accompanying table shows the relative control for each of the combination of fungicides.

Note that each of the fungicides used in this study are alternated or used in combination with standard fungicides. The idea behind this study is to lessen the use of standard fungicides without giving up commercial level control.

Although all of the fungicides listed below are labeled for muskmelon, Serenade and Sonata are not labeled for Alternaria leaf blight. For the purposes of this article, imagine you are applying fungicides for powdery mildew control and Alternaria leaf blight breaks out.

Table 1. Comparison of alternative fungicides alternated or applied in combination with standard fungicides for the control of Alternaria leaf blight of muskmelon. The larger the AUDPC number, the more disease present. Numbers which are accompanied by the same letter are not statistically significantly different (t-test (LSD), P=0.05).

Treatment and rate/A	Application information	AUDPC*
Serenade 4 lb/Echo 720 3 pt	Alternated weekly	255.3 c
Echo 720 2 pt	Applied weekly	260.8 c
Oxidate 1.25 oz/gal ^w and Echo 720 2 pt	Applied in combination weekly	272.0 c
Manzate 200 DF 3 lb/Echo 720 3 pt	Manzate applied first 4 application. Echo applied final 3 applications.	273.0 c
Sonata 4 lb/Echo 720 3 pt	Alternated weekly	323.0 bc
Messenger 4.5 oz/Echo 720 2 pt/A	Alternated weekly	378.8 bc
Echo 720 3 pt	Applied biweekly	474.0 b
Non-treated control		954.3 a

* Area Under the Disease Progress Curve.

Remember that the higher the area under disease progress curve (AUDPC) number, the more disease. Numbers accompanied by the same letter are not statically significant. That is, if we did this experiment again, only the numbers accompanied by different letters would likely be different from each other.

The untreated control had far more disease than any other treatments. The Echo applied at two-week intervals had more disease than the Serenade alternation, Echo applied weekly, Oxidate in combination with Echo and the Manzate / Echo alternation. Otherwise, there were few differences.

It may be important to note that some of the alternative fungicides, when alternated with a standard fungicide, were not statistically different than the standard fungicide at weekly intervals. That is, under the conditions of this study, some alternative fungicides may be good rotational partners with standard fungicides.



ANNOUNCEMENTS:

Starlight Vegetable Growers Meeting, Thursday February 12, 2004. Behind Joe Huber's Family Restaurant in the Barnyard Bash II Building, 2421 Starlight Road. Refreshments/Registration (No Charge – FREE), Private Applicators Re-certification (PARP) has been approved for this meeting. Please call to Pre-Register (812) 948-5470.

2004 Midwest Small Farm Conference "Closer to Home", Saturday, February 14, 2004. Montgomery County Fairgrounds, Crawfordsville, Indiana. Described as "A premier educational event for organic, natural and biological farmers and consumers who choose to eat food produced in this manner." Sponsored by Sustainable Earth and co-sponsored by Purdue Extension, Montgomery County Office. For more information, contact Sustainable Earth at (765) 463-9366. E-mail sustainableearth.steve@verizon.net. URL: www.sustainableearth.net.

Growing Your Business Through Fruit and Vegetable Food Safety, March 4-5, 2004. Complete workshop information is available by contacting Jennifer Hungerford at (614) 246-8289.

Southwest Indiana Melon and Vegetable Growers Meeting, Friday, March 12, 2004. Quality Inn, 600 North 6th Street, Vincennes, IN 47591. For information, contact: Chris Gunter (812) 886-0198.

Illiana Watermelon Association Annual Meeting, Friday and Saturday, March 12-13. Quality Inn, 600 North 6th Street, Vincennes, IN 47591. For information, contact: Stephanie Nowaskie (812) 886-1051.

The **NCR SARE** announced new call for proposals for Producer Grants. Look at www.sare.org/ncrsare for details. Click on Call for Proposals and then go to Producer Grants at the bottom of that site. The due date for these producer grants is 4:30 p.m. CST March 24, 2004.

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