

VEGETABLE CROPS HOTLINE

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

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USING STICKY TRAPS TO SAMPLE CUCUMBER BEETLES ON MUSKMELONS - (Frankie Lam) - Walking fields and counting cucumber beetle numbers directly on plants, is time-consuming, difficult, and inexact. Using yellow sticky traps as an alternative technique for sampling cucumber beetles has been investigated at Southwest Purdue Agricultural Center in the past few years. The results of the study indicated that 20 cucumber beetles per trap was equivalent to one beetle per plant in the field. This study demonstrated that placing the traps in the field, if beetle number per trap is more than 20 within a 48-hour period, justifies the application of insecticide.

The yellow sticky trap, which is formally known as the Pherocon® AM yellow sticky trap, is manufactured by Trécé Inc. (Adair, OK). The unfolded card is 9x11 inches with a 7x9 sticky grid (Figure 1). This unbaited trap has sticky material only and no chemicals, such as insecticides or pheromones. Please contact Trécé Inc. at (918) 785-3061 or www.trecede.com for purchasing the trap.

Simply following the procedures below to set yellow sticky traps in fields and count the number of cucumber beetles on traps at several-hour intervals. Within a 48-hour period, if the beetle number is more than 20 per trap, decision on insecticide application should be made.

1. For every 20-acre field select randomly 10 locations in a "Z" pattern (Figure 2).
2. Each location should be at least 25 feet or 4 rows from the border.



Figure 1. Pherocon® AM yellow sticky trap. (Photo by Frankie Lam)

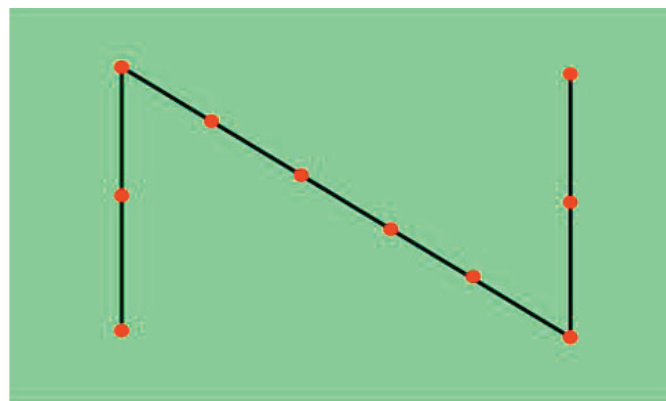


Figure 2. For each 20-acre field sample 10 locations randomly in a "Z" pattern. (Photo by Frankie Lam)

3. At each location put a stake between 2 rows of melons.
4. Unfold and wrap a yellow sticky trap on the stake with the sticky yellow surface on the outside and position vertically with lower edge of the trap even with the top of the melon canopy (Figure 3).
5. Record the time of the day after setting up the 10 sticky traps in a 20-acre field.



Figure 3. Place the sticky trap on a stake with lower edge of trap even with the top canopy. (Phot by Frankie Lam)

6. Count the cucumber beetle numbers on the traps after the traps had been set for several hours in the field (Figure 4).



Figure 4. Within a 48-hour period, if cucumber beetle number on the sticky trap is more than 20, that means the beetle number in that area is more than one beetle per plant. (Photo by Frankie Lam)

7. a. On an average, if more than 20 cucumber beetles were on the trap, the number of beetle in that area is more than one beetle per plant and insecticide application is justified.

- b. On an average, if less than 20 cucumber beetles were on the trap, then do nothing. Come back and count the beetle number on the traps the next day. Repeat steps 6 and 7 once or twice in the following day.
8. After setting the traps in the field for a 48-hour period, if the average number is less than 20 beetles per trap, it means that the beetle number in the field is below the economic threshold.
9. Remove all the sticky traps and set the traps in the field again after 1-2 days.
10. Repeat this sampling technique in the field until harvest. Apply insecticide only when the average beetle number is more than 20 per trap.

However, when counting the number of beetles on the traps, growers should identify and count the cucumber beetles carefully. This is because beetles in the leaf beetle family (Chrysomelidae), including western corn rootworm beetle and bean leaf beetle that look similar to cucumber beetles, and might also be trapped by the yellow sticky trap. The abdomen of striped cucumber beetle is black (Figure 5), whereas the abdomen of western corn



Figure 5. the abdomen of striped cucumber beetle is black. (Photo by Frankie Lam)



Figure 6. Male western corn rootworm beetle has unclear three stripes and yellow abdomen. (Photo by Frankie Lam)

rootworm beetle is yellow (Figures 6 and 7). The spotted cucumber beetle is greenish yellow with six black spots on each wing cover (Figure 8), while the bean leaf beetle is either yellow (Figure 9) or red (Figure 10) with a black triangular marking behind the collar, and two black spots and a black border on each wing cover. Moreover, "spotless" bean leaf beetle, which is either yellow or red, has only the black triangle and has no spots on the wing cover (Figure 11).



Figure 7. Female western corn rootworm has three stripes and yellow abdomen. (Photo by Frankie Lam)



Figure 8. Spotted cucumber beetle is greenish yellow with six black spots on each wing cover. (Photo by Frankie Lam)



Figure 9. Bean leaf beetle (yellow phase). (Photo by Frankie Lam)



Figure 10. Bean leaf beetle (red phase). (Photo by Frankie Lam)



Figure 11. A "Spotless" bean leaf beetle. (Photo by Frankie Lam)



PURDUE EXTENSION TAKES ORGANIC FARMING TO THE NEXT LEVEL - (Jerry Nelson and Liz Maynard) - When people think organic, they often think of fruits and vegetables, but a Purdue University Cooperative Extension Service event could help change that. On

March 30 the Purdue Extension New Ventures team and the Small Farms team will present Organic Marketing Opportunities for Production Agriculture via an IP videoconference at 21 locations throughout the state. This free event runs from 7-9:30 p.m. EST.

Jerry Nelson, the Purdue Extension New Ventures educator, said this conference is geared toward producers looking for new markets. "We want to raise Hoosier producers' awareness of the opportunities in organic agriculture," he said.

Conference topics include markets for organic livestock, organic grains and oil seeds, opportunities for Indiana farmers, an overview of the organic fruit and vegetable market, and wholesale and retail markets.

Michael Mazzocco, of the Department of Agriculture and Consumer Economics at the University of Illinois, will lead the discussion about organic grains and oilseeds. Prior to joining the faculty at the University of Illinois, Mazzocco was a commercial banker for seven years and worked for Clarkson Grain of Cerro Gordo, Ill. "Clarkson is one of the Midwest's largest purchasers and sellers of certified organic grains. Mazzocco's experience at this company gives him a unique perspective on the opportunities available in the organic market," Nelson said. Nelson said that anyone interested in organic production can walk away from this conference with ideas.

"We're trying to make all producers, even those who may think that organics are for someone else, aware of organic market options," he said. "There are opportunities in grains and livestock as well as fruits and vegetables."

Viewing locations for "Organic Marketing Opportunities for Production Agriculture" include:

- Allen County - Purdue Extension office, 4001 Crescent Ave., Fort Wayne.
- Clinton County - Purdue Extension office, 1111 S. Jackson St., Frankfort.
- Decatur County - Purdue Extension office, 545 S, 200 W., Greensburg.
- Franklin County - Franklin County High School Library, 1 Wildcat Lane, Brookville.
- Hancock County - Purdue Extension office, 802 N. Apple St., Greenfield.
- Harrison County - Purdue Extension office, 124 S. Mulberry St., Corydon.
- Hendricks County - Purdue Extension office, 955 E. Main St., Danville.
- Jennings County - Southeast Purdue Ag Center, 4425 E C.R. 350 N., Butlerville.
- Knox County - Southwest Purdue Ag Center, Southwest District Office, N. Purdue Road, Vincennes.
- LaGrange County - Purdue Extension office, 114 W. Michigan St., LaGrange.

- Lake County - Purdue Extension office, 2293 N. Main St., Crown Point.
- Marshall County - Purdue Extension office, 112 W. Jefferson, Plymouth.
- Monroe County - Purdue Extension office, 119 W. Seventh St., Bloomington.
- Orange County - Purdue Extension office, 205 E. Main St., Paoli.
- Scott County - Lifelong Learning Center, 1092 West Community Way, Scottsburg.
- Shelby County - Purdue Extension office, 1110 Amos Road, Shelbyville.
- Tippecanoe County - Purdue University, Stewart Center, Room 209, West Lafayette.
- Tipton County - Education Center of Tipton County, 239 Ash St., Tipton.
- Vanderburgh County - Purdue Extension office, 13301 Darmstadt Road, Evansville.
- Vermillion County - Purdue Extension office, 255 S. Main St., Newport.
- Vigo County - Indiana State University, Nursing Building, Room 106, Terre Haute.

Organic Marketing Opportunities for Production Agriculture is funded by the North Center Region Sustainable Agriculture, Research and Education (SARE) Professional Development Program.

Farmers interested in organics also have another avenue to find out information. The New Ag Network is a collaboration among Purdue, Michigan State University, the University of Illinois and Iowa State University that consists of Extension specialists and educators, and organic farmers from each state. These individuals contribute to a newsletter that is published twice a month during the growing season and a Web site.

"The network and its Web site and newsletter will serve those interested in transitioning to organics, as well as those practicing low-input or organic agriculture," said Liz Maynard, a Purdue Extension commercial vegetable specialist who also coordinates Purdue's contributions to the network. To view New Ag Network newsletters go to www.ipm.msu.edu/new-ag.htm. For more information contact: Jerry Nelson, (812) 886-9582, jnelson@purdue.edu or Liz Maynard, (219) 785-5673, emaynard@purdue.edu.



PURDUE WORKSHOPS EXPLORE EXPANDING AG SPECIALTY MARKETS - (*Timi Jo Jordan*) - Three one-day workshops will offer insights on the trends, market requirements and marketing tools needed to help break into agricultural specialty markets.

The workshops, co-sponsored by the Purdue University Cooperative Extension Service, will take place April 15 at Hilger's Farm Restaurant in Fort Wayne, Ind., June 10 at the Purdue Extension office in Nobles-

ville, Ind., and Aug. 5 at the Clark County 4-H Center in Charlestown, Ind. "We are combining tools and practical experience from people who are actually in the market, and that's a great way to offer a program," said Corinne Alexander, agricultural economist and workshop coordinator. "These workshops will offer a broad perspective on specialty crops, especially those that don't have established markets yet, such as blue corn and spelt." (Spelt is a type of grain similar to corn, but higher in protein.)

Workshop topics include:

- Marketing tools used by successful businesses.
- Identifying profitable customers and how to promote customer relationships.
- Current production and market trends in Indiana, including insights into future opportunities.
- New ways to produce and market livestock, as well as enterprises such as goats and pastured poultry.
- Production and marketing alternatives for horticultural crops, such as direct marketing, agritourism, greenhouse operations, organics and season extension.
- Value-added agriculture, including food entrepreneurship.
- Production and marketing of specialty grains, such as organic grain, blue corn, flax, spelt and Niger seed.

Registration for each workshop begins at 8 a.m.; with sessions running from 8:30 a.m. to 3:30 p.m. Early registration is \$15 if received by April 1 for the Fort Wayne workshop, by May 27 for the Noblesville workshop and by July 22 for the Charlestown workshop. After the early registration deadlines, the cost is \$20. The registration fee includes lunch and snacks. To register, contact Patt Sheahan at (765) 494-4310, shehanp@purdue.edu. The workshops are partially funded by a grant from the U.S. Department of Agriculture's Risk Management Agency. For more information on the workshops, contact Alexander at (765) 494-4249, cealexan@purdue.edu. A <www.agecon.purdue.edu/pdf/SFT_brochure.pdf> is available online. The Purdue Small Farms and Sustainable Agriculture Team, Purdue's Department of Agricultural Economics, Purdue Extension and the USDA-RMA are co-sponsoring the workshops.



MEADOW VOLES - (Judy Loven) - The Meadow vole (*Microtus pennsylvanicus*), is a common rodent in Indiana which has caused damage in agricultural crops, lawns and gardens. Voles have a torpedo-shaped body about 4 to 5 inches long, are brown to gray with a short tail and very small ears. The vole reproductive cycle runs from March through October. Voles are capable of producing litters of three to eight young about every 21 days under ideal conditions. The females reach sexual maturity in 35 to 40 days and soon after start producing litters of their own. Large populations can develop rapidly,

depending on habitat quality, severity of winter weather and the type of food resources available. The life span of a vole varies from about two months to 1½ years. Vole populations usually peak every two to three years and tend to be higher during the reproductive season, spring through fall.

Voles are very active feeders and need food (primarily vegetation) year-round since they do not hibernate. Voles will eat all parts of the plant including roots, stems, leaves, fruits, and seeds. Undisturbed, well-established turf and landscape plants also provide ideal habitat. Crops such as corn, wheat, legumes, forage, cucurbits and sweet potatoes, as well as other food items such as tubers, insects and some animal remains are also desirable. Vole damage to no-till field corn usually occurs within the first 21 to 28 days after planting.

The voles will burrow into the planter slot to eat the germinating seed and small seedlings.

The vole's favorite habitats usually have thick wood mulch, ground cover, or turf in landscaped areas and lawns; or are densely vegetated ridges or mounds in crop fields. Dark green mounds in a grass/crop area usually indicates a colony. Urine and fecal deposits near the burrow opening will fertilize the vegetation enough to produce a dark green color. A network of trenches (shallow one to two inch-wide aboveground runways) are easily seen radiating from a cluster of burrow openings out to surrounding areas where voles can actively feed. A colony's range can be up to ¼ acre in many cases. In areas with a dense vole population, plant damage can reach up to 80 or even 100 percent.

The first step in any IPM rodent control program is scouting lawns, gardens, crop areas and field borders at least 30 days before planting. This should usually take place in mid to late March. Once the presence and severity of the vole infestation has been determined, an IPM program can be developed to control vole damage. Vole Control options fall into six main categories:

- * Habitat modification is probably the most effective, cheapest, easiest to complete and safest on the environment. Since voles require a full canopy cover for protection from predators (snakes, hawks, owls, coyotes and foxes), minimizing that cover can cause them to move out of the crop area. This can be done by: mowing buffer strips during the fall, low mowing in turf, early pre-plant herbicides, and removing ground covers or bark-type mulch. Although reducing the cover doesn't actually kill the voles, it may cause them to disperse from your crop/lawn area, hopefully to areas where natural mortality is higher. Although natural predators may help reduce the overall vole population, other control measures will be required to prevent or minimize damage if large vole populations exist on the site.
- * Tillage or plowing before planting is an effective way to control and prevent damage by destroying the vole colony, cover and food supply. Voles will

not live in an area that does not provide food and cover. Be aware that you will lose the erosion control benefits of "no-till" with this option.

- * Alternative feeding or lure crops may help reduce vole damage during the first 21 to 28 days after planting, which is a critical time to prevent crop damage. The alternate food offered (whole or cracked corn, soybeans, wheat or rye) may temporarily divert voles from the emerging crop. Long-term use of a lure crop will just add to the vole food resources and result in an increased vole population.
- * The use of repellents in garden areas may have some usefulness, but large-scale use in turf or crop areas is not practical. Several taste repellents that contain the active ingredient capsaicin have been labeled for use against voles in gardens and/or field crops. These products may be applied between crop emergence and when edible portions of the plant begin to form. Effectiveness is limited and cannot be applied to the actual vegetables, fruits, or grains.
- * Toxicants containing zinc phosphide as the active ingredient are another rodent control option. Some ZP treated grain products are still registered for use, but pellet-type bait products are becoming more common. ZP toxicant products are Restricted Use Pesticides and are not registered for use in all crops. Check the label for approved application sites. Burrows are usually hand-baited in lawns and gardens, and the use of a modified planter applies the toxicant in-furrow at the time of planting in no-till. Ensuring that treated grain or pellets are not left above ground helps to eliminate non-target

exposure to the toxicant bait. Toxicant baits can also be applied above ground in a commercially available bait box or bait station. Since the vole runs are open trenches and the burrows are so close to the soil surface, fumigants are not effective in vole control.

- * Trapping voles is usually not practical in a large-scale setting. In flower beds or small gardens, standard snap traps can be set in vole runways or in an area of high vole activity. Place the traps so that the trigger is level with the bottom of the vole run. Place a bucket over the trap to prevent catching non-targets such as birds. Peanut butter plus a little dry oatmeal makes an excellent bait.

For additional information, check out the Wildlife Conflicts Information Hotline and Website. (800) 893-4116 <www.entm.purdue.edu/wildlife/wild.htm>.



ANNOUNCEMENT - The Agricultural Economics Department, the Food Science Department, and the Southeast Indiana Small Business Development Center are co-sponsoring the bi-annual workshop titled, **"Introduction to Starting a Specialty Food Business in Indiana"** on Friday, April 22nd, 2005 at the Farm Bureau Building in Indianapolis, Indiana. Topics discussed in the workshop range from business planning and marketing food products to packaging and food safety. If you are interested in attending the workshop please contact Maria Marshal (765) 494-4268 or email mimarsha@purdue.edu or De Bush (765) 469-1805 or email djbush@purdue.edu.

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