UMASS EXTENSION

VEGETABLE IPM MESSAGE

JUNE 2, 2003 VOLUME 14, NUMBER 3

CROP CONDITIONS

Despite cool temperatures, rare sun, and yet another rain-filled weekend, growers are busy setting their warm-weather crops and are pleased to see excellent growth in spring greens and brassicas. Tomatoes, eggplant, peppers, melons are being set out into good soil moisture and can look forward to some warm weather ahead. Lettuce, spinach and early brassicas have been growing well and harvest may actually begin on time. Early lettuce harvest will begin in 2-3 weeks. Potatoes are emerging (as are Colorado potato beetles). Corn under plastic has been cut out in the past week and bare ground corn is growing, though later than usual. Butternut is popping. Harvest of asparagus, rhubarb, spinach and other early greens continues. Green house tomatoes are ripening.

Early plantings of tomatoes and summer squash may have suffered from cold and early fruit quality may be affected, but generally they have been spared damaging frosts. Winds provided a challenge to row covers during the weekend storm. Growers from Southeastern Mass and the Islands report torn covers that need to be replaced after the wind hammered at hoops and strings used to support the covers. However, crops under covers are doing well.

Successive plantings of corn, lettuce and other greens, cole crops, cucumbers are continuing. Growers with heavy soils have had to scrounge to find fields dry enough to work, and depending on the field, it may take some drying time to get in for planting or cultivating.

Cultivating will be on the top of the list this week, as weeds aren't wasting any time with good sun and moist soil. While crops enjoy sun (and, yes, perhaps more rain), so will the beetles – expect cucumber beetle and potato beetle to be moving in before long. Striped cucumber beetle was active in CT Valley early squash last week. European corn borer flights have begun.

R. Hazzard, contributions from J. Galonka, D. Kaplan, R. Bonanno, J&B Bartlett, P. Westgate, NASS Crop Weather 5/27

JUNE TWILIGHT MEETING: DIVERSIFIED VEGETABLE FARM INTEGRATING ANIMALS WITH RENEWABLE ENERGY APPLICATIONS

Thursday, June 26, 4-6 pm
Caretaker Farm, Sam and Elizabeth Smith,
1210 Hancock Rd., Williamstown, MA (413)-458-4309

Caretaker Farm has been operating as an organic vegetable farm successfully for over 35 years. The 35 acre farm has 16-24 acres in pasture, 7 acres in planned stages of vegetable production, with 3 and 1/2 planted and the remainder at rest or in rotation. Originally a market garden with farm stand and restaurant accounts, Caretaker Farm is now and has been a Community Supported Agriculture Farm (CSA) for the last decade. It has 215 CSA members or sharers who purchase a share in the annual harvest of mostly vegetables, with some small fruits and flowers.

The Smiths are currently integrating animals for farm fertility and pasture and weed management, with sheep, lambs, pigs, heifers, chickens, and a cow and calf. Future plans are to market beef and lamb to farm members/sharers. They are also pioneering solar powered electric fencing, livestock feeders and will eventually install a rooftop PV for providing barn lighting and vegetable refrigeration.

Directions: Caretaker Farm is located just under a half mile from the Five Corners Intersection which is marked by a blinking yellow light at the intersection of Rte. 7 and Rte. 43 near Williamstown. From Rte. 7 heading north, turn left at the intersection onto Rte. 43. Go one-half mile to the farm.

BRAMBLE HILL FARM

Bramble Hill Farm is a 120-acre farm located 1 mile from the center of Amherst. The farm is comprised of 80 acres of fenced pasture, 10 acres of cropland, and a 10-acre woodlot. There is a livestock barn with silos, 3 greenhouses & packing shed, a machine shop, 3 houses, and various other outbuildings on the site. Past activities have included a sheep operation, vegetable & flower production, and farm-based educational programs.

Bramble Hill Farm is owned by the Open Field Foundation (OFF), a non-profit corporation created to legally hold the assets of Bramble Hill Farm. The primary mission of the foundation is the preservation and protection of open land and the unique and diverse ecologies associated with it. The Foundation is also committed to the exploration and development of programs for the productive and sustainable use of this land.

OFF is looking for interested parties to lease all (or part) of the land and infrastructure of Bramble Hill Farm to create their own agricultural enterprises. The Foundation is looking for proposals that combine wise use of the resources with a solid plan for development of viable farm enterprises. Those enterprises that serve to enhance the farm as a whole as well as the broader mission of the foundation will be especially favored. Lessees would be able to begin development of their enterprises on-site at Bramble Hill Farm in November 2003.

If you are interested, please submit a preliminary proposal including the following:

1. Type of farming enterprise
2. Scale of production
3. Financing plan
4. Marketing plan
5. Enterprise budget
6. Open Field Foundation assets needed for your enterprise
7. Resume with references

Deadline for submissions is July 15, 2003. For more information, send your proposal to the Open Field Foundation, 150 Main St, Northampton, MA 01060 or email to info@bramblehill.com

Anne Carter, Department of Plant and Soil Sciences,
University of Massachusetts, Amherst

PERMACULTURE IS...

The UMass Plant and Soil Sciences Department is offering a 3-week class in Permaculture Design for the second time this summer in Shutesbury, MA. The class has students from all over the U.S. and is being taught by renowned Permaculture teacher, Mr. David

Jacke, (with a little assistance from John Gerber and others). Permaculture is a design system for ecological living, integrating plants, animals, buildings, people, and communities. It offers a new paradigm for creating sustainable, productive and beautiful human environments using natural ecosystems as models. Through experiential, participatory and classroom learning, participants will explore the relationships between personal, social, and ecological sustainability in the rich context of life in an ecovillage. Course graduates will receive 4 college credits through UMass Amherst and a Permaculture Design Course certificate. The course is scheduled from July 19 through August 8 and will go from 8am to 6pm everyday and some evenings. For registration and information on costs contact Living Routes, Inc., 85 Baker Road, Shutesbury, MA 01072; call 413/259-0025; or e-mail at info@LivingRoutes.org

BRASSICAS: SPRING PESTS ARE ACTIVE

Cabbage root maggots of all stages were found last week in soil samples from brassica crops at the UMass Research Farm. Given the cool, wet soils that have prevailed throughout May, we can expect excellent survival of eggs and maggots…. threatening the survival of our early cole crops. Traditional cole crops (cabbage, broccoli, cauliflower, kale, collard) as well as Asian brassicas such as Chinese cabbage are susceptible. Generally a single soil drench is adequate, but it is advisable to scout 5-7 days after treating to be sure the application was effective. Continue to scout new cabbage plantings for eggs and treat if eggs are found. Egg numbers on new plantings should decline as the adult activity drops and soil surface temperatures heat up.

Flea beetles are busy. Rotated fields may be spared, but wherever spring brassicas are close to last year's fall brassicas and beetles were high last fall, they are back again this spring. What you are seeing are beetle adults that emerged last summer and survived the winter. They will be active throughout June, feeding and laying eggs at the base of brassica plants to produce the next generation. Adult females are now mated and maturing eggs.

Row covers. We have noticed a number of situations where row covers are not providing good control. In our trials of various flea beetle controls, row covers consistently provide perfect control as long as they were completely sealed along the edges. One of the challenges of row covers is to maintain that seal despite wind, rain, deer, dogs, weeding episodes, etc.

Here are some suggestions:

- The best seal is a solid line of soil along the edge of the cover. If you are sealing the cover with soil-filled black plastic bags placed at intervals along the edges, be sure to place them close enough that they can keep flea beetles out -- even when the wind is blowing! Make the row cover as taut as possible to prevent entry under the edges.

- Many farms have new, less new, and older sets of row covers - with progressively more tears each time the cover is used. Choose your best quality cover for flea beetle barrier. The beetles are small and persistent, and tears will allow entry. They can wiggle through tiny holes – and they seem to be able to detect the presence of a host crop under the cover

- Be sure to put the cover on and seal the edges down AS SOON AS YOU SEED. Do not wait for the crop to emerge – beetles will find the first cotyledons. They are quite happy underneath the cover if you place it over them.

- When you remove the cover for weeding, replace it as soon as possible. DO NOT leave it uncovered overnight, as beetles are actively feeding during the night if temperatures are adequate.

- Pay attention to the ends of the rows. Often there is a small, uncovered section at the end of the row that attracts flea beetles. If the end of the cover is not well sealed, flea beetles will move under the cover and work their way down the row.

Insecticide applications. The list of broad-spectrum synthetic pyrethroids that are available to control this pest keeps growing and now includes – Capture, Warrior, Asana XL, Mustang, Ammo, Mustang. In addition, carbamates Larvin and Sevin are labeled. Be sure to observe REI and days to harvest intervals. The actual amount used per acre can be reduced by using banded sprays on young seedlings at the standard rate on the treated band.

The search for reduced-risk or organic options has been yielding some promising alternatives –finally. These include spinosad (Spintor 2SC or Entrust , which is approved for organic crops) and Pyganic Crop Protectant. The latter has a new 5.0 EC formulation which is more concentrated than the previous 1.4 formulation and therefore used a lower rate per acre. Both of these are showing efficacy in the field.

A spreader-sticker is recommended for foliar applications on brassicas. For organic prorducers, NuFilm 17 is a readily available sticker, derived from a natural source that is approved. This adds only a small cost per acre and may increase efficacy significantly.

BUG VS. BUG: BIOLOGICAL CONTROL AND IDENTIFICATION OF APHIDS

Effective and timely control of aphid populations in greenhouse vegetable production is important due to their ability to develop into large populations quickly. The most common species found in Pennsylvania greenhouses include green peach aphid (*Myzus persicae*), potato aphid (*Macrosiphum euphorbia*) and melon aphid (*Aphis gossypii*). The aphid that is usually found to infest vegetable crops, especially tomatoes (Solanaceae crops) is potato aphid. Green peach aphid and melon aphid infest ornamental crops and have a very large host range. Aphids have widespread resistance to many classes of traditional insecticides. Using natural enemies offers an effective and alternative method of control since aphids have widespread resistance to many classes of traditional insecticides.

In crop situations where a broad spectrum insecticide is not being used, aphids can be controlled by naturally occurring predators such as lacewings, ladybeetles, hover flies, and tiny parasitoids. Several biocontrols of aphids are sold commercially and can be used to augment a system of natural control.

Damage: Aphids will feed on foliage and stems of plants. Plant damage can appear as curling and stunting of leaves. In addition to the ability to transmit viruses, aphids cause direct damage by feeding on plant sap to acquire the proteins and sugars needed for their reproduction. Aphids secrete excess sugars in the form of sticky 'honeydew'. Honeydew supports the growth of black sooty mold that affects plant photosynthesis, possibly reducing plant yields. Removing sooty mold from fruit increases handling time and can possibly render fruit unmarketable.

Life cycle: In greenhouse production, aphids are very prolific. Instead of reproducing by eggs, female aphids (stem mother) give birth to live nymphs (3-10/day) that start to feed immediately. Within a week, this offspring will be ready to reproduce. Aphids can have two forms: winged or wingless. As colonies enlarge, aphids develop wings to migrate to less populated areas in the crop.

The most outstanding characteristic for identifying aphids is by the two cornicles ("tail pipes") on the rear of their abdomen. Color is variable among species and is not accurate for identification. As aphids increase in size, they shed their exoskeletons (cast skins). These white cast skins, often mistaken for adult whiteflies, can be found on leaves or stuck in honeydew excretions.

Description of Aphids: A hand lens (at least 16x) is needed to identify these characters.

Potato aphid (*Macrosiphum euphorbia*) – Large aphid, adults are 2.5 to 3.5 mm long. The antennae are longer than the body and the cornicles are very long and cylindrical. Aphid color varies from green to pink forms.

Green peach aphid (*Myzus persicae*) – To differentiate from other species, look for a rectangular indentation on the head between the antennae. The adult aphid is light to dark green and cornicles are slightly darker than the rest of the body. Aphids may also appear pink or orange depending on the host.

Melon aphid (*Aphis gossypii*) – Antennae are shorter than the length of the body. Color can vary from green, blue-green to gray green. The cornicles are of adult aphids are short and entirely black.

Monitoring: Plant monitoring should begin at the seedling stage and continue through the duration of the crop cycle. Start plant inspection on lower leaves and continue up the plant to the growing tips. As aphids feed on growing tips, the leaves curl, sometimes looking like virus symptoms.

Yellow sticky cards are useful in detecting winged aphids. Hang sticky cards 4 – 6 inches from growing tips. IPM Labs (www.ipmlabs.com) sells a chart with drawings of important insects found on sticky cards. Unfortunately, winged adults on sticky cards may indicate that there are crowded populations already established in the crop and they are migrating to less populated areas. The presence of ants in the greenhouse may indicate aphid development, since the ants feed on the excreted honeydew and thus protect the aphids. When introducing biological controls, place them in an area protected from ants and control ants with baits or traps.

Biological Control: Several long-lasting and effective biological controls are commercially available for aphid control.

Parasitoids for Aphid Control: Caution: Parasitoids for aphid control are very species specific. Identify the aphid species infesting your crop before ordering from your supplier.

Aphidius colemani – Used to control green peach aphid and melon aphids. This tiny wasp lays an egg in the aphid. The egg hatches into a larva that spins a cocoon, producing a new wasp. The wasp exits the aphid body, leaving behind a brown shell called an aphid mummy.

Aphidius ervi – Used to control potato aphids. This parasitoid has a similar appearance and life cycle as *Aphidius colemani*. This parasitic wasp is about twice the size of A. *colemani*.

Aphelinus abdominalis – Used to control larger aphid species such as potato aphid and glasshouse potato aphid. This wasp is about 3 mm long. The main advantage to using this parasitoid is that the female adult will parasitize for several weeks and it will also feed on the aphids.

Predators for aphid control

Ladybeetles (*Hippodamia convergens*): – Ladybeetles are sold as adults in pints, quarts and gallons. A general predator, ladybeetles are effective for cleaning up hot spots. They also feed on scales, thrips, and other soft – bodied insects.

Lacewings (*Chrysoperla rufilabris*) – Lacewings are sold as eggs, larvae. The larvae are voracious predators known as "aphid lions". They will also feed on mealybugs, scales, spider mites and thrips.

Predatory Midge (*Aphidoletes aphidimyza*)- This midge is sold as the adult to be released in greenhouse. The adult midge lays eggs near aphid colonies and the orange larvae feeds on aphids.

A partial list of biocontrol suppliers

- Crop King,, http://www.cropking.com (330) 769-2002 fax: (330) 769-2616
- Green Spot, http://www.greenmethods.com (603) 942-8925, FAX (603) 942-8932

- Hydrogardens. http://www.hydro-gardens.com (888) 693-0578, FAX (800) 694-6362
- International Technology Services, http://www.bugsandbees.com Ph. (800) 375-1684, FAX (303) 661-9543
- IPM Laboratories, Inc. http://www.ipmlabs.com Ph. (315) 497-2063, FAX (315) 497-3129
- Koppert Biological Systems, http://www.koppert.nl (800) 928-8827

For a comprehensive listing of biocontrol suppliers and information visit this website: http://www.anbp.org. This is the site of the The Association of Natural Biocontrol Producers (ANBP), a professional association representing the biological pest management industry. ANBP membership includes producers, distributors, and in addition, users of natural enemies and researchers.

Tips for using biocontrols effectively

- Discontinue the use of residual pesticides, 4 – 6 weeks prior to introducing biocontrols – check residues with suppliers
- Identify the aphid attacking the crop
- Start introducing biocontrols when pest populations are low
- Follow supplier recommendations for release rates
- Disperse biocontrols on the day of receipt

--Cathy Thomas, Integrated Pest Management Program
Bureau of Plant Industry, PA, published in
Vegetable and Small Fruit Gazette June 2003 Vol. 7 #6

Weekly Trap Captures of European Corn Borer in Sweet Corn				
Town	**Date**	**ECB Z1 Iowa**	**ECB Z2 New York**	**Total ECB**
S. Deerfield	5/30	1	20	21
S. Deerfield	6/2	4	24	28
Sunderland	6/2	5	8	13

SWEET CORN

European corn borer flight has begun. We began capturing ECB moths last week and today at locations in the Connecticut River Valley. The earliest corn is in the whorl stage. It will be a week to 10 days before egg masses will be laid, but the most attractive corn will be the plantings that have been cut out of plastic and are exposed. If possible, leave floating row covers on for as long as possible to prevent egg laying. See article below for a proven strategy in row-covered corn.

INSECT CONTROL FOR EARLY SEASON ROW COVER SWEET CORN

A common technique in cold climates to speed maturity in sweet corn is to start the corn under plastic or floating row cover. Once the corn is from one to two feet tall, the plastic or row cover is removed. Because it is so much farther advanced than sweet corn planted on bare ground, the crop attracts early season European corn borer (ECB). Scouting for insect damage is difficult or impossible because the larvae are deep in the plant. Working with two large-scale growers of row cover sweet corn, a successful technique for insect control has been identified. Pheromone traps next to the fields are used to monitor early season corn borer flight patterns.

Three years of informal observation and one year of data collection have confirmed the results. Growers have developed confidence in using the technique and have achieved both high quality early sweet corn and minimal pesticide application. Remember, this technique only works on row cover or plastic corn in early season. For bare ground sweet corn, you should go out and scout the fields while in whorl and make your spray decisions based on insect feeding levels. In early June, we will have more information on

scouting techniques in this newsletter.

Growers wishing to purchase their own traps can obtain the "Scentry Heliothis Trap" from Great Lakes IPM Inc. 10220 Church Road NE Vestaburg, MI 48891 Ph 1-800-235-0285. The traps cost $48.00. You will also need lures. The "Trece" European corn borer II (NY) lure is sold in packages of 25 and cost $44.00. Lures should be changed every two weeks. The traps are good for about 10 years if you don't leave them out over winter. Gempler can also supply traps but they are a little more expensive. Put the trap out the last week of May next to your row cover field. Monitor the traps every 3-4 days. You will catch a few of the tan ECB moths regularly until a point when the counts jump from a couple to maybe 10 or 15 moths. This is the time to start thinking about applying an insecticide application in 3 to 4 days. The moths are attracted to the row cover corn first because it is the most advanced. You want to wait a few days before applying an insecticide to give the eggs time to hatch. The goal is to catch the immature larvae on the outside of the plant before they dig deep into the corn. After you have put on an application, wait 3-5 days and apply a second application.

Once the early corn is harvested, you can move the traps to other sweet corn fields and monitor for the second flight. Remember to keep changing the lure every two weeks.

John Mishanec, Area Vegetable IPM Educator, Cornell Cooperative Extension, Capital Vegetable News, Vol. 5:1-- Spring 2003.

STRIPED CUCUMBER BEETLE PART TWO

Striped cucumber beetles are becoming active and numbers are likely to jump rapidly this week. Direct-seeded pumpkin, winter squash, melons and cucumbers that are just emerging, as well as transplants that are still young are highly susceptible to both feeding damage and transmission of bacterial wilt, which is vectored by the cucumber beetle. The cotyledon up to the five-leaf stage is most susceptible.

Beetles are very mobile and can build up rapidly, so fields should be scouted at least twice a week. Activity tends to be high during hot sunny weather – so this week may bring them out. Rotation makes a difference! Numbers will be higher and infestation earlier in non-rotated fields.

Scouting: Look for signs of feeding on the underside of leaves, especially the cotyledons. Beetles are often found underneath leaves or in cracks in the soil. Check sets of 5 plants in at least five areas of the field (25 plants total), counting number of beetles on or near the plant. This can be done in about 15-20 minutes. Check field edges for hot spots. Beetles often colonize from field edges and numbers will be higher in the first rows near a woods or fallow area. Border treatments or border trap crops may help reduce infestation of the whole field. See the 2002-2003 New England Vegetable Management Guide for specific materials. (Don't have one? Call 413-545-2717 to order your copy).

When to spray? Controlling cucumber beetles in the cotyledon to 5 leaf stage is the only way to preventing bacterial wilt. For susceptible crops such as cucumber, summer squash and zucchini, muskmelon, gourds, and some winter squashes and pumpkins, lower thresholds are needed. Do not allow numbers to exceed 1 beetle per two plants. The time between first arrival of beetles and that threshold can be short, so keep an eye on fields once you see any beetles and spray within 24 hours of reaching threshold.

Organic Controls: For organic growers, kaolin (Surround WP) provides a new option. Other organic options are row cover, pyrethrin (Pyganic Crop Spray 5.0 EC), perimeter trap crops (see below). Available Rotenone products have lost approval under the National Organic Program. For growers using Surround, here are some suggestions:

- Apply before beetles arrive. This acts as a repellent and anti-feedent so must be present before damage is done.
- If you are using transplants, apply before setting them out. This saves time and materials.
- With direct-seeded crops, apply as soon as seedlings emerge if beetles are active.
- Ensure good coverage of the foliage (it will look like it was sprayed with white latex paint), including, if possible, the undersides of leaves (not easy when cotyledons are close to the ground).
- Reapply after a heavy rain.
- When mixing, add the powder to water and allow it to settle slowly. Once the powder is fully wet, agitate gently. This reduces clumping. One approach is to mix a more concentrated slurry in a bucket and then add the slurry to the tank, as the dry powder could cake if added directly to the tank mix.
- Continuous agitation is needed.
- Although kaolin is safe in terms of skin exposure or ingestion, handlers should take precautions to avoid breathing the powder. Wear a respirator or mask when mixing and spraying.

--Ruth Hazzard

PERIMETER TRAP CROPPING FOR CUCUMBER BEETLE MANAGEMENT

Trap crops are used to protect the main cash crop from a pest or complex of pests. The trap crop can be a different plant species, variety, or just a different growth stage of the same species as the main crop, as long as it is more attractive to the pests when they are present. ***Perimeter Trap Cropping*** involves planting the attractive plant species so that it completely encircles the main crop like fortress walls. A trap crop barrier on all sides is useful when it is necessary to protect the crop from a pest attack that may come from several or unknown directions. This technique works best against pests that tend to damage the crop along the edge of the field (at least initially) – such as striped cucumber beetle. Perimeter Trap Cropping functions by concentrating and/or killing the pest in the border area, while reducing pest numbers and disease spread on the unsprayed cash crop in the center and by preserving natural enemies. Perimeter Trap Cropping often eliminates the use of broad-spectrum pesticides on the cash crop, which helps preserve natural enemies and helps prevent resurgence of the primary pest population, secondary pest outbreaks and additional spraying to solve these "man-made" problems. Perimeter Trap Cropping often results in improved crop quality and dramatic pesticide savings. Less spraying usually translates into lower costs.

Blue Hubbard around yellow summer squash. In 2002, Connecticut researchers attempted to stop cucumber beetles and squash vine borers damage on summer squash using Blue Hubbard as a perimeter trap crop. Blue Hubbard was chosen because it is highly attractive to beetles, grows fast, and is not susceptible to bacterial wilt so it does not serve as a reservoir of wilt for the rest of the field. In the 2002 trials, over 94% of the cucumber beetles in the experiment were on plants in the perimeter. Beetle populations on the unsprayed main crop in the center were reduced by up to 95%. In addition, spraying the perimeter trap crop reduced squash vine borer infestation on the unsprayed summer squash within by 88%. Six commercial cucurbit growers successfully employed the technique in 2002. All the growers improved their pest control and reduced crop damage using Perimeter Trap Cropping, and all said they would continue to use trap crops in the future.

How to use perimeter trap cropping in yellow and green summer squash – or other vine crops. A number of growers in CT and

MA are testing Perimeter Trap Cropping in summer squash and butternut this season. You may be interested in trying it, or come to summer twilight meetings to learn more about it. Here are some suggestions if you want to try it:

- Use a rotated field where cucumber beetle populations are not extremely high.
- Plant the trap crop earlier or at the same time as the main crop.
- Use the same in-row and between row spacing to plant the main crop and the perimeter trap crop row (or rows) of Blue Hubbard. Plant the outside rows along the length of the block by machine. Trap crop plants at the end of each row can be placed by hand or by machine (drive across the rows). Don't worry if all the Blue Hubbard plants don't line up with the main crop rows or are killed between rows by tractor tires. As long as most of the border plants survive on all sides of the field, without major gaps (>15 ft), the barrier should still function.
- Scout the trap crop at least twice weekly and spray the border with an effective insecticide (Asana, Sevin for conventional, Pyganic for organic) *as soon as beetles are found*. Don't wait for beetles to build up in the borders. It is important to maintain healthy border plants and to prevent redistribution throughout the field. However, even without border sprays, PTC reduces beetles in the main crop. Scout again to determine if repeat sprays are needed in the border. 103 sprays may be needed as beetles continue to colonize.
- Don't mix another, highly attractive vine crop inside the border. Or, if you do, monitor it closely to determine if sprays are needed on that main crop. For example, zucchini is more attractive than summer squash and may need to be sprayed even if it is inside a blue hubbard perimeter.
- Where heavy infestations might be expected, such as borders along woods where beetles may have overwinter, use a wider perimeter of 2-3 rows.
- Watch for more details on twilight meetings at demonstration farms in Connecticut and Mass!

PTC can also be used to reduce pepper maggot infestations in pepper – with a ring of cherry peppers around bell peppers - and diamondback moth in cabbage – using collards as the trap crop. For more information visit the UConn website at http://www.hort.uconn.edu/ipm/veg/htms/trpcrops.htm.

Adapted from PTC for Yellow and Green Summer Squash *and* Perimeter Trap Cropping Works!*, by T Jude Boucher and Robert Durgy, University of Connecticut Cooperative Extension System.*

Vegetable Notes, Ruth Hazzard, Editor. Nicholas Connor, Assistant Editor. *Vegetable Notes* is published weekly from May to September and includes contributions from the UMass Extension Vegetable Program faculty and staff, growers, and private IPM consultants. Authors of articles are noted; author is R. Hazzard if none is cited.

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