University of Massachusetts Extension

Vegetable Notes

For Vegetable Farmers in Massachusetts

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This issue of Vegetable Notes features the benefits of perimeter trap cropping, the compatibility of pesticides with natural enemies in greenhouses and an article on heirloom tomatoes.

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Farm to School Update: Calling Growers of Fruit, Vegetables and Cranberries!

Letters have gone out to growers living near the school districts of Worcester, Middleboro, Belchertown, Hudson, and Maynard looking for suppliers of locally grown produce for school lunches. The produce may be fresh or from storage. If you are interested in supplying to these schools and did not receive a letter or you misplaced your letter, please call Kelly Erwin at 413-253-3844 or email her at kelerwin@localnet.com. Some schools would only need one or two farmers to meet their supply needs while other schools need several farmers. For example, the Worcester school lunch program serves 15,500 lunches a day while Hudson and Maynard serve 2,000 lunches a day.

We have applied for grants to expand the program in the Pioneer Valley. If the grant requests are approved, then the school districts of Holyoke and Chicopee should begin purchasing local food for this year's summer feeding program and will continue purchases into the fall. We are working on a third large school in the district as well. Many thanks to the Massachusetts Fruit Growers Association for providing a financial match to get apples into the schools as well.

On the National front, House Bill 2626 and Senate Bill 1755 - "Farm to Cafeteria Projects Act", part of the Child Nutrition Reauthorization, has come out of committee fully funded and is ready for a full vote in the House. Many thanks to Congressmen, Neal, Olver, Frank, and McGovern for supporting this act so far. If passed, schools will have the opportunity to receive $100,000 grants to work with farmers to purchase equipment and supplies that will allow schools to serve meals with locally grown products. Some of our Massachusetts schools have started with some products and more requests are coming in.

However, I want to caution farmers to move slowly and thoughtfully into this new market. Moving too fast can cause frustration as each school's delivery and billing requirements are unique. Kelly Erwin has been working as a liaison between schools and growers and is facilitating this part of the program. As more grants come in, we will include more schools and farms. This program is working well in schools in California, New York, Florida and New Jersey. In some schools, growers started with one product, then expanded once all the kinks were worked out of the system. Because the school food purchaser is the same person for all commodities, we hope to help our apple and cranberry growers as well as our vegetable growers. Please call Kelly at (413)253-3844 kelerwin@localnet.com or myself at (413)545-5216 akcarter@pssci.umass.edu as we expand the project.

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

USDA Wildlife Services

The U.S. Department of Agriculture's Wildlife Services program is available to assist vegetable growers with wildlife damage management throughout Massachusetts, Connecticut, and Rhode Island. Wildlife Services may provide assistance with obtaining permits and the development of a management plan specific to most vegetable growers' needs. For more information, please contact Don Wilda at (413)253-2403, or email at Donald.J.Wilda@aphis.usda.gov

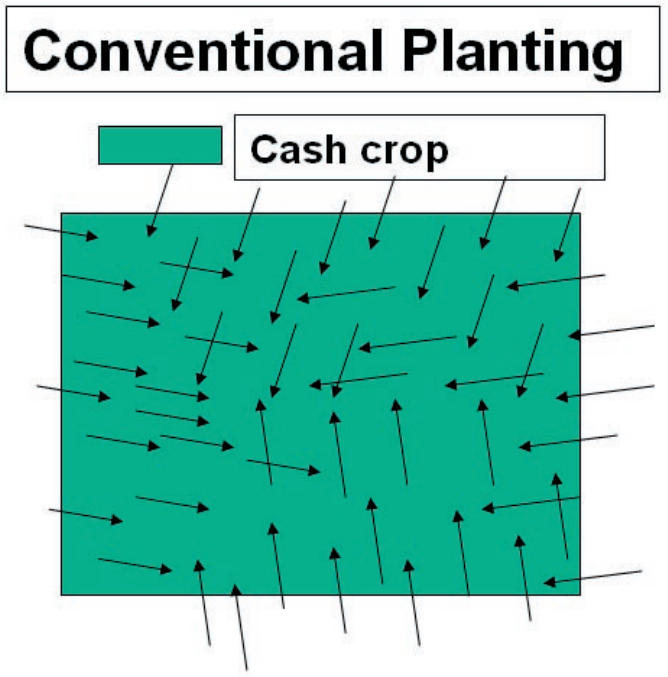
Perimeter Trap Cropping

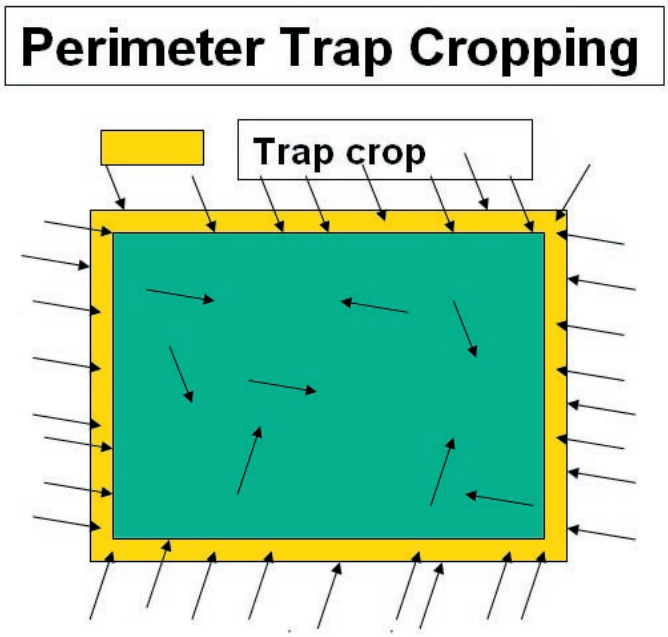
Trap crops are used to protect the main cash crop from a pest or complex of pests. The trap crop can be a different plant species, variety, or just a different growth stage of the same species as the main crop, as long as it is more attractive to the pests when they are present. Trap cropping is most worthwhile for pests that are abundant and destructive in most years. Perimeter Trap Cropping (PTC) involves planting the attractive plant species so that it completely encircles the main crop like fortress walls. PTC tends to work best for insects that move into the field from outside, that use plant cues to find their way to their host crop, and that damage the crop along the edge of the field first. Pests are intercepted in the border, where they can be killed, thus preventing injury and disease spread on the unsprayed cash crop in the center. The perimeter barrier intercepts pest migration regardless of the direction of attack. This simple redesign of the crop production system works equally well on large and small farm operations and is easy to use because the same machinery, crop spacing, and plant-culture system can be used for both the main and trap crops.

Trap crops are most economical if they have some other use (e.g. support beneficial insects or can also be marketed) and if they require a small amount of space relative to the main crop. The required trap crop planting size depends upon the intensity and direction of the pest attack expected, as well as the mobility of the target insect(s). Wider trap plantings may be necessary along field edges that border known sources of infestation, such as insect overwintering sites, non-crop breeding sites or alternative food sources. For some pests, Perimeter Trap Cropping may work in very small (garden-size) plots but for others, larger plantings may be required. Understanding how the pest uses and moves in its environment is crucial in developing or deploying a successful trap crop system.

Perimeter Trap Cropping functions by concentrating the pest in the border area, while reducing pest numbers and disease spread on the unsprayed cash crop in the center.

The effectiveness of this trap crop technique can often be improved by adding other perimeter defenses like biological, mechanical, cultural or chemical control tactics, or with pest attractants and repellants. The most common and simplest additional defense is to spray the trap crop border as soon as the pest arrives. This prevents movement into the main crop. Border sprays require significantly less time and pesticide compared to full field sprays. By avoiding cover sprays in the main crop, natural enemies are protected. The PTC with border sprays may not always eliminate the pest completely, but it can substantially reduce their populations on the main crop. In recent years, using a pe-





rimeter trap cropping system has dramatically increased the success of trap cropping on a variety of crops.

Vine crops: perimeter trap cropping for striped cucumber beetle, bacterial wilt, and other cucurbit pests. Blue hubbard squash has been selected as a trap crop for many cucurbit crops because it is highly attractive to striped cucumber beetles, has vigorous seedlings, and is not as susceptible to bacterial wilt as other attractive varieties.

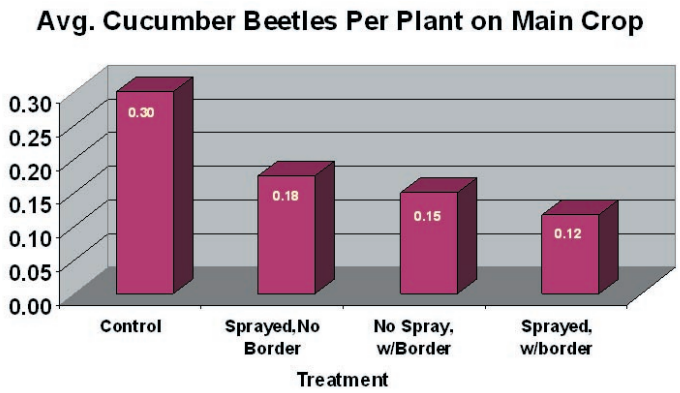
Blue hubbard border around summer squash

Blue Hubbard around yellow summer squash has been studied for several years in Connecticut. In experimental plots, 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 93% in plots with sprayed Hubbard squash borders compared to plots without perimeter sprays or trap crops. Spraying the perimeter trap crop also reduced squash vine borer infestation on the unsprayed summer squash within by 88%. Six commercial cucurbit growers successfully employed the technique in 2002 and 2003. All the growers improved their pest control and reduced crop damage using Perimeter Trap Cropping, and all but one said the system was simpler to use and saved them time and money.

Blue Hubbard around winter squash. In Massachusetts we are evaluating Blue Hubbard as a perimeter around butternut squash. In experimental plots in 2003, plots with Blue Hubbard borders had eight times as many cucumber beetles per plant in the border than those with butternut at the border. The number of beetles per plant in the unsprayed main crop was reduced by 60% where there were sprayed Blue Hubbard borders, compared to the control.

Blue hubbard and butternut squash

The same system was tested in six commercial fields of butternut ranging in size from two to six acres. On average, more than seven times as many beetles per plant were found in the borders of protected fields than on the main crop. At one point we counted over a hundred beetles on one plant in the border. Fortunately, the border had recently been sprayed and most of them were dead. Unfortunately, a combination of heavy rains and cold, wet soils led to poor crop emergence and the incomplete borders did not hold up against the beetles. In several cases growers needed to use a full-field spray because of the combination of high beetle pressure and poor trap crop emergence. We are looking at using a double border along woods edges, and possibly a systemic insecticide treatment in the border this year to help keep the borders intact enough to protect the main crop even in times of extremely high beetle pressure. All of the farmers were able to market their Hubbard squash in addition to their butternut. And all of them are



Blue Hubbard around Butternut, UMass Research Farm, 2003
- *There was a 60% reduction in beetle numbers in the center of plots with a sprayed border vs. the control*
- *There was a 50% reduction in beetle numbers in the center of plots with an unsprayed border vs. the control*

planning to try the system again this year.

Pumpkin around Pumpkin. Prizewinner, a giant pumpkin variety, is highly attractive to beetles – more attractive than standard pumpkins. One grower in 2003 planted Prizewinner as a perimeter around a field with a mix of other pumpkin varieties as the main crop. Despite the fact that half the field was planted late due to the wet weather, the beetles were heavily concentrated on the border plants. We found more than three times the number of beetles in the border than in the main crop. The grower sprayed the border three times, did not spray the main crop, and was satisfied with his control in the main field.

Other vine crops. There is good evidence that the Blue Hubbard trap crop can be used in other vine crops as well. Blue Hubbard PTC has also been used with success in cucumbers, reducing defoliation and plant death from direct feeding and from wilt, and increasing yield by 33% (148 boxes/acre) in PTC plots compared to control plots. Growers who tested this in commercial fields gained a level of control that they had not been able to achieve even with multiple full field sprays.

Research in Oklahoma suggests that minimal plantings of systemically treated squash can be used effectively to suppress early-season populations of cucumber beetle and squash bug in seedling cantaloupe, squash, and watermelon. Studies conducted in 1994 showed that significantly greater numbers of cucumber beetles were attracted to 'Blue Hubbard' than Lemondrop squash trap plant positioned in a field of watermelon. In field studies conducted at the USDA-ARS South Central Research Laboratory, squash trap crops lured more than 66 percent of cucumber beetles from melon crops. A single application of either a systemic or foliar insecticide on the squash could be used to control the beetle population.

Collards around cabbage. The diamondback moth (DBM) becomes resistant to insecticides quickly and is therefore difficult to control. Researchers in Florida were able to keep the DBM from reaching action thresholds in nine commercial cabbage fields by surrounded them with two rows of collards. Sixty percent of the nearby control fields without collards exceeded thresholds. The DBM population on the collard plants around the cabbage exceeded threshold in 89% of the fields, but a naturally occurring parasitic wasp, *Diadegma insulare*, helped control the population and keep it from spilling over into the cabbage. Perimeter trap crop fields used 56% fewer insecticide sprays (there were sprays for loopers) for a net savings of $47.35 - $62.40/acre in chemical costs alone.

In our plots in South Deerfield, Massachusetts we are looking at a complex of pests including diamond back moths, imported cabbageworms, and cabbage loopers. It seems that imported cabbageworms also prefer collards to cabbage – we found a 25% reduction in the larvae in the main crop of the plots with a perimeter of collards vs. the plots without borders.

Cherry peppers around bells. Pepper maggot flies lay their eggs in pepper fruit and the maggots feed inside, ruining the fruit. These pests are sporadic, worse on some farms or fields than on others, and only occur in southern areas of New England. In Massachusetts, pepper maggots cause damage in the Southeast, in some areas of central/eastern Mass (e.g. Acton, Concord), and at scattered other locations. Pepper maggot flies prefer to lay eggs in cherry bomb peppers, compared to regular bell pepper. Researchers in Connecticut have stopped pepper maggots from infesting bell peppers by using a perimeter trap crop of hot cherry peppers and border sprays timed when flies begin to sting the fruit in the border. In experiments, bell peppers surrounded by the trap crop produced at least 98% pest-free fruit at harvest compared with all-bell plots, which had 15% of the fruit infested. Commercial farmers using Perimeter Trap Cropping harvested 99.99% clean fruit, experienced the best pest control in the history of the farms, and had better pest control than farms that had used well-timed full-field sprays. They reduced their insecticide use for pepper maggots by up to 89%. (Some have reduced their total pesticide use on peppers by up to 99% using PTC and the complete pepper IPM program.) Growers said the system simplified pest control and saved them money. Economic analysis confirmed an overall improvement in crop profitability ($5.25 - $152/acre).

Italian eggplant around standard eggplant or tomato. Results from experiments in CT indicate that both Colorado potato beetle (CPB) and eggplant flea beetle (FB) prefer the elongated Italian or Japanese eggplant, 'Vittoria' compared to standard eggplant varieties and to tomato. If either of these are a problem on your eggplant or your tomato, using Vittoria as a PTC may help (we don't have proof yet) keep them out of eggplant or tomato. Border plants can be sprayed when FB or CPB arrives, or could be treated with a systemic insecticide before transplanting.

Early-planted potato around potato. Colorado potato beetles emerge in the field edges and walk or fly into potato fields. An early-planted or early-emerging crop that is planted along the border can serve as a trap crop. Early emergence can be achieved by green sprouting the potatoes before planting. Another option is to plant an early variety such as Superior two weeks before the rest of the crop.

What can Perimeter Trap Cropping do for you?

- Perimeter Trap Cropping often eliminates the use of broad-spectrum pesticides on the cash crop, thus preserving natural enemies which may help prevent resurgence of the primary pest population or 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.
- Less spraying simplifies harvesting and marketing, by eliminating re-entry (REI) and pre-harvest restrictions (dh).
- Less spraying reduces the possibility of chemical residues at harvest.
- Less spraying leads to fewer environmental and safety concerns.
- Less spraying may help improve personnel/management relations. This is especially true for migrant labor crews, who may be distrustful of management and of pesticide applications.
- Less spraying delays the development of pesticide resistance.
- Perimeter Trap Cropping will complement your current pest management program.
- This technique may also improve the efficacy of full-field sprays for tough pests by restricting most of the damage to the perimeter area.

So, how do I do it?

Here are some things to keep in mind when you try PTC:

- Plant the trap crop on good ground where it will grow well, so that it completely encircles the cash crop (without gaps). Make sure all edges are encircled, even where the field shape is irregular.
- Multiple trap crop rows may be needed, especially near woods where the pest has overwintered, to prevent large populations of migrating beetles from breaching the trap crop barrier.
- Spray perimeter as soon as the beetles (or other pest) appears and begin to feed on the trap crop. Do not wait for the numbers to reach a threshold.
- Monitor the field for as long as the invading pest is a problem (in vine crops, at least until bloom).
- If perimeter has large gaps and pest numbers in the main crop exceed threshold, use full-field sprays. For example, in butternut squash before the 5 leaf stage, if beetle numbers exceed 1 per plant based on a sample of 25 or more plants, use a full field spray.
- Use PTC along with crop rotation to reduce the population. Don't expect perfect control with extreme pest populations.
- In dry conditions, plant large seeded trap crops before main crops to be sure that both emerge at the same time.
- The trap crop can be planted with your regular planter, or by hand. Drive a planter across the ends of the rows, in order to plant crosswise. If you have to cultivate out some plants in the row middles, don't worry about it.

We invite you to try it!

We would like to invite you to try this system yourself – with support from us - on any main crop/trap crop/pest system that you think it might work for. We can offer many suggestions, but we also encourage you to try anything that you think might work. Many of these ideas originally came from growers who noticed that certain pests seemed to love one variety, while skipping over others. We can offer support in the form of consultation any time before or after planting, and a visit over the summer to see how things are working for you. We are hoping that you will join the growing number of growers for whom PTC has become an indispensable part of their pest management practices.

If you have any questions, or if you think you might be interested in experimenting with this system on one or more crops, please contact Andy Cavanagh at (413) 577-3796 email: acavanagh@pssci.umass.edu or Ruth Hazzard at (413) 545-3696 email: rhazzard@umext.umass.edu.

More information on PTC can be found on the web at: www.hort.uconn.edu/ipm/veg/htms/ptcworks.htm

Below are suggested main crop/trap crop/pest combinations.

Main Crop	Trap Crop	Pest
Butternut Squash	Blue Hubbard Squash, other *Curcubita maxima*	Striped Cucumber Beetle
Summer Squash	Blue Hubbard Squash, other *Curcubita maxima*	Striped Cucumber Beetle
Cucumbers	Blue Hubbard Squash, other *Curcubita maxima*	Striped Cucumber Beetle

Main Crop	Trap Crop	Pest
Melons	Blue Hubbard Squash, other *Curcubita maxima*	Striped Cucumber Beetle
Pumpkins	Valenciano or Prizewinner Pumpkins	Striped Cucumber Beetle
Peppers Eggplant	Cherry Bomb Hot Peppers	Pepper Maggot
Tomato	Italian Eggplant	Colorado Potato Beetle, Flea Beetle
Eggplant	Italian Eggplant	Colorado Potato Beetle, Flea Beetle
Cabbage	Collards, Indian Mustard	Diamondback Moth
Cabbage, Kale	Komatsuna (*Brassica rapa*)	Flea Beetle

This project is funded by the Northeast Sustainable Agriculture Research and Education Program of USDA (NESARE)

-T. Jude Boucher & Robert Durgy,
University of Connecticut and
Ruth Hazzard & Andrew Cavanagh,
Department of Entomology,
University of Massachusetts

Massachusetts Organics Recycling Summit: "Links in the Food Chain"

Thursday, April 22, 2004, 8:30am to 4:00pm

Boxborough Holiday Inn, Boxborough, Massachusetts
The site is located just east of the Boxborough exit on I-495 (one exit south of Rt. 2)

Gather with 200 of your colleagues for a comprehensive overview of the food waste management infrastructure in Massachusetts. By attending, you will:

- Learn of business opportunities for on-farm composting to make stronger connections with haulers and generators of organic waste, including: commercial food processors, hospitals, hotels and motels, colleges and universities, restaurants, supermarkets and even the prison system.
- Be ready for the potential state disposal ban on organics.
- Meet equipment and product vendors.

Two farmers who operate on-farm composting operations will be among the presenters. Bob Martin of Martin's Farm Recycling in Greenfield, and Bill Paige of MassNatural in Westminster, will discuss their successful composting of food waste.

Officials from the Massachusetts Departments of Environmental Protection and Agricultural Resources will provide updates on solid waste and recycling policies, programs and regional trends.

This is a terrific networking opportunity! To see agenda and get registration form, visit DEP on the Web at: http://www.mass.gov/dep/recycle/compost.htm or contact Steve Long (617-292-5734, stephen.long@state.ma.us) or Sumner Martinson (617-292-5969, sumner.martinson@state.ma.us).

Bug vs. Bug- Compatibility of Pesticides with Natural Enemies in Greenhouse Vegetables

Before implementing a pest control program using natural enemies (biocontrols), give these issues some thought and plan carefully.

The first issue to consider before starting a pest control program using biocontrols is to know what pesticides have been used on the crop itself and in the greenhouse where you will be using biocontrols. Conventional classes of insecticides such as carbamates, chlorinated hydrocarbons, organophosphates, and synthetic pyrethroids can persist for many months on plants and on the greenhouse structure itself. Insecticides from these classes usually have a negative impact on natural enemies and bumble bees used for pollination in greenhouse vegetables. If you plan to use biocontrols, transplants should not be treated with long residue pesticides. Check with the plant propagator if you do not start your own transplants.

The second issue is to determine what pesticides you can use along with the introduction of natural enemies. If a pest outbreak requires a spray treatment, use selective pesticides and spot spray when possible. A selective pesticide has these qualities:

- Non-toxic or slightly toxic to natural enemies (soft chemistry)
- Short persistence
- Does not inhibit development or reproduction of the natural enemies

Some compounds may be harmful to biocontrols at the moment they are applied, but may have a short persistence (i.e., natural pyrethrins). After the recommended time period has elapsed, beneficial insects can be introduced again.

Always consult your biocontrol supplier before applying any pesticide. Even though a particular pesticide label may state that the compound is safe to use in an IPM program, it may not be safe to use with natural enemies. On line information on the side effects of pesticides on beneficial insects can be obtained through this web site:

http://www.koppert.nl/e0110.shtml

A list of materials approved for organic production can be found at this web site:

Organic Materials Review Institute
http://www.omri.org

Here are a few additional points to consider when using pesticides with natural enemies.

- Designate a sprayer for soft pesticides and use only in biocontrol houses
- Pesticide vapors from a non-biocontrol area may have a negative impact in other areas where biocontrols are being used.
- Keep accurate records of pesticides and biocontrols that are used and note the effectiveness of those treatments.

Pesticide Use Compatibility with Biological Controls (Prepared by Cliff Sadof, Purdue University and Michael Raupp, University of Maryland)

Botanicals

Pyrethrins – somewhat compatible, short residue but very broad spectrum. Can be used to cleanup a pest population, one to two weeks (check with biocontrol supplier) before biocontrols are introduced.

Azadirachtin – compatible, insect growth regulator derived from seeds of the neem tree, controls larval stages of insect pests.

Microbial insecticides (pathogen biological control agents)

Bacillus thuringiensis var. kurstaki – highly compatible, targets caterpillars. Larval stages must feed on plants parts containing the bacteria.

Bacillus thuringiensis var. israelensis – highly compatible, targets fungus gnat larvae.

Beauvaria bassiana (fungus) – compatible, kills some soft bodied predators, short residue, broad spectrum.

Steinernema feltiae (Nematode) – compatible, targets fungus gnat larvae, low toxicity to humans.

Others

Horticultural Oil – compatible, active when wet, kills soft-bodied insects; pupal stage parasitoids not killed.

Insecticidal Soap – compatible, active when wet, kills soft-bodied insects, pupal stage parasitoids not killed

- Cathy Thomas, Integrated Pest Management Program, Pennsylvania Department of Agriculture

Heirloom Tomatoes: It's all about flavor!

Heirloom tomatoes have been in the news for years, and with good reason. But after all the conversations about genetic diversity, the history and stories, it all boils down to one word - flavor. The home gardener is growing heirlooms for their flavor. The market customer comes back again and again for the "good old tomato flavor" provided by heirlooms.

Sometimes the subject of heirlooms and poor disease resistance comes up. In my experience, most heirlooms can be grown well and will be disease free if good conditions are provided. Ample spacing to provide plenty of air drainage, mulch to prevent splash from the soil, steady moisture, appropriate support, and minimal pruning will all contribute to a good harvest. Other folks maintain that heirlooms may bear fewer fruits than hybrids. In some cases this IS true, but in my experience well grown plants will bear well as a general rule.

And it ***is*** true that some heirloom tomatoes will crack on the shoulders. One of the factors that makes the heirloom tomato so appreciated is the tenderness of the skin. And it is that tenderness that makes many heirlooms vulnerable to cracking. The "secret" to limiting cracking is providing even moisture. Since the skins lose a lot of their elasticity as they approach maturity, a heavy rain (or drip irrigation left on too long) will swell the fruits and cause cracking. With heavy rain in the forecast it is sometimes wise to pick ripe and almost ripe fruits to protect them!

Market growers sometimes experience the "it looks funny" reaction to some heirlooms, but a tasting plate will take care of doubters! From a practical standpoint, a great market display should have a good mix of hybrids, standards, and heirlooms. There will always be the customer who can't possibly eat a tomato that isn't round and red! But that's where the tasting plate comes in - even dyed-in-the-wool red tomato folks can be challenged to try something new! In addition to direct market sales, the connection to

chefs and fine restaurants provides another valuable outlet for an unusual and beautiful crop.

Trials of heirloom tomatoes can be a real adventure. I try to plan at least three years for a realistic trial, as the results I need are complex. I need to know if the variety will produce at all in my niche of New England. I need to know how the variety will produce in the widely varying growing seasons in New England. I need to know the growth habits of the plant. It is amazing what differences of opinion there are when describing "healthy", "sprawling", compact", or "vining" plants! I also need to know if the variety is sensitive to particular micro-climates on my property. I need to know when I can expect the first ripe fruits. I need to satisfy the question of whether this variety is actually unique. And last but not least, I need to know if it tastes good! So my trials include several widely spaced plantings of at least 3 to 4 plants each as well as side-by-side plantings with suspiciously similar varieties. The true test comes in the second and third years when I grow out seedlings from saved seed. I carefully select fruit that meets the description and save seed to see if the variety will breed true.

The following is a list of some of my personal recommendations of heirloom tomato varieties. This list is based on both spring seedling sales and farmer's market sales later in the season.

REDS

- Box Car Willie (80 days-Indeterminate)
- Delicious (77- I) One of the early standard setters, selected from Beefsteak
- Mortgage Lifter (90-I) This is a wonderful firm pink/red beefsteak...great flavor...great story!
- Red Brandywine (90-I) Scarlet red, rounded, gourmet version of Brandywine!
- Cosmonaut Volkov (72-I) Round, slightly flattened red fruits; can weigh up to 2 lb.

PINKS

- Brandywine - OTV Strain (78-I) The fruits are a rich pink/red with an orange undertone; 12 to 16 oz.
- Cherokee Purple (80-I) Bears 10 to 12 oz. dusky rose/purple fruits that are delicate and a true taste treat. Vines should not be pruned as the delicate fruits sunburn easily.
- German Johnson (pink) (70-I) Deep pink, rich-tasting, medium sized tomato; large yields.

BI-COLORS and GOLD

- Earl of Edgecombe (golden) (73-I) The round fruits are firm, absolutely smooth and defect free.
- Hillbilly (yellow/red) (85-I) Large beefsteak type fruits average from 1 to 2#! Unique orange and yellow flesh streaked with red and pink.
- Pineapple (85-I) Unique red and yellow striped huge fruits

BLACKS

- Black Brandywine (80-I) Large, oval, well-formed fruits are DARK, almost black.
- Black Krim (80-I) This is a medium sized slicer, with dark maroon to black flesh and distinctive green-black shoulders!
- Black Prince (70-I) Garnet-red outside and red to chestnut-brown on the inside

CHERRIES

- Broad Ripple Yellow (75-I) A VERY prolific plant, bearing hundreds of 1/2" round, incredibly tasty pale yellow fruits.
- Matt's Wild Cherry (60-I) Incredibly high sugar content gives this little cherry tomato a wallop of flavor!
- Tommy Toe (70-I) Hundreds of apricot-sized bright red fruits per plant, Very sturdy plants are disease resistant

PASTE

- Amish Paste (74-I) Averages 7 to 8 ozs.
- Corne de Bouc (mid) 5 inches long, fat sausage shape and intensely red/orange.
- Hogheart (75-I) These are huge, often 12 oz!
- San Marzano (80-I) Rectangular pear shaped, red, meaty, and averaging 3 1/2 inches.

- adapted from an article by Amy LeBlanc, Whitehill Farm, East Wilton, ME in the 2003 New England Vegetable and Berry Conference Proceedings

Vegetable Notes is a publication of the University of Massachusetts Extension Vegetable Program which provides research-based information on integrated management of soils, crops, pests, and marketing on Massachusetts farms.

For more information about the Vegetable Team's research and UMass Extension programs, visit our website at www.umassvegetable.org or call Ruth Hazzard at 413-545-3696.