UMASS EXTENSION

VEGETABLE IPM MESSAGE

SEPTEMBER 12, 2002 VOLUME 13, NUMBER 20

CROP CONDITIONS

Summer crops (tomatoes, peppers, summer squash, eggplant, and lettuce) are still being harvested, while the harvest of fall crops (potato, winter squash, and pumpkin) is in full swing. Please see the table on post harvest handling and storage, on Page 7. Processing peppers are starting to be harvested as the cucumber season winds down. Sweet corn is also winding down, with >85% of the crop reported to be harvested. Potatoes are reported to be 45% harvested (NASS Crop Weather, 9/9/02). It's a busy time, with disking and preparing fields for the winter tucked in between harvests. Groups of school children, visiting farms to see firsthand what's behind the food they eat, are an additional 'crop' that many farmers are busy tending in the fall season. Nights are dipping into the forties, which means that winter squash begins to accumulate **chilling injury** and fruiting crops show signs of chilling (e.g., darkened areas on peppers). **Flea beetles** are finally leaving brassicas alone, except for some new plantings in fields near earlier brassicas. However, keep watching for **caterpillars** in late brassicas; they may slow down, but can still do damage.

This is in final weekly IPM newsletter of the season. As always, we hope that the information has helped you maintain high quality crops and sustain a successful cropping season. Within the next few weeks you will be receiving a brief survey about this newsletter. Please let us now how we're doing and how this newsletter has impacted your farm!

-R. Hazzard & S. DeGray

THANK YOU TO OUR CONTRIBUTORS

This newsletter is the outcome of the contributions of many people around the state and around the region. We'd like to thank all those who contribute field information, articles, questions, or who write other newsletters that we use as resources. We especially thank growers who have taken the time to send us information, and those who ask questions! Below is a list of people and groups who have contributed this season. Many thanks!

Weekly Field Reports: Eileen Atmore-Droescher, Jim Golonka, Dale Riggs, Dave Dumaresq, David Rose, Matt Rulevich, Jeremy Barker-Plotkin.

UMass Extension Agroecology Program (articles): Rich Bonanno, Anne Carter, William Coli, Craig Hollingsworth, John Howell, Frank Mangan, and Robert Wick.

Other organizations: David Rose (USDA Farm Services Agency), Jonathan Bates (MARS), Dominc Marini (NEVBGA), Department of Environmental Management (DEM), United States Geological Survey (USGS), The MA Drought Management Task Force, and Eric Sideman (MOFGA).

Weekly Corn Data: David Dumaresq, Amanda Duphilly, Jim Golonka, Bruce Howden, Jim Mussoni, Ray Pestle, Dale Riggs, David Rose, Matt Rulevich, Pamela Westgate, and Paul Willard.

Weather Data & TOM-CAST: Tim Andenmatten, Joe Bergman, and Stephanie DeGray.

Newsletters: New England Agricultural Statistics Service Crop Weather Report; New England Vegetable & Berry Growers Association; Lake Plains Pest Minder Weekly; Ontario, Wayne, Yates & Steuben Counties Weekly Vegetable Update, Vegetable IPM News, and Vegetable Pest Status Report, and Western New York Sweet Corn Pheromone Trap Network (Cornell Cooperative Extension); Pennsylvania State Cooperative Extension; Purdue University Cooperative Extension Service Vegetable Crops Hotline; Rutgers Cooperation Extension at the New Jersey Agricultural Experiment Station: Plant & Pest Advisory Edition, and their Organic Farming Edition; University of Vermont Extension; Vermont Vegetable & Berry News.

I would also like to extend thanks to the Assistant Editor, Stephanie DeGray, who has contributed to the quality and consistency of this newsletter with her tireless efforts. She has maintained our mailing lists, researched and edited articles, contacted contributors, processed weather data for TOM-CAST, collated corn data, printed, folded, and mailed every issue, uploaded data to the sweet corn website, and done endless other jobs that make this work. Many thanks, Stephanie!

-R. Hazzard

PUMPKIN AND WINTER SQUASH HARVEST AND STORAGE

Winter squash and sugar pumpkin harvest is well underway. In many fields, full-sized pumpkins have matured and are ready for harvest. Fruit may need to be held for several weeks before it can be marketed. There can be extra work involved in bringing fruit in early, especially for growers who normally have pick-your-own harvest, but we recommend that growers harvest as soon as crops are mature and store under proper conditions, if it is feasible. With the bouts of heat and intense sun of the past few weeks, sunscald may be a problem in some varieties of winter squash. At the same time, nights below 50 contribute to chilling injury of winter squash.

Attention To Curing And Handling will go a long way toward improving the life of winter squash and pumpkin fruit. In fields where pumpkins are turning orange, it is worthwhile to cut and windrow the pumpkins and bring them in out of the field. This will allow the handles to cure and will protect fruit from insects, vertebrate pests, and diseases. Pumpkins are not marketable if the handle is broken off or dried up. If you need to leave pumpkins in field for pick-your-own, cut the handles from the vine to save them from advancing **powdery mildew** and reduce shrinkage.

Curing Pumpkins: As long as pumpkins are starting to turn color, they will ripen off the vine. If necessary, pumpkins can be ripened in a well-ventilated barn or greenhouse. The best temperatures for ripening are in the seventies or even low eighties during the day. Night temperatures should not drop below the sixties. In a greenhouse, temperature can be managed with ventilation on sunny days. Unless it is quite cool, heat is not likely to be needed if the house is closed up at night.

Holding In The Field: Often it is not feasible to harvest pumpkins early and store them until they can be marketed, and so they must be 'stored' in the field. If vines are healthy, storage in the field can be successful for a few weeks. If the vines die back, damage to the fruit from sun and insects is more likely. In any case, it is important to scout for insects feeding on the fruit, which may include **squash bug nymphs** or **adults**, or **striped cucumber beetle**. Control them if damage is evident. In fields that have a history of **Phytophthora blight**, **Fusarium fruit rot**, or **black rot**, field storage may increase the incidence of these problems, particularly if we have a period of wet weather or a major storm. This has been one of the causes of significant losses in recent years, and one reason that we recommend bringing fruit in as soon as it is mature.

Winter Squash Harvest: Fruit that are free from disease and haven't been subject to much chilling (below 50° F) should be selected for long-term storage. Sorting fruit in this manner requires extra labor and may not be economical, but it should not be too difficult to separate bins of squash according to

good and poor fields or areas of fields. Fruit from fields where Phythophthora is present are not the best choice for storage.

Storage life depends on the condition of the crop when it comes in and your ability to provide careful handling and a proper storage environment. All fruit placed in storage should be free of disease, decay, insects, and unhealed wounds. When harvesting squash and pumpkins, it is important to handle the fruit with care to avoid bruising or cutting the skin. Despite its tough appearance, squash and pumpkin fruit are easily damaged. The rind is the fruit's only source of protection. Once that rind is bruised or punctured, decay organisms will invade and quickly break it down. Place fruit gently in containers, on pallets or in pallet boxes.

Curing Winter Squash: A period of curing is important for extended storage life. This may be done in windrows in the field - especially with a series of warm, dry days - or by placing squash in a warm dry atmosphere (70-80° F) such as a greenhouse for up to two weeks. This pre-storage treatment permits rapid drying of the outer cell layers, and when combined with a dry atmosphere for storage inhibits infections that can take place at this time. Removal of the stem from squash (butternut, Hubbard, etc.) will also decrease the amount of fruit spoilage because the stems frequently puncture adjacent fruit, facilitating infection. Furthermore, any clean cuts during the curing period often heal over and are no longer a source for injury or infection.

Chilling Injury: Take care to avoid subjecting squash to chilling injury. Chilling hours accumulate when squash is exposed to temperatures below 50° F in the field and in storage. Injury increases as temperature decreases and/or length of chilling time increases. Chilling injury is of particular concern with squash intended for storage because it increases the likelihood of breakdown.

After Curing: Move squash or pumpkins to a dry, well-ventilated storage area. Pressure bruises can also reduce storage life, so avoid rough handling, tight packing, or piling fruit too high. Fruit temperature should be kept as close to the temperature of the air as possible to avoid condensation, which can lead to rot. Ideally, the storage environment should be kept at 55° F with a relative humidity of 50-70%. Anne Carter's studies of stored butternut squash found that 55 to 60 degrees improved storage life. Low relative humidity increases water loss, resulting in reduced weight, and if excessive, shriveling of fruit. High relative humidity provides a favorable environment for fungal and bacterial decay organisms. Under the right conditions, disease-free pumpkins or butternut squash fruit should have a storage life of 8-12 weeks or more. Even if it is difficult to provide the ideal conditions, storage in a shady, dry location, with fruit off the ground or the floor, is preferable to leaving fruit out in the field.

--John Howell, R. Hazzard; with information from Liz Maynard of Purdue Univesrity

FALL WEED MANAGEMENT ADVICE

Weed management is still important at the end of the season. There are three main activities that need to be completed. They are: fall field scouting, preventing weed seed production, and controlling perennial weeds.

End Of Year Weed Scouting: It is worthwhile to take the time to check fields for weed problems at this time of year. A quick scouting can identify problems that will be expensive to solve if they get out of control and can provide clues that will help in designing a weed management program for next year. Mapping weedy spots, and keeping some kind of permanent record of weed surveys, can help you evaluate your weed management over the years. Make a map of each field and fill in the following information:

How Many? How Dense Are The Weeds?: If weeds are very dense, they may be having an impact on yields. This is especially true if these weeds emerged early in the season, when competition is greatest. If weeds were actively growing during the period of greatest crop growth, consider changing the weed management program.

Which Weeds?: Identifying weeds can help identify potential problems before they get out of hand, and can help you decide if you need to modify your weed control program. Weeds like yellow nutsedge, hedge bindweed, and quackgrass are

spreading perennials, which have underground parts that enable them to spread throughout whole fields. Because these weeds can be very damaging, and are very difficult to control, they are worth "nipping in the bud." In addition, keep an eye out for annual weeds, which are new to a field or are increasing in numbers. Some weeds can be very difficult to control in some or all of the crops in your rotation. Galinsoga, for example, is hard to control in cole crops, peppers, and squash. Nightshades are difficult to control in tomatoes for growers who rely on herbicides for control, because they are in the same family as tomatoes. Velvetleaf is hard to control in sweet corn.

What Worked?: It is also useful to look at the whole field and evaluate the effectiveness of your weed control efforts. If some weeds are generally escaping, identify them. They may point to weaknesses in your herbicide or cultivation program. If mostly grasses, or mostly broadleaves are escaping, it may require an adjustment of either the rates or the timing of grass or broadleaf herbicides. You may also find the *New England Vegetable Management Guide* useful. This manual contains a chart listing the effectiveness of vegetable herbicides on most of the common weeds in New England. Use this guide to find an herbicide labeled for your crop that might give better control than the one that was used.

Where Are The Weeds?: Weeds in the rows or planting holes are much more damaging to crop yields than between-row weeds. Weeds in rows may be an indication that cultivation equipment needs adjustment, or cultivation needs to be done earlier.

Preventing Weed Seed Production: Annual weeds produce incredible amounts of seeds. Annual grasses normally produce 3000 to 5000 seeds per plant, small seeded annual weeds such as pigweed and lambsquarters can produce 100,000 to 250,000 seeds per plant, and larger-seeded broadleaf weeds such as velvetleaf and smartweed can produce 5,000 or more seeds per plant. Perennial weeds can also produce seeds or other reproductive structures. For example, one yellow nutsedge plant can produce 2000 tubers. Perennial weed management is covered below.

Once fields are harvested, they should be tilled or disked as soon as possible to prevent seeds from maturing. Be especially concerned with weeds that are new to a field or are in abundant supply. If time is short, one alternative is to mow the weeds. This will remove the primary seed stalk but will also encourage lateral branching. Eventually, however, these branches will produce seeds and must be destroyed.

Perennial Weed Management: The best time to control perennial weeds is in the Fall. All perennial weeds have storage structures (tap roots or rhizomes) below ground that enable these plants to survive winter and regenerate themselves the following year. Fall tillage of perennial weeds will kill top growth and fragment the storage organs but will not kill the weed. Frequent tillage will, over a long period of time, control perennial weeds but, in most cases, this is not practical.

Perhaps the best control technique for perennial weeds is an application of glyphosate (Roundup) before the plant goes dormant. Perennial broadleaf weeds such as bindweed or dandelion should be sprayed while they are still actively growing which is usually before a hard frost. Perennial grasses, such as quackgrass, can be sprayed as late as mid-November. Use 10 to 20 gallons of water per acre when spraying Roundup. Two quarts of the herbicide will provide much better control at 10 gallons of water per acre than at 40 gallons of water per acre. Spraying on a mild afternoon following a cold or cool morning is best to encourage translocation of the herbicide to the belowground storage structures. Disking or tilling two weeks after application will also improve control of the weeds.

Many growers fight perennial weeds such as quackgrass in cornfields year after year because their primary goal in the Fall is to plant a cover crop. This is usually followed by a Spring application of Roundup, which provides top kill but does not kill the whole weed. Applying Roundup at the proper time is the only way to achieve good control. Delaying the seeding of a cover crop may be a necessary evil in the fight against perennial weeds. In conclusion remember to

scout and map your fields, prevent weed seed production, and apply Roundup at the right time to control perennial weeds.

--Rich Bonanno, UMass Extension

CONFERENCE ON ECOLABELS AND THE GREENING OF THE FOOD MARKET

Date: November 7-9, 2002 in Boston, MA.

Conference Organizers: The Gerald J. & Dorothy R. Friedman School of Nutrition Science & Policy at Tufts University. Co-Sponsors: Economic Research Service, U.S. Department of Agriculture Agricultural Marketing Service, U.S. Department of Agriculture.

Background: Ecolabels' Potential and Problems: In recent years there has been a proliferation of labels that are intended to convey that foods have been produced in a socially and environmentally preferable way. These "ecolabels" variously apply to areas such as consumption of renewable resources; soil, air and water pollution; biodiversity and wildlife; farm animal welfare; and social justice and equity. One especially important one ("organic") will be governed by the USDA starting in October 2002 (just two weeks before the conference). Many involve independent third-party certification, but others don't, and it is not clear how confident consumers can be in those. The rationale behind ecolabels is admirable. However, with their rapid growth have come several important questions: How credible are they? How can one distinguish those motivated by bona fide environmental concern from those that are just a marketing ploy? Do consumers understand what they do and do not mean, or are they imposing "information overload"? Which ones are most successful in gaining consumers' confidence and support, and why? How much of a marketing advantage do they give to American products in the global food market? Do they reinforce each other in "greening" the food market, or are they in competition, with the more valuable and legitimate ones at risk of losing out to the more dubious ones? How have small-volume ecolabeled products fared in today's food retailing environment, which favors larger suppliers who can better afford to pay slotting fees?

Further Information: If you would like a more detailed program with registration information, please contact the Conference Chair, Willie Lockeretz, School Of Nutrition Science & Policy at Tufts University.

NEVGBA WINTER MEETINGS

Mark your calendar for the dates and locations of the four winter vegetable meetings! These programs are co-sponsored by New England Vegetable and Berry Growers Association and UMass Extension. There are a couple of changes in dates and locations for this coming year, see below. The exact programs listed are tentative and subject to change; watch for further announcements on program details in future newsletters. For info call Dominic Marini at (508) 378-2546.

Saturday, November 9, Portsmouth NH. Program may include: Fertilizer Calibration, Vegetable Variety Trials, Windbreaks, Row Covers, New Weed Control Equipment, Bacterial Leaf Spot in Peppers, Greenhouse Bio-Control in Tomatoes and Bedding Plants, New Greenhouse Designs.

Saturday, December 7, Southeastern Massachusetts. A Mini Trade Show will accompany the program, which may include: Specialty Crops Grant Report, an Herbicide Update, Fertilizers, High Tunnels, Pesticide Certification, Reducing Field Sprays, Cultivation after Herbicide Application, How to Use the Veg., Small Fruit, and Flower Guides. **Location to be announced.**

Tuesday, January 7, Sturbridge, MA. For the first time, **this meeting will be associated with the annual Tree Fruit meeting and trade show in Sturbridge**, which is sponsored by the New England Fruit Growers Association and the UMass Extension Fruit Program . Program may include Strawberries on Plastic Mulch, Strawberry Black Rot Research Report, Rhizosphere Bacteria on Strawberries, Sandea on Pumpkins, Raspberries Grown in Containers, New Sweet Corn Varieties, and Precision Greenhouse Seeders.

Saturday, February 1, Waltham. Commercial Members Day-Trade Show. Program may include Specialty Crops Grant Reports, Fences & Deer, Coyotes and People, Update on Curcurbit Diseases, Insecticide & Fungicide Updates, New Weed Killers and How they are Working.

INDIAN CORN: HARVESTING AND HANDLING INDIAN CORN

This is information from a University of Kentucky Cooperative Extension Publication, ***"Ornamental Corn Production in Kentucky",*** *Terry Jones, John Strang, Brent Rowell, Ric Bessin, Bill Nesmith, Steve Isaacs, Extension Specialists, and William Witt, Professor of Agronomy, University of Kentucky. Contact Alan Erb at (716) 652-5400 ext. 139 for a copy of this fact sheet. Thanks to Pestminder,CCE Lake Plains Veg. Program, for this article.*

Ornamental corn must be harvested by hand when the husk is dry. When ears of ornamental corn have lost their green color and begin to dry down, they have reached full maturity. If warm, dry weather is expected, the ears may be left on the plants until sales are expected. To harvest, break off ears with a quick downward motion. Be careful not to damage the ear or husk attached to it. Pick ears carefully so that the kernels are not damaged. Spread the ears out to dry in a shallow pile where there is good air circulation and under cover if the weather has been damp. Pull the husk back if it is not completely dry at harvest. Be careful not to tear the husks because they contribute to the value of the ears. The husk and ear may become moldy if they are not handled properly. Pulling the husk back allows slightly damp husks and ears to dry quickly. When husks and ears are dry, tie the ears together with twine or rubber bands in bunches of two or three around the base of the ears and allow them to dry in a warm, dark, airy place. If husks are too dry, they tend to pull off or break easily from the ears, decreasing their value. Should this occur, wait for a humid or rainy day to prepare the ears for sale. DO NOT box or bag ears when they are first harvested or they may mold. Mold may occur on both the husk and ear if proper handling and storage techniques are not used. Ears Accumulated Growing Degree Days (G.D.D.) can be used for ornamental purposes after a week of drying. During and after drying, ornamental corn may be stored in open wooden apple or cabbage bins. Growers with small quantities often suspend the ears in cabbage or onion sacks in a dry location until time for marketing. The ears are usually sold in groups of three. The three ears are held together with rubber bands, wire twists, or with a plastic sleeve similar to that used for dried flower arrangements.

POSTHARVEST HANDLING OF VEGETABLE CROPS

From the New England Extension Food Safety Consortium.

	Temperature °F	°C	Relative Humidity (%)	Approximate Storage Life
Asparagus	32-35	0-2	95-100	2-3 weeks
Beans, snap or green	40-45	4-7	95	7-10 days
Beets, bunched	32	0	98-100	10-14 days
Beets, topped	32	0	98-100	3-5 months
Broccoli	32	0	95-100	10-14 days
Brussels sprouts	32	0	99-95	3-4 weeks
Cabbage, early	32	0	99-98	3-6 weeks
Cabbage, late	32-36	0-2	90-98	5 months
Cabbage, Chinese	32	0	95-100	2-3 months
Carrots, bunched	32	0	95-100	2 weeks
Carrots, mature	32	0	95-100	7-9 months
Cauliflower	32-35	0-2	95-98	3-4 weeks
Celery	32	0	95-100	5-7 weeks
Chard	32	0	95-100	10-14 days
Corn, sweet	32	0	95-98	5-10 days
Cucumbers	50-55	10-13	95	10-14 days
Eggplants	45-54	7-12	90-95	1-2 weeks
Garlic	32	0	65-70	4-5 months
Greens, leafy	32	0	95-100	10-14 days
Kale	32	0	90-95	10-14 days
Kohlrabi	32	0	98-100	2-3 months
Leeks	32	0	95-100	2-3 months
Lettuce	32-36	0-2	85-90	2-3 weeks
Melons				
Muskmelon (full-slip)	32-36	0-2	95	5-14 days
Honey Dew	45	7	90-95	3 weeks
Watermelons	50-60	10-15	90	2-3 weeks
Onion, green	32	0	95-100	3-4 weeks
Onion, dry[1]	32	0	65-70	1-8 months
Parsnips	32	0	98-100	4-6 months
Peas, green	32	0	95-98	1-2 weeks
Peppers, bell	45	7	95	2-3 weeks
Potatoes, early[2]	40-42	4-5	90-95	4-5 months
Potatoes, late[3]	38-40	3-4	90-95	5-8 months
Pumpkins[4]	50-55	10-13	50-70	1-2 months
Radishes	32	0	95-100	2-4 weeks
Rhubarb	32	0	95-100	2-4 weeks
Rutabagas and Turnips	32-35	0-2	95-100	4-6 months
Spinach	32	0	95-100	10-14 days
Squashes, summer	41-50	5-10	95	7-14 days
Squashes, winter[4]	50	10	50-70	2-3 months
Tomatoes	46-50	8-10	90-95	8-10 days

[1] After field curing for 7-14 days at 70-80° F (21-27° C) or forced-air curing for 1-2 days at 90-95° F (32-35° C).
[2] If disease and bruise free and cured for 8 days at 60-65° F (15-18° C).
[3] After curing for 10-14 days at 50-60° F (10-15.5° C).
[4] If stored for more than 1 month, cure pumpkins for 7-10 days at 80-85° F (27-29° C).
[5] After Curing for 10-20days at 75-80 °F (24-27°C).

Sources: The Commercial Storage or Fruits, Vegetables, and Florist and Nursery Stocks, USDA Handbook #66, 1986; Vegetable Crops, Dennis R. Decoteau, Prentice Hall Publishers, 2000; Postharvest Technology Research and Information Center, Department of Pomology, University of

California-Davis.

SWEET CORN

Corn earworm seems to be making another sweep up into New England, arriving on the latest weather front. Counts are variable within regions, but highest numbers are mostly in the traps checked most recently. Growers are reporting that their trap counts are primarily live moths that arrived in the past few nights. Still River and Sharon trap counts are for the past four nights. So, for those farmers with late-season corn that still is in fresh silk and more than a week away from harvest, it's not quite time to put away the sprayer yet (or your Zealater). With the cooler weather, add a day onto your spray intervals – go to five or six day intervals depending on trap counts. Both corn and worms will mature more slowly with cooler nights.

Sweet Corn Trap Captures September 6 - 12, 2002

Town	Date	ECB Z1	ECB E2	TOTAL ECB	CEW	FAW
		Iowa	New York			
Conn. River Valley North to South						
South Deerfield	September 12	4	63	67	21	3
Hatfield	September 12	1	3	4	8	-
Feeding Hills	September 11	0	0	0	5	0
East/Central MA, North to South						
North Andover	September 6*	0	4	4	10	0
Ipswich	September 12	0	2	2	18	0
Dracut	September 11	3	6	9	3	-
Still River	September 11	0	0	0	80	-
Concord	September 9	0	6	6	9	1
Leicester	September 10	1	1	2	2	1
Northbridge	September 10	1	0	1	2	0
Belchertown	September 12	0	0	0	6	3
Dighton	September 12	0	4	4	58	-
Sharon	September 12	0	0	0	33	4

Abbreviations:
ECB Z1: European corn borer Z (Iowa, I) strain.
ECB E: European corn borer, E (New York, 2) strain.
CEW: Corn earworm; FAW: fall armyworm. * From last week.

European corn borer flight is virtually over. The exception is the research farm in South Deerfield, where increases suggest a partial third flight. **Pepper growers** can rest easy – no more sprays should be needed. We can expect that sweet corn will continue to have ECB in ears if it was not controlled earlier at the tassel stage or during silking. However, new infestations of crops are about over. European corn borers over winter as full-grown larvae inside stalks of host plants. Chopping corn residue or disking thoroughly before winter will help reduce the survival of larvae over the winter.

Fall armyworm trap counts are lower this week. Sprays for corn earworm should clean these up.

Visit the regional sweet corn website to see graphs of moth counts for the entire season, from the mid-Atlantic states to Maine at: http://pestwatch.cas.psu.edu/SC/default.html.

CORN EARWORM THRESHOLDS

Note: Spray intervals can be lengthened by one day if daily maximum temperatures were below 80° F for the previous 2-3 days.

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	No spray
0.2 -0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 - 7	5 days
1.0 - 13.0	7 - 91	4 days
Over 13	Over 91	3 days

Vegetable IPM Newsletter, Ruth Hazzard, Editor and Stephanie DeGray, Assistant Editor. The Vegetable IPM Newsletter is published weekly from May to September and includes contributions from the faculty and staff of the UMass Extension Vegetable Program, other universities and USDA agencies, growers, and private IPM consultants. Authors of articles are noted; author is R. Hazzard if none is cited.

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