UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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IN THIS ISSUE:

CROP CONDITIONS

The transition from 'spring' to 'summer' vegetable crops was ushered in this week with harvests of early broccoli, kohlrabi, summer squash, radishes, peas, lettuce, chard, many kinds of Brassica greens, and scallions, along with the first full week of strawberry picking. Heat has been punctuated with thunderstorms. Earliest corn is beginning to tassel and first European corn borer hatch is expected this week. Garlic is producing scapes. CSA pickups have started around the state, and farmer's markets are busy. Pumpkin and winter squash crops are popping out of the ground and getting off to a good start. No late blight has been reported in NJ, NY or New England -- but continue to look for potato volunteers and inform customers and farmer friends about what to look for. Keep an eye out for cucumber beetles, potato leafhopper, flea beetles, Colorado potato beetle, thrips, and cabbage caterpillars.

MEXICAN BEAN BEETLE: PLAN AHEAD FOR EFFECTIVE BIOLOGICAL CONTROL

If Mexican bean beetles have historically been a problem on your farm, you will very likely see them again this year. They may be pests on snap beans, soybeans, and lima beans. While they are not a pest on every farm, some farms report significant damage from these pests and have to take action to prevent crop loss. Using biological control can reduce the need for insecticides.

Mexican bean beetle (MBB) adults are coppery brown with black spots. They look very much like large ladybeetles and in fact are closely related – but unlike lady beetles they feed on leaves, not other insects. Adults lay yellow-orange egg masses on the underside of bean leaves. These hatch into bright yellow, spiny oval larvae, which feed, molt several times as they grow, and pupate on the underside of leaves. Feeding damage from adults and larvae can reduce yield and injure pods if numbers are high. There are several generations per season, often with increasing populations in each generation.

Pediobius foveolatus is a commercially available biological control agent for Mexican bean beetle control and has a good track record in the mid-Atlantic states and among New England growers who have tried it. (Pediobius is pronounced "pee-dee-OH-bee-us"). It is mass-reared and sold by the New Jersey Dept of Agriculture and is also available from other beneficial insect suppliers. This small (1-3 mm), non-stinging parasitic wasp lays its eggs in Mexican bean beetle larvae. Wasp larvae feed inside the MBB larva, kill it, and pupate inside it, forming a brownish case or 'mummy'. About twenty five adult wasps emerge from one mummy. Control continues and in fact gets better as the season progresses and successive generations of the wasp emerge and search out new bean beetle larvae. Planning 2-3 releases at 7-10 day intervals will help ensure good timing. and coverage on several plantings. This makes it well suited to our succession-planted snap bean crops. After a release in the first plants, it is advisable to leave that planting intact for a while, until the new generation of wasps has emerged from their mummies.

As with any biological control, make releases as soon as the pest is present – not after it has built up to damaging numbers. The New Jersey Dept of Agriculture Beneficial Insect Rearing Laboratory recommends two releases, two weeks in a row, coinciding with the beginning of Mexican bean beetle egg hatch. Wasps will lay their eggs in larvae of any size, but it is best to target the newly-hatched young MBB larvae. This will give control before damage has been done. Thus, timing is

important. Watch for eggs and time the shipment for the first hatch of eggs into larvae. If in doubt about the timing of the hatch, release as soon as you see the eggs – if you wait for the larvae you may be playing catch-up.

The release rate should be at least 2000 adult wasps per field for less than an acre, or 3,000 per acre for fields of one acre or more. The 2009 cost from NJDA is $40 plus shipping for 1000 adults, or $20 for 20 mummies (pupal parasites inside dead MBB larvae) from which about 500 adults will emerge. Order adults if you already have MBB larvae in the field. Ship for overnight delivery. Instructions for handling and release will come with the wasps.

Wasps reproduce in the field and will still be around when the second generation of MBB hatches out. Thus, it should not be necessary to make more than two releases. Like beans, Pediobius wasps are killed by frost.

Plan ahead by contacting a supplier to inform them of your expected release dates and acreage. Contact information for New Jersey source: Tom Dorsey, 609-530-4192; address; NJDA, Phillip Alampi Insect Lab, State Police Drive, W. Trenton, NJ 08628. http://nj.gov/agriculture/divisions/pi/prog/beneficialinsect.html. Pediobius is also available from the following suppliers: Green Spot Ltd., NH., www.greenmethods.com 603-942-8925; IPM Laboratories, NY 315-497-2063; ARBICO, 800 -827-2847 (AZ), http://www.arbico.com/; Network (TN), 615-370-4301, http://www.biconet.com/.

If you would like assistance in using these biocontrols in your bean crops please call the UMass Extension Vegetable Program at 413-577-3976 or 413-545-3696 or email at umassveg@umext.edu.

--R. Hazzard

CHECKLIST FOR LATE BLIGHT MANAGEMENT JUNE-AUGUST

Note: The following checklist is written specifically for potatoes, but many items also apply to tomato.

JUNE

Check rock piles and compost piles for potato plants. Some potato tubers may have survived the winter in rock piles gathered from potato fields the previous year. They can also survive in compost piles that don't heat well. Find and eliminate any volunteer potato plants.

Calibrate and maintain sprayer. Before the first fungicide application, check nozzles for uniform operation and recalibrate the sprayer for the correct application rate (see page 32, New England Vegetable Management Guide - available free at www.nevegetable.org).

Check areas of wet soil. With late blight infected seed, the pathogen may grow up the stem and subsequently spread to the rest of the field.

Check for volunteer potatoes. If deep snow protected fields during the past winter, check for volunteers where potatoes were planted last year. If volunteers are a concern, plant alternate crops late to allow tillage of emerged potato plants. Choose rotation crops so an herbicide effective on volunteer potatoes may be used.

Remove inoculum; disk up or kill vines immediately. If late blight infected areas or fields are discovered early in the season, remove them to avoid the rapid increase of the infected area.

Identify or help neighbors identify late blight infections in fields. Early identification of late blight is critical. Walk fields paying close attention to the wet areas. At this time, late blight infections easily can be missed. It is especially important to inspect wet areas and have suspicious plants identified.

Get late blight updates. Check Vegetable Notes, visit the web site NEWA website, or ask a neighbor that does either of these, but get the information.

Band spray early when cultivating. This is an add-on spray. Band spraying will not replace a broadcast application if called for by the forecasting models.

JULY AND AUGUST

Make the final hill big, after the set has been established. This will place more soil over the tubers. Shallow tubers are

more susceptible to infection by the late blight pathogen.

Use protectant products regularly. Chlorothalonil or EBDC products are the backbone of late blight protection program. Regular applications as recommended by the forecasting models are needed. Maintaining protection on new growth is a critical part of late blight control.

Keep new foliage covered. Infections can occur on the new growth of the potato plant especially where this portion of the plant can outgrow the protection in a matter of days. This is especially critical during June and early July. Application frequency is the key to protecting new growth.

Optimize spray equipment. Use adequate water and pressure to cover plants. By the end of July, there can be up to four times more foliage than ground area. Use more water now than earlier in the season and be certain all nozzles are within operational tolerance.

Raise booms as the crop grows. Operate booms at the proper height. Late blight usually starts in the tops of plants that were missed or outgrew the fungicide.

Beware of irrigation when late blight is present. Irrigation can fill the humidity gaps and aggravate blight situations. Heavy irrigation can carry spores down to tubers.

- Adapted From University of Maine Extension Potato Program, Revised by Steven B. Johnson, Ph.D., Originally Developed by Leigh Morrow

LATE BLIGHT FORECASTING

The first appearance of late blight (caused by *Phytophthora infestans*), and periods of late blight favorable weather can be "predicted" using relative humidity, rainfall and temperature data collected from an electronic weather monitor or a hygrothermograph. The weather data is converted into units called "severity values" (SV) for the purpose of predicting late blight outbreaks (see Table 1).

	Hours of RH > 90%						
Average Temp. Range F*	0-9	10-12	13-15	16-18	19-21	22-24	25 +
45-53	0	0	0	1	2	3	4
52-59	0	0	1	2	3	4	4
59-80	0	1	2	3	4	4	4

Above 80°F No severity values accumulate

* Average temperature during period of relative humidity (RH) of 90% or greater

Table 1. Severity Value Accumulation Using Wallin's System of Forecasting Late Blight

Late blight is first expected to appear within 1-2 weeks after 18 SV have accumulated since the emergence of green tissue from the source of late blight inoculum. The source of inoculum could be plants growing from infected tubers in a cull pile, volunteers growing from infected tubers that survived the winter, or infected seed tubers. Fungicide applications to protect potatoes and tomatoes should be initiated as soon as possible after 18 SV have accumulated. To date, no late blight has been reported in New England and all areas of Massachussetts for which we have data have accumulated less than 18 severity values. Cornell pathologists are currently recommending that growers in NY begin a spray program using protectant fungicides such as chlorothalonil or mancozeb. Although a conservative approach to fungicide spraying is wise this year, Maine potato growers have relied on this forecasting system for many years even when late blight was present.

Once 18 SV have accumulated and the first fungicide has been applied, SV accumulations over a 7 day period, combined with the amount of rainfall during that period, can be used to estimate how favorable weather conditions have been for late blight spore production and infection. The recommended spray interval depends upon both of these factors; a 5-day

spray interval is recommended when conditions are highly favorable, and a 10-14 day interval is recommended when the risk of late blight is low.

Table 2 indicates the recommended spray intervals (from University of Maine Cooperative Extension Potato Program).

	Total severity values during last 7 days					
	<3	3	4	5	6	>6
Total rain/irrigation for past 10 days	Spray Interval for late blight control (in number of days)					
>1.2 inches	10-14	10	7	5	5	5
<1.2 inches	10-14	10-14	10	7	5	5

Table 2. Spray intervals based on severity values

Because weather conditions can vary depending on topography and altitude, the forecast information will be most accurate very close to the weather monitor. For locations that are not close to a weather monitor, forecast information should only be used as a *general indication* of how favorable weather has been for late blight. If the location of the station is more open or higher than your farm, periods of RH>90% are likely to be shorter and SV lower than would be appropriate for your farm.

UMass Extension has gained access to the NEWA weather monitoring and forecasting system, and you can look for a weather station close to your farm online at http://newa.cornell.edu/index.php?page=station-pages. We are currently collecting data from airports and from 4 UMass Extension weather stations. Additional stations will be rolled out over the next two years. To see the accumulation of late blight severity values in your area, click on the station closest to your farm. You will be directed to a page where you can choose to see the late blight forecast, as well as a number of other pest forecasts for that area.

If rain is forecast, be sure that all foliage has received a fungicide application within the last 7 days, especially if late blight has been found in the area. Late blight spores can be carried on storm fronts, and if large numbers of spores are deposited on unprotected tissue, a lot of infections can get started.

Irrigation can create late blight favorable conditions in a field that a weather monitor will not be taking into account. Irrigation that starts when the leaves are still wet from dew in the morning, or continues after dew has fallen at night will extend the wetting period for that day and must be taken into consideration when weekly severity value accumulations are calculated.

- Adapted from http://newa.cornell.edu by R. Hazzard and Andy Cavanagh

PRESIDIO FUNGICIDE REGISTERED FOR DRIP IRRIGATION

Valent U.S.A. Corporation has received EPA registration for use of Presidio® Fungicide in drip irrigation on cucurbits and fruiting vegetables. The fungicide is currently registered for foliar use in most states. California registration is expected this fall; New York registration is pending.

This new registered use gives growers another material for downy mildew and Phytophthora blight (caused by P. capsici) management. Using Presidio through drip irrigation provides another method of application that will protect cucurbits and fruiting vegetables. Presidio translocates through the plant for some level of systemic protection. Fungicide trials at NCSU showed Presidio providing some control of P. capsici; however, trials performed at Ohio State University showed no statistically significant differences in phytophthora blight between squash plots treated with Presidio and an untreated control. Better results have been reported in peppers. No fungicide program has been shown to be sufficiently effective to be the sole management strategy for phytophthora blight.

According to the manufacturer, Presidio has no known tank mix limitations with other fungicides or insecticides. Presidio can also be applied via sprinkler or used as a foliar treatment. As always, we are providing this information for education purposes only and no endorsement is implied or intended. Always read the label before using any pesticide.

MANAGING STRIPED CUCUMBER BEETLE IN VINE CROPS

Striped cucumber beetle is our most serious early-season pest in vine crops. These beetles spend the winter in plant debris in field edges, and with the onset of warm days and emergence of cucurbit crops, move rapidly into the field. Densities can be very high, especially in non-rotated fields or close to last year's cucurbit crops. Adult feeding on cotyledons and young leaves can cause stand reduction and delayed plant growth. The striped cucumber beetle vectors (*Erwinia tracheiphila*), the causal agent of bacterial wilt, and this can be more damaging than direct feeding injury. Crop rotation, transplants, and floating row cover are cultural controls that help reduce the impact of cucumber beetles. Perimeter trap cropping gives excellent control with dramatic reduction in pesticide use (see short article).

Avoid early season infection with wilt. Cucurbit plants at the cotyledon and first 1-4 leaf stage are more susceptible to infection with bacterial wilt than older plants.

Thresholds and foliar controls. Beetle numbers should be kept low, especially before the 5-leaf stage. Scout frequently (at least twice per week for two weeks after crop emergence) and treat after beetles colonize the field. Early spot treatments of field edges can be helpful. The threshold depends on the crop. To prevent bacterial wilt in highly susceptible crops, we recommend that beetles should not be allowed to exceed one beetle for every 2 plants. Less wilt-susceptible crops (butternut, most pumpkins) will tolerate 1 or two beetles per plant without yield losses. Spray within 24 hours after the threshold is reached. Proper timing is key. There are a number of broad spectrum insecticides which can be used for foliar control (including Capture 2EC, Decis 1.5EC, Thoinex 50W, Asana, and Sevin). See 2010-2011 New England Vegetable Management Guide for more details.

Organic insecticides. OMRI-list insecticides available for use in organic cucurbits include kaolin clay (Surround WP), pyrethrin (Pyganic Crop Spray 5.0 EC), and spinosad (Entrust). In 2009 spray trials comparing these three products at the UMass Research Farm, kaolin was the most effective in reducing beetle numbers and feeding damage. There was a trend toaward Surround WP being more effective when Pyganic or Entrust was mixed with it, but never significantly better than Surround alone. Other studies have shown more efficacy from pyrethrin and spinosad. Surround should be applied before beetles arrive because it acts as a repellent and protectant -- beetles do not "recognize" the plant and so do not feed -- not a contact poison. With direct-seeded crops, apply as soon as seedlings emerge if beetles are active. Transplants can be sprayed before setting out in the field.

Systemic controls. Two systemic neo-nicotinoid products, imidacloprid (Admire Pro) and thiamethoxam (Platinum), are registered for use in cucurbits. In New England, Platinum is labeled for use specifically for striped cucumber beetle only in MA and CT. These are systemic insecticides that may be used as an in-furrow, banded, drench, or drip irrigation application to the seed/seedling root zone during or after planting/transplanting operations. DO NOT apply as a foliar spray.

Using systemics in direct seeded crops. It is important to get the insecticide into the soil to avoid photochemical breakdown; placing it in the furrow or irrigating it in can accomplish this. One of the most efficient systems for an in-furrow treatment is to attach an injector to the planter for placement at the seed level after the furrow is opened and before the seed drops. This has the advantage of one trip through the field and very precise targeting of material. Where it is applied to the soil surface, it should be watered in with irrigation (or rainfall) to move it to root depth for seedlings.

Using systemics on transplants. The best time to treat is about 1 day prior to planting in the field. We have observed effective results at rates of 0.01 ml Admire Pro per plant. See label for application rates. Caution should be used because phytoxicity can occur at high rates. Note: there are 29.6 milliliters (ml) in one fluid oz.

Another way to apply imidacloprid to transplants is through a water wheel planter. Use the same rate per plant as you would for a transplant drench and the rate of water per plant that fits your planter (e.g. 8 oz). Multiply by the number of plants and mix the total insecticide needed with the total water needed in the tank. Make sure your workers wear protective ger including chemical resistant gloves and allow time for uptake (1+ days) into leaves Note that the highest rate of uptake will be into new growth.

Systemic seed treatments. New this year is the Farmore DI-400 seed treatment from Syngenta, which combines a systemic insecticide with three different fungicides in a seed treatment. We haven't tested it ourselves, but we've heard that results are good, with 20-25 days of SCB control and no reduction in germination or plant health. The price is relatively low, as the seed treatment adds about $2-$3 per 1,000 seeds. It's available on a limited number of varieties this year,

mostly pumpkins and winter squash, but demand is high so we'll likely see it on become available on a wider selection of vine crops & varieties next year.

Drip application. A drip system can be used for Admire or Platinum applications to either direct seeded or transplanted crops. Know your system well enough to know how long it will take to inject a given amount of concentrated solution (eg one bucketful) and to soak the area between emitters. Apply early enough to allow the plant roots and leaves to take up the material before beetles arrive. The system should be primed with water first, and the insecticide injected slowly for even distribution. Make sure to use enough water to soak the area between emitters. More emitters provide more even distribution of product.

Calculate the total needed based on the rate per 100 or 1000 ft of row and the number of row feet of line that will be treated. Place the total amount in the bucket with enough water for 20-30 minutes of injection. Charge the system with water first to get the soil wet. Turn on the Venturi or other injector, to inject slowly for even distribution (20 or 30 minutes). Then flush lines with clear water and to move product out and down.

Non-target effects. Bees are very susceptible to imidacloprid and thiamethoxam and could be affected by its presence in pollen if it is still at high levels in the plants at the time of flowering. Bees intoxicated by Admire or Platinum, like beetles, show unusual behaviors such as tremors, staggering, and falling over before dying. This could happen with bees at excessively high rates of these insecticides. The foliar formulation of imidacloprid (Provado)is not labeled for cucurbits, and the foliar formulation of thiamethoxam (Actara) has a label for cucurbits but may not be sprayed during bloom. Carbamates such as Sevin and synthetic pyrethroids should not be used during bloom to avoid killing bees. Given the high losses of hives over the past several years – which seems to be from multiple causes, only one of which is the pesticides used on crops that bees visit – taking precautions to protect both native and domestic bees is an especially important concern. Note that the 2010 edition of the New England Vegetable Management Guide gives rating for bee toxicity of insecticides in Table 20 (pg 49).

Resistance from overuse. The down side of systemic products might be that they are 'too easy'. That's not necessarily a bad thing for growers who are always too busy! However if these are overused on a routine basis, these products may well be lost to resistance in a fairly short time. Furthermore, they are not cheap. For a truly IPM approach, combine or alternate these materials with crop rotation, perimeter trap cropping, and field scouting followed by foliar sprays with other classes of insecticides to reduce the likelihood of resistance and keep use rates low. Perimeter trap cropping provides a large, untreated refuge which may delay resistance.

-Ruth Hazzard & Andrew Cavanagh, University of Massachusetts, updated for 2010.

PERIMETER TRAP CROPPING FOR VINE CROPS

Over the past years, you have probably have heard a lot from us about perimeter trap cropping to manage striped cucumber beetle in cucurbit crops. The system has proven itself as an effective, cost-saving method for managing this pest. Systemic or foliar insecticides in the trap crop border are effective in halting the beetles in the border and protecting the main crop.

PTC systems can reduce insecticide use by over 90% if implemented correctly, but this is not the only benefit. By spraying only the border of your crop you're leaving the main part of the field as a refuge for pollinators and natural enemies of insect pests. Leaving the main crop unsprayed may also help to delay the development of insecticide resistance in the striped cucumber beetles – a few beetles will always bypass the border, and thereby escape selection for resistance.

The first trap crop that we looked at was Blue Hubbard, but many growers told us that Blue Hubbard is difficult to market and other border trap crops were needed. We evaluated buttercup and kabocha squash as alternative border crops, and they worked just as well as Blue Hubbard. Markets for these crops are strong. Any *Cucurbita maxima* variety is likely to be very attractive. This species includes many giant and specialty pumpkin varieties; the only one we do not recommend as a border crop is Turk's Turban because unlike most *C. maxima* varieties it is highly susceptible to bacterial wilt which is vectored by the beetles. You can even plant a border of mixed *C. maxima* around your butternut squash, acorn squash, and other winter squashes that are *C. pepo*, or *C. moschata* types. This will provide you a wide variety of interesting squash to market. We've tested this system extensively and found that as long as the trap crop border is planted on

good land and remains intact the system works remarkably well. In most cases, growers who use this system never need to apply insecticides to their main butternut crop at all. In Connecticut, they've found the system to work equally well with cucumbers and summer squash. Zucchini tends to be more attractive than summer squash, and some varieties such are so attractive that they could be used as a trap crop. We've also seen PTC work well in pumpkin crops, as long as the pumpkins in the main crop are C. pepo and not C. maxima. Remember, many giant and specialty pumpkins are actually *C. maxima* species, and would make good trap crops.

On organic farms, growers often treat the main crop with kaolin clay (Surround WP) which serves as a repellent. For transplants, using this before planting is very efficient and lasts for a week or so if there are not heavy rains. Spinosad or pyrethrin could be used in the border.

Every year we talk to more growers who adopt this system. The reduction in pesticide costs can be dramatic, and more than offset the small amount of time and care it takes to plant and treat a solid perimeter trap crop. If you would like to try this system and have any questions, or just want to find out more about how it works, please call Andy Cavanagh at 413-577-3976.

SWEET CORN REPORT

The Vegetable Program received its first European corn borer trap counts this week. Although numbers are low (Hatfield reported 2 EII and 6 ZI, South Deerfield 2 EII and 3 ZI, Rehoboth 7 EII and 0ZI, Litchfield NH 19 EII and 0 ZI), it appears that we are on the rising curve of emerging adults and egg laying. The first releases of *Trichogramma ostrinea* were put out this week across the state just in time for the beginning of the first flight. We can assume that as long as flight is occurring, eggs are being laid. Eggs hatch in four to nine days depending on temperature.

If you do not have pheromone traps on your farm, another way to know if flight or hatch has begun is track accumulated growing degree days (GDD). Accumulated GDDs represent the heating units above a 50° F baseline temperature that have occurred each day from the beginning of the current calendar year. GDD are calculated by taking the average of the daily maximum and minimum temperatures compared to a baseline temperature of 50° F. For example if the maximum temperature for the day is 70° F and the minimum was 52° F giving you an average daily temperature of 61° F, your GDD accumulation for that day would be 11 (61° F-the baseline of 50° F). GDD area specific information is gathered by the UMass Extension Agriculture and Landscape program and can be found by linking to the weekly Landscape message at www.umassgreeninfo.org. It can also be found at NEWA, http://newa.cornell.edu/index.php?page=degree-days

European corn borer flight begins after 375 GDD have accumulated and egg hatch occurs after 450 GDD have accumulated. According to umassgreeninfo.org, as of May 28th all of Massachusetts was above 375 indicating flight is occurring and many were very close to 450. Since last week we have had many warm days which will mostly likely put your farm over the 450 GDD required for egg hatch regardless of where you are in the state. NEWA weather data for June 2 indicated 410-460 GDD at various locations. What this tells us is that hatch will occur soon if it hasn't already, followed by caterpillar feeding. **This week is a good time to start scouting your fields for ECB damage.**

Field scouting for ECB usually begins when the tassels first appear in the whorl. Some fields are at or nearing this stage in the Connecticut Valley and in the Eastern part of the state. Check your fields this week to see if scouting is in your near future!

The ideal time to control ECB is as the green tassel pokes up out of the whorl. Borers will leave the tassel as it opens up, and move down the plant looking for protected feeding sites. At that time, they are exposed and are more easily reached by pesticides. Before that time, borers are protected inside the whorl, and after that time they may be protected inside the stalk

For information on scouting procedures and implementing a sweet corn IPM program on your farm, visit www.umass-vegetable.org to download a copy of the UMass Extension publication Using IPM in the Field Sweet Corn Insect Management Field Scouting Guide or email umassvegetable@umext.umass.edu to request a free copy. If you are scouting on your farm this season and would like to contribute trap captures to this publication email Amanda Brown at abrown@umext.umass.edu.

-Amanda Brown

UPCOMING MEETINGS

Intro to Plant Diseases and Management Strategies for the Farm - a webinar presented by the UVM Extension New Farmer Project.

June 24, 2010

7 p.m. to 8 p.m.

Many of us walk into the field or greenhouse and are stumped by what we see. Is it insect damage, nutrient deficiency, plant disease, or something else? Join Ann Hazelrigg, director of the Plant Diagnostic Clinic at the University of Vermont, to learn to identify common plant diseases and learn strategies for managing them. Go to http://tinyurl.com/NFPJune-24Webinar at about 6:45 pm on June 24. Or, visit that same link a few days earlier to pre-configure your computer for webinar participation. For more information, contact newfarmer@uvm.edu or call 802-223-2389x203.

Cold Spring Orchard Research Farm, Belchertown

July 15

Summer Fruit Growers Meeting

For more information please contact Wes Autio; 413-545-296

MNLA/MFGA Great Ideas Summer Conference and Trade Show

July 21

www.progrownews.com or www.umassgreeninfo.org; Tina Smith 413-545-5306

Field Day at the UMass Crops Research and Education Farm

89-91, River Rd, South Deerfield, MA

Wednesday August 11, 2010

Vegetable, Field and Energy Crops

For more information contact: Masoud Hashemi 413-545-1843, masoud@psis.umass.edu or Ruth Hazzard 413-545-3696, rhazzard@umext.umass.edu

NOFA 36th Annual Summer Conference

August 13-15, 2010

UMass, Amherst, MA

This year's keynote speakers are Sally Fallon Morrell, of the Weston A. Price Foundation, and Dr. Fernando Funes, from Havana, Cuba, of the Cuban Association of Foresters and Agronomists. To add to our captivating speakers, as always, the Summer Conference will feature a fantastic Children's Conference, a Teen Conference, a local meal, dozens of exhibitors, a live auction, live evening entertainment, and an afternoon fair.

Registration is available online now at www.nofasummerconference.org.

Vegetable Notes. Ruth Hazzard, editor and Amanda Brown and Andrew Cavanagh, assistant editors. Vegetable Notes is published weekly from May to September and at intervals during the off-season, 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 and photographer is R. Hazzard if none is cited.