UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 19, Number 20 October 29, 2008

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VEGNOTES SURVEY

Every week during the growing season and monthly during the rest of the year we work carefully and diligently to produce VegNotes, the UMass Extension Vegetable Program newsletter. We take pride in our newsletter and hope that you find it to be helpful and informative. In order to ensure that VegNotes addresses as many of your crop related concerns as possible we would like your feedback. After the rainy 2008 season, we also would like input on the impact of diseases, especially in your vine crops. Please help us improve the quality of VegNotes by filling out the online survey, found here:

http://www.surveymonkey.com/s.aspx?sm=fQ_2fgLRrQhsjkz_2b_2bMN5DPjg_3d_3d

The survey should take you 10-15 minutes to complete. Your responses will be confidential. The information you give us will help us improve VegNotes and will help to shape our research and extension work in the coming year.

To take this online survey, please go to:

http://www.surveymonkey.com/s.aspx?sm=fQ_2fgLRrQhsjkz_2b_2bMN5DPjg_3d_3d

Thank you for your participation!

FALL AND WINTER PROGRAMS 2008-2009

Wednesday, November 5 - Friday, November 7, 2008

New England Greenhouse Conference & Expo

DCU Center, 50 Foster Street,Worcester, MA 01608

If greenhouses are important in your business, this conference is not to be missed! The New England Greenhouse Conference and Expo is held in even-numbered years in Massachusetts for the region's floriculture industry, both production and retail. The conference has continually grown over its 32 years, and now attracts about 2000 attendees to its three full days of concurrent educational sessions and its trade show of nearly 150 vendors.

Wednesday, November 5th, 5:30 - 7:00PM

Pre-Conference Short Courses

In-depth education on focused topics, presented by experts to small groups with plenty of opportunity to ask your specific questions. Speakers will be available during lunch between sessions for questions and informal discussion. An additional fee of $28 and pre-registration is required for the lunch with speakers.

Thursday, November 6th, and Friday, November 7th

Conference Workshops and Trade Show

More than 35 educational sessions address production, marketing and management topics over two days, with dedicated trade show time each day from 10:15 a.m. – 1:30 p.m.

For more details and registration go to: http://www.negreenhouse.org/index.html

New England Floriculture, Inc., the parent sponsor of this event, consists of grower representatives from the six New England states plus New York.

Monday, December 1, 2008

Zone-Tillage & Soil Health Conference

9:00 am – 3:30 pm

Publick House, Rt. 131, Sturbridge, MA

Do you want to save $44/acre in diesel fuel? Would you like to improve the organic matter levels, structure and fertility of your soils? Do you have a soil compaction problem or a plow pan? Does water tend to pool on the surface of your fields leaving crops vulnerable to wilts and rots? Did you have trouble with soil erosion with all the rain in 2003, 2004, 2006 and 2008? Do you have trouble getting on to your land to plant when it is too wet or planting on schedule when it is too dry? Would you like to improve crop quality and yields without increasing nutrient inputs? Are you tired of picking rocks after plowing and harrowing? Would you like to rent land from a trust or municipality, but they won't let you conventionally-till their land? Well maybe it is time to look into a better way of farming called zone-tillage. Come hear researchers, Extension folks and growers describe what zone-tillage can do for your farm and why they would never recommend conventional tillage again!

Pre-registration: $35 by Nov. 21 (rain or shine, no refunds), $40 at the door – if space is available. Send name of attendee(s) and a check made out to UConn, to the University of Connecticut, Cooperative Extension System, 24 Hyde Ave., Vernon, CT 06066. Contact: Jude Boucher, 860-875-3331, jude.boucher@uconn.edu. A program and registration form can be found attached to the email version of this newsletter and is available online at www.umassvegetable.org under 2008 meetings.

(Note: this meeting is at the Publick House, around the corner from the Sturbridge Host Hotel, not at the Sturbridge Host Hotel)

Sponsored by Northeast SARE, and the University of Connecticut, University of Rhode Island and Cornell University Cooperative Extension Systems

Thursday, December 4, 2008

Transitioning to Renewable Energy for Greenhouse Heat

8:30-4 pm

Sturbridge Host Hotel and Conference Center

Sturbridge, MA

This one-day conference will focus on alternative technologies & fuel sources that are immediately available, locally produced, and economically favorable in comparison to traditional fossil fuels. While the emphasis will be placed on showcasing the experiences of growers who have made the switch to renewable fuels, we will also provide information on sources of funding that may be available, conservation strategies, and procuring, producing, and using wood and corn as biomass fuels.

A pre- registration fee of $40.00 is due by December 1st. Please make checks payable to the University of Massachusetts and mail to: Energy Program, Marilyn Kusmeskus, 250 Natural Resources Rd., University of Massachusetts, Amherst, MA 01003. Cost of admission includes: handouts, lunch, snacks and beverages during break. A program and registration form can be found attached to the email version of this newsletter and is available online at www.umassvegetable.org

under 2008 meetings.

Contact Tina Smith, 413-545-5306, tsmith@umext.umass.edu, or Andy Cavanagh, acavanagh@psis.umass.edu, 413-577-3976, University of Massachusetts Extension.

Sponsored by the University of Massachusetts Extension Floriculture and Vegetable Programs, New England Vegetable and Berry Growers Association and Massachusetts Flower Growers Association.

Friday, December 12, 2008.

Alternative Greenhouse and High Tunnel Crops

Sturbridge Host Hotel, Sturbridge, MA

This all day conference will address topics of interest to those with greenhouses and unheated high tunnels. Among the speakers at the conference are: Vern Grubinger from the University of Vermont, who will be speaking on Growing in Greenhouses and High Tunnels. Becky Grube from the University of New Hampshire will be speaking on Growing Winter Sprouting Brocoli in Unheated High Tunnels for the Fresh Market. Sandie Shores from Herb's Herb & Such will be speaking on Growing Fresh Cut Herbs and Edible Flowers. Sandie is the author of "Growing and Selling Fresh Cut Herbs" and will have autographed books available for sale. Pete Johnson of Pete's Greens, in Craftbury, Vermont will discuss Growing Greens. David Zemelsky from Starlight Gardens in Durham, CT will discuss Salad Greens for High Tunnel Production and Missy Bahret and Casey Steinberg from Old Friends Farm in Amherst, MA will talk about Growing and Marketing Ginger Root.

A pre- registration fee of $35.00 is due by December 5th. Please make checks payable to the University of Massachusetts and mail to: Greenhouse Crops Program, Room 203 French Hall, University of Massachusetts, Amherst, MA 01003. Cost of admission includes: handouts, lunch, snacks and beverages during break. A program and registration form can be found attached to the email version of this newsletter and is available online at www.umassvegetable.org, under 2008 meetings.

For more information see: http://www.umass.edu/umext/floriculture/

Or contact: Tina Smith, University of Massachusetts, 413-545-5306, tsmith@umext.umass.edu; Paul Lopes, University of Massachusetts 508-295-2212 ext 12 or lopes@umext.umass.edu or Leanne Pundt, University of Connecticut, 860-626-6240, leanne.pundt@uconn.edu

Sponsored by University of Massachusetts Extension, University of Connecticut Cooperative Extension System, and Northeast SARE.

Friday, January 9, 2009

New England Vegetable and Berry Growers -- All Day Program

Day's Inn at the Parwick Centre, Chicopee, MA

(450 Memorial Drive, next to Exit 5 off I-90)

Saturday, February 7, 2009

New England Vegetable and Berry Growers -- All Day Program

Waltham Extension Ctr., Waltham, MA

These two day-long programs will focus on current topics of special interest to New England vegetable and berry farmers. Topics will include downy mildew in cucurbits; biological disease control products; selecting and managing cover crops for nutrients, organic matter and pest control; fertilizer products and uses, mixing for fertigation, soil testing; update on new materials for weed control and problem weeds such as galinsoga; cucurbit diseases: testing irrigation water for Phytophthora capsici, new materials, resistance to fungicides; specialty crop research; economics of vegetable production; how climate change may affect vegetable and berry production in New England; farm slides from Tuttle Farm in Maine; and the Ag conservation model for land preservation in New Hampshire. More information can be foundon the UMass Vegetable Website www.umassvegetable.org, under 2008 meetings.

Co-sponsored by the New England Vegetable and Berry Growers Association and New England Vegetable Extension Programs.

Registration is at 9:30 a.m., each meeting starts at 10:00 a.m. and ends at 4:00 p.m. Contact hours for pesticide applicator recertification will be offered at both meetings.

To register, contact John Howell, (413)665-3501, howell@umext.umass.edu.

RESULTS WITH ZONE TILLAGE FOR VEGETABLES IN NEW YORK STATE

In a survey of NY vegetable growers in 2002, many expressed concern about yields in once prime, highly productive fields. Past yields could not be achieved by increases in fertilizer use or more intensive tillage. They concluded that yield loss was due to a decline in soil health and quality.

A new approach was needed for soil management, to enhance soil quality. Since 2003, a team of researchers, extension educators and growers have been working together to develop reduced or minimum tillage systems for vegetables in New York and the Upper Northeast. The focus is on the regions from New York north, because our cooler climate can restrict use of some reduced tillage systems, like straight no-till, for vegetables. While there have been excellent results with pumpkins in no-till systems, growers have reported that crop performance can be variable.

With funding from the Northeast Sustainable Agriculture Research and Education program and the New York Farm Viability Institute, NY researchers have been able to develop a research and extension program to support growers as they transition to a reduced tillage system. They have focused primarily on a Deep Zone Tillage approach. This involves equipment such as an Unverferth Zone Builder or Ripper Stripper. In this system, a narrow ripping shank (3/4 inch wide) is set at a depth to break up plow pan and deeper compaction. This is followed by angled fluted coulters that create a small mound of disturbed soil 6 to 8 inches wide and rolling baskets to break up clods in this mound.

Researchers and farmers have also examined straight zone tillage, which does not include the deep ripping. In some parts of the northeast, such as Maine, buried ledges in fields prevent the use of the ripping shank. In Pennsylvania, grower Steve Groff, a well know conservation till farmer, has been able to do a straight zone tillage in his fields, but his climate is warmer than most NY production areas.

Photographs of equipment and fields, fact sheets and case histories of some growers who have adopted zone tillage can be found at a new reduced tillage website: at http://www.hort.cornell.edu/reducedtillage/

Observations from these trials with zone tillage and deep zone tillage:

After four years of experiments with sweet corn and dry beans in both zone tillage and deep zone tillage, researchers observed no differences in yield or quality compared to conventional tillage systems (moldboard plow followed by disk harrow). Grower trials with dry beans and sweet corn have confirmed this observation as well.

Yield of fresh market cabbage (transplanted) in a deep zone tillage system was similar to conventionally tilled. This was tested in both organic and conventional production systems at the Freeville Research Farm. Pumpkin and squash yields have also been similar with reduced tillage.

Pepper yields may be reduced in zone tillage systems. This was only tested in an organically managed plot for one year.

Deep Zone Tillage is also being tested with carrots and beets. In initial beet research, harvest was delayed slightly in the deep zone tilled system. Carrot quality was reduced in the reduced tillage system (grower trial observation). Beets and carrots are currently being grown at the Thompson Vegetable Research farm, in zone, deep zone and conventionally tilled plots.

Grower experiences are being summarized into case studies and these are being posted on the Cornell website. Thus far, growers have reported reduced fuel use, improved labor efficiency and less equipment wear by transitioning to Reduced Tillage systems. Recently, John Gill, a fresh market sweet corn grower in Ulster County, reported that he purchased an 8 row zone builder for $45,000 this year, and has already paid for it with savings in fuel, labor and maintenance.

- adapted from Cornell Veg Edge, Volume 4, Issue 10, October 2008; from Anu Rangarajan, Cornell University

WOOD HEAT FOR GREENHOUSES

Fuel wood, waste wood and biomass are potential sources of heat for greenhouses. An adequate supply at a low cost is needed to pay for the additional cost of the equipment and operation as compared to conventional fossil fuel units.

Combustion basics

Combustion of wood has three requirements - fuel, air and heat. If any of these is removed, burning ceases. When all three are available in the correct proportion, combustion is self-sustaining, because the wood releases more than enough heat to initiate further burning.

The rate at which wood burns is controlled by the amount of air. A lack of air causes wood to smolder and produce pollutants. Too much air will cool the fire and waste heat.

Another important aspect of combustion is the energy content of the fuel. This is normally expressed in British thermal units (Btu's). Energy content is greatly affected by the moisture content and weight of the wood. For example, hardwood and softwood at 50% moisture will have about 4,700 Btu/lb whereas the same wood at 20% moisture will contain about 6,200 Btu/lb. Hardwood has about twice the weight as softwood and therefore twice the heat content. The same is true with wood chips - 4,000 Btu/lb green (50% m.c.) and 7,400 Btu/lb dry (10%).

In the burning process, wood goes through three stages. During stage 1, the wood is heated to evaporate and drive off the moisture. The heat generated does not provide heat for the greenhouse. In stage 2, starting at about 500°F the wood starts to break down chemically and volatile mater is vaporized. The vapors contain between 50 and 60% of the heat value of the wood. These vapors have to be heated to about 1100°F to burn. If not, smoke is generated which can coat heat exchange surfaces and chimneys with creosote. In stage 3, once the volatile gases are released, the remaining material (charcoal) burns at temperatures above 1500°F. All three stages can be present at the same time.

Fuel quantity

The amount of fuel needed depends on many factors including the heat required by the greenhouse, furnace efficiency, fuel type and moisture content. If you know your present consumption, you can estimate the firewood or chips you will need from the following table:

Above values are based on 75% heating system efficiency for fossil fuels and 70% for solid fuels.

Present fuel usage			Wood needed	
Fuel oil (gal.)	**Propane (gal.)**	**Natural gas (therms)**	**Dry cordwood, 20% (cords)**	**Wood chips, 45% (tons)**
10000	15000	13800	74	194
20000	30000	27600	148	389
30000	45000	41400	222	584
40000	60000	55200	296	778
50000	75000	69000	370	973

Equipment selection

The wood-fired heating system is a major investment that should be selected to give efficient operation for many years. It pays to spend a little more on the initial investment to get a unit that will reduce handling, increase efficiency and provide a safer operation. Consider the fo1lowing:

Size of system. The unit should be sized to offset the heat losses. Too large a unit may create inefficiencies in fuel usage and excess smoke and pollution. The installation of modular units will allow for expansion of the growing area and greater fuel efficiency during mild weather.

Furnace (hot air) or boiler (hot water). Most units are boilers as it is easier to get the heat where you need it with a hot water system. Water can be modulated for root zone heating.

Firewood or chips. There is little savings from solid fuel if you have to pay the homeowner rate. Solid wood may be available for landscapers or arborists at little or no cost but requires time to get it sized to fit the firebox. Larger firewood units require handling several hundred pounds of wood a day. Chips and sawdust are delivered in bulk and are automatically fed to the firebox. A good long-term supply source is needed.

Indoor or outdoor location. Location inside the greenhouse or headhouse results in shorter supply piping. An outdoor installation can be located close to the wood storage. It also keeps the smoke away from the greenhouse.

Lined or unlined firebox. A firebrick lined firebox will usually burn hotter, create less smoke and be more efficient than an unlined one especially if it has a water jacket.

Gasification. In these units, the volatiles are driven off in an oxygen deprived chamber and then moved through a burner nozzle where they are superheated and mixed with air for complete and even combustion. The increased efficiency of this two-stage process produces greater economic benefits and shorter payback.

Natural or forced draft. The chimney on a natural draft unit needs to be tall to get adequate draw on the fire. A forced draft maintains a hotter, more efficient fire and decreases smoke, creosote and ashes. This reduces the need for a water jacket with a large capacity as temperature recovery time is reduced.

Primary and secondary air supplies. Choose a unit that has both primary and secondary air supplies. Many new designs have electronic controls that regulate the rate of firing, draft inducers that provide the right amount of air, heat storage that absorbs extra heat and heat reclaimers to capture the heat of combustion before it escapes up the chimney.

Duel fuel capability. Some units are available with fossil fuel burners for starting the wood and also providing backup if the solid fuel fire goes out.

Will the unit meet local and state codes? Larger units usually have to meet emission codes for particulate matter, carbon dioxide and other pollutants. In some states such as Connecticut, outdoor wood furnace installation and operation are regulated.

Solid fuels offer a heat alternative for many growers throughout the U.S. Their availability, low cost and high heat value can replace expensive fossil fuels. Care in selection and installation is important.

- John W. Bartok, Jr.,Extension Professor Emeritus, University of Connecticut, Storrs

PHASE TWO OF THE MASSACHUSETTS FARM ENERGY PROGRAM: ENERGY AUDITS AND INCENTIVES

Berkshire-Pioneer Research, Conservation, & Development has been implementing the Massachusetts Farm Energy Program. The first phase of this program focused on streamlined technical and financial assistance for agricultural producers. It included step by step guidelines for reducing energy costs on the farm. Phase two, the Energy Audits & Incentives portion of the program, is beginning this winter.

Phase 2 of the Mass Farm Energy Program (MFEP) will provide energy audits, renewable energy assessments, and/or incentives for implementation of audit recommendations, including those recommended by public utility programs. Since funds are limited to approximately $250,000 for audits and incentives through the MFEP, higher priority will be given to farmers with less access to other audits and incentives programs. MFEP audits, assessments, and consultations will be paid at 75% with the applicant responsible for the remaining 25%. Incentives for implementation will be based on energy savings. Although the emphasis of Phase 2 is energy conservation and efficiency, there will be some funding opportunities for renewable energy projects, especially those projects that are not eligible for other programs. The intent of the audits and incentives program is to encourage implementation of at least 50% of the recommended measures. The program administrators reserve the right to make changes in the program deemed necessary to meet the intent of the program.

BPRC&D has retained several state, regional, and national energy consultants who will be contracted to provide these

energy services. The list of Technical Assistance Consultants will be posted in the coming weeks as we finalize contracts with each of them.

Please refer to the Berkshire-Pioneer RC&D website to learn more about the MFEP Energy Audits & Incentives: http://www.berkshirepioneerrcd.org/mfep/energy.php

If you read the program description and think that you are eligible, an on-line application can be completed on the "Forms" page at http://www.berkshirepioneerrcd.org/mfep/forms.php.

Berkshire-Pioneer RC&D will also offer technical assistance and grant writing assistance to at least 25 farmers interested in the 2009 funding for USDA-Rural Development's Section 9007: Rural Energy for America Program (formerly called the Renewable Energy Systems and Energy Efficiency Improvements Program). This program pays 25% of the cost of energy projects through grants and can also provide guaranteed loans. Once growers have read the program description at http://www.berkshirepioneerrcd.org/mfep/existing.php and think they may be eligible, an on-line application can be completed on the "Forms" page (link below).

The MFEP will continue to offer technical assistance to any agricultural producers, whether or not they meet the eligibility requirements of MFEP Energy Audits & Incentives or the MFEP Grant Writing Assistance for USDA REAP. Please refer to the Berkshire-Pioneer RC&D website or call Ann Gibson at 413-256-1607 or email agibson@berkshirepioneerrcd.org, they can try to leverage other funds and provide referrals.

On-line applications for the MFEP Energy Audits & Incentives program, MFEP Grant Writing Assistance for USDA REAP, and the Farm Energy Questionnaire can be found on the "Forms" page at http://www.berkshirepioneerrcd.org/mfep/forms.php

FRESH PRODUCE SAFETY AND GOOD AGRICULTURAL PRACTICES:

YOUR INPUT IS NEEDED!!!

Recent contamination outbreaks for tomatoes and spinach have raised concerns about the safety of fresh produce. As a grower, you, too, may be receiving pressure from buyers about the safety of your produce. To address this issue, UMass Extension and the UMass Department of Nutrition, with funding from the Massachusetts Department of Agricultural Resources (MDAR), have teamed up to implement a Good Agricultural Practices (GAP) certification program for fruit and vegetable growers in Massachusetts. To achieve this goal, your help is needed.

During the first week of November, you will be receiving a survey to assess your thinking about fresh produce safety. We hope you will take the 15 minutes or so to complete it. The results from this survey will direct the designing of a GAP food safety program that meets the needs of Massachusetts fruit and vegetable growers like you, i.e. the educational resources developed for the growers during the program will reflect the results of the research efforts of the project.

If you do not receive a copy by the 24th of November, 2008 and are interested, please contact David Nyachuba at 413-545-0552 or email him at dgn@nutrition.umass.edu.

- Rich Bonanno & David Nyachuba, UMass Extension & UMass Department of Nutrition

ADD YOUR CSA LISTING TO THE UMASS VEGETABLE WEBSITE

Community Supported Agriculture (CSA) has a strong following throughout the state and the number of CSA farms in Massachusetts increases every year. CSA provides a great way for new farmers to get started, and for established farms to add another way to market their crops directly to consumers.

The UMass Extension Vegetable website (www.umassvegetable.org) features a section on CSA. There are in-depth profiles of ten CSA farms that highlight their growth and changes from 1994 to 2004, a listing of resources for CSA, and background information on 'What is CSA?'. There is also a list of CSA farms in Massachusetts with over 60 farms. However, we know that it is out of date – it is certainly missing some of the new CSA farms, and in many cases the man-

ager and contact information has changed. Many farms may have a new website that could be reached through a link on this list.

We invite CSA farms to add or correct your farm listing to this site! We'd like it to be as complete and up to date as possible. The CSA page is one of the most popular sections of the Vegetable program website – there seem to be a lot of people searching for information on CSA's. We've seen over 8,000 visitors to our CSA page over the past year.

To update your information, please visit the CSA Farms in MA page and look for your farm. Reach it via the following link: http://www.umassvegetable.org/food_farming_systems/csa/index.html or search for 'umass csa' If your farm's listing is missing or needs updating, an email to umassvegetable@umext.umass.edu with your updated information and it will be posted!

--Ruth HazzardAnne Gibson, Berkshire-Pioneer RC&D

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.