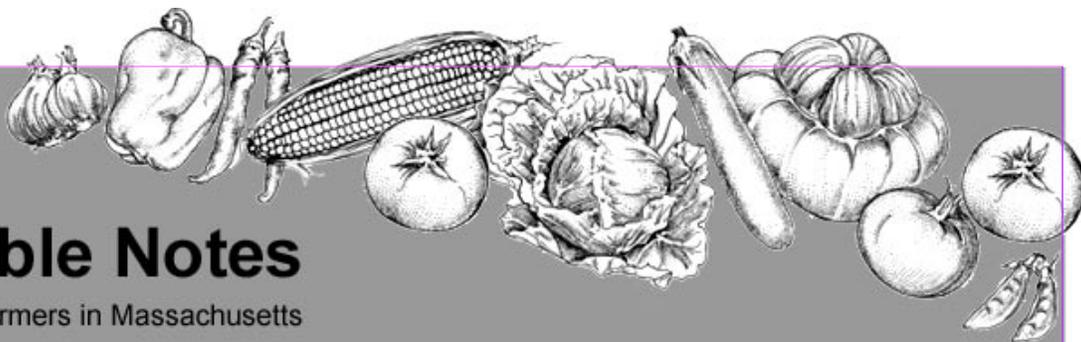




UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

Volume 16, Number 23

December, 2005

CROP AND FARM CONDITIONS

Cold weather arrived early in December this year, made it difficult for winter greens producers to keep up the level of production and harvest that they had planned on. Commercial harvesting of winter greens has pretty much shut down as we go through the 'dead zone' of low light and cold that will last till the end of January. Ground Hog day signals 'spring' in the greenhouse and will bring winter greens production back to life.

Temperatures in the low twenties have challenged farmers whose stored squash, potatoes and other root crops need to stay at a steady temperature. Butternut squash, especially, is sensitive to chilling injury. Many growers are storing for sale of whole and peeled squash through the winter, and getting all the bins in the storage unit through the cold times of December and January is critical. Watch for cold spots in the corners of the storage, and keep temperatures above 50-55°F. Chilling injury accumulates whenever temperatures drop below 50°F, and squash also becomes more susceptible to disease. Black rot lesions that are dormant at 55°F can become active and start breaking down the fruit when squash is chilled.

Energy costs will be a major concern for all vegetable and flower farmers in the coming months, whether it is the fuel required to keep storage areas at the proper temperature or the fuel needed to maintain heated greenhouses. Conserving energy is one of the best ways to cut your fuel bill. See two articles by John Bartok with suggestions for conservation in the greenhouse as well as installing efficient heating systems.

Looking for new markets? The 'farm to school' marketing effort, which connects farmers with cafeterias in school districts throughout the state, is growing. See article by Kelly Erwin of MDAR, inviting growers to forge new sales connections with schools.

The New England Vegetable and Fruit Conference in Manchester, December 13-15 was a great success with record attendance of over 1300 people. If you missed it, you can purchase the Proceedings by contacting the UMass Extension Vegetable Program (413-545-3696) or buying one at another vegetable growers winter meeting.

But, that's just the beginning of great educational programs for vegetable farmers in this winter 05-06! See programs for Vegetable and Berry Meetings January 6 in Chicopee and January 28 in Waltham, the Mass NOFA winter conference on January 21 and CT Vegetable and Small Fruit Conference on January 26, as well as other calendar listings.

--Ruth Hazzard, editor

VEGETABLE AND BERRY GROWERS MEETING IN CHICOPEE

Sponsored by: *The New England Vegetable and Berry Growers' Association and New England Cooperative Extension*

Friday January 6, 2006

The Parwick Centre, Days Inn

450 Memorial Drive, Chicopee, MA

At Exit 5, MA Tpk.- I-90, turn right after toll booth

PROGRAM

--**9:30 AM Registration** \$10.00. The registration fee is waived for members of the Association. This does not include lunch. See "Noon" below.

--**10:00 Update on the new Vegetable Management Guide:**

--Weed Management – Rich Bonanno, UMass

--Insect Management – Ruth Hazzard, UMass and
Jude Boucher, UConn

--Disease Management – Bess Dicklow, UMass

--**11:30 Soil Moisture and Using Tensiometers to Schedule Irrigation** – Phil Gallo, Irrrometer Company

--**12:00 Noon Lunch** \$12:00. To reserve a lunch, call (413)773-0412 or email: howell@umext.umass.edu (look for a confirmation that John received your email) by December 31, 2005 so meals can be ordered on time. If you order a lunch and can't attend, please call to cancel or you will be billed \$12.00.

--**1:00 PM Announcements**

--**1:05 Bees in the Field; Honey Bees, Bumble Bees Other Native Bees** – Lynn Adler, UMass

--**1:45 Recognizing and Correcting Nutrient Deficiencies in Small Fruits** – Sonia Schloemann, UMass

--2:30 Perimeter Trap Cropping and Pollinators in Butternut Squash – Ruth Hazzard and Lynn Adler, Umass.

--3:15 Have a safe trip home

NOTE: There will be 2 ½ hours of credit toward Pesticide Recertification. Session number: UMA2006-04

NOFA/MASS WINTER CONFERENCE AND ANNUAL MEETINGS

•Saturday, January 21st

Bancroft School, Worcester, MA

COST: Farmer.....	\$30
NOFA/MOFGA Member.....	\$35
Non-Member.....	\$40
Teenage (13-17).....	\$20
Child (3-12).....	\$15

8:00-9:00am: REGISTRATION

9:00am-10:30am: WORKSHOP SESSION 1 --
10 Concurrent Sessions

9:00am-5:30pm: CHILDREN'S PROGRAM – Room 112 (during workshops only)

11.00am-12:30pm: WORKSHOP SESSION 2 –
12 Concurrent Sessions

12:30-1:30pm: POTLUCK LUNCH - in the cafeteria.

For details contact: Jassy Bratko at 978-928-5646

1:30-2:30pm NOFA/MASS Annual Meeting - in the Auditorium.

NOFA/Mass President Frank Albani will facilitate. There will be committee reports, awards, voting for next year's Board of Directors and a chance to share ideas about where NOFA/Mass should head and how we can get it there. All are welcome!

2.30-3:30pm: KEYNOTE SPEAKER,
BRIAN DONAHUE

Brian is the author of "Reclaiming the Commons: Community Farms and Forests in a New England Town" and "The Great Meadow: Farmers and the Land in Colonial Concord". He co-founded, and for 12 years directed, the Land's Sake Community Farm in Weston and for three years was Director of Education at the Land Institute in Salina, Kansas. Presently Brian is Associate Professor of American Environmental Studies at Brandeis University.

--4-5.30pm: WORKSHOP SESSION 3 –
10 concurrent sessions

FARMERS' MARKET & EXHIBIT

Locally produced items and exhibits we think you will find of interest. To reserve and exhibit table or donate a raffle item contact Tom Szeleky, Exhibit Coordinator at 781-894-4358 or seedpotato@yahoo.com.

WEATHER CANCELLATION AND MORE INFO

Event cancellation will be posted on our website: www.nofamass.org or call Jassy Bratko at 978-928-5646 or Julie Rawson at 978-355-2853.

Directions

From The Mass Turnpike

From the west: Take exit 10, Auburn. After tolls, bear left and get onto I-290 East toward Worcester. Follow directions below from I-290.

From the east: Take 11a, Westborough. Marked route 495 North (toward Marlboro). Take I-290 West toward Worcester. Follow directions below from I-290.

From the North on I-190

Take Exit 2, Ararat Street. After going straight through the first set of lights, follow sign for Shore Drive. At second set of lights, turn right. Bancroft School is the second building on the right (after the YMCA). Park in front driveway or in parking lot beyond buildings.

From the East or West on I-290

Take Exit 19 (marked Holden, Fitchburg, I-190, Route 12). Take first exit (Exit 1) before Greendale Mall. Enter Route 12 North and immediately cross into left lane to take first left (access road to I-190). Next, take immediate right fork to Norton Drive. Turn left at traffic lights. Bancroft School is the second building on the right (after the YMCA). Park in front driveway or in parking lot beyond buildings.

CONNECTICUT VEGETABLE & SMALL FRUIT GROWERS CONFERENCE

•Thursday, January 26, 2006

Tolland County Agricultural Center,
24 Hyde Avenue (Route 30), Vernon, CT

Sponsored by: *University of Connecticut Cooperative Extension System & Plant Science Dept.*

8:15-9:00 - Registration: \$20 at the door - Coffee & donuts/Trade Show (lunch & coffee/donuts included in registration fee as a 4-H Club benefit)

PROGRAM:

Morning Moderator - Jude Boucher, University of CT

9:00 - Blueberry Pests: Insects, Diseases, Weeds.
- Lorraine Los, UConn

9:30 - Management Options for Reducing Deer Damage to Agricultural Crops - Howard Kilpatrick, CT DEP

10:00 - Bt Sweet Corn: How Does It Fit Into IPM? - Galen Dively, Univ. of Maryland

10:30-10:45 - Break (Coffee & donuts/Trade Show)

10:45 - Growing Grapes for Connecticut Wineries
- Gary Crump, CT Farm Wine Development Council/Priam Vineyard, Colchester, CT

11:00 - Vineyard Establishment - William Nail, CT Ag Experiment Station

11:15 - Monitoring Corn Earworm Resistance to Pyrethroids - Galen Dively, UMD

11:45 - What Produce Buyers Need From Growers - David Yandow, Fowler & Huntting

12:15-1:15 - Lunch break/Trade Show (Lunch included in registration fee as a 4-H Club benefit)

Afternoon Moderator - Lorraine Los, University of Connecticut,

1:15 - A Tour of Pesticide Storage and Mixing Facilities on NH Farms - George Hamilton, Univ. Of New Hampshire

1:45 - Cow Pots: A "Green" Alternative to Jiffy Pots
- Matt Freund, Freund's Farm Market, E. Canaan, CT

2:15-2:30 - Break (Trade Show)

2:30 - Upgrading Facilities to Save Energy and Labor
- John Bartok, Ashford, CT

3:00 - Sweet Corn & Cucurbit Pest Control: Problems & Solutions - Jude Boucher, UConn

Re-certification Credits: 3 hours

Directions: Take Exit 67 off I-84. Take Route 31 north to junction of Route 30 at first traffic light. Turn right on to Route 30. Tolland County Ag Center is on right just after Rockville Savings Bank.

VEGETABLE AND BERRY GROWERS MEETING IN WALTHAM

•Saturday, January 28th

Eastern Massachusetts Extension Center
240 Beaver st., Waltham, MA

Sponsored by: *The New England Vegetable and Berry Growers' Association* and *New England Cooperative Extension*

COMMERCIAL MEMBERS DAY - Commercial Members are invited to set up exhibits of their products or services

PROGRAM

--9:30 AM Registration \$10.00. The registration fee is waived for members of the Association. This does not include lunch. See "Noon" below.

--10:00 -- Using Calisto in Sweet Corn—Rich Bonanno

--10:30 -- Cold Tolerance of Sweet Corn Varieties—Seedway Rep

--11:00 -- Melon, Hoop House and Bell Pepper Trials—Mark Hutton, Univ. Of Maine

--11:30 -- Vegetable and Small Fruit Evaluations—Dave Handy, Univ of Maine

--12:00 Noon Lunch \$12.00. To reserve a lunch, return the enclosed card, call (413)773-0412 or email: howell@umext.umass.edu (look for a confirmation that I received your email). By December 31, 2005 so meals can be ordered on time. If you order a lunch and can't attend, please call to cancel or you will be billed \$12.00.

--1:00 PM Business Meeting, Election, Reports

--1:30 -- Pictures of Roadside Stands, Frank Mangan, UMass

--2:30 -- High Tunnel Production of Colored Peppers—Becky Grube, UNH

--3:00 -- Weed management in Minor Crops—Rich Bonanno, UMass

--3:30 -- Have a safe trip home

NOTE: There will be 1 hour of credit toward Pesticide Recertification.

GREENHOUSE ENERGY SAVERS

Reduce Air Leaks

In some greenhouses, cold air infiltration adds considerable to the cost of heating. Cracks around doors, vents and shutters that don't close tight, broken glass and tears in the plastic are typical examples. For example, a 4 foot square shutter that fails to close fully and leaves 1/2 inch gaps will allow about 12,000 cubic feet of cold air to enter each hour. To heat this amount of air over a 24 hour period to 60°F when the outside temperature is 0°F require almost 4 gallons of fuel oil. Most infiltration leaks can be corrected with minimal cost. Weatherstripping and foam insulation work well on small gaps. Shutters not needed for cooling should be covered with a sheet of film plastic or one inch of polystyrene or polyurethane insulation board. A few hours spent in tightening your greenhouses is well worth the effort.

Energy Blankets

The installation of an energy blanket reduces the volume of greenhouse that has to be heated. These are easiest between the trusses in large free-standing or gutter-connected greenhouses. The blanket usually is suspended or supported on cables. A tight seal at each truss and along the eaves is important to retain the heat below the blanket. Typically on a 0°F night with a 60°F plant zone temperature, you will find that the temperature above the drawn blanket will be about 35°F. Depending on the blanket material used and whether the greenhouse has a single or double cover, this results in a saving of 25% - 50% on the heating bill. At a cost of \$1 - \$2/sq ft of floor area for the blanket system, the payback is usually less than 2 years.

Sidewall insulation

One factor that influences heat loss from a greenhouse is the amount of glazed area. In a 30' wide hoop house, the glazed area from the ground to bench height is about 15% of the total surface area. Insulating this area with an inch or two of polyurethane or polystyrene can reduce total heat loss over 10%. Use a closed cell insulation board and not beadboard as this absorbs moisture reducing its insulating

value.

Pipe Insulation

Bare heating system pipes waste a considerable amount of fuel each year in areas such as boiler rooms and head-houses where heat is not needed. This heat loss continues every day the system is operating. Adding 1" thick fiberglass or foam insulation to a ¾" pipe will save about \$2.25/linear foot and on a 2" pipe about \$5/linear foot over the heating season in northern climates. The payback usually takes less than two years. Installation is simple and can be done by unskilled workers in slack time.

Install Floor or Under-bench Heat

Growers that have installed a floor or bench root zone heating system have realized a significant savings in heating costs. With a remote bulb thermostat located in the soil set to maintain the optimum root temperature, the air temperature in the greenhouse can be lowered 5°F - 10°F and still get good plant quality and growth. For every degree that the air temperature is lowered, a saving in heating cost of about 3% is obtained.

Heating System Maintenance Pays

Oil furnaces and boilers should be serviced at least once a year. Change the fuel filter and nozzle. Lubricate the motor and pump bearings. Check and adjust fan and blower belts. Clean or replace air filters. Remove soot from heat exchange surfaces and chimney connectors. Drain and flush dirty water from boilers to remove scale and lime deposits. Check combustion efficiency by measuring stack temperature and carbon dioxide content of the flue gases. Adjust the draft control to minimize soot and smoke content. Increasing efficiency 2%, which is possible with most heating units, will reduce yearly fuel oil consumption by 200 gallons in a 30' x 150' greenhouse.

Save Fuel - Check Thermostat Accuracy

Mechanical thermostats tend to lose accuracy over time. You can easily check the accuracy of a thermostat. Start by checking the accuracy of a good thermometer by inserting it into an ice bath. The reading should be 32°F. After allowing it to come back up to room temperature, place it next to the thermostat you want to check. Slowly move the dial until the heater turns on. The reading should be the same as the thermometer reading. If not, mark the thermostat accordingly. Next time the heating system is serviced, have the service person recalibrate it. If the thermostat setpoint is 1°F too high, a 30' x 100' double poly covered hoop house will use an additional \$300 of fuel for the heating season. This is based on maintaining 60°F inside where the average winter temperature is 25°F outside with fuel oil at \$2.00/gallon, natural gas at \$1.37/therm or propane at \$1.17/gallon.

Horizontal Air Flow (HAF)

Providing uniform temperature throughout a greenhouse is easy with the HAF system. Small, 1/10 horsepower, 12" - 20" diameter circulating fans spaced 40' to 50' apart create a horizontal air circulation pattern that mixes the air, end to end and floor to roof. One set of fans moves the air down one half of the greenhouse and another set moves it back on the other side. The fans are suspended, above head height, from the trusses or frame and operate continuously except when the exhaust fans are on or the vents wide open. The air moves at 50 to 100 feet/minute. The air pattern can be checked by placing a smoke bomb behind one of the fans. The fans cost from \$100 to \$150. Cost of operation is 25¢ - 30¢/fan/day. HAF results in a lower heating thermostat setting, less disease problems as moisture is continually removed from leaf surfaces and air with a higher carbon dioxide content at the leaves.

Replace Incandescent Bulbs

You can save up to two-thirds on your lighting bill by changing incandescent bulbs to the new compact fluorescent (CFL) bulbs. Replacing a 100 watt incandescent with a 32 watt CFL will save at least \$2.50/year. These bulbs which have a life of 10,000 hours as compared to 1,000 hours for incandescents, are available in many wattages and several shapes. Since being introduced in 1980, there have been many improvements. The new electronic ballasts use less energy and eliminate the humming noise. CFL's are now available for use with dimmers. To get the same light distribution as an incandescent, select a helical bulb. If the bulb will be used for retail sales, select one with a color rendering index (CRI) of 80 or greater. Remember that if you are going to be out of a room for more than 10 minutes, turn the lights out.

Lower Trucking Costs

With the rapid rise in gasoline and diesel prices, truck operation and maintenance are becoming more important. Regularly scheduled maintenance can save 10% on fuel usage. Check tire pressure and balance frequently. For every 10 pounds per square inch that a tire is below the ideal pressure, fuel mileage is reduced 1%. Limit idling. A 400 horsepower diesel engine consumes about ½ gallon per hour. Encourage drivers to slow down. Decreasing the speed from 65 to 55 miles per hour will save ½ to 1 mile per gallon. Consider purchasing trucks with lighter materials such as aluminum or plastic instead of steel. For each 100 pounds of weight, miles per gallon decreases about 0.10. Purchase truck bodies with a curved hood, open bumpers and roof deflectors. The difference between the best and worst drivers is about 35% or about 6 cents/mile. Drivers that have taken a formal training course usually perform the best.

*--Prepared by: John Bartok, Agricultural Engineer,
University of Connecticut, October 2005*

COMBAT HIGHER FUEL PRICES WITH EFFICIENT HEATING SYSTEMS

Heating fuel prices have continued to rise over the past few years. How high they will go will depend on many factors including the world fuel supply situation, demand, level of inflation and the weather. Good energy conservation measures can help to offset this increase and keep production costs under control.

Keeping the greenhouse heating system in peak operating condition is a good starting point. It can save by increasing efficiency, providing more uniform temperature in the growing area, reducing service calls and letting you sleep through the night.

Fuel

August is the time to lock in your fuel price for the coming heating season. Growers that do this every year have saved considerable money. Historically fuel prices are lowest in August and gambling that it will be a warm winter and prices will stay low has not proven to be a good bet in recent years.

Protect fuel tanks - Twenty percent of all service calls result from dirty fuel or problems related to the flow of the fuel. Tanks should be located away from dusty locations and water tight fittings should be used. Outdoor tanks should be protected from harsh winter weather with an enclosure.

Have all heating units serviced before winter – The efficiency of most greenhouse heating systems can be improved by at least 5%. A first step towards this is to have a competent service person clean and adjust all furnaces and boilers before the start of the heating season. This should include:

Oil furnaces

Changing the fuel filter on oil furnaces. It is surprising how much sludge and dirt collects in the fuel.

Replace the nozzle. Wear increases the nozzle orifice opening increasing fuel usage. Select a nozzle with the correct spray angle to fit the firebox. Follow the manufacturers' recommendations.

Replace and adjust electrodes

Inspect safety controls including cad cell sensor, transformer, limit switch and fan control.

Gas furnaces

On natural gas units, check gas inlet and manifold pressure to make sure it is properly set.

On propane units check gas regulators for proper pressure settings and to be certain the regulator and gas ports are not plugged. Tank relief valves should be replaced every 5 to 10 years.

On larger systems an evaporator or vaporizer converts the liquid propane into the gaseous state. These heaters

with safety valves and flame supervisor need to be checked and maintained.

The mixer, a valve which combines propane gas with atmospheric air should be serviced and tested to manufacturers' recommendations. It is best to operate the furnace on a monthly basis during the year to check for problems.

Heat exchanger

Soot should be removed from heat exchanger surfaces. A 1/8-inch soot deposit can increase fuel consumption by as much as 10%. Brush and vacuum surfaces or clean them with special cleaning compounds.

Exterior heat exchange surfaces, such as tubes, fins and radiators collect considerable dust and dirt in a greenhouse atmosphere. Brush and vacuum surfaces to increase heat output. Clean blowers for efficient air movement.

Drain off dirty water in steam and hot water systems. Analyze boiler water periodically to determine if treatment is needed.

Combustion Efficiency

Efficiency testing of a furnace or boiler is a 10 minute procedure that can indicate when problems begin to occur. It is the key to saving money on the heating bill. Increasing efficiency one or two percent can significantly reduce fuel consumption over the year. For example, a 2% increase in efficiency of a million Btu/hr burner operating 3300 hours from September to May will save about 650 gallons of fuel oil. This is quite realistic based on efficiency tests conducted on greenhouse heating equipment in Connecticut and Massachusetts.

Combustion Air

The combustion process combines the carbon in the fuel with the oxygen in the air. The lack of adequate oxygen results in incomplete combustion and carbon buildup. A 400,000 Btu/hr furnace will require about 100 cu ft of air/minute to operate efficiently. In tight poly and glass greenhouses, a makeup air supply of 1 sq in of intake area/2000 Btu/hr burner input should be available from a pipe or louver through the endwall unless a separated-combustion heater is installed. These are installed with a direct connection to outside air.

Flue pipe connections should be tight and the chimney should extend at least 2' above the ridge of the greenhouse. The top of the chimney should be at least 8' above the combustion chamber and have a cap to prevent backdrafts and possible air pollution injury to plants.

Controls

Accurate controls are important to achieve high efficiency. The payback of replacing an old mechanical thermostat with a new electronic thermostats having a +/- 1 deg F differential is very short. The sensor should be shielded and aspirated with a small fan to quickly sense changes in the environment.

Heat Distribution

Air circulation will reduce temperature stratification in the greenhouse. Installing horizontal air flow (HAF) fans that move the air at 50 to 100 feet/min can limit temperature differences to no more than 2 deg at any point in the growing area. Use 1/10 th horsepower circulating fans located 40' to 50' apart to create a circular flow pattern.

New Publication

The recently updated, 100 page handbook "Energy Conservation for Commercial Greenhouses" – NRAES-3 gives many helpful hints and suggestions for saving energy in your greenhouses this winter. Copies are available for \$20 including shipping and handling from the University of Connecticut , NRME Dept., 1376 Storrs Road, Storrs CT 06269-4087. Make check payable to UConn.

--John W. Bartok, Jr. *Agricultural Engineer*
Natural Resources Mgt. & Engr. Dept.
University of Connecticut , Storrs CT, May 2005

RESOURCE GUIDE FOR ORGANIC INSECT AND DISEASE MANAGEMENT

Cornell Cooperative Extension

This practical, information-laden guide provides organic farmers a well designed, smartly organized, and scientifically accurate source for organic farming best practices, available pest control materials, and organic farm production rules as set forth by the USDA National Organic Program (NOP), and the U.S. EPA. Perhaps most importantly, efficacy of pest control materials that are permitted for use in organic food production systems are detailed with reliable product information as reviewed in recently published trials on material efficacy.

Cultural crop management practices make up the first 39 page section and are organized into 5 major vegetable crop groups: Brassicas or Crucifers, Cucurbits, Lettuce, Solanaceous Crops, and Sweet Corn. For each grouping, key pests and disease problems are described, along with a listing for their respective cultural control methods and approved organic production materials. This information is further supported by over 70 color photographs to aid in disease and pest identification.

The greater part of this publication is devoted to detailed descriptions, use, and efficacy of 13 materials that can be used in organic production systems. The materials covered are: *Bacillus subtilis*, *Bacillus thuringiensis* (Bt), Beauveria, Potassium and Sodium Bicarbonates, Coniothyrium, Copper products, Kaolin Clay, Neem, Oils (petroleum, fish, and plant), Pyrethrum, Rotenone, Pesticidal Soap, and Spinosad. Each material "fact sheet" not only describes the material, how it works, and what type of pests it controls, but also includes its type (i.e. micro-

bial, botanical, mineral, synthetic, etc.), U.S. EPA toxicity category; USDA-NOP (National Organic Program) requirements; formulation and application guidelines; availability, sources, and OMRI (Organic Material Review Institute) and non-OMRI brand listings; reentry and/or pre-harvest intervals; effects on crops, the environment, and human health; references; and efficacy charts by pest.

Seven useful appendices include: Plant Resistance to Insects and Diseases; Habitats for Beneficial Insects; Trap Cropping and Insect Control; Induced Resistance: Revving Up Plant Defenses; Understanding Pesticide Regulations; Organic Research Needs; and Additional Resources.

This publication is spiral bound and printed on stain and moisture resistant paper, making it durable and easy to use - especially in the field where the elements may accelerate deterioration of less durable books.

The Resource Guide for Organic Insect and Disease Management was written by Brian Caldwell, Farm Education Coordinator, Northeast Organic Farming Association; Emily Brown Rosen, former Policy Director, Organic Materials Review Institute; Dr. Eric Sideman, Director of Technical Services, Maine Organic Farmers and Gardeners Association; Dr. Anthony M. Shelton, Professor, Department of Entomology, and Dr. Christine D. Smart, Assistant Professor, Department of Plant Pathology, New York State Agricultural Experiment Station, Cornell University.

Funding for this publication was provided by the Northeast Organic Network (NEON), United States Environmental Protection Agency, Northeast Region Sustainable Agricultural Research and Education Program, the New York State Agricultural Experiment Station, and Cornell Cooperative Extension.

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List Price: **\$14.95**

Get your copies of the Resource Guide for Organic Insect and Disease Management at our secure online bookstore: www.cce.cornell.edu/store. You may also call-in (607-255-2080) or fax-in (607-255-9946) your order with a valid credit card, or mail a check to **The Resource Center, 750 Cascadilla Street, Ithaca, NY 14850**. Make your check payable to Cornell University. Add \$5.00 shipping for the first item, and \$1.00 shipping for each additional item (save on shipping by ordering online). NY destinations add 8% sales tax, CA destinations 8.25% sales tax, and Canadian destinations 7.25% sales tax.

SCHOOLS WANT LOCALLY GROWN AND YOU'VE GOT IT!

This is an excellent time for growers to evaluate the potential profitability of school customers and to forge new sales connections.

WHY NOW?

Issues related to food quality and diet, especially children's diets, are currently hot topics. Seeking out more locally grown foods is one aspect of this larger cultural conversation. There are a growing number of schools in Massachusetts and New England choosing to purchase locally grown food. An informal survey in October found at least 40 schools buying directly from local farmers and others, including our second largest public school system, Worcester, requesting locally grown products from their distributor. This is happening at the k-12 level and at colleges.

WHAT'S THEIR MOTIVATION?

Among institutions the initial reason to serve locally grown foods differs. Public schools are most focused on improving nutrition and increasing school lunch participation, while private schools and colleges are more focused on meeting consumer demand. Many food service directors also wish to show support for their community through local purchasing. Once they start serving locally grown food, the fresh taste and superior quality of the products becomes a primary motivator for most school food service staff. Very few schools appear to be looking for cheaper food when they seek out local growers.

HOW TO GET STARTED

As with any other type of potential customer, you need to figure out if a particular school or school system is going to be profitable. What are the factors to consider?

Delivery Vehicle or Arrangement

If you don't have an appropriate vehicle or an arrangement with someone else who delivers, then your options for school sales are limited. A few small schools are purchasing at the farm gate, at a CSA, or at a farmers market, but most need delivery.

Purchasing Volume

Schools come in all sizes and have differing levels of commitment to serving fresh fruits and vegetables. They can be very big, very small, or in-between sized customers. Ask pointed questions at the beginning to get a good sense of how much they will buy. To help you target schools of an appropriate size for your operation, MDAR is creating a database of k-12 Mass. schools, which includes number of lunches served, names of food service directors, etc. and it will be available on the MDAR web site soon, at www.mass.gov/agr/. Information on colleges is also being gath-

ered. Contact Kelly Erwin for more details.

Location

It makes sense to sell to schools that are near your farm or on existing delivery routes. Clusters of school customers are probably more profitable. To see what schools are near you or on your route, use the upcoming MDAR school database, or check the Mass. Dept. of Education food service director listing which is located at www.doe.mass.edu/cnp/fsd/default.html#A.

Number of Delivery Sites

If a school system needs deliveries at 13 locations on one day it is a different customer than a system with the same size order and 2 delivery locations. Tell them what you can and cannot do, ask them to be flexible, remember to build in the cost of deliveries to your price, and set a per site minimum order, if that's important.

Delivery Schedule

Find out what day or days are requested for deliveries and what time the staff goes home. Most schools need delivery before 1 pm, some before 11 am, and sometimes they're planning to prepare your food that same day. Again, negotiate for a schedule that works for you, but be aware that late deliveries at schools can be a disaster.

Product Mix

Combining fruit sales with vegetable sales appears to provide a much better profit margin than either alone. From the school side there's a desire to deal with only one farmer or farm vendor, so having a diversified products list is a big plus. Obtaining products from other growers to offer the schools can be useful. Once you have a relationship, ask the school to let you know way in advance what they would like to buy next year and discuss if there are affordable options for extended season products.

Communication Requirements

Make sure that you have a reliable way to share information with the schools about what's for sale and to receive their orders. Take the time to put together a clear product/price list and share information about your farm. Schools have holidays and vacation breaks that change their schedules. Most schools order on a weekly basis but plan their menus several weeks in advance. Teach them about seasonality and, given time, they will change their menus to match your product list. Schools are often interested to learn about IPM or organic methods, about the history of your farm, and may want to encourage students or staff to visit your farm.

Insurance or Handling Requirements

If you are already delivering to stores or restaurants, chances are you have met these requirements. Ask about this in the beginning conversations with the school. Be aware that school food services which are run by manage-

ment companies, such as Aramark or Chartwells, may have additional requirements but once you're certified at one of their locations you're certified for all of them.

Pricing and Payment

So far, schools in Massachusetts are paying good prices for products from local growers. Schools are reliable payers, if sometimes slow. A few schools have required farmers to enter a formal bidding process, but most have not. Ask questions at the beginning so there are no surprises. Be sure to quote prices which reflect the entire cost of doing business with the school and if you plan to vary the prices, let them know ahead of time that your prices are seasonal and fluctuate.

*--By Kelly Erwin, Managing Consultant,
Mass. Dept. of Agricultural Resources
Farm to School Project*

Contact Kelly Erwin at kelerwin@localnet.com or 413-253-3844 if you'd like a copy of the form she's developed to help growers evaluate a new school customer, or to talk over your situation. She has lists of k - college schools that are still looking for growers and is available to talk with groups of farmers who are thinking about sales to schools.

UPCOMING PROGRAMS – 2006

•Winter Flower Growers' Program

Tuesday, January 17th, 2006

9:00 AM – 3:10 PM

Mahoney's Wholesale Growing Division, 200 Wildwood St., Woburn, MA

Tour Mahoney's greenhouses and attend our day-long educational program. Topics will include: Purchasing Fuel Oil; Issues Affecting Your Business (Invasive Plants, Labeling La, Health Insurance, State Programs); New Pest Management Products for Spring 2006 (1 Pesticide Recertification Credit); and Garden Center Panel: Changes We are Making for the 2006 Season. Co-sponsored by Massachusetts Flower Growers' Association and the University of Massachusetts Extension Floriculture Program
For more information, contact: **Bob Luczai**, bluczai@ballseed.com, **Tina Smith**, tsmith@umext.umass.edu, or **Paul Lopes**, lopes@umext.umass.edu

•Plant Nutrition for Greenhouse Crops

Tuesday, January 24th, 2006

9:30 AM – 3:30 PM

Sturbridge Host Hotel and Conference Center, Rt. 20, Sturbridge, MA

This program is designed to provide practical information on plant nutrition for greenhouse ornamentals. Bring your pH and EC meters to be calibrated, or if you need a refresher on using them! \$35 registration fee includes coffee, lunch and handouts. Co-sponsored by University of

Massachusetts Extension Floriculture Program and Northeast SARE

For more information, contact: **Tina Smith**, tsmith@umext.umass.edu, 413-545-5306 or **Paul Lopes**, lopes@umext.umass.edu, 508-295-2212 ext. 24

•Seven-Week Course: Integrated Pest Management for Greenhouse Crops

Thursdays, February 2, 9, 16, 23 and March 2, 9, 16

Time: 11:00 AM – 1:00 PM

Place: French Hall, University of Massachusetts Campus, Amherst

This progressive seven-week course is designed to provide basic, practical information on common greenhouse pests including identification, monitoring, and management strategies for greenhouse crops.

For more information, contact: **Tina Smith**, tsmith@umext.umass.edu, 413-545-5306

LAND AVAILABLE FOR CSA USE

Grafton, MA

Seeking farmer to take over a one acre, hand-cultivated, raised-bed (organic but uncertified) market garden in Grafton, MA for 2006 season and beyond. The land is owned by a friendly and supportive family and is rent free in exchange for sharing in the organic bounty. This very fertile acre has been managed organically for four years as a CSA serving between 30 and 40 shareholders. The most recent farmers left the area as of November, 2005, but hope to pass land use on to a hard working, enthusiastic, and sustainable grower who would plan to steward it in hand-worked, raised-bed fashion for multiple seasons. There are no on-site living accommodations. Contact **Patrick McCabe** (508) 839-3185.

Vegetable Notes, Ruth Hazzard, editor and Ben Hunsdorfer, Assistant Editor. 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.

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