



UNIVERSITY OF MASSACHUSETTS
AMHERST



The Green Directory 2009

University of Massachusetts Amherst, founded in 1863 as Massachusetts Agricultural College, offers resources for agricultural enterprises through its College of Natural Resources and the Environment and through UMass Extension. This guide will help you take advantage of the teaching and research from the university as well as the services and assistance we offer. UMass Amherst is committed to working with agricultural businesses to maintain and grow an economically and environmentally healthy Commonwealth.

Educational
Resources for
Agricultural &
Landscape
Industries

from UMass Amherst



UMassAmherst Outreach **UMass
Extension**

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page to see
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contents.

Information Resources for Home Gardeners

GARDEN HOTLINES

Western Mass.

Master Gardener Association

(413)298-5355

(413)533-0414

Questions taken via voice mail and email
year round

www.wmassmastergardeners.org

Massachusetts Horticultural Society

Mon., Wed., Fri.; 10 a.m.–2 p.m.

(617)933-4929

Barnstable County

Master Gardener Program

(Barnstable County residents only)

(508)375-6700

BOTANIC GARDENS

Arnold Arboretum

Mon.; 1–3 p.m.

(617)384-5235

Tower Hill Botanic Garden

Wed. 2–4 p.m.

(508)869-6111 ext. 110

OTHER

2009 UMass Garden Calendar

Daily gardening tips and more

www.UMassGardenCalendar.org

UMass Soil Testing Laboratory

www.umass.edu/soiltest

See page 21

UMass Workshops for Home Gardeners

www.MassAggieSeminars.org

www.UMassGarden.com

Massachusetts Audubon Wildlife

Information Line

Especially helpful with questions about
snakes and other wildlife. Mon. - Fri.

9 a.m.–5 p.m.; All Year; (781)259-2150

wildlifeinfo@massaudubon.org

National Pesticide

Information Center (NPIC)

Sponsored by the Environmental Protection
Agency; offers impartial information about
pesticides (products, poisoning, safety,
health and environmental effects, etc.);

Sun. - Sat., 9:30 a.m.–7:30 p.m.

(excluding Holidays)

(800)858-7378

www.npic.orst.edu

USDA Wildlife Services

Damage control of problem
animals, permits.

Mon.–Fri., 8:00 a.m.–4:30 p.m.

(413)253-2403

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UMassAmherst Outreach **UMass
Extension**

Green Directory

November 2008–November 2009

This directory highlights the educational resources provided by the Agriculture and Landscape Programs of University of Massachusetts Extension.

Our staff assist agricultural and horticultural professionals by providing educational programs and research-based information on environmentally sound management practices, particularly those that reduce pesticide use. Our programs educate businesses in the use of Integrated Pest Management (IPM), a leading edge system developed at UMass Amherst.

Agriculture and Landscape Program Staff

<i>Team Name & Staff</i>	<i>Program Focus</i>	<i>Location</i>	<i>Phone</i>	<i>Fax</i>	<i>E-mail</i>
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UMass Extension - www.UMassExtension.org

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UMass Extension Newsletters

Hort Notes

For landscapers, grounds managers and other green industry professionals. Published monthly year round (12 issues). Alerts green industry professionals to emerging landscape insect and disease problems while providing timely Integrated Pest Management strategies. Emphasizes timely plant health care practices and problem-solving information. A calendar of events is included.

Call for a sample. Cost is \$20 per year. Contact Ellen Weeks (413)545-0895, eweeks@umext.umass.edu.

Garden Clippings

Available for distribution by garden centers and landscapers to your customers at a bulk rate. This monthly newsletter is published March through October with tips of the month and other information for home gardeners. (A one-year subscription of eight issues is \$10 per year.)

Call for a sample. Contact Ellen Weeks, (413)545-0895, eweeks@umext.umass.edu.

Floral Notes

This bimonthly publication provides research-based information pertinent to Massachusetts flower growers.

A mailed hard copy is available for \$15/year or \$22 for two years. An e-mail version includes full color illustrations not available in print and is available for \$5 for two years. To subscribe to either or both, contact Doug Cox at (413)545-5214 or dcox@pssci.umass.edu.

Floralert

This publication is published several times a year to publicize upcoming programs. Free. Contact Doug Cox at (413)545-5214 or dcox@pssci.umass.edu.

Crops, Dairy, Livestock, Equine News

Published quarterly, presenting information that crosscuts the various livestock industry areas (dairy, sheep, goats, swine, and horses). Issues such as grazing, input cost control (crops, feeds, and nutrient management), and environmental quality (soil and water quality) are covered. It also presents results of ongoing research and outreach projects.)

Contact Stephen Herbert at (413)545-2250 or shebert@pssci.umass.edu

Healthy Fruit

Healthy Fruit is a timely newsletter that includes information on tree-fruit horticulture, pest management, and related topics. The primary target reader is the commercial grower, but anyone growing fruit trees will benefit.

Healthy Fruit is published weekly or biweekly from April through September and periodically throughout the rest of the year. Meeting announcements, fact sheets, and bulletins published during the year, and updates to the *New England Apple Pest Management Guide* are included with the *Healthy Fruit* subscription. The cost for subscription to *Healthy Fruit* is \$50 per year for the e-mail version and \$70 per year for the print version. For more information, contact Wesley Autio, (413)545-2963, auto@pssci.umass.edu.

Fruit Notes

Prepared by the UMass Department of Plant, Soil & Insect Sciences. Subscription rates: \$25 per year for the print version and \$20 per year for the e-mail version. All payments must be made in United States currency. Contact Wesley Autio at (413)545-2963 or auto@pssci.umass.edu.

Vegetable Notes

Vegetable Notes is a six- to eight-page newsletter for commercial vegetable growers and market gardeners, published weekly during the growing season and periodically during the winter months. Weekly issues from May to September contain timely, field-based alerts and information on management of weeds, insects and diseases, fertility, soils, and cover crops. The latest chemical, cultural, and biological controls for organic and conventional growers are provided, with an emphasis on Integrated Pest Management strategies. Sweet-corn trap captures from all regions of Massachusetts are reported weekly. Calendar updates include twilight meetings and field days throughout New England.

Winter editions, published every four to six weeks, provide research reports and articles on production, pest management, marketing, and agriculture issues relevant to vegetable farms, and announcements of conferences and educational programs in the region.

A mailed, hard-copy edition is available for \$40 per year. Subscribe by sending a check, payable to University of Massachusetts, to Marilyn Kusmeskus, Department of Plant, Soil and Insect Sciences, Agricultural Engineering Building, University of Massachusetts, Amherst, MA 01003. An e-mail edition is available free of charge; send request to umassvegetable@umext.umass.edu. Subscribe to either edition online at www.umassvegetable.org/newsletters/subscribe. Archived editions are also available on the same website.

For more information call the Vegetable Program office at (413)545-3696 or go to www.umassvegetable.org.

Small Fruit Newsletter: Massachusetts Berry Notes

The *UMass Small Fruit Newsletter: Massachusetts Berry Notes* is a comprehensive publication that includes seasonally relevant information on small fruit production, pest management, marketing, and related topics. Short articles on recent research results are also often included. Information about all types of production practices including IPM, organic, and conventional management is provided as well as a section for grower's questions and answers.

Massachusetts Berry Notes is produced monthly from August to May and biweekly for 10 weeks during the summer growing season. Summer issues of *Berry Notes* often include pest alerts, scouting results, and reminders and/or checklists for important crop management activities (such as how and when to renovate strawberry beds).

Massachusetts Berry Notes includes announcements of meetings for small fruit growers, including locations, registration information, and directions. Pesticide applicator certification trainings are also posted. An annual *Small Fruit Resource Guide*, which includes information on grower associations, other valuable small fruit publications, and websites, is published each November. E-mail subscriptions are \$10 per year. For more information, contact: Sonia Schloemann, (413)545-4347, sgs@umext.umass.edu.

Cranberry Station Newsletter

Published periodically during the year, the *Cranberry Station Newsletter* presents timely information on cranberry pest management, horticulture, research findings, and current issues relevant to the industry. It also provides updates on available publications and upcoming meetings.

Prepared by the Cranberry Station faculty and staff. A hard copy is free to Massachusetts growers. All others can pay \$15/year, sign up for free e-mail version or view it on the web at www.umass.edu/cranberry. Contact Deb Cannon at (508)295-2212 ext. 10 or dcannon@umext.umass.edu for subscription information.

New England Grape Notes

New England Grape Notes is a periodic electronic newsletter published during the growing season with approximately 10 issues annually and is distributed throughout New England. Each issue contains seasonally relevant information on grape production, insect and disease management, harvest parameters, upcoming meetings, and related topics. Information about all types of production including IPM, organic, and conventional management is provided.

E-mail subscriptions are \$10 per year. For more information, contact: Sonia Schloemann, (413)545-4347, sgs@umext.umass.edu.

Frequently Used Phone Numbers

UMass Extension

Floriculture Diagnostics (p.25)	413-545-3209
Pesticide Education Program (p.32)	413-545-1044
Soil Testing Lab (21)	413-545-2311
Turf Diagnostics (p.28)	413-545-3209
Vegetable Diagnostics (p.24)	413-545-3209
Woody Ornamental Diagnostics (p.27)	413-545-3208

Industry Associations

Associated Landscape Contractors of Massachusetts www.alcom.org	508-653-3373
Board of Registration of Landscape Architects www.mass.gov/dpl	617-727-3072
Cape Cod Cranberry Growers Association, East Wareham George Rogers, President Jeffrey LaFleur, Executive Director www.cranberries.org Email: cccga@cranberries.org	508-295-4895
Cape Cod Landscape Association www.capecodlandscapes.org	877-432-3156
Ecological Landscaping Association www.ecolandscaping.org	617-436-5838
Federation of Massachusetts Farmers Markets, Waltham Jeff Cole www.massfarmersmarkets.org	781-893-8222
Golf Course Superintendents Association of America www.gcsaa.org	800-472-7878
Golf Course Superintendents Association of New England www.gcsane.org	800-833-4451
Massachusetts Aquaculture Association PO Box 500, North Eastham, MA 02651 Co-President (Shellfish) Bob Tourigny Co-President (Finfish) Reagan Ellis Email: info@massaqua.org www.massaqua.org	
Massachusetts Arborists Association www.massarbor.org	508-653-3320
Massachusetts Association of Lawn Care Professionals www.malcp.org	781-274-7373
Massachusetts Association of Roadside Stands, Acton info@massfarmstands.com www.massfarmstands.com	978-263-5229

Massachusetts Christmas Tree Growers Association www.christmas-trees.org	978-365-5818
Massachusetts Farm Bureau www.mfbf.net	508-881-4766
Massachusetts Flower Growers Asso. Bedford Bob Luczai www.massflowergrowers.com	781-275-4811
Massachusetts Fruit Growers' Association, N. Amherst Wesley Autio, Secretary autio@pssci.umass.edu www.massfruitgrowers.org	413-545-2963
Massachusetts Golf Association info@mgalinks.org www.mgalinks.org	800-356-2201
Massachusetts Maple Producers Association, Ashfield Tom McCrumm info@massmaple.org www.massmaple.org	413-628-3912
Massachusetts Nursery and Landscape Association www.mnla.com	413-369-4731
Massachusetts Recreation and Park Association P.O. Box 783, Westfield, MA 01086 www.massrpa.org	413-568-8356 (f) 413-568-4166
Massachusetts Tree Wardens Association, Waltham Melissa LeVangie www.masstreewardens.org	781-894-4759
New England Chapter/International Society of Arboriculture Marcia McPhee www.newenglandisa.org	800-617-4870
New England Greenhouse Conference Cindy Delaney www.negreenhouse.org	802-865-5202
New England Grows, Natick Virginia Wood www.negrows.org	508-653-3009
New England Nursery Association, Natick www.nensyassn.org	508-653-3112
New England Pest Management Association, Concord, NH www.nepma.org	866-386-3762
New England Regional Turfgrass Foundation Gary Sykes www.nertf.org	401-841-5490

New England Sod Producers Association Gary Sykes www.nesod.com	401-841-5490
New England Sports Turf Managers Association (NESTMA) Nick Caggiano, President www.nestma.org	603-589-3370
New England Vegetable & Berry Growers Association Paul Gove, President John Howell, Sec./Treasurer	978-537-8640 413-665-3501
Northeast Organic Farming Association (NOFA), Barre Julie Rawson www.nofamass.org	978-355-2853
Sports Turf Managers Association (STMA) www.stma.org	800-323-3875
Turfgrass Producers International www.turfgrassod.org	847-649-5555 800-405-8873
United States Golf Association www.usga@usga.org www.usga.org	908-234-2300

Chemicals

CHEMTREC Pesticide Emergency Network For emergency spills, fires, leaks and explosions www.chemtrec.com	800-262-8200
EPA Emergency National Response Center	800-424-8802
EPA Emergency Treatment, Spills	617-223-7265
National Pesticide Information Center (NPIC) www.npic.orst.edu	800-858-7378
Pesticide Collection Program (Safety Kleen) Chemical disposal business, not for general information. www.safety-kleen.com	508-867-7184

Poison Control Centers

Connecticut Hearing Impaired Connecticut Poison Control Center University Connecticut Health Center, 263 Farmington Ave., Farmington	800-222-1222 866-218-5372
Administrative Phone Administrative Fax www.poisoncontrol.uchc.com	860-679-3531 860-679-1623

NORTHERN NEW ENGLAND POISON CENTERS:

MAINE, NEW HAMPSHIRE, VERMONT Maine Medical Center, 22 Bramhall Street, Portland, ME	800-222-1222
Administrative Phone Administrative Fax	207-662-7220 207-871-6226

MASSACHUSETTS, RHODE ISLAND Regional Center for Poison Control and Prevention , 300 Longwood Ave., Boston, MA Administrative Phone Administrative Fax www.maripoisoncenter.com	800-222-122 617-355-6609 617-730-0521
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State of Massachusetts

BUREAU OF RESOURCE PROTECTION Ken Chin, Environ. Engineer Ken.Chin@state.ma.us Bob Fagan, Southeast Region	617-292-5893 508-946-2811
DEPARTMENT OF AGRICULTURAL RESOURCES www.mass.gov/agr 251 Causeway Street, Suite 500 Boston, MA 02114-2151 Doug Petersen, Commissioner doug.petersen@state.ma.us Scott Soares, Assistant Commissioner scott.soares@state.ma.us	617-626-1700 617-626-1701 617-626-1702
-Division of Agricultural Development Mary Jordan, Director Mary.Jordan@state.ma.us Land Use, APR Program: Ron Hall Markets: Rick LeBlanc Farm Composting: Bill Blanchard Aquaculture: Sean Bowen Farm Viability: Craig Richov Export Markets: Bonita Oehlke Economics: Dr. Bill Gillmeister Farmers Markets: David Webber Business Training: Rick Chandler Farm-To-School: Kelly Erwin	617-626-1750 617-626-1704 617-626-1759 617-626-1709 617-626-1724 617-626-1725 617-626-1753 617-626-1811 617-626-1754 413-577-0459 413-253-3844
-Division of Biosecurity and Regulatory Services Lee Corte-Real, Acting Director leecorte-real@state.ma.us Farm Products & Plant Industries Pesticide Product Registration: Susie Reed Exam dates and locations Exam and license info. packet CAFO/AFO: Gerard Kennedy Ag. Environ. Enhancement Grants: Gerard Kennedy Animal Health: Esther Wegman Riding Instructor Licensing: Sandy Pepe	617-626-1776 617-626-1800 617-626-1778 617-626-1841 617-626-1785 617-626-1773 617-626-1773 617-626-1795 617-626-1796

-Energy Efficiency, Conservation, & Renewables Program Gerry Palano gerald.palano@state.ma.us	617-626-1706
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DEPARTMENT OF CONSERVATION & RECREATION Rick Sullivan www.mass.gov/dcr	617-626-1250
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DEPARTMENT OF ENVIRONMENTAL PROTECTION www.mass.gov/dep Western Region Central Region	800-462-0444 617-338-2255 413-784-1100 508-792-7650
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Northeast Region Southeast Region	978-694-3200 508-946-2700	U.S. Department of Agriculture	
DEPARTMENT OF INDUSTRIAL ACCIDENTS 800-323-3249 (Worker's Comp)		www.usda.gov/	
DEPARTMENT OF PUBLIC SAFETY www.mass.gov/dps	617-727-2834	Amherst offices Animal & Plant Health Inspection Service Monte Chandler	413-253-2403
To obtain a Hoister's License, contact the Hoisting Division: 1 Ashburton Place, Rm 1301 Boston, MA 02108		Agricultural Mediation Program Loraine M. Della Porta, Esq., Deputy Dir. Mass. Office for Dispute Resolution & Public Collaboration University of Massachusetts Boston 100 Morrissey Blvd., Boston, MA 02125 loraine.dellaporta@umb.edu	888-869-1898 617-287-4048
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS 100 Cambridge St, Suite 900 Boston, MA 02114	617-626-1000	Farm Service Agency Sandra Adams	413-253-4500
OFFICE OF BUSINESS DEVELOPMENT www.magnet.state.ma.us/mobd/mobdhome.htm Berkshire Area Springfield Area Mike Vedovelli	413-499-0037 413-562-8780	Rural Development David Tuttle	413-253-4302
Others		Natural Resources Conservation Service, Christine Clarke	413-253-4351
Dig Safe	888-344-7233	Field Offices Barnstable Greenfield Holden Hadley Pittsfield Westford West Wareham	508-771-6476 413-772-0384x3 508-829-4477x3 413-585-1000x3 413-443-1776x3 978-692-1904x3 508-295-5151x2
New England Regional Turf Conference and Trade Show	401-848-0004	Resource Conservation & Development Berkshire-Pioneer Pilgrim Patriot Plymouth Conservation District	413-256-1607 508-295-5151x5 978-692-1904x4 508-295-5151x4
University of Massachusetts		National Turfgrass Evaluation Program Kevin Morris www.kmorris@ntep.org	301-504-5125
www.umass.edu/	413-545-0111	U.S. Environmental Protection Agency (EPA)	
Agricultural Experiment Station www.umass.edu/nre/experimentstation	413-545-4204	www.epa.gov/	
Center for Rural Massachusetts www.umass.edu/ruralmass	413-545-0153	Dr. Rob Koethe koethe.robert@epa.gov FIFRA Enforcement Officer: Kan Tham tham.kan@epa.gov FIFRA State Grants Coordinator: Ray Putnam putnam.raymond@epa.gov Special Projects Grants (SAI, PESP) & WPS Coord.: Andrea Szylyian szylyian.andrea@epa.gov	617-918-1535 617-918-1872 617-918-1872 617-918-1198
College of Natural Resources and the Environment Steve Goodwin www.umass.edu/nre/	413-545-2766	U.S. Fish and Wildlife Service	
Donahue Institute Lynn Griesemer	413-545-0001	www.fws.gov/	
Dr. Joseph Troll Turf Research Center	413-665-4360	Rick Jorgensen	413-253-8581
Environmental Health and Safety www.umass.edu/safety/	413-545-2682		
Massachusetts Center for Agriculture www.masscenterforag.org			
Massachusetts Small Business Development Center Georgianna Parkin www.msdbc.som.umass.edu/	413-545-6301		
Stockbridge School of Agriculture William L. Mitchell www.umass.edu/stockbridge	413-545-2222		
UMass Extension www.umassextension.org	413-545-4800		

U.S. Forest Service

www.fs.fed.us/

Trade and Public Interest Organizations

Agricultural Environmental Enhancement Program (AEEP),

Boston

Gerard Kennedy

gerard.kennedy@state.ma.us

617-626-1773

American Farmland Trust,

Northampton

Julia Freedgood

www.farmland.org

413-586-9330

Arnold Arboretum, Jamaica Plain

Tom Ward

www.arboretum.harvard.edu

617-524-1718x148

Berkshire Grown, Great Barrington

Danielle Mullen

info@berkshiregrown.org

www.berkshiregrown.com

413-528-0041

Center for Ecological Technology,

Pittsfield

Laura Dubester

www.cet@cetonline.org, www.cetonline.org

413-445-4556

Community Involved in Sustaining Agriculture (CISA), South Deerfield

cisa@buylocalfood.com

www.buylocalfood.com

413-665-7100

Cornell Waste Management

Institute, Ithaca, NY

Lauri Wellin

cwmi@cornell.edu

www.cwmi.css.cornell.edu

607-255-1187

E F Schumacher Society,

Great Barrington

Susan Witt

efssociety@smallisbeautiful.org

www.smallisbeautiful.org

413-528-1737

Farm Viability Enhancement

Program (FVEP), Boston

Craig Richov

Craig.Richov@state.ma.us

617-626-1725

International Plant Propagator's

Society, Eastern Region,

Southhold, NY

Margot Bridgen

www.ipps.org/EasternNA

631-765-9638

IPM Institute of North America,

Madison, WI

Dr. Thomas Green

ipminstitute@cs.com

www.ipminstitute.org

608-232-1410

Lyle E. Littlefield Ornamentals Trial Garden

Orono, ME

Brad Libby

www.umaine.edu/lhc/ornamental.htm

207-581-3112

Massachusetts Agriculture in the Classroom, Seekonk

Debi Hogan

debi.hogan@earthlink.net

www.umass.edu/umext/MAC

508-336-4426

Massachusetts Audubon Society,

Boston

Christopher Hardy

www.massaudubon.org

617-523-8448

Massachusetts Farm Bureau,

Ashland

staff@massfarmbureau.com

www.mfbf.net

508-881-4766

Massachusetts Horticulture Society,

Dover

www.masshort.org

617-933-4900x4925

Massachusetts Public Interest Research Group (MassPIRG),

Boston

www.info@masspirg.org

www.masspirg.org

617-292-4800

Northeast Biosolids and Residuals Association,

Tamworth, NH

Ned Beecher

www.nebiosolids.org

603-323-7654

New England Small Farm Institute (NESFI), Belchertown

www.smallfarm.org

413-323-453

Northeast Sustainable Agriculture Working Group (NESAWG),

Belchertown

Kathy Ruhf

www.kruhf@smallfarm.org

www.nesawg.org

413-323-9878

SEMAP, West Wareham

Sarah Kelley

skelley@umassd.edu

www.umassd.edu/semaph

508-295-2212x50

Sustainable Agriculture Research and Education, Northeast Center,

Burlington, VT

David Holm

nesare@uvm.edu

www.uvm.edu/~nesare

802-656-0471

Tower Hill Botanic Garden,

Boylston

John Trexler

www.towerhillbg.org

508-869-6111

Toxics Use Reduction Institute,

UMass Lowell

Michael Ellenbecker

www.ellenbec@turi.org

www.turi.org

978-934-3275

Van En Center for Sustainable

Living, Chambersburg, PA

Randy Jo Market

csacenter@yahoo.com

717-264-4141

Conferences, Seminars, and Workshops

Pesticide Education Program Workshops

Contact Natalia Clifton, UMass Extension, at (413)545-1044 or check www.umass.edu/pested for the schedule of 2009 workshops (See page 32).

Green School

November–December, 2008

Doubletree Hotel, Milford, MA

November–December, 2010

(Location TBA)

Presented by the Landscape, Nursery and Urban Forestry and Turf Programs, Green School is a comprehensive educational training program for Green Industry professionals which provides instruction on the relationship of horticultural fundamentals to environmental quality and instills a sense of environmental stewardship in participants. Knowledge of plants and plant systems as well as integrated pest management (IPM) is the basis of the curriculum.

The 60-hour training program focuses on management of the landscape as a whole, and is appropriate for garden center managers and employees, private or municipal grounds managers and personnel, landscape and lawn care operators, nursery operators and personnel, and professional gardeners. Horticulture professionals learn about basic plant management with emphasis on IPM concepts and the optimization of pest control through proper cultural management of turf, woody ornamentals, and other related specialties. Participants can choose **Landscape Management, Turf Management, or Arboriculture**. Topics will be taught by University of Massachusetts Extension educators and UMass Amherst faculty, as well as other professionals recognized in their areas of expertise in the Northeast. Classes are held several days per week from 9:00 a.m. to 3:30 p.m. The next program will be held in November–December 2010. **Applications will be accepted starting July 2009.**

For an application or further information, go to www.umassgreeninfo.org or contact the Landscape, Nursery, and Urban Forestry Program at (413)545-0895 or Mary Owen, UMass Extension Turf Program, at (508)892-0382.

New England Greenhouse Conference

November 5, 6, 7, 2008

Worcester, MA
Centrum Centre Arena & Convention Complex

A 24-year tradition has developed into an event attracting over 2,000 growers and garden retailers. New England state universities and growers' associations have joined New England Floriculture Inc. to sponsor this conference featuring 70 educational programs and 200 trade show booths.

This conference is held every other year.

For more information contact Tina Smith (413)545-5306, tsmith@umext.umass.edu, or Paul Lopes (508)295-2212 ext. 24, lopes@umext.umass.edu, UMass Extension Floriculture Program, or visit the website www.negreenhouse.org.

Conference on Renewable Energy and Alternative Heat Sources for Farms and Greenhouses

December 4, 2008

8:30 am – 4:00 pm
Sturbridge Host Hotel and Conference Center
Sturbridge, MA

Sponsored by the UMass Extension Agriculture and Landscape Program, New England Vegetable and Berry Growers Association, the Massachusetts Flower Growers Association, and Massachusetts Dept. of Agricultural Resources. This one day conference will focus on how to deal with the current crisis in farm costs brought on by skyrocketing prices for fossil fuels. Topics covered will include current options for transitioning to biomass fuel (corn, wood, and pelletized fuel), energy audits and conservation, growing and using shelled corn as a fuel crop, furnace and boiler designs, grant programs that help growers transition to alternative energy sources, and the future of biomass fuel in Massachusetts.

For more details contact Andrew Cavanagh, 413-577-3976, acavanagh@psis.umass.edu or visit www.umassvegetable.org and select the Corn Heat for Greenhouses Project.

Alternative Crops for Greenhouses and High Tunnels

December 12, 2008

Sturbridge Host Hotel and Conference Center
Sturbridge, MA

Sponsored by the UMass Extension Floriculture Program, UMass Extension Vegetable Program, University of Connecticut Extension Program and Northeast SARE.

Contact Tina Smith, 413-545-5306, tsmith@umext.umass.edu, Paul Lopes, 508-295-2212 ext. 24, lopes@umext.umass.edu, of UMass Extension.

Winter Flower Growers Meeting

January 2009

Date and place TBA

Full-day educational program for greenhouse and floriculture businesses, co-sponsored by UMass Extension Floriculture Program and Massachusetts Flower Growers Association. For more information contact Tina Smith (413)545-5306, tsmith@umext.umass.edu, or Paul Lopes (508)295-2212 ext. 24, lopes@umext.umass.edu, UMass Extension Floriculture Program, University of Massachusetts Amherst.

UMass Winter School for Turf Managers

January 5-

February 19, 2009

The annual UMass Winter School for Turf Managers provides turf management professionals with the concepts essential to maintaining high quality turf while instilling a sense of environmental stewardship and fiscal responsibility. This comprehensive program is designed for professionals involved in the management of golf courses, athletic fields, parks, industrial, municipal and private grounds, fine lawns, and other situations in which quality turf is desired. Winter School is especially suited for those who want to expand their skills and advance in their chosen career but cannot schedule a two- or four-year program.

Winter School is a full-time program with classes held Monday through Friday. A Certificate of Completion is awarded to those who complete the program requirements.

Professional Continuing Education Units (CEUs) will be available, applicable towards renewal of certification for Certified Golf Course Superintendent (CGCS) in the Golf Course Superintendents Association of America (GCSAA), and towards the Sports Turf Managers Association (STMA) Certified Sports Field Manager (CSFM) program. Contact hours in commercial pesticide certification category 37 (turf) will be available for all New England states.

Applications for the 2010 course will be available in July 2009; deadline for applications is September 15, 2009. For information, including information on application deadline and program dates for Winter School 2010, contact the UMass Winter School for Turf Managers at (413) 545-5202, or visit www.umasssturf.org.

Winter Vegetable & Berry Meetings

Friday, January 9, 2009

Day's Inn at the Parwick Centre, Chicopee, MA
(450 Memorial Drive, next to Exit 5 off I-90)

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; the Ag conservation model for land preservation in New Hampshire.

Saturday, February 7, 2009

UMass Extension Center, Waltham, MA

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. For program details, visit the UMass Extension Vegetable Program website, www.umassvegetable.org or contact John Howell.

Winter Lawn Care Conference

January 21, 2009
(Snow date - January 22)

Sturbridge Host Hotel
Sturbridge, MA

Who should attend? Lawn, landscape, municipal and sports turf professionals and crews, and anyone interested in ecologically sound, economically feasible turf management. Business owners and managers will learn from the best of their colleagues, making their businesses thrive. 2009 Winter Lawn Care Conference attendees will have the choice of two education tracks: Business or Technical. The theme of the Technical Track will be environmental protection, with a focus on protecting water and managing invasive plants.

Pesticide recertification contact hours will be available in the Tech Track for all New England states for category 37 (turf) and category 00, Licensed Applicator.

Business track participants are invited to attend the trade show and post-conference reception.

The Winter Lawn Care Conference is held in partnership with the Massachusetts Association of Lawn Care Professionals. For more information, contact the UMass Turf Program at (508) 892-0382, mowen@umext.umass.edu; or MALCP at (781) 274-7373, malcp@yahoo.com, UMass TurfTalk subscribers will receive notice of posting of program agenda and registration information by email. To sign up, visit www.umassurf.org and click on Mailing List.

Stockbridge School Job Fair

February 10, 2009
10:00 am-1:00 pm

UMass Campus Center
Auditorium
Amherst, MA

The Stockbridge School will host its 12th Annual Job Fair. Approximately 100 companies will be seeking qualified students and graduates for full-time and internship positions. The Stockbridge School, an integral part of the College of Natural Resources and the Environment, offers the associate of science degree in six majors: Arboriculture and Community Forest Management, Equine Industries, Fruit & Vegetable Crops, Horticulture, Landscape Contracting and Turfgrass Management. Registration deadline is December 31, 2008. Contact Elizabeth Wiernasz, Stockbridge School Office, (413)545-2222, or via fax, (413)577-0242, wiernasz@nre.umass.edu, www.umass.edu/stockbridge.

Garden Center Employee Training

March 2009
Date and Location TBA

Training for garden center employees, horticulture retailers and growers interested in information concerning organic methods, biological control and the use of Integrated Pest Management practices in managing insects and plant disease in the landscape and the garden. Customers routinely have questions and look for answers. This training will prepare the participants to better deal with these questions. For more information contact Tina Smith (413)545-5306, tsmith@umext.umass.edu, or Paul Lopes (508)295-2212 ext. 24, lopes@umext.umass.edu, UMass Extension Floriculture Program, University of Massachusetts Amherst.

Good Agricultural Practices Training for Vegetable and Berry Growers

March 2009
Location and date TBA

Food safety is a growing concern in the marketplace. Wholesale produce buyers are becoming more likely to require growers to obtain certification for using Good Agricultural Practices (GAP) to ensure the safety of their produce. Growers need to understand what GAP means on their farm, how to comply and how to become certified. This daylong program will provide training for GAP certification.

To receive notice of program details, subscribe to Vegetable Notes (page 7) or contact Rich Bonanno at rbonanno@umext.umass.edu for more information.

Community Tree Conference

Saving Our Trees:

*A Conference for
Arborists, Foresters, Tree
Wardens, Sugar Bush
Owners and Anyone
Who Loves Trees*

March 10, 2009
9 am - 4 pm

Stockbridge Hall
UMass Amherst
Amherst, MA

This one-day conference is designed for arborists, tree wardens, municipal managers, city planners, foresters, sugar bush owners and landscape architects who are involved with the management of property, both private and public. The University of Massachusetts Extension, the Massachusetts Department of Conservation and Recreation and the USDA Forest Service sponsor this annual conference. With the identification of the Asian longhorned beetle (ALB) in central Massachusetts, it is imperative that anyone responsible for land and tree management have an understanding of this major pest. This conference will review the ALB, what is being done to manage it, and what you can do. Additional topics include identification of plant health care problems in New England, fruit tree management, conservation laws and regulations, and nutrient management.

Pesticide, ISA, SAF, CFE, MCA, MCH and MCLP credits have been requested.

Cost is \$65. For a registration form or more information, go to www.umassgreeninfo.org or contact UMass Extension at (413) 545-0895, eweeks@umext.umass.edu.

2009 Landscape
Season Preview:
Insects, Weeds,
and Ticks!

Monday, March 23, 2009
8:30 am - 3:30 pm

UMass Experiment
Station, E. Wareham, MA

Join UMass faculty and UMass Extension Specialists in a day-long seminar covering new pests such as Asian longhorned beetle and viburnum leaf beetle, preview the 2009 grub season including new products and management strategies, learn new products for weed management, and be prepared for the upcoming deer tick season. **Pesticide contact hours, ISA, SAF, CFE, MCA, MCLP and MCH credit requested.** Cost \$65.

For more information or a registration form, go to www.umassgreeninfo.org or contact the UMass Extension Landscape, Nursery and Urban Forestry Program at 413-545-0895 or eweeks@umext.umass.edu.

Weed
Management for
Garden Retailers

March 26, 2009
8:30 am to 12:30 pm

Doubletree Hotel
11 Beaver St.
Milford, MA

Customers commonly ask garden retailers questions about weed identification and the control of weeds in lawns, landscapes and gardens. This program with help retailers answer many of these common questions. A wide range of weed control strategies and retail products will be discussed in depth. Tips and resources for weed identification will be covered. There will be plenty of time for questions and discussion on topics that are important to the participants, so be sure to bring your questions. Cost is \$50

Four pesticide contact hours available for categories 29, 36, 37, and 00.

For a registration form or more information, go to www.umassgreeninfo.org or contact UMass Extension at (413) 545-0895, eweeks@umext.umass.edu.

Snow Mold
Research Field
Days

Late winter – Early spring,
2009

Dates TBA

Ekwanok Country Club,
Manchester, VT

Berkshire Hills Country
Club, Pittsfield, MA

Montcalm Golf Club,
Enfield, NH

Joseph Troll Turf
Research Center,
South Deerfield, MA

Workshop dates are dependent on snowmelt and prevailing disease conditions. Dates will be announced later this winter. To sign up to receive specific notification of dates and times, visit www.umassturf.org and click on Mailing List.

These field days provide an opportunity to see first-hand the results of the UMass Turf Program snow mold field trials for turfgrasses maintained at fairway height. The trials at the three golf courses will be used for testing snow mold products against a mixture of pink snow mold, *Microdochium nivale*, and Typhula Blight, caused by *Typhula* spp., under natural conditions. Identification of fungal species at each site will be confirmed using morphological characters and DNA techniques. Since pink snow mold, also called Microdochium patch (formerly Fusarium patch), is the most common snow mold in New England, there will be a trial at the UMass Joseph Troll Turf Research Center specifically targeting for Microdochium control under artificially inoculated conditions and artificial snow.

For further information on the snow mold research trials, contact Dr. Geunhwa Jung at (413) 545-2243, jung@psis.umass.edu, the UMass Extension Turf Program at 508-892-0382 or online at www.umassturf.org.

Fruit Twilight
Meetings

April, May & June
(dates TBA)

Evening educational meetings will be presented in mid-April, May, and June, 2009. For more information, contact Wesley Autio at 413-545-2963, [autio@pssci.umass.edu](mailto:auto@pssci.umass.edu) or go to www.umass.edu/fruitadvisor.

Sustainable
Greenhouse
Health
Maintenance
Program

Spring 2009

This three-year program for farmers in southern New England (MA, CT, RI) is funded by Northeast SARE. The program includes hands-on training, diagnostics, pest management and cultural recommendations, an early alert system, and sustainable greenhouse workshops. In recent years, many farmers in New England have diversified their farms by adding greenhouse crops to increase income and retain farm viability. The sustainable greenhouse health maintenance program helps farmers to prevent and identify problems early and to successfully adopt sustainable practices. For more information, contact Paul Lopes (508) 295-2212 ext. 24 or Tina Smith (413)545-5306.

Scouting for Pests and Problems of Woody Ornamentals Walkabouts

Diseases and Weeds–
April 30, 2009
Tower Hill Botanic Garden,
Boylston, MA

Insects and Weeds–
June 4, 2009
Heritage Museums
Sandwich, MA

Diseases and Weeds–
October 1, 2009 (location TBA)

Aquaculture Twilight Meetings

Dates and locations TBA

Identifying Freshwater Wetlands in the Landscape

June 3 & 10, 2009
9 am - 3:30 pm
French Hall
UMass Amherst

UMass Turf Research Field Day

June 17, 2009
8:30 am - 1:00 pm
UMass Joseph Troll
Turf Research Center,
South Deerfield, MA

To maintain landscapes sustainably, regular monitoring and using IPM practices is essential. Join Extension specialists for a diagnostic walkabout through the landscape for an up-close look at pest and cultural problems of woody ornamentals. Updates on new pests, diagnostic techniques and IPM strategies will be emphasized for a true hands-on learning experience. Workshop held rain or shine.

2 Pesticide contact hours for categories 29, 36, and Applicators License available. ISA, SAF, CFE, MCA, MCH, and MCLP credit requested.

Preregistration required as space is limited; the cost is \$55. For more information or a registration form, go to www.umassgreeninfo.org or contact the UMass Extension Landscape, Nursery and Urban Forestry Program at (413) 545-0895 or eweeks@umext.umass.edu.

Meetings and demonstrations will target issues in production and fish health. Scheduling information will be posted at the UMass Extension Aquaculture website: www.umass.edu/aquaculture.

This workshop series will be useful to anyone who needs to be able to identify the presence of freshwater wetlands in the landscape, such as land surveyors, foresters, landscapers, etc.

Training I: Inland Wetland Plant Identification

Wednesday, June 3, 2009

This introduction to inland wetland plant identification will begin with an overview of the major characteristics of woody and non-woody vegetation used for identification in most plant keys. Guided exercises will be used in a classroom/laboratory setting to practice keying out plant specimens collected from local wetland sources. An afternoon field trip to a local wetland will allow opportunity to practice identification skills in a natural setting. Related topics such as plant adaptations to wetland hydrology and the concept of “hydrophytic” vegetation will also be discussed. Cost: \$100. Required Text: *Field Guide to Nontidal Wetland Identification*, by Ralph W. Tiner, Jr. Cost: \$25 for text. (Please indicate when registering, if you wish to purchase a copy of this field guide.)

Training II: Identifying Inland Wetland Soils

Wednesday, June 10, 2009

Participants will be introduced to some of the fundamental characteristics of soils that are used to identify hydric (wetland) soils in the field -- including soil texture, color, horizon type and redoximorphic features. The afternoon will include a field trip to a local wetland where participants will examine plants and soils along a wetland/nonwetland gradient. Plant communities will be used to locate transitional wetland-upland areas in the landscape for further investigation of their soil characteristics. Participants should have taken Training Session I of this series or be able to identify wetland vegetation (by permission of instructor). Cost: \$100.

If registering for both sessions, total cost: \$190. For a registration form, go to www.umassgreeninfo.org or contact the UMass Extension Landscape, Nursery & Urban Forestry Program at (413) 545-0895 or eweeks@umext.umass.edu.

Field Day will focus on the wide range of research projects currently taking place at the Joseph Troll Turf Research Center as well as on research being conducted at other locations by University of Massachusetts Turf Program faculty, staff, and graduate students. Research Field Day participants will have the opportunity to meet and speak with UMass staff and to view projects underway. Turf research includes studies on the biology and integrated management of turf-damaging insects, short- and long-term weed management, pesticide exposure, fertility, drought management, as well as a range of National Turfgrass Evaluation Program fine turf trials. Field Day will also feature displays and demonstrations from turf industry vendors. Pesticide recertification contact hours will be available for all New England states.

For more information, contact the UMass Extension Turf Program at (508) 892-0382, email fieldday@umassturf.org or visit www.umassturf.org

Vegetable Twilight Meetings and IPM Field Schools

Dates and locations TBA

During the growing season the UMass Extension Vegetable team collaborates with other organizations to offer educational programs and farm tours at vegetable farms in various locations in Massachusetts. Each farm features innovative and successful production and marketing practices. In 2009, there will be a special focus on farms using renewable energy, especially shelled corn for greenhouse heat. We will also hold IPM Field Schools which give hands-on experience in scouting, pest and disease identification, and pest management strategies in cucurbits and other crops. One contact hour for pesticide recertification credit is offered per meeting. For details, subscribe to Vegetable Notes (see page 7), visit the vegetable program website at www.umassvegetable.org or call (413)545-3696.

Vegetable IPM Field Schools

Dates TBA

The best way to learn about insects, weeds and diseases in vegetable crops is through hands-on experience in the field. At IPM Field Schools we will meet on farms to learn how to recognize insects, diseases and weeds, scout efficiently for them, understand their biology, and manage them. Cultural practices, biological and chemical controls, and both conventional and organic practices will be discussed. For details on dates and locations contact the UMass Extension Vegetable Program at (413) 545-3696, rhazard@umext.umass.edu or online at www.umassvegetable.org.

Vegetable Research Field Day

Summer 2009 (Date TBA)

Crops Research and Education Center,
South Deerfield, MA

The Vegetable Research Field Day will highlight the research taking place in vegetable, herb and field crops at the Crops Research and Education Center in South Deerfield. Pesticide recertification contact hours will be available. For more information, contact UMass Extension Vegetable Program at (413)545-3696 or visit www.umassvegetable.org.

MNLA/MFGA Great Ideas Summer Conference and Trade Show

July 22, 2009

Sylvan Nursery,
Westport, MA

The Massachusetts Nursery and Landscape Association and the Massachusetts Flower Growers Association will again hold their Summer Field Day jointly in 2009. The day will offer horticultural education workshops by well known researchers and educators and a trade show. For more information, go to www.mnla.com or www.umassgreeninfo.org.

Weed Identification Workshops

Broadleaf Weeds (plus a few grassy weeds)

July 29, 2009

9 am - 3 pm

Arnold Arboretum
Jamaica Plain, MA

August 6, 2009

9 am - 3 pm

UMass Amherst

Grassy Weeds: an in-depth look

August 26, 2009

9 am - 3 pm

UMass Amherst

Correct weed identification is an important first step in the development of an effective weed management program. Using a classroom presentation, potted weed herbarium and weed walk, UMass Extension Specialist Randy Prostack will help participants enhance their weed identification skills. Feel free to bring a weed or two to identify. Workshop held rain or shine (lunch not provided).

Cost \$95/person (pre-registration required, space is limited). **5 pesticide contact hours available; MCLP and MCH credits will be offered.**

For a registration form or more information, go to www.umassgreeninfo.org or contact UMass Extension at (413) 545-0895, eweeks@umext.umass.edu.

Summer Seminar:
Managing Stress
and Diseases on
Turf

August 5, 2009
4-6 pm

UMass Joseph Troll
Research Center,
South Deerfield, MA

In mid-summer 2009, the UMass Joseph Troll Turf Research Center will welcome interested turf managers for an early evening seminar. Attendees will be offered a guided first-hand look at research projects and other items of interest in the field. The educational program will focus on the viewing and discussion of stress-related turf problems, particularly disease problems, unique to the summer season. This event will be held rain or shine.

Two pesticide recertification contact hours will be available for all New England states in category 37, Turf, and category 00, Licensed Applicator. For more information contact the UMass Extension Turf Program at (508) 892-0382 or visit www.umassturf.org.

Turfgrass
Identification
and Selection
Workshop

August 12, 2009

UMass Amherst campus
9:00 am - 3:00 pm

UMass Joseph Troll
Research Center, South
Deerfield, MA (optional)

3:30 a.m. - 4:30 p.m.

The ultimate performance of a stand of turf depends on matching turfgrass species and varieties with site characteristics, intended use and maintenance level. Knowing what you have is the key to knowing how to manage it. In this hands-on workshop, participants will learn to identify and recognize the principal cool season turfgrasses and how to select cultivars for specific characteristics such as disease resistance, drought tolerance, wear tolerance, and vigor. In addition, participants will learn how cultivars are evaluated through observation of the Kentucky bluegrass, perennial ryegrass, fine fescue and fairway and greens height bentgrass National Turfgrass Evaluation Program trials in place at the UMass Joseph Troll Research Center.

For more information, contact the UMass Extension Turf Program at (508) 892-0382 or visit the website www.umassturf.org.

Pesticide recertification contact hours will be available for all New England states in category 37, Turf and category 00, Licensed Applicator.

Dollar Spot
Resistance
Field Trials and
Oriental Beetle
Discussion

Mid August, 2009
(Date TBA)

Wainno Club,
Osterville, MA

This program will provide an opportunity to see first-hand the results of the UMass Turf Program dollar spot resistance trials underway at the Wainno Club in Osterville, MA. Management strategies for delaying resistance development or managing existing resistance will be presented and followed by a look at the field trial plots. If you are experiencing inadequate dollar spot control (shorter interval or fungicide failure), this workshop will provide strategies to help manage these problems. This research is supported by the Golf Course Managers Association of Cape Cod and the following companies: BASF Corporation, Bayer Environmental Science, Cleary Chemical Corporation, Quali-Pro and Sygenta Professional Products.

For further information on the dollar spot resistance research trials, contact Dr. Geunhwa Jung at (413)545-2243, jung@psis.umass.edu, or the UMass Extension Turf Program at (508) 892-0382.

To sign up to receive specific notification of dates and times, visit www.umassturf.org and click on Mailing List.

New England
Vegetable &
Fruit Conference
& Trade Show

December 15-17, 2009

The Center of New
Hampshire Radisson
Hotel
Manchester, NH

www.nevfc.org

The premier fruit and vegetable conference in New England will once again offer three full days with over twenty educational sessions that cover all of the major vegetable, berry, and tree fruit crops, as well as various special topics. Each morning and afternoon has four concurrent sessions which offer the latest research and innovative practices and include the perspectives of farmers, Extension staff, and researchers. Farmer-to-farmer sessions bring speakers and farmers together for informal, in-depth discussion on 'hot topics.' The extensive trade show offers over 100 exhibitors who cater especially to the needs of vegetable and fruit growers. Join over 1,000 growers from around New England, and don't miss this every-other-year event! Co-sponsored by the New England Vegetable and Berry Growers Association and Massachusetts Fruit Growers Association.

More details including registration materials will be posted at www.nevfc.org. For more information contact Jon Clements, 413-478-7219, clements@umext.umass.edu.

2009 Mass Aggie Seminars

UMASS EXTENSION WORKSHOPS FOR HOME GARDENERS

For more information, see our website at UMassGarden.com

or contact UMass Extension at 413-545-2254, dnyork@umext.umass.edu.



The University of Massachusetts Extension Agriculture and Landscape Program will once again sponsor a seminar series for back-yard gardeners. In the tradition of the Mass Aggie Seminars, the 2009 UMass Home Garden Series will feature UMass Extension Educators and UMass Amherst faculty. A broad and diverse range of topics will be presented. Proceeds from these programs will partially support the research and outreach efforts of UMass Extension for farmers and agribusinesses in Massachusetts.

GROWING APPLES IN THE HOME GARDEN - Dr. Wes Autio

February 28, 9:00 AM - 3:30 PM

Clubhouse, Topsfield Fairgrounds, Topsfield, MA and Brooksby Farm, Peabody, MA

The visual experience of flowering fruit trees in the home landscape is surpassed only by the delicious variety of summer and fall fruits which they produce. Growing apples successfully can be a horticultural challenge, but it can be done! Wes Autio will present an in-depth program on how to grow apples in the home landscape. Varieties, rootstocks, young tree care, nutrition, and tree/branch training will be covered in the morning. In the afternoon, the class will move to Brooksby Farm for a hands-on apple pruning workshop. Participants will have the opportunity to conduct actual pruning and gain both experience and confidence in pruning fruit trees in order to produce a bountiful crop.*

NO BAD APPLES: DEALING WITH APPLE PESTS - Dr. Dan Cooley

March 7, 9:30 AM - 2:30 PM

Clubhouse, Topsfield Fairgrounds, Topsfield, MA

The first step in dealing with the rots and worms in home apple trees is knowing what they are, and why they are causing you problems. With a little know-how, you can increase your chances of growing a healthy crop of apples. Dan Cooley will help participants with the basics of identification and control of the most important apple insects and diseases. Plenty of opportunity will be provided to ask questions and discuss control of the problem pests.

GROWING AND PRUNING PEACHES, PLUMS, AND CHERRIES IN THE HOME GARDEN - Mr. Jon Clements

March 14, 9:00 AM - 2:30 PM

The Big Apple, Wrentham, MA

Although we are on the northern edge of the successful stone-fruit growing region, nothing beats the mid-summer taste of home-grown peaches, nectarines, plums, and cherries. Culture is surprisingly easy if you follow the suggestions presented by Jon Clements in this seminar. In the morning, site and variety/rootstock selection, nutritional needs, and pest management recommendations will be covered to insure your success. Pruning stone fruits is not the same as apples. In the afternoon, participants will be guided through the annual pruning process beginning with young trees progressing to mature trees. This hands-on workshop is an opportunity to learn how to prune peaches, plums, and cherries to achieve a good balance of vegetative growth, fruit buds, and tree health.*

WEEDS, INSECTS, AND DISEASES IN THE HOME LANDSCAPE AND GARDEN - Mr. Randall Prostak, Mr. Robert Childs, and Mr. Daniel Gillman

March 21, 9:00 AM - 3:30 PM

Topsfield Fairgrounds, Topsfield, MA

Everyone who gardens battles a host of organisms whose goals include killing or maiming your favorite plants or taking their water and nutrients. During this day-long program, Randy Prostak, Bob Childs, and Dan Gillman will describe 10 each of the most common and problematic weeds, insects, and diseases in the home landscape, lawn, and garden. Participants will learn how to identify and control these troublesome pests. Organic strategies will be included. Plenty of opportunity will be provided to ask questions.

2009 Mass Aggie Seminars *(continued)*

GROWING AND PRUNING BERRIES IN THE HOME GARDEN - Ms. Sonia Schloemann

March 28, 9:00 AM to 2:30 PM

Tougas Family Farm, Northborough, MA

Edible Landscaping has been gaining popularity in recent years. Many types of berries fit well into an edible home landscape. The pleasure of walking out to the backyard berry patch for a handful of sweet berries is matched with some surprising ornamental qualities offered by these plants. Sonia Schloemann will present an in-depth program on how to grow various types of berries in the home landscape. Site and soil requirements, planting systems, cultural practices, and pest control will be covered in the morning. Pruning berries can be confusing. In the afternoon, participants will develop an understanding of the general principles of pruning blueberries and raspberries. Participants will have the chance for hands-on experience in pruning some bushes after receiving instruction.*

GROWING AND PRUNING GRAPES IN THE HOME GARDEN - Dr. Duane Greene

April 4, 9:00 AM - 2:30 PM

UMass Cold Spring Orchard, Belchertown, MA

Grapes are one of the most universally enjoyed fruits available. Many of the new varieties have excellent taste, are winter hardy, and can make excellent wine. Grapes are fun to grow but present some challenges. Duane Greene will help participants through the basics and give them the tools to overcome some of the challenges. Specific topics will include selecting varieties, planting, fertilizing, controlling pests, pruning, and vine training. Participants will have the opportunity to conduct actual pruning and gain both experience and confidence in pruning and training grapes in order to produce a bountiful crop.*

GRAFTING APPLE TREES, A HANDS-ON WORKSHOP - Dr. Wesley Autio

April 18, 9:00 AM - 2:30 PM

UMass Cold Spring Orchard, 391 Sabin Street, Belchertown, MA

Many people do not realize that all apple varieties are reproduced by grafting – they are not grown from seed. For horticultural enthusiasts, one of the most satisfying techniques to master is grafting. Wes Autio will present a hands-on workshop on “bench grafting” and “cleft grafting” of apple trees. Other grafting techniques will be discussed. Proper tools and sharpening will be discussed. All participants in the workshop will graft several of their own apple trees to take home.*

PRUNING ORNAMENTAL TREES AND SHRUBS - Dr. Dennis Ryan

April 25, 9:00 AM - 2:30 PM

Location to be determined (eastern MA)

There is no need to be afraid of pruning, but your efforts will be much more successful after this demonstration and hands-on workshop. Dennis Ryan will guide participants through the art and science of pruning ornamental trees and shrubs in the home landscape. Pruning tools, basic pruning techniques, and pruning safety will be discussed. Participants will have the opportunity to prune trees and shrubs with expert guidance and gain both experience and confidence that can be taken home and used on their own landscape.*

*Pruning and grafting workshops will be held out of doors, so please dress appropriately for potentially wet, cold and muddy conditions. Some pruning tools will be available for pruning workshops, but please bring your own if possible.

For more information, see our website at UMassGarden.com

or contact UMass Extension at 413-545-2254, dyork@umext.umass.edu.

Soil and Tissue Testing

UMass Extension offers a variety of soil test options.

1. **Standard Soil Test** — \$10; includes pH and lime requirement, levels of available plant nutrients, and abnormally high levels of several toxic elements. Based on this test the client receives recommendations on the amount of lime and fertilizer to add to the soil and what actions to take should an unusually high level of lead be present.
2. **pH Test only** — \$5
3. **Standard Soil plus Organic Matter** — \$115; includes all the elements of the standard test listed above plus the percentage of organic matter in the soil.
4. **Soil Texture only** — \$60; provides the percentages of sands, silts, and clay.
5. **Tissue Test without Nitrogen** — \$15; includes all the elements of the standard test listed above plus the percentage of organic matter in the soil.
6. **Tissue Test with Nitrogen** — \$24; provides concentrations of all elements listed in #5 plus nitrogen.

Soil sampling can be done at any time, but late October or early November is usually best. Avoid sampling when the soil is very wet or recently limed or fertilized. Soils that look different or have been used differently should be sampled and tested separately. Areas where there is poor growth should also be tested separately.

Tissue samples should be taken from the specific plant part, at a specific location on the plant, at a specific stage of growth as noted below:

Apples, pears, and peaches: Sample fully expanded leaves from current growth midshoot during late July or August

Strawberries: Sample from the first fully expanded new leaves after renovation

Blueberries: Sample healthy leaves during July or August

Raspberries: Sample healthy leaves on non-fruiting canes in early to mid-August

Grapes: Sample petioles from most recently matured leaves on shoots at beginning of veraison in mid-August

Tissue Sampling Procedure

1. When there is a plant-growth problem, always attempt to sample the problem areas and then take a second sample from the same variety showing satisfactory growth. Send these two samples in separate containers with separate payments.
2. When no plant growth problem exists, but there is interest in assessing the nutritional status, your results will be compared with those in the scientific literature or from previously sampled crops.
3. Remove leaves (or selected plant part) from a representative area. For example, remove leaves from 10-20 plants scattered through the area to be sampled (rather than 10-20 plants from one end of the planting).
4. Make certain management practices have been uniform within the sampling area. If soil characteristics vary significantly over the area, sampling should be refined to reflect these differences.
5. Take 10-50 leaves (or selected plant part), depending on crop, and rinse thoroughly with tap water to remove any chemicals, foliar-applied fertilizer, and soil particles. Place them on clean paper to air-dry.
6. Once air-dried, carefully place tissue (avoiding contamination with foreign material) in paper bag.

Send soil or tissue samples, with a check made payable to the University of Massachusetts, to:

Soil & Tissue Testing Lab

West Experiment Station, 682 North Pleasant Street, UMass, Amherst, MA 01003-9302

(413)545-2311 www.umass.edu/soiltest/

Plant Problem Diagnostics

The University of Massachusetts Amherst recognizes the importance of reliable and prompt diagnosis of plant problems for the turf, floriculture, fruit, vegetable, nursery, urban forestry and landscape industries. We serve farmers, horticulturists, landscape contractors, turf managers, arborists, nurseries, and others in agriculture and the green industries. The lab also assesses ticks for Lyme disease as a service to the public.

To insure that we continue to provide the most reliable service, all of our plant diagnostics expertise has been integrated into one location in Holdsworth Hall on the UMass Amherst campus. The members of the diagnostics team of the **UMass Extension Plant Diagnostic Lab** are able to call upon each other's expertise to make fast and accurate diagnoses. Each diagnosis includes a written report with pest management strategies that are research based, economically sound, and environmentally appropriate for the situation.

Notes for Diagnostic Sample Submission

- A completed diagnostic sample submission form is required for each specimen** (or particular problem). Diagnostic forms for various types of samples, along with instructions, are on the following pages. Remember that accurate diagnosis requires **both** a representative sample and sufficient information about the cultural practices and environmental conditions associated with the problem. The information you record on the form can be more important to the diagnosis than the sample itself! Photos of the problem are also extremely helpful. *No sample will be diagnosed without a completed form.*
- There is a fee per specimen** (or particular problem) payable to the University of Massachusetts, and the appropriate fee must accompany each sample. The UMass Extension Plant Diagnostic Lab will call and/or send a written report when a conclusion has been reached on the diagnosis or identification. Detailed management recommendations are included with disease, insect, and weed diagnoses.
- You may obtain copies of the forms by calling the lab at (413) 545-3208 or at www.umass.edu/agland/diagnostics.**

Diagnostic Fees

Floriculture/greenhouse crop diseases	\$50
Fruit diseases	\$50
Landscape and turf weed ID	\$25
Landscape and turf insect ID	\$25
Lyme Disease tick assessment.	\$35
Nematode assay all other crops except turf.	\$50
Turf disease analysis	\$75
Turfgrass ID.	\$25
Turf nematode assay	\$75
Vegetable crop diseases	\$50
Woody plant disease analysis	\$50

Address packages to:
UMass Extension Plant Diagnostic Lab
Holdsworth Natural Resources Center, 160 Holdsworth Way
University of Massachusetts, Amherst, MA 01003-9285
(413)545-3208 fax (413)545-4385
Use exact address to ensure delivery.

Floriculture Diagnostics

Contact: **Dr. Robert Wick**, (413)545-1045, rwick@pltpath.umass.edu
M. Bess Dicklow, (413)545-3209, mbdicklo@umext.umass.edu

Contact M. Bess Dicklow (413)545-3209, Tina Smith (413)545-5306, or Paul Lopes (508)295-2212 ext. 24 to determine if sending a specimen is necessary or to inform the lab that one is being sent. Microscopic and laboratory identification of fungi, bacteria, viruses, and nematodes are routinely carried out. Samples can be hand-delivered (if possible) or sent overnight mail, UPS, or Federal Express. Along with your sample, include a completed *Vegetable, Fruit & Floriculture Diagnostic Form* (page 25). Be as complete as possible; accurate diagnosis depends on sufficient information about cultural practices and environmental conditions. Collect specimens that show a range of symptoms, avoiding rotted or decayed specimens. **Please avoid Friday samples;** Friday samples will not be examined until Monday which can lead to deterioration of the sample. Upon reaching a conclusion, the lab will send or e-mail a report on the diagnosis including complete management guidelines emphasizing cultural and biorational controls, as well as chemical control options.

Lyme Disease Diagnostics

Contact: **Dr. Craig Hollingsworth**, (413)545-1055, chollingsworth@umext.umass.edu

UMass Extension, in cooperation with researchers at UMass Amherst, will assess deer ticks for the presence of Lyme Disease. There is a fee of \$35 per sample. We identify each tick to species and stage, then using polymerase chain reaction (PCR) we test individual ticks for the presence DNA from the bacterium that causes Lyme disease.

To submit a sample, follow the directions and use the submission form at the UMass Extension tick diagnostics web site at www.umass.edu/tick. Mail samples with the submission form to UMass Extension Diagnostic Lab, Tick Assessment, Holdsworth Natural Resources Center, 160 Holdsworth Way, University of Massachusetts, Amherst, MA 01003-9285. Use exact address to ensure delivery.

Tick samples are opened each Monday and results are generally report by email on the following Thursday. If someone has been infected by a tick bite, symptoms may begin to occur even before the results of tick testing are available. People should not to wait for tick testing results before seeking medical advice should any symptoms develop.

For specific information, see the website: www.umass.edu/tick.

Tree and Shrub Disease and Insect Diagnostics

Contact: **Diseases – Dan Gillman**, (413)545-2826, dgillman@umext.umass.edu
or **Insects – Bob Childs**, (413)545-1053, rchilds@psis.umass.edu

Fill out the *Tree and Shrub Diagnostic Form* on page 27 as completely as is feasible.

Disease Samples: See guidelines on page 28.

Insect Samples: Immature and soft-bodied insects should be placed in 70% ethyl alcohol (rubbing alcohol is not ideal, but may work). Other insects must be carefully packaged. Do not place loose insects into envelopes for mailing, as the automatic process for handling mail will most likely destroy the specimens.

Vegetable & Fruit Diagnostics

Contact: **M. Bess Dicklow**, (413)545-3209, mbdicklo@umext.umass.edu
Dr. Robert Wick, (413)545-1045, rwick@pltpath.umass.edu

Contact M. Bess Dicklow to determine if sending a specimen is necessary or to inform her that one is being sent. Microscopic and laboratory identification of fungi, bacteria, viruses, and nematodes are routinely carried out. Samples can be hand-delivered (if possible) or sent overnight mail, UPS, or Federal Express. Along with your sample, please include a completed *Vegetable, Fruit & Floriculture Diagnostic Form* (page 25). Be as complete as possible; accurate diagnosis depends on sufficient information about cultural practices and environmental conditions. Collect specimens that show a range of symptoms, avoiding rotted or decayed specimens. **Please avoid Friday samples;** Friday samples will not be examined until Monday which can lead to deterioration of the sample. Upon reaching a conclusion, the lab will send or e-mail a report on the diagnosis including complete management guidelines emphasizing cultural and biorational controls, as well as chemical control options. Pre-paid diagnostic kits with everything you need to submit a sample may be purchased from the Plant Diagnostic Lab or at any Vegetable Extension programs or meetings. \$50 per kit or 3 kits for \$100.

Turfgrass Identification

Contact: **UMass Extension Plant Diagnostic Lab**, (413)545-3208

Fill out the *Turf Diagnostic Form* (page 29) as completely as is feasible, following the guidelines on page 30. When choosing a specimen, select the healthiest and most mature plant(s) available. Collect the whole plant, including the roots, if possible. Wrap roots in a wet paper towel. Place plant in a zip-lock or freezer bag and seal with some air in the bag in order to prevent crushing. Place bag in a sturdy box or envelope for mailing.

Weed Identification

Contact: **Randy Prostack**, (413) 577-1738, rprostack@umext.umass.edu

Depending on the site, fill out the *Tree and Shrub Diagnostic Form* (page 27) or the *Turf Diagnostic Form* (page 29) as completely as possible. Collect the whole plant, including the roots if possible, and select the healthiest plants available. Wrap roots in a wet paper towel. Place plant in a zip-lock or freezer bag and seal with some air in the bag in order to prevent crushing. Place bag in a sturdy box or envelope for mailing.

Nutrient Management

Contact: **Masoud Hashemi**, (413) 545-1843, masoud@psis.umass.edu

Nutrient management planning will benefit both the farmers and the environment. For assistance with nutrient planning and/or manure management, horse owners, dairy and livestock producers, and vegetable growers can contact Masoud Hashemi at (413) 545-1843 or email: masoud@psis.umass.edu.

UMass Extension Plant Diagnostic Labs: VEGETABLE/FLORICULTURE/FRUIT FORM *

Providing analysis, identification, and ecologically sound management strategies for diseases, insects, weeds, and nematodes found in landscapes, turf, nurseries, greenhouses, farms, orchards, and the urban forest.



UMassAmherst Outreach **UMass Extension**

UMass Extension Plant Diagnostic Lab - 160 Holdsworth Way, Holdsworth Natural Resources Center, University of Massachusetts - Amherst, MA 01003
 Telephone: (413) 545-3208 - Fax: (413) 545-4385 - www.umass.edu/agland/diagnostics

Send specimen to above address. Please include payment payable to *University of Massachusetts*.

→ **USE THIS FORM FOR:** Vegetable Disease or Nematode Analysis (\$50) Floriculture Disease or Nematode Analysis (\$50) Fruit Disease Analysis (\$50)

Host Plant _____ Cultivar _____ Date Collected _____

Approximate Age / Planting Date / Length of Time in Present Medium _____

When Did Symptoms Occur? _____ % of Crop Affected _____ Size of Planting _____

Briefly Describe the Problem _____

Describe Pesticides / Rates Used: _____ When? _____

Describe Site Conditions and Relevant Cultural Practices _____

Is a Soil Test Being Done for This Specimen? _____

Circle all that apply:

<u>Location</u>	<u>Part Affected</u>	<u>Symptoms</u>	<u>Symptom Distribution</u>	<u>Soil-Type</u>	<u>Soil Moisture</u>	<u>Irrigation</u>
Container	Roots	Wilted	Scattered	Soilless	Wet	Overhead
Field	Crown	Yellowed	Localized	Soilless/Soil	Moderate	Drip
Greenhouse	Stem	Stunted	Borders	Soil Only	Dry	Flood
Nursery	Leaves	Leaf Spot/Blight	Edges	Sandy	Very Dry	None
Hydroponic	Flower	Fruit Blight	All or Nearly All	Clay		Other
Other	Fruit	Other		Loam		

Contact _____ Firm _____ Address _____

Town _____ State _____ Zip Code _____ Phone _____

Fax Number _____ E-mail Address _____

THE FOLLOWING SECTIONS WILL BE COMPLETED BY DIAGNOSTIC LAB:

Lab Number	Date Received	Date Answered	Payment
Condition of Specimen: Good Poor Insufficient		Specimen Code <input style="width: 50px;" type="text"/>	Client Code <input style="width: 50px;" type="text"/>

Ver. 2006 GD

* **NOTE** – turf samples and tree and shrub samples require alternate submission forms. Visit www.umass.edu/agland/diagnostics or call (413) 545-3208 for copies

Guidelines for Sending Floriculture Samples

Please submit samples according to the following guidelines, based on the symptoms present, using the form on the reverse side:

Leaf Spots and Blights. Leaf spots and blights of floriculture crops are often caused by fungi or bacteria. Certain pesticides or environmental or nutritional factors can also cause spotting. Select leaves which show a range of symptom development. Specimens that are dead or dry are of little diagnostic value. Place leaves between sheets of paper or inside a magazine. Place the package in a plastic bag, and then into the envelope for mailing. Never wrap leaves in wet paper towels.

Stem Cankers. When a canker occurs on a large plant, cut a section of the stem with the symptoms, wrap in newspaper and place in a plastic bag for mailing. If the plants are small (1 foot or less), shake the soil from the roots, wrap in newspaper and put into a plastic bag for mailing.

Wilt, Crown Rot or Root Rot. If the plants are 1 foot or less, include the entire plant. Dig the plant including a good handful of the root system. Leave the soil on the roots. Place the root/soil ball into a plastic bag and tie off at the crown to prevent soil from spilling out. Wrap in newspaper and put into a plastic bag for mailing. If the plants are large, send a portion of the plant that includes the infected tissue. For wilt diseases, we must have lower stem tissue and roots.

Scorch, Defoliation or Poor Growth. These symptoms are usually caused by nutritional or environmental factors. They may also be the result of root rot or vascular disease. Collect a specimen as for Wilt (above); be sure to submit a soil sample to the UMass Soil Testing Laboratory (information on page 21). A tissue analysis may also be advisable. Call the soils lab at (413) 545-2311 before sending the sample.

Guidelines for Sending Fruit & Vegetable Samples

Please submit samples according to the following guidelines, based on the symptoms present, using the form on the reverse side:

Leaf Spots and Blights. Leaf spots and blights of fruit and vegetable crops are often caused by fungi or bacteria. Certain pesticides, or environmental or nutritional factors can also cause spotting. Select leaves which show a range of symptom development. Specimens that are dead or dry are of little diagnostic value. Place leaves between sheets of paper or inside a magazine. Place the package in a plastic bag, then into the envelope for mailing. Never wrap leaves in wet paper towels.

Fruit Rots. Select early stages of disease rather than badly rotted tissue. With large fruit such as a pumpkin, cut the affected area out with a knife and submit. Wrap fruit or fruit sections in newspaper, and put into a plastic bag for mailing.

Stem Cankers. When a canker occurs on a large plant, cut a section of the stem with the symptoms, wrap in newspaper and place in a plastic bag for mailing. If the plants are small (1' or less), shake the soil from the roots, wrap in newspaper and put into a plastic bag for mailing.

Wilt, Crown Rot or Root Rot. If the plants are 1 foot or less, include the entire plant. Dig the plant, including a good handful of the root system. Leave the soil on the roots. Place the root/soil ball into a plastic bag and tie off at the crown to prevent soil from spilling out. Wrap in newspaper and put into a plastic bag for mailing. If the plants are large, send a portion of the plant that includes the infected tissue. For wilt diseases, we must have lower stem tissue and roots.

UMass Extension Plant Diagnostic Lab: TREE & SHRUB FORM*

Providing analysis, identification, and ecologically sound management strategies for diseases, insects, weeds, and nematodes found in landscapes, turf, nurseries, greenhouses, farms, orchards, and the urban forest.



UMass Amherst Outreach **UMass Extension**

UMass Extension Plant Diagnostic Lab - 160 Holdsworth Way, Holdsworth Natural Resources Center, University of Massachusetts - Amherst, MA 01003
 Telephone: (413) 545-3208 - Fax: (413) 545-4385 - www.umass.edu/agland/diagnostics

Send specimen to above address. Please include payment payable to *University of Massachusetts*.

→ **USE THIS FORM FOR:** Diseased Tree/Shrub Analysis (\$50) Tree/Shrub Insect ID (\$25) Landscape Weed ID (\$25)

Host Plant _____ Cultivar _____ Date Collected _____

Approximate Age _____ Length of Time in Present Location _____

When Did Symptoms Occur? _____ Were Symptoms Apparent in Previous Years? _____

Briefly Describe the Problem _____

Describe Pesticides/Chemicals Used: _____ When? _____

Describe Site Conditions and Relevant Cultural Practices _____

Circle all that apply:

Location	Irrigation	Site Condition	Soil	Drainage	Symptoms	Part Affected
Landscape	Lawn	Shade	Sandy	Good	Yellowed/Browning	Roots
Greenhouse	Overhead	Full Sun	Clay	Moderate	Stunted	Crown
Nursery	Drip	Wet	Loam	Poor	Shoot Blight	Branch/Stem
Forest	None	Droughty	Soil Mix		Canker	Leaves/Needles
Other _____		Compacted	pH _____		Stippling/Spots	Fruit

Contact _____ Firm _____ Address _____

Town _____ State _____ Zip Code _____ Phone _____

Fax Number _____ E-mail Address _____

THE FOLLOWING SECTIONS WILL BE COMPLETED BY DIAGNOSTIC LAB:

_____	_____	_____	_____
Lab Number	Date Received	Date Answered	Payment
Condition of Specimen: Good Poor Insufficient	Specimen Code <input style="width: 50px;" type="text"/>	Client Code <input style="width: 50px;" type="text"/>	

Ver. 2006 GD

* **NOTE** – Turf samples and vegetable/floriculture/fruit samples require alternate submission forms. Visit www.umass.edu/agland/diagnostics or call (413) 545-3208 for copies.

Guidelines for Sending Samples of Tree and Shrub Material

Please submit samples based on the following guidelines for tree and shrub diseases, insect identification, and weed identification, using the form on the reverse side:

For proper diagnosis, specimens must be received in good condition. It may be helpful to call the lab first at (413)545-3208 to see if sending a sample is necessary. Hand-deliver samples if possible, or send them by the fastest means available. Include accompanying information (such as photos, etc.) regarding the symptoms that are of particular concern to you.

When Sending Samples:

1. Ship samples so that they will be delivered in 48 hours or less. Federal Express, UPS, and Two-day Priority Mail through the U.S. Postal Service deliver directly to the building. Be sure to pack the specimen in a sturdy envelope or box.
2. Fill out the *Tree and Shrub Diagnostic Form* as completely as possible. This form must accompany each specimen sent to the lab. The information supplied will allow a more thorough and accurate diagnosis. Include your phone number, e-mail, and a fax number, if available, so we may contact you for further information or inform you of the diagnosis.
3. **Disease Samples:** Send several plants/leaves/branches etc. showing a range of symptoms that are representative of the problem. Select samples from the area at the margin between the diseased portion of the plant and the healthy tissue. Dead plant material usually is of little value because it often contains secondary organisms that may make detection of the primary pathogen difficult.
 - Place leaves, branches, and other plant parts in a plastic bag and seal it. Do not add moist towels or moisten the sample before sealing it.
 - When sending entire plants, dig, rather than pull, roots from the soil. Wrap roots and attached soil in a plastic bag and secure to the trunk with a twist tie. Place a second bag over the foliage and punch a few holes through this bag for ventilation. Do not add additional water or moist towels.
 - *Vascular wilt specimens:* Plants or plant parts that suddenly wilt may be infected with a vascular disease. Branch or stem sections 1/4" to 1" in diameter and 4" to 6" long should be taken from the wilting plant or recently wilted plant part. Avoid sending plant material that has been dead for any length of time.
4. **Insect Samples:** Immature and soft-bodied insects should be placed in 70% ethyl alcohol (rubbing alcohol is not ideal, but may work). Other insects must be carefully packaged. Do not place loose insects into envelopes for mailing, as the automatic process for handling mail will most likely destroy the specimens.
5. **Weed Samples:** Collect whole plant, including the roots, if possible. Wrap roots in a wet paper towel. Place plant in a zip-lock or freezer bag and seal with some air in the bag in order to prevent crushing. Place bag in a sturdy box or envelope for mailing.

Turfgrass Disease Diagnostics and Nematode Assays

Contact: **M. Bess Dicklow**, (413)545-3209, mbdicklo@umext.umass.edu

Dr. Robert Wick, (413)545-1045, rwick@pltpath.umass.edu

Contact M. Bess Dicklow or Dr. Robert Wick before sending a sample to ensure that someone will be available to examine your specimen. **Please avoid Friday samples;** Friday samples will not be examined until Monday which can lead to deterioration of the sample. If you mail the sample, use an express delivery service such as UPS, Federal Express, or next day mail. Please include a completed *Turf Diagnostic Form* (page 29). The information you record on the form may be more important to the diagnosis than the sample itself, so please be comprehensive. Upon reaching a conclusion, the lab will call you and send, fax, or e-mail a detailed report including cultural and chemical management measures.

UMass Extension Plant Diagnostic Lab: TURF FORM*

Providing analysis, identification, and ecologically sound management strategies for diseases, insects, weeds, and nematodes found in landscapes, turf, nurseries, greenhouses, farms, orchards and the urban forest.

UMass Extension Plant Diagnostic Lab - 160 Holdsworth Way, Holdsworth Natural Resources Center, University of Massachusetts - Amherst, MA 01003
 Telephone: (413) 545-3208 · Fax: (413) 545-4385 · www.umass.edu/agland/diagnostics



UMass Amherst Outreach **UMass Extension**

Send specimen to above address. Please include payment payable to *University of Massachusetts*

→ **USE THIS FORM FOR:** Turf Disease Analysis (\$75) Turf Nematode Analysis (\$75) Turfgrass/Weed ID (\$25) Turf Insect ID (\$25)

Grass species: _____ Cultivar: _____ Date Sample Collected: _____

Year Established: _____ Origin: Seeded Sodded Plugged Unknown

Describe Symptoms: _____

When Did Symptoms Occur? _____ Were Symptoms Apparent in Previous Years? _____

List Fungicides Used, Rates, and Dates of Application: _____

List Nematicides Used Within the Current Year and Rates: _____

List Other Pesticides Used, Rates, and Dates of Application: _____

List Fertilizers Used, Rates, and Dates of Application: _____

Relevant Cultural Practices and Additional Info: _____

Circle all that apply:

Location	Site Condition	Soil	Drainage	Symptoms
Golf Course - (Green / Tee / Collar / Fairway / Rough)	Shade	Sandy	Excellent	Patches
Lawn	Part Shade	Clay	Good	Rings, Arcs
Athletic Field	Full Sun	Loam	Moderate	Leaf Spot/Blight
Utility/Industrial	Wet	Sand Green	Poor	Yellowing
Other _____	Droughty	pH _____		Wilt

Contact _____ Firm _____ Address _____

Town _____ State _____ Zip Code _____ Phone _____

Fax Number _____ E-mail Address _____

THE FOLLOWING SECTIONS WILL BE COMPLETED BY DIAGNOSTIC LAB:

Laboratory	Nematodes per 100 cc:			
	<i>Criconebella</i> (ring)	_____	<i>Meloidogyne</i> (root-knot)	♂: _____ j2: _____
	<i>Heterodera</i> (cyst)	♀: _____ j2: _____	<i>Pratylenchus</i> (lesion)	_____
	<i>Helicotylenchus</i> (spiral)	_____	<i>Tylenchorhynchus</i> (stunt)	_____
	<i>Hoplolaimus</i> (lance)	_____		_____
	<i>Longidorus</i> (needle)	_____		_____

specimen insufficient for diagnosis

no nematode problem detected

Lab Number _____ Date Received _____ Date Answered _____ Payment _____

Condition of Specimen: Good Poor Insufficient Specimen Code Client Code

Ver. 2006 GD

* **NOTE** – tree and shrub samples and vegetable/floriculture/fruit samples require alternate submission forms. Visit www.umass.edu/agland/diagnostics or call (413) 545-3208 for copies.

Guidelines for Sending Turf Samples

Please submit samples based on the following guidelines for turf diseases and turfgrass identification, using the form on the reverse side:

1. **Collecting a sample for turf disease diagnosis:** A 4" to 6" diameter sample from the "leading edge" of a problem is most useful. Include roots and soil to a depth of at least 2" and foliage showing a range of symptoms. Do not send smaller samples or samples collected with a soil probe. Sample from areas where the problem is active or increasing. The pathogen is most likely to be found at the leading edge of a patch area. Samples should include both healthy and affected grass. Try to choose an area that is typical of the problem.
2. **Packaging the sample*:** Keep the sample moist and cool, **but do not add water** or seal tightly in plastic. Avoid soil and moisture on the grass. Wet or soiled grass will deteriorate and make diagnosis impossible. Wrap the sample in several layers of newspaper and pack it snugly in a sturdy box. This keeps the soil from getting on top of the plants and obscuring the disease symptoms. If you suspect an unusual problem, take a sample *before* spraying any fungicides. It is often difficult to make an accurate diagnosis after a fungicide has been applied. ***Turf insect samples:** grubs and other soft-bodied insects should be placed in 70% ethyl alcohol (rubbing alcohol is not ideal, but may work). Other insects must be carefully packaged. Do not place loose insects into envelopes for mailing, as the automatic process for handling mail will most likely destroy the specimens.
3. **Fill out the Turf Diagnostic Form:** Be as *complete* as possible. Include complete name and mailing address. Remember that accurate diagnosis requires **both** a representative sample and sufficient information about the cultural practices and environmental conditions associated with the disease problem. Photos of the problem are extremely helpful.

Instructions for Submitting a Turf Sample for Nematode Assay

1. **Collection of soil samples.** Nematode populations are estimated most accurately with a composite sample. Use a 3/4" to 1" diameter soil probe, or something similar, and sample to a depth of four inches throughout the site. This depth is a compromise but represents the population distribution of different species fairly well.
 - *When damage is evident:* If a portion of the turf appears unhealthy, collect 15 to 20 subsamples from throughout the affected area and bulk them. **For comparison, a composite sample should also be taken from an adjacent, healthy appearing area.**
 - *When no damage is evident:* The entire green can be sampled by collecting 30 or 40 samples and combining them as one. However, if portions of the green have had a prior history of being weak, sample throughout the area collecting about 20 samples. Keep notes about where you sampled so you can return at a later date and sample the same general area.
2. **Packaging the sample.** The soil (at least 1/2 pint) should be placed in a container, such as a plastic bag, to prevent desiccation. Do not add water to the sample. Clearly identify the sample number on the outside of the container. **Paper tags placed in contact with the soil deteriorate quickly. Do not subject the soil to high temperatures.** After collection, refrigerate or deliver as soon as possible.
3. **Sending the sample.** If possible, hand carry the sample to the diagnostic lab. If you mail the sample, use an express delivery service that will deliver directly to the Diagnostic Lab rather than the University Mail Room. U.S. Postal Service Priority Mail and next day delivery packages go to the the University distribution system and are **delayed by a day or more.** UPS and Federal Express Express Delivery are best. Please **DO NOT use Federal Express "First Delivery"** because they arrive before our offices open (before 8:00 a.m.). The "before noon" deliveries seem to work very well. Mark the box, "*Plant Material — Perishable. Refrigerate on Delivery.*" Include a completed *Turf Diagnostic Form*.

How to Get a Pesticide License

Massachusetts pesticide law requires that all persons who apply pesticides in public areas and private places used for human occupation and habitation must be in possession of a valid license or certification issued by the Massachusetts Department of Agricultural Resources (MDAR). In accordance with the Massachusetts Pesticide Control Act and the current pesticide regulations, MDAR conducts written examinations to measure competency to use, sell, and apply pesticides in Massachusetts. All exams are closed book and applicants must be at least 18 years of age as of the date of the examination.

General Information

- Go to www.mass.gov/agr/pesticides/licensing/ to obtain a “Pesticide Exam Information Bulletin.” Included in the bulletin are: the examination schedule, examination application, order form for study materials, and a list of workshops (optional) that you may attend to help prepare for the exams or call (617)626-1785.

Eligibility for a Pesticide License or Certification

You must pass a written exam to be eligible for a pesticide license or certification.

- **Applicator License** — You must take and pass the applicator license exam. If you intend to do pesticide work for general-use pesticides for hire, you **MUST** obtain a commercial applicator license. This document is usually obtained by individuals working in an extermination, lawn care, landscape, or tree business. This also includes individuals working not for hire such as office building grounds keepers, apartment building landlords, custodians, condominium maintenance personnel, and golf course superintendents.
- **Dealer License** — You must take and pass the dealer exam. If you intend to sell “restricted use pesticides,” you **MUST** obtain a dealer license. This document is obtained by individuals who are employed by distributors and dealers of pesticides.
- **Private Certification** — You must take and pass the appropriate private certification category exam. If you intend to do pesticide work using restricted use pesticides on property owned or rented by you or your employer for the purpose of raising agricultural commodities, you **MUST** obtain a private certification. This document is usually obtained by individuals working as farmers and growers.
- **Commercial Certification** — You must take and pass the appropriate commercial certification category exam and have two years of relevant experience. If you intend to do pesticide work using restricted use pesticides **FOR HIRE** or **NOT FOR HIRE**, you **MUST** obtain a commercial certification. This document is usually obtained by individuals working in an extermination, lawn care, landscape, or tree business, and those noted above under the applicator license.

You may apply for one exam only on any scheduled exam date. The commercial applicator and dealer license exams are given in the afternoon only; check-in at 12:00 p.m., exam starts promptly at 12:30 p.m. The private and commercial certification exams are given in the morning only; check-in at 8:30 a.m., exam starts promptly at 9:00 a.m. (See the exam schedule on the next page.) Exams are multiple choice and are timed. You will have one hour and 45 minutes for the dealer and applicator exams and two hours and 30 minutes for the commercial and private certification exams. The established passing score for the applicator license test is 70% and the established passing point for all other exams is 75%.

Completing and Submitting the Application

Only original, current, Pesticide Bureau examination applications are valid. Call (617)626-1785 for an application or print it off their website. Photocopies and faxes are not acceptable. Be sure to complete the examination application, including the exam date and location, sign it, and include the appropriate fee. Incomplete applications or those without the proper fee will be returned which may cause you to miss your chosen examination date.

Pesticide Exam Study Materials

An order form for study materials is included in the “exam packet” along with the exam application (see above). The order form is also available at the UMass Extension Pesticide Education Program website at www.umass.edu/pested. For phone orders, contact the UMass Extension Bookstore at (413)545-2717, Monday through Friday, 10:00 a.m. to 4:00 p.m. or order on-line at www.umassextension.org and click on Products & Services, then on Extension Bookstore. Please order study materials in advance in order to have time to prepare for the exams.

Pesticide Applicator License Training Workshops for 2009

This optional two-day workshop offered by the UMass Extension Pesticide Education Program is designed to help individuals prepare for the pesticide applicator's license exam. Workshops are from 8:45 a.m. to 4:30 p.m. Preregistration is required. Choose a workshop date at least 1 week prior to your selected exam. Contact Natalia Clifton at (413)545-1044 or check website at www.umass.edu/pested for registration information. Dates and locations for 2008 are:

UMASS EASTERN EXTENSION CENTER, 240 Beaver Street, Waltham, MA 02154

January 22 & 23, 2009	March 19 & 20, 2009	April 30 & May 1, 2009	October 8 & 9, 2009
February 10 & 11, 2009	April 1 & 2, 2009	May 21 & 22, 2009	November 5 & 6, 2009
February 24 & 25 2009	April 8 & 9, 2009	August 6 & 7, 2009	December 3 & 4, 2009
March 3 & 4, 2009	April 14 & 15, 2009	September 10 & 11, 2009	

WESTERN MASSACHUSETTS,

Location TBA
 January 20 & 21, 2009
 March 9 & 10, 2009

UMASS CRANBERRY EXPERIMENT STATION, East Wareham

January 29 & 30, 2009
 March 5 & 6, 2009
 May 7 & 8, 2009

Mass. Pesticide Certification/License Exam Schedule 2009

Check-in for Private and Commercial Certification exams is at 8:30 a.m.; exams start promptly at 9:00 a.m. Check-in for Commercial Applicator (Core) and Dealer exams is at 12:00 p.m. Exams start promptly at 12:30 p.m. Call (617)626-1841 for a prerecorded message regarding cancellation information. In the event of bad weather, call after 6:30 a.m. on the morning of the scheduled exam and listen to the message. If the exam has been canceled, the message will indicate that you should report on the snow date. Exam dates are also posted at www.mass.gov/agr/pesticides. Deadline for receipt of applications is one week before the exam date.

Dates may change! Please check above website.

<i>Exam Date</i>	<i>Snow Date*</i>	<i>Exam Date</i>	<i>Snow Date*</i>
January 9, 2009	January 30, 2009	April 24, 2009	April 28, 2009
January 29, 2009	January 30, 2009	May 8, 2009	No snow date
February 5, 2009	February 27, 2009	May 14, 2009	No snow date
February 13, 2009	February 27, 2009	May 29, 2009	No snow date
February 20, 2009	February 27, 2009	June 12, 2009	No snow date
February 26, 2009	February 27, 2009	July 10, 2009	No snow date
March 6, 2009	March 31, 2009	August 14, 2009	No snow date
March 13, 2009	March 31, 2009	September 18, 2009	No snow date
March 27, 2009	March 31, 2009	October 16, 2009	No snow date
April 10, 2009	April 28, 2009	November 13, 2009	November 17, 2009
April 17, 2009	April 28, 2009	December 11, 2009	December 15, 2009

ADDITIONAL EXAMS will be scheduled in **SPRINGFIELD** and **CAPE COD**. For a complete schedule refer to www.mass.gov/agr/pesticides

Snow date **only if the Department/Pesticide Bureau reschedules exam due to inclement weather.*

Center for Agriculture

The Center for Agriculture brings together agricultural programs from UMass Extension, the College of Natural Resources and the Environment, and the Massachusetts Agricultural Experiment Station. The purpose of the Center for Agriculture is to serve as a portal through which individuals, industries, and agencies can connect with scientists and educators. Simply put, the Center for Agriculture provides access to all of the expertise within the agricultural programs of the university. For more information, visit www.masscenterforag.org.

Greenhouse Updates and E-mail List

Greenhouse managers: Receive timely reports about what's happening with pests, nutrition, marketing and other issues that affect your greenhouse business. University Extension Specialists post updates to our website www.negreenhouseupdate.info based on site visits and conversations with growers. As new information is added, an e-mail sends a reminder and provides a direct link to the website. To be added to the e-mail or fax list contact: Tina Smith, tsmith@umext.umass.edu or call 413-545-5306.

Turf Management Updates and TurfTalk E-mail List

Turf managers: Keep current with the latest Northeast regional turf management information by logging onto the UMass Extension Turf Program web site, www.umassturf.org. During the growing season, UMass Extension Turf Specialists post Management Updates on a regular basis. These messages cover disease outbreaks, insect population status, cultural strategies for managing turf, and other timely information.

Subscribe to the UMass TurfTalk e-mail list, and you will be immediately notified when a new Management Update is posted to the website. You will also be notified of upcoming events and educational opportunities. The subscription is free, and it only takes a few moments to get started. For instructions on how to subscribe to the list, please visit www.umassturf.org and click on "Mailing List."

The Landscape Message

The **Landscape Message** is compiled from information gathered by Extension scouts monitoring landscape sites statewide. The message allows landscapers, arborists, turf managers, and nursery growers to be in touch with local pest activity 24 hours a day at www.umassgreeninfo.org. There are 25 messages each year, weekly during the growing season, and monthly and bimonthly the rest of the year. The following information is available for turf and landscape plant materials.

- What insects are emerging that week
- Disease occurrences and potential disease problems
- Cultural problems and solutions
- Growing degree day, soil temperature and rainfall reports
- Pest management strategies, including IPM

Online at www.umassgreeninfo.org. For more information, call (413)545-0895.

PUBLICATIONS available from UMass Extension

To order, go to umassextensionbookstore.com/catalog or call (413) 545-2717.

New England Greenhouse Floriculture Guide:

A Management Guide for Insects, Diseases, Weeds and Growth Regulators **Price: \$25.00**

2007-2008 Edition. A comprehensive guide for commercial production of greenhouse ornamentals with information on current pest management and growth regulators including integrated pest management and biological control information for greenhouse crops. The guide is also designed to provide commercial growers with technical information on pest management (weeds, diseases and insects) and growth regulators. This publication is rewritten every two years by Extension faculty and staff from the New England State University Extension Systems of Massachusetts, Maine, New Hampshire, Vermont, Connecticut, and Rhode Island and reflects the current collective knowledge for greenhouse crops for this region. Published by New England Floriculture, Inc., sponsor of the New England Greenhouse Conference (200+ pages)

IPM for Strawberries in the Northeastern U.S. **Price: \$7.00**

Covers nutrient and water management, as well as identifying and controlling pests, diseases and weeds. Includes 77 color photos.

Management Guide For Low-Input Sustainable Apple Production **Price: \$10.00**

This publication details the techniques of apple production that utilizes disease-resistant apple cultivars and IPM procedures.

Integrated Pest Management for Northeast Schools **Price: \$12.50**

Designed to help school personnel in the Northeast establish a comprehensive IPM program, including developing an IPM policy statement, identifying roles and responsibilities of school community members, and bid specifications for contracting with outside pest management firms.

Massachusetts IPM Guidelines: Crop Specific Definitions **Price: \$6.00**

Best management practices for apples, cole crops, cranberry, field and greenhouse tomato, highbush blueberry, peppers, poinsettia, potato, pumpkin and winter squash, raspberry, strawberry, sweet corn, and wine grapes.

Structural Integrated Pest Management: A Manual for IPM Practitioners **Price: \$15.00**

A manual for IPM practitioners describes the basic skills needed by a professional pest management specialist. Discussions include monitoring procedures, action thresholds, non-chemical and chemical control procedures, record keeping and management of common pests in the Northeast. Produced in cooperation with the New England Pest Management Association.

Cultural Practice Problems of Trees and Shrubs in the Landscape and Nursery **Price: \$17.00**

A concise compilation of the most recent research on cultural practice problems of trees and shrubs in the landscape and nursery. Highlights the many cultural practice pitfalls associated with woody plants in the nursery, landscape, and urban forest. Written for professional horticulturalists, landscape designers, municipal grounds managers and master gardeners.

Professional Guide for IPM in Turf for Massachusetts **Price: \$22.00**

This 2006-2007 edition of the *Professional Guide for IPM in Turf for Massachusetts* features the latest techniques critical to environmentally sensitive, integrated management of lawns, athletic fields, and golf courses. This guide contains research-based material about turfgrass selection, as well as current approaches for managing disease, insect, weed, and nematode problems. Alternative and cultural pest control options are highlighted, and pesticide selection advice is based on least environmental impact. Initially developed in 1991, this revision for 2006-2007 marks the 8th edition of this popular publication.

Protocols for an IPM System on Golf Courses **Price: \$49.95**

This guide describes the basic elements of an IPM system, outlines the IPM systems desired in the construction of a new golf course, and how to develop, implement, document, and verify a site specific IPM program.

Turf IPM Facts **Price: \$40.00**

Over 60 fact sheets on IPM-based lawn selection, maintenance and troubleshooting. Includes information on cultural practices that reduce lawn disease, white grubs in lawn, and annual grassy weed control.

Professional Management Guide for Insects, Diseases and Weeds of Trees and Shrubs in New England **Price: Replacement update alone \$26, three-ring binder \$4.00**

2008-09 Edition. Pesticide label registration changes every year in all states and you can only legally apply pesticides according to the current year's label. This updated 2008-09 guide tells you what is current and legal for use in all the New England states. An updated version of a popular Massachusetts guide, this is the way for you to stay current with pesticide information. If you already have the 2003 version, this is the updated supplement for pesticide information. Remember, if you're a pesticide applicator, it's the law! Created by UMass Extension professionals, this manual offers the latest on virtually all the insects, diseases, and weeds of woody plants in New England; current and legal listings of chemical compounds labeled for the management of these pests; integrated pest management (IPM) considerations for most of these pests; environmentally friendly alternatives in pest management such as horticultural oils, soaps, biologicals, etc.; and Growing Degree Day (GDD) information for most of the insect pests of woody plants.

Planting and Maintaining Sustainable Landscapes: A Guide for Public Officials and the Green Industry **Price: \$15.00**

A collection of fact sheets, including Trees and Shrubs for Low Maintenance Landscapes; Recommendations for Planting and Maintaining Trees and Shrubs; Integrated Pest Management and Plant Health Care; Streetscape Design and Planting; Selecting Turfgrasses for Low Maintenance Sites; Turf Pesticides and the Environment; Children's Protection Act and School IPM Plans; and Guidelines for Planting within the 100 Foot Wetland Buffer.

New England Vegetable Management Guide 2008-2009 **Price: \$15.00**

The *New England Vegetable Management Guide* is a comprehensive guide for commercial vegetable growers with information on current production and pest management techniques. This manual is a collaborative effort of members of the Extension Vegetable Programs of the Universities of Maine, New Hampshire, Vermont, Connecticut, and Massachusetts. We invite readers to make use of the extensive introduction with sections on soil fertility and nutrients, soil management, cover crops, weed, insect and disease management, IPM, organic production, biorational pesticides, irrigation, and greenhouse vegetable bedding plant production. In the crop sections you will find recommended cultural practices, varieties, fertilization, and information on management

of weeds, insects and diseases for each crop. Each crop has a chart showing how to read and use soil test results for that crop.

The *Northeast Pest Identification Guide* that is bound with this guide provides color photographs of all the weeds, insects, diseases and nonpathogenic disorders that are mentioned in this *Guide*. We hope that growers will use these two publications together for identification and management of pests.

New features in the 2008-2009 Edition include:

- New crops have been added, including basil, mesclun, sweet potato, and okra.
- The irrigation section has been updated and expanded.
- Many new pest management products have been added, including biorational disease control materials.
- Because pesticide resistance management is a serious concern, we have added the resistance group designations for insecticides, herbicides and fungicides/bactericides. This will help growers select products from different resistance groups and slow development of resistance to certain products or groups.
- To assist organic growers in selecting approved pesticides, all materials which are approved for use in organic production are identified as "OMRI listed."

To purchase copies of the *Guide* and photo supplement, contact your state Extension publication office, or the University of Massachusetts Extension Bookstore at 1-877-UMASSXT (within Massachusetts) or 413-545-2717. The *Guide* is also available in pdf format online at www.nevegetable.org.

Northeast Vegetable and Strawberry Pest Identification Guide

Price: \$10.00

Good identification of your pest problem is the first and most key step to successful management! This guide has fifty pages of clear color photographs for every weed, insect, disease and nonpathogenic disorder that is mentioned in vegetable and strawberry recommendation guides around the Northeast. When you buy the *New England Vegetable Management Guide*, you will get this photo guide with it.

To purchase copies contact the University of Massachusetts Extension Bookstore at 1-877-UMASSXT (within Massachusetts) or 413-545-2717. This photo guide is also available in pdf format online at www.nevegetable.org.

A Guide to Insects and Related Pests of Floriculture Crops In New England

Price: \$10.00

Required for Greenhouse; Category 26 Private Certification Licensure test. A guide for the management of the most common insects and related pests of floricultural crops grown commercially in glass and plastic houses in New England.

Pruning Fruit Trees In the Home Orchard

Price: \$3.50

37 photos and illustrations enhance the detailed text covering apple, pear, peach, plum and cherry trees.

Using IPM in the Field: Sweet Corn Insect Management Field Scouting Guide.

Free from the UMass Extension Vegetable IPM lab: contact 413-577-3976 or email umassvegetable@umext.umass.edu.

Over 40 percent of the vegetable acreage in Massachusetts is used to grow fresh market sweet corn. Consumers demand high quality, worm-free corn throughout the season. An Integrated Pest Management (IPM) approach helps growers achieve high quality corn while protecting natural resources and reducing costs. Using IPM effectively in sweet corn combines several methods to monitor pests, decide when insecticides are needed, and encourage biological control where possible. This guide is designed as a tool to take to the field to help growers use IPM successfully. It shows step-by-step how to identify and monitor key pests, how to scout, what to look for, and what thresholds to use for insecticide applications. Color photos help you know exactly what to look for and what to do. A companion guide, the *Sweet Corn Insect Management Recordkeeping Book*, provides a place to write down what you find and keep your scouting records all season long in one compact location.

UMass Extension Garden Calendar

Price: \$12.00

www.umassgardencalendar.org

The annual UMass Extension Garden Calendar presents a selection of plants chosen by UMass Extension Landscape, Nursery and Urban Forestry staff for pest resistance, adaptability to specific growing environments, and seasonal effectiveness. Each month features an inspiring garden image, daily gardening tips for Northeast growing conditions, daily sunrise and sunset times, plenty of room for notes, and low gloss paper for easy writing. Bulk pricing also available: 10-24 copies \$9.00 each, 25-49 copies \$8.00 each, orders of 50 copies or more \$7.00 each, plus shipping and handling. For an order form and chart of shipping charges, go to www.umassgardencalendar.org or contact the UMass Extension Landscape, Nursery and Urban Forestry Program at (413) 545-0895 or eweeks@umext.umass.edu.



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VEGETABLES www.umassvegetable.org,
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www.worldcrops.org

