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Resources

1) Massachusetts Department of Agricultural Resources (MDAR)
251 Causeway Street, Suite 500
Boston, MA 02114-2151
Phone: (617) 626-1700
Fax: (617) 626-1850
http://www.Mass.gov/agr
http://www.Mass.gov/Massgrown

2) Massachusetts Farm Bureau Federation Inc.
466 Chestnut Street.
Ashland, MA 01721
Phone: (508) 881-4766
Fax: (508) 881-4768
http://www.mfbf.net/

3) Current Pest Activity Reports in Massachusetts
http://www.umassgreeninfo.org (click on "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. There are 25 messages each year, weekly during the growing season, and monthly and bimonthly the rest of the year.

4) UMass Extension Plant Diagnostic Lab (Woody plant disease diagnosis, weed ID, insect ID) 160 Holdsworth Way, Holdsworth Natural Resources Center, University of Massachusetts, Amherst, MA 01003
Phone: (413) 545-3208
http://www.umass.edu/agland/diagnostics

5) University of Massachusetts Soil & Tissue Testing Laboratory
West Experiment Station, 682 North Pleasant St. UMass, Amherst, MA 01003
Phone: (413) 545-2311
http://soiltest.umass.edu/

6) Pesticide Recommendations for Insects, Diseases and Weeds in New England
Professional Management Guide for Insects, Diseases and Weeds of Trees and Shrubs. (130 pages, 3-ring binding). A UMass Extension Publication. Available through: UMass Extension Bookstore, 101 University Drive, Suite A4, Amherst, MA 01002. Phone: (413) 545-2717 OR on-line at: http://www.umassextensionbookstore.com

7) Registration Status for Commercial Pesticide Products in Massachusetts
http://www.kellysolutions.com/MA/pesticideindex.htm

8) Pesticide Labels
Crop Data Management Systems, Inc.
http://www.cdms.net
This site lists nearly 100 pesticide companies that produce products for the turf and ornamentals (T&O) market (as well as ag products). The user of this site can obtain specimen labels of specific products along with the Material Safety Data Sheets (MSDS) that accompany the labels.

Greenbook
http://www.greenbook.net
This site lists a number of products and can be easily searched by company, active ingredient, and product trade name. Along with being able to obtain specimen labels and the MSDS, the user can usually also access a "product summary sheet," Department of Transportation (DOT) information, mode of action sheet, state registration information, supplemental label information, and other valuable information about each product.

9) USDA-Natural Resource Conservation Service (NRCS)
451 West Street, Amherst, MA 01002
Phone: (413) 253-4350
http://www.ma.nrcs.usda.gov
The Natural Resources Conservation Service is the federal agency that shows farmers and landowners how to improve and protect their natural resources. NRCS is not a regulatory agency. Its mission is to introduce people to conservation practices and federal conservation programs that can improve water quality and maintain healthy and productive lands. Landowners and NRCS specialists work together on a voluntary basis.

10) Massachusetts Department of Environmental Protection (Mass DEP)
One Winter Street, Boston, MA 02108
http://www.mass.gov/eea/agencies/massdep/ Wetland and Composting information

11) Massachusetts Department of Environmental Protection
Water Management Program
One Winter Street, Boston, MA 02108
http://www.mass.gov/eea/agencies/massdep/water/

12) Massachusetts Division of Fisheries and Wildlife
251 Causeway St., Suite 400, Boston, MA 02114

http://www.mass.gov/masswildlife

13) Worker Protections Standards
http://www.epa.gov/oecaagct/htc.html

14) Energy Resources
Energy Conservation for Commercial Greenhouses - NRAES-3, 100 pages, $20.00 available from the Department of Natural Resources Mgt. & Engr., 1376 Storrs Rd. , UConn, Storrs CT 06269-4087. Make check payable to UConn. Price includes postage and handling.

Renewable Energy Resources for Massachusetts Farms and Greenhouses
University of Massachusetts Extension
http://extension.umass.edu/floriculture/

Massachusetts Department of Agriculture Energy Program
http://www.mass.gov/agr/programs/energy/index.htm
The MDAR Energy Program's primary function is to promote energy knowledge and awareness and to facilitate the implementation of energy related projects for our agri-businesses through energy efficiency, energy conservation, and renewable energy applications, as a means to reduce both energy costs and environmental pollution.

Biomass Energy Crops: Potential for Massachusetts
http://www.mass.gov/doer/programs/renew/bio-ma-potential-crop.pdf

15) Membership Grower Associations
Massachusetts Nursery and Landscape Association (MNLA)
http://www.mnla.com/

Massachusetts Flower Growers Association
http://www.massflowergrowers.com/

New England Nursery Association Inc.
http://www.nensyassn.org/

American Nursery and Landscape Association (ANLA)
http://www.anla.org/

16) Best Management Practices Guide for Producing Container-Grown Plants. Yeager, Thomas, Charles Gilliam, Ted Bilderback, Donna Fare, Kenneth Tilt, and Alex Niemiera. 1997. Available from the Southern Nursery Association, 1000 Johnson Ferry Road, Suite E-130, Marietta, GA 30068-2100. Phone: (770) 973-9026; Fax: (770) 973-9097

17) Greenhouse Engineering. J.A. Aldrich and J. Bartok Jr. NRAES-33. 1994. Available from the Northeast Regional Agricultural Engineering Service
http://www.nraes.org/nra_order.taf?_function=detail&pr_booknum=nraes-33

Appendix A.

Massachusetts Prohibited Plant List

**Effective 1/1/06: The importation of the plants listed below are banned by the listed (importation ban) date. The one and three year propagation ban phase-out dates listed are allowed only on plants that have entered the state *prior to the listed importation ban date* and remain in the channels of trade within the Commonwealth.

NOTE: After the listed "propagation ban" date, the sale, trade, purchase, distribution and related activities for that plant are prohibited.

Latin Name	Common Name	Importation Ban	Propagation Ban
Acer platanoides	Norway maple	7/1/06	1/1/09
Acer pseudoplatanus	Sycamore maple	7/1/06	1/1/09
Aeginetia		1/1/06	1/1/06
Aegopodium podagraria	Bishop's goutweed; bishop's weed; goutweed	7/1/06	1/1/09
Ageratina adenophora	Crofton weed	1/1/06	1/1/06
Ailanthus altissima	Tree of Heaven	1/1/06	1/1/06
Alectra Thunb.		1/1/06	1/1/06
Alliaria petiolata	Garlic mustard	1/1/06	1/1/06
Alternanthera sessilis	Sessile joyweed	1/1/06	1/1/06
Ampelopsis brevipedunculata	Porcelain-berry; Amur peppervine	1/1/06	1/1/06
Anthriscus sylvestris	Wild chervil	1/1/06	1/1/06
Arthraxon hispidus	Hairy joint grass; jointhead; small carpetgrass	1/1/06	1/1/06
Asphodelus fistulosus	Onion weed	1/1/06	1/1/06
Avena sterilis	Animated oat	1/1/06	1/1/06
Azolla pinnata	Mosquito fern	1/1/06	1/1/06
Berberis thunbergii	Japanese Barberry	7/1/06	1/1/09
Berberis vulgaris	Common barberry; European barberry	1/1/06	1/1/06
Cabomba caroliniana	Carolina Fanwort; fanwort	1/1/06	1/1/06
Cardamine impatiens	Bushy rock-cress; narrowleaf bittercress	1/1/06	1/1/06
Carex kobomugi	Japanese sedge; Asiatic sand sedge	1/1/06	1/1/06
Carthamus oxyacantha Bieb.	Wild safflower	1/1/06	1/1/06
Caulerpa taxifolia		1/1/06	1/1/06
Celastrus orbiculatus	Oriental bittersweet; Asian or Asiatic bittersweet	1/1/06	1/1/06
Centaurea biebersteinii	Spotted knapweed	1/1/06	1/1/06
Chrysopogon aciculatus	Pilipiliula	1/1/06	1/1/06
Commelina benghalensis	Benghal dayflower	1/1/06	1/1/06
Crupina vulgaris	Common crupina	1/1/06	1/1/06
Cuscuta	Dodder	1/1/06	1/1/06
Cynanchum louiseae	Black Swallow-wort; Louise's swallow-wart; Autumn olive	1/1/06	1/1/06
Cynanchum rossicum	European swallow-wort;	1/1/06	1/1/06
Digitaria abyssinica		1/1/06	1/1/06
Digitaria scalarum	African couch grass	1/1/06	1/1/06

Latin Name	Common Name	Importation Ban	Propagation Ban
Digitaria velutina	Velvet fingergrass	1/1/06	1/1/06
Drymaria arenarioides	Alfombrilla	1/1/06	1/1/06
Egeria densa	Brazilian waterweed; Brazilian eloda	1/1/06	1/1/06
Eichhornia azurea	Anchored waterhyacinth	1/1/06	1/1/06
Elaeagnus umbellata	Autumn Olive	1/1/06	1/1/06
Emex australis	Three-cornered jack	1/1/06	1/1/06
Emex spinosa	Devil's thorn	1/1/06	1/1/06
Epilobium hirsutum	Hairy willow-herb; Codlins and Cream	1/1/06	1/1/06
Euonymus alatus	Winged euonymus; Burning Bush	7/1/06	1/1/09
Euphorbia esula	Leafy Spurge; Wolf's Milk	1/1/06	1/1/06
Euphorbia cyparissias	Cypress spurge	1/1/06	1/1/06
Festuca filiformis	Hair fescue; fineleaf sheep fescue	1/1/06	1/1/06
Frangula alnus	European buckthorn; glossy buckthorn	1/1/06	1/1/06
Galega officinalis	Goatsrue	1/1/06	1/1/06
Glaucium flavum	Sea or horned poppy; yellow horn poppy	1/1/06	1/1/06
Glyceria maxima	Tall mannagrass; reed mannagrass	1/1/06	1/1/06
Heracleum mantegazzianum	Giant hogweed	1/1/06	1/1/06
Hesperis matronalis	Dames Rocket	1/1/06	1/1/06
Homeria	Cape tulip	1/1/06	1/1/06
Humulus japonicus	Japanese hops	1/1/06	1/1/06
Hydrilla verticillata	Hydrilla; water-thyme; Florida elodea	1/1/06	1/1/06
Hygrophila polysperma	Miramar weed	1/1/06	1/1/06
Imperata brasiliensis	Brazilian satintail	1/1/06	1/1/06
Ipomoea aquatica	Chinese waterspinach	*Permit required-contact Department	*Permit required-contact Department
Iris pseudacorus	Yellow iris	1/1/06	1/1/06
Ischaemum rugosum	Murain-grass	7/1/06	1/1/07
Lagarosiphon major	Oxygen weed	1/1/06	1/1/06
Lepidium latifolium	Broad-leafed pepperweed; tall pepperweed	1/1/06	1/1/06
Leptochloa chinensis	Asian sprangletop	1/1/06	1/1/06
Ligustrum obtusifolium	Border privet	1/1/06	1/1/06
Limnophila sessiliflora	Ambulia	1/1/06	1/1/06
Lonicera japonica	Japanese honeysuckle	7/1/06	1/1/09
Lonicera maackii	Amur honeysuckle	7/1/06	1/1/09
Lonicera morrowii	Morrow’s honeysuckle	7/1/06	1/1/09
Lonicera tatarica	Tatarian honeysuckle	7/1/06	1/1/09
Lonicera x bella [morrowii x tatarica]	Bell’s honeysuckle	7/1/06	1/1/09
Lycium ferrocissimum	African boxthorn	1/1/06	1/1/06
Lysimachia nummularia	Creeping jenny; moneywort	7/1/06	1/1/09
Lythrum salicaria	Purple loosestrife	1/1/06	1/1/06
Melaleuca quinquenervia	Melaleuca	1/1/06	1/1/06
Melastoma malabathricum		1/1/06	1/1/06
Microstegium vimineum	Japanese stilt grass; Nepalese browntop	1/1/06	1/1/06

Mikania cordata	Mile-a-minute	1/1/06	1/1/06
Mikania micrantha	Mile-a-minute	1/1/06	1/1/06
Latin Name	**Common Name**	**Importation Ban**	**Propagation Ban**
Mimosa diplotricha		1/1/06	1/1/06
Mimosa invisa	Giant sensitive plant	1/1/06	1/1/06
Mimosa pigra L.	Catclaw mimosa	1/1/06	1/1/06
Miscanthus sacchariflorus	Plume grass; Amur silvergrass	7/1/06	1/1/07
Monochoria hastata	Monochoria	1/1/06	1/1/06
Monochoria vaginalis	Pickerel weed	1/1/06	1/1/06
Myosotis scorpioides	Forget-me-not	7/1/06	1/1/07
Myriophyllum aquaticum	Parrot-feather; water-feather; Brazilian water-milfoil	1/1/06	1/1/06
Myriophyllum heterophyllum	Variable water-milfoil; Two-leaved water-milfoil	1/1/06	1/1/06
Myriophyllum spicatum	Eurasian or European water-milfoil; Spike water-milfoil	1/1/06	1/1/06
Najas minor	Brittle water-nymph; lesser naiad	1/1/06	1/1/06
Nassella trichotoma	Serrated tussock	1/1/06	1/1/06
Nymphoides peltata	Yellow floating heart	1/1/06	1/1/06
Opuntia aurantiaca	Jointed prickly pear	1/1/06	1/1/06
Orobanche L.	Broomrape	1/1/06	1/1/06
Oryza longistaminata	Red rice	1/1/06	1/1/06
Oryza punctata	Red rice	1/1/06	1/1/06
Oryza rufipogon Griffiths	Red rice	1/1/06	1/1/06
Ottelia alismoides	Duck-lettuce	1/1/06	1/1/06
Paspalum scrobiculatum	Kodo-millet	1/1/06	1/1/06
Pennisetum clandestinum	Kikuyugrass	1/1/06	1/1/06
Pennisetum macrourum Trin.	African feathergrass	1/1/06	1/1/06
Pennisetum pedicellatum Trin.	Kyasuma-grass	1/1/06	1/1/06
Pennisetum polystachyon	Missiongrass	1/1/06	1/1/06
Phalaris arundinacea	Reed canary-grass	1/1/06	1/1/06
Phellodendron amurense	Amur cork-tree	1/1/06	1/1/06
Phragmites australis	Common reed	1/1/06	1/1/06
Polygonum cuspidatum	Japanese knotweed; Japanese arrowroot	1/1/06	1/1/06
Polygonum perfoliatum	Mile-a-minute vine or weed; Asiatic Tearthumb	1/1/06	1/1/06
Potamogeton crispus	Crisped pondweed; curly pondweed	1/1/06	1/1/06
Prosopis pallida	Kiawe	1/1/06	1/1/06
Prosopis reptans	Tornillo	1/1/06	1/1/06
Prosopis strombulifera	Argentine screwbean	1/1/06	1/1/06
Prosopis velutina		1/1/06	1/1/06
Pueraria montana	Kudzu; Japanese arrowroot	1/1/06	1/1/06
Ranunculus ficaria	Lesser celandine; fig buttercup	1/1/06	1/1/06
Ranunculus repens	Creeping buttercup	1/1/06	1/1/06
Rhamnus cathartica	Common buckthorn	1/1/06	1/1/06
Robinia pseudoacacia	Black locust	1/1/06	1/1/06
Rorippa amphibia	Water yellowcress; great yellowcress	1/1/06	1/1/06
Rosa multiflora	Multiflora rose	1/1/06	1/1/06
Rottboellia cochinchinensis	Itchgrass	1/1/06	1/1/06

Rubus fruticosus	Wild blackberry complex	1/1/06	1/1/06
Rubus moluccanus	Wild blackberry	1/1/06	1/1/06
Rubus phoenicolasius	Wineberry; Japanese wineberry; wine raspberry	1/1/06	1/1/06
Latin Name	**Common Name**	**Importation Ban**	**Propagation Ban**
Saccharum spontaneum	Wild sugarcane	1/1/06	1/1/06
Sagittaria sagittifolia	Arrowhead	1/1/06	1/1/06
Salsola vermiculata	Wormleaf salsola	1/1/06	1/1/06
Salvinia auriculata	Giant salvinia	1/1/06	1/1/06
Salvinia biloba	Giant salvinia	1/1/06	1/1/06
Salvinia herzogii de la Sota	Giant salvinia	1/1/06	1/1/06
Salvinia molesta	Giant salvinia	1/1/06	1/1/06
Senecio jacobaea	Tansy ragwort; stinking Willie	1/1/06	1/1/06
Setaria pallidifusca	Cattail grass	1/1/06	1/1/06
Setaria pumila		1/1/06	1/1/06
Solanum tampicense	Wetland nightshade	1/1/06	1/1/06
Solanum torvum	Turkeyberry	1/1/06	1/1/06
Solanum viarum	Tropical soda apple	1/1/06	1/1/06
Sparganium erectum	Exotic bur-reed	1/1/06	1/1/06
Spermacoce alata	Borreria	1/1/06	1/1/06
Striga Lour.	Witchweed	1/1/06	1/1/06
Trapa natans	Water-chestnut	1/1/06	1/1/06
Tridax procumbens	Coat buttons	1/1/06	1/1/06
Tussilago farfara	Coltsfoot	1/1/06	1/1/06
Urochloa panicoides	Liverseed grass	1/1/06	1/1/06

Appendix B

Soil and Tissue Testing Service

UMass Extension offers a variety of soil test options at the University of Massachusetts Amherst Soil and Tissue Testing Laboratory. **(Contact laboratory for current price list, http://www.umass.edu/soiltest.)**

The tests listed DO NOT identify plant growth problems associated with soil drainage, insects, plant diseases (whether soil-borne or not), weeds, winter injury, the misuse of pesticides, or the spillage of petroleum products.

Again, pesticide residues and petroleum contaminants are **not identified** by these tests. Analyses for these are expensive, but may be obtained through the private sector.

1. Standard Soil Test - 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 -

3. Standard Soil plus Organic Matter - includes all the elements of the standard test listed above plus the percentage of organic matter in the soil.

4. Soil Texture only - provides the percentages of sands, silts, and clay.

5. Tissue Test without Nitrogen - provides concentrations of total tissue phosphorus, potassium, calcium, magnesium, sulphur, iron, manganese, zinc, copper, boron, and molybdenum. Lead, cadmium, nickel, and chromium levels available on request.

6. Tissue Test with Nitrogen - provides concentrations of all elements listed in #5 plus nitrogen.

Tissue Sampling

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:
Sample fully expanded leaves from current growth midshoot during late July or 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 to 20 plants scattered through the area to be sampled (rather than 10 to 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 to 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 Laboratory
West Experiment Station, 682 North Pleasant Street, UMass, Amherst, MA 01003-9302
Phone (413)545-2311
http://www.umass.edu/soiltest

Appendix C

Interpretation of Soluble Salt and pH Measurements by Extraction Method

The following information was adapted from "Measuring Soluble Salts and pH with the Pour-Through Method" by John M. Ruter, Nursery Crops Research and Melvin P. Garber, Extension Horticulturist, University of Georgia College of Agricultural and Environmental Sciences Cooperative Extension Service, Horticulture Fact Sheet H-93-015.

The University of Massachusetts Soil and Tissue Testing Laboratory in Amherst uses the saturation media extraction method for soilless growing media. Methods used by growers of container crops on-site are 1:2 dilution method and the Pour-Through method.

The ranges of pH and soluble salts levels found in Table C-1 should be used as guidelines only. Factors to be considered include 1) different species have different nutritional requirements, 2) stage of crop growth, 3) time of year, 4) fertilization (liquid feed versus controlled release) and irrigation program, 5) growing medium, and 6) other environmental factors. Media should be tested at least every two weeks to determine if adequate nutrient levels are being maintained.

Since the soluble salt level gives an indication of the concentration of total salts and not individual elements, nursery operators should have individual nutrient concentrations checked every four to six weeks. A growth medium that tests in the low range will generally not have sufficient levels of nutrients to support good growth. Plants on a constant liquid feed program can be grown at levels in the acceptable range for the Pour Thru method. Soluble salt levels of 3.00 dS/m will generally result in decreased plant quality and injury in young plants and seedlings.

Reference:

Ruter J. and M. Garber. *Measuring Soluble Salts and pH with the Pour-Through Method*. University of Georgia College of Agricultural and Environmental Sciences, Cooperative Extension Service Hort Fact Sheet H-93-015.

Table C-1. Interpretation of soluble salt and pH measurements by extraction method

Method	Soluble salt level	pH	Electrical conductivity (dS/m or mMhos/cm)
Pour-Through	Sensitive crops (liquid feed)	5.2-6.2	0.50-0.75
	Nursery crops (liquid feed)		0.75-1.50
	Nursery crops (controlled-release)		0.20-1.00
Saturated Extract Method* Nursery Crops	Low	5.8-6.8	0.00-0.74
	Acceptable		0.75-1.49
	Optimum		1.50-2.24
	High		2.25-3.49
	Very high		3.50+
Saturated Extract Method* Greenhouse Crops	Low	5.6-5.8	0.00-0.75
	Acceptable		0.75-2.0
	Optimum		2.0-3.5
	High		3.5-5.0
	Very high		5.0+

The ranges of pH and soluble salts levels should be used as guidelines only. Irrigation water should be <0.75 dS/m. The soluble salts level of the water used in the Pour Through procedure should be subtracted from the final leachate value.

*Method used by the University of Massachusetts Soil Testing & Plant Analysis Laboratory.