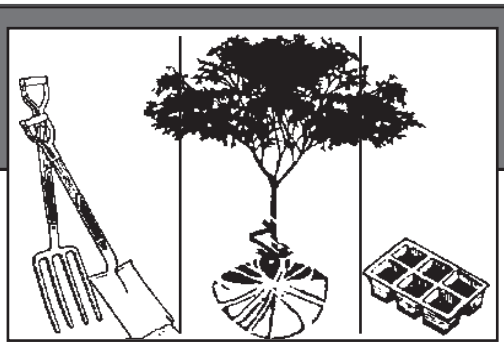
UMass Extension

Hort Notes©



An educational newsletter with research-based information for businesses and individuals involved in selling, planning, designing, servicing, and enjoying landscapes and gardens.

Volume 25, Number 3 **www.UMassGreenInfo.org** **March, 2014**

Changes to the USDA Plant Hardiness Zone Map

Adapted by Lisa McKeag, UMass Extension, from an article by Deborah C. Swanson, Horticulturist

As you go about choosing plant material for your customers, knowing their Plant Hardiness Zone will help decide which plants are likely to survive through the winter in their particular location. The USDA created the first map of these hardiness zones in 1960, dividing the US and Canada into 10 zones, representing 10 degree differences in average annual minimum temperatures between each zone. The higher the zone number, the warmer it tends to be in that area. The USDA updated the map in 1990, basing the zones on weather data collected between 1974 and 1986. For this version, they also created the 5-degree half-zones, denoted "a" and "b", for greater accuracy.

In 2012, the USDA released an improved version of its Plant Hardiness Zone Map, using data that was collected over a 30-year period between 1976 and 2005. According to a news release from USDA's Kim Kaplan, "for the first time, the new map offers a GIS-based interactive format and is specifically designed to be Internet-friendly. The map website also has a 'find your zone by zip code' function. Static images of national, regional, and state maps have been included to ensure that the map is readily accessible to those who lack broadband internet access. The new version of the map includes 13 zones, with the addition for the first time of zones 12 and 13. Each zone is still a 10-degree F band, further divided into 5-degree F zones 'a' and 'b'".

The zones in this most recent edition of the map have shifted slightly since the 1990 version. Most areas are now categorized as one 5-degree F half-zone higher. That is, their average annual minimum temperatures were found to be somewhat warmer than when the 1990 version was published. This is largely due to the fact that more recent temperature data, collected over a longer period of time was used. Some changes, though, also result from the use of more sophisticated data-collection tools and methods. According to Kaplan, "These include algorithms that considered for the first time such factors as changes in elevation, nearness to large bodies of water, and position on the terrain, such as valley bottoms and ridge tops. Also, the new map used temperature data from many more [weather] stations than did the 1990 map. These advances greatly improved the accuracy and detail of the map, especially in mountainous regions of the western US." In some cases, areas were found to be cooler rather than warmer.

Zone numbers in the continental US range from 3a in northern Minnesota and 3b in northernmost Maine, to 10a at the southern tip of Texas, 10b around Los Angeles and 11b in Key West, Florida. Zones in Massachusetts range from 5a in the Berkshire mountains to 7a on Cape Cod. Most of western Massachusetts is in zone 5b, while most areas in coastal eastern Mass are now designated as zone 6b, where the average annual extreme minimum winter temperature is between 0 and -5 degrees F. Gardeners who live in 6b should be able to grow plants that are hardy to zone 6, as well as any plants whose zones are numbered lower than that (zones 5,4,3,2). These zone 6 gardeners might be challenged to grow plants that are hardy to zone 7b (avg. min. 5 to 10 degrees F) as those plants may not survive in the colder zone 6.

It is important to remember that within each garden location "microclimates" exist which may allow gardeners to grow plants that are listed at a higher zone number. For example, in a zone 6 garden, there may be a warm, sunny location, with well-drained soil, near a building that is protected from the cold and wind, making that particular location a "zone 7". Conversely, in that same zone 6 garden, there may be an open, unprotected, low-lying area, where cold settles, making that a zone 5 area, an area where zone 6 plants would struggle.

Find the updated USDA Plant Hardiness Zone Map at **planthardiness.ars.usda.gov/PHZMWeb**

The Successful Planting Initiative Part III: Tree Establishment

Rick Harper, Extension Assistant Professor in Urban & Community Forestry
UMass Dept. of Environmental Conservation

For Parts 1 and II of this series, see the April and October, 2013 issues of Hort Notes.

Having reviewed the important elements from the site assessment phase and the plant selection phase, we now have a better understanding about the local environmental conditions (i.e. light levels, spatial constraints, climate) that selected urban trees will be growing in, their site requirements (i.e. soil conditions, space requirements), and their attributes (i.e. flowering/fruiting habit, tree height potential, etc.). While the plant selection phase can allow for the proactive management of many important forthcoming challenges, it is the establishment phase itself that can directly impact even the short-term success of a planting initiative.

The ultimate objective of the establishment phase is to ensure the survival of the tree in its new environment. As we know, the act of transplanting itself can be a very stressful occurrence. Depending on the system of production, significant amounts of root loss may occur, and even the most basic biological functions (i.e. plant growth) may be compromised for up to several years. And these are the trees that survive this experience – there are many specimens that don't make it past even the short term (the first 2 or 3 years) in their new location.

A swamp white oak (*Quercus bicolor*) being dug with a tree spade. A significant amount of roots may be lost at the time of transplant.

According to a planting that was studied almost a decade (2004) ago, nearly 2/3 of the trees featured excessive soil on top of their root systems. This can be compared to a study conducted a decade and a half earlier, where significantly fewer (i.e. 1/3) trees established featured excessive soil on top of their root systems. Since we believe that excessive soil on root systems may be associated with a number of problems (i.e. the formation of girdling roots, various disease and insect-related challenges, overall reduction of tree longevity), why the apparent increase in this trend from the late 80's through 2004? As with many situations, a number of potential factors have been speculated about:

In the production site:

- Excessive planting depth from the earliest stages of propagation and growth.
- Weed management practices (i.e. cultivation) where soil may potentially end up accruing around the base of the tree.
- Transplant practices where soil may potentially accumulate on top of the roots as trees are dug and balled.

In the new establishment site:

- Excessive planting depth.
- Settling of the plant or the rootball itself (referred to as 'pancaking').
- Addition/accumulation of excessive materials (i.e. mulching as part of the after-care).

As with any challenge, an intervention at the right time with the right strategy can often go a long way to remediating the situation. Fortunately, many problems that may exist as a result of production may be addressed in the establishment phase AND challenges often associated with the establishment stage can be prevented through good practice. Field-grown/balled and burlapped trees are believed to comprise up to 90% of the types of trees that are currently established in a typical tree planting in the Northeast. Assuming this production system, good establishment practices include the following:

Though this urban site offers abundant useable soil volume, establishment practices should have included the application of mulch, in part to help prevent mechanical injury.

• Digging a planting hole of ample width, at least 2x the width of the rootball (recommendations range from 2x-5x the diameter of the rootball).

• Ensuring that burlap, twine and wire baskets are entirely removed.

• Placing the tree in the hole at both the appropriate upright angle and depth.

• Appropriate replacement of soil so that there is not excessive coverage to roots or contact above the root flare at the stem.

• Appropriate addition of a 2-3" layer of mulch, not contacting the bark of the tree.

• Immediate watering, with a plan for regular follow-up.

• A final quality-control check, where depth of structural roots is verified – possibly with the use of a chaining pin or some other measuring implement.

An important – but often overlooked – part of the establishment phase is personal expectation. Conventional wisdom (supported by research) indicates at least a 3-year period where recently established trees will likely grow very little; when considering other factors consistent with an urban setting, this period may in fact be significantly longer. Additionally, the demand for larger trees at the time of installation can further prolong the wait for the new tree(s) to start growing in earnest. Whatever the specific time period for a particular planting, the idea that patience is a virtue applies – especially when it comes to waiting for our trees to take root, and take off.

For further reading on tree establishment:

University of Massachusetts, Landscape, Nursery & Urban Forestry Fact Sheets
extension.umass.edu/landscape/fact-sheets

Cornell Guide for Planting Trees and Shrubs
by Richard Weir III
www.ecommons.cornell.edu/handle/1813/3572

Recommended Urban Trees by Nina Bassuk, Ph.D.
www.hort.cornell.edu/uhi/outreach/recurbtree/index.html

For further reading on tree roots and excessive soil conditions:
www.mortonarb.org/meet-our-scientists/gary-watson.html

Winter Moth Update

UMass Entomologist Dr. Joe Elkinton reports that, "in areas where winter moth caterpillars have been active in past years, we expect winter moth caterpillar numbers to be up considerably this spring compared to last year. The wildcard is whether or not the subzero temperatures we have seen this winter have killed a lot of winter moth eggs. We will not know this until the eggs hatch in the spring".

Winter moth caterpillars usually begin to hatch in early – mid April, although they hatched in late March in 2012 because of unusually warm temperatures that spring. These small caterpillars wriggle into developing buds and feed. Winter moth caterpillars feed on several plant species, but are especially partial to oak, maple, ash, birch, crabapple, apple and blueberry. If winter moth caterpillars have been a problem in your area, be on the lookout for them this spring.

WINTER MOTH DISTRIBUTION MAP

If you grow apples and/or blueberries, you may want to consider protecting the flower buds just as they are swelling and beginning to open by applying a well-timed dormant oil spray that contains an added insecticide such as a Spinosad product, which can be useful if applied within a day or so of egg-hatch. Always check to be certain that any two pesticides are compatible before mixing by reading the label.

According to UMass Extension Entomologist Bob Childs, if you grow apples and/or blueberries, "you may want to consider applying a well-timed dormant oil spray to the trunks and branches to kill the overwintering eggs before they hatch. Some growers add a chemical companion, such as Spinosad, to the oil spray to reach any newly hatched winter moth caterpillars. Always check to be certain that any two pesticides are compatible before mixing by reading the label. When applying oil sprays, it is prudent to have temperatures above 45° F and to avoid applying oil when temperatures may dip below freezing for 24-48 hours after application". This is to avoid damaging the plant.

SPRING KICKOFF FOR LANDSCAPERS
UMASS EXTENSION LANDSCAPE EDUCATION DAY

April 3, 2014 - 10 AM to 3:15 PM
Location: UMass Cranberry Station, East Wareham, MA

Every new year comes with its own challenges for successful maintenance of healthy and attractive landscapes. These challenges include variable and unpredictable weather, insect pests, weeds and changing regulations. Join UMass Extension Educators at the UMass Cranberry Research Station in East Wareham for a day of learning about the latest research-based information to help you kick off a successful landscape management season. Topics include new nutrient regulations and BMPs for nutrient management, timely info on insect pests of landscape and urban trees, developing a landscape weed management program, principles of ecological landscaping, and finding the right plant for the right place. *Two pesticide contact hours for categories 36, 40, and Applicator's License.*

For a registration form or more information, go to www.umassgreeninfo.org or contact Geoffrey Njue, UMass Extension, 508-295-2212 ext. 47, gnjue@umext.umass.edu, or Russ Norton, Cape Cod Cooperative Extension, 508-375-6692, rnorton@barnstablecounty.org.

UMass Extension
French Hall
230 Stockbridge Rd.
Amherst, MA 01003-9316

(104905)

Non-Profit Org.
U.S. POSTAGE
PAID
Permit No. 2
Amherst, MA

Hort Notes®

SCOUTING FOR EARLY-SEASON LANDSCAPE PESTS AND PROBLEMS

April 23, 2014 - 4:30 to 6:30 PM • Location: UMass Amherst

Kick off the 2014 growing season with hands-on scouting, identifying and even forecasting landscape pests and abiotic problems. Join Randy Prostak, Extension Weed Specialist, Nick Brazee, Extension Plant Pathologist, and Rick Harper, Extension Assistant Professor in Urban & Community Forestry, for a walk through the landscape as they discuss and demonstrate how to put IPM practices to work efficiently and examine some of the most common pest and cultural problems of woody ornamentals. Dress for walking; workshop held rain or shine.

Two pesticide contact hours for categories 36, 40, and Applicator's License. ISA, SAF, CFE, MCA, MCH and MCLP credits available. Preregistration required as space is limited. For a registration form or more information, go to www.umassgreeninfo.org or contact UMass Extension at (413)545-0895, eweeks@umext.umass.edu.

HORT NOTES is a monthly horticultural newsletter by UMass Extension. Subscriptions are $20.00 (12 issues) per year. Make check or money order payable to University of Massachusetts, and mail it to HORT NOTES, French Hall, 230 Stockbridge Rd., UMass, Amherst, MA 01003-9316. When writing to request a change of address or to renew a subscription, please include the mailing label. For subscription questions, call (413) 545-0895.