Kentucky Nursery LISTSERV Bulletin

University of Kentucky Nursery Crops Team

End of April 2017

May: Cool and Wet then Warm and Dry

Though the first week of may calls for cooler than normal temperatures, the overall outlook for the next three months is warmer than average for almost all of the United States. Higher than average precipitation is expected for the first week in May, the rest of the month is forecasted to be drier than average.

See **UKAg Weather's Long Range Outlooks** for a variety of forecasts of temperature and precipitation probabilities.

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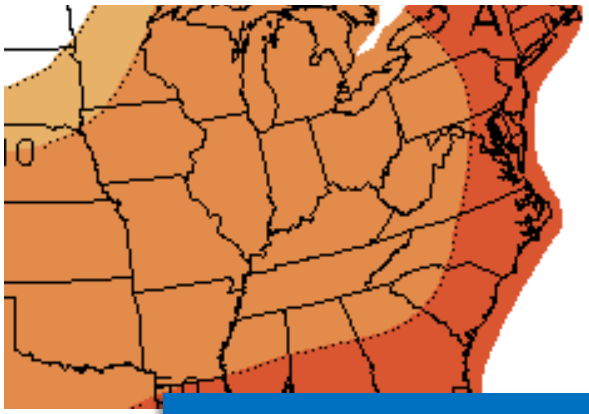

May-June-July Outlook, Temperature Probability
Image: NOAA Climate.gov, 20 April 2017

- **Topsoil recovery in field nursery production**
- **Scouting for Calico scale egg hatch**
- **Water testing and results**

Topsoil recovery in field nursery production

Zenaida Viloria, Extension Associate, Nursery Crops
Win Dunwell, Extension Professor, Horticulture

Before the end of the spring, field nurseries will exhibit a large collection of holes that are left on the ground after balled and burlapped (B&B) tree harvest. Topsoil loss is approximately 470 tons of soil/acre for 44-inch-diameter B&B stocks at the time of harvest. Additionally, reduction in the soil organic matter content occurs over the long term in B&B production. Topsoil recovery is basically focused on increasing soil organic matter in the field nursery after harvest. The practice usually includes planting cover crops for instance cereals, grasses, legumes and brassicas, which are incorporated into the soil before the next cropping cycle. Green manure, cover crops sown in the soil while they are still green with no seeds, are commonly use in field nurseries. Green manure crops can be planted in summer or fall and plowed later in the fall or spring, respectively. Mowing is recommended to avoid seeding. The increase of soil organic matter is not enough over a short period using green manure; thus, it is recommended to supplement this practice with annual application of composted residues or manures.

Balled and burlapped tree harvested in summer.

Photo: Zenaida Viloria, University of Kentucky

Compost can be applied after harvesting or before planting making it unnecessary to take field out of production. Application rates of 50-100 tons/acre appear to be acceptable for many plants. Compost must be incorporated in the first 6-10 inches.

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Individual hole after selective tree harvest

Photo: Ginny Travis, University of Kentucky

Benefits of organic matter in the soil

- Increases the nutrient holding capacity.
- Improves soil physical properties: aggregate size and stability, drainage and aeration.
- Increases water holding capacity of sandy soil.
- Helps soil to resist compaction, promotes water infiltration and reduces runoff and erosion.
- Provides a source of carbon and energy for soil microorganisms which might antagonize with pathogens or play important role in nutrient synthesis and recycling.
- Promotes root growth.
- Allows for easier digging.

Balled and burlapped trees ready for pickup and shipping.

Photo: Zenaida Viloria, University of Kentucky

Land application of horse manure to rebuild topsoil in field nursery.

Photo: Win Dunwell, University of Kentucky

Soil organic matter is dynamic and tends to decrease with time depending upon the environmental conditions. Organic matter quality and quantity as well as the available sources near to the field nursery must be evaluated beforehand to buildup topsoil at low cost and provide optimal soil conditions for the best plant growth.

Additional Information

Check list soil conservation. https://extension.umass.edu/landscape/sites/landscape/files/pdf-doc-ppt/nursery_bmp/NurseryBMPpgs42-52.pdf

The US composting council. 2001. Field guide to compost use. http://compostingcouncil.org/admin/wp-content/plugins/wp-pdfupload/pdf/1330/Field_Guide_to_Compost_Use.pdf

Cooperband, L. 2002. Building soil organic matter with organic amendments. http://images.csacoalition.org/media/soil-organic-matter.pdf

Scouting for Calico scale egg hatch

Joshua Knight, Extension Associate, Nursery Crop Production

Calico scale is a type of soft scale that **infests a large number of woody species** including maple, zelkova, honeylocust, dogwood, crabapple, elm, all stone fruit species, and many more. This species of scale has one generation each year with egg hatch occurring in late May, typically. However, they are at least a couple weeks ahead of schedule this year.

When using an insecticide spray to target scales, **it is best to target the newly hatched "crawlers", which are now active on the branches.** Crawlers are very small and vulnerable to insecticides, and unlike other life stages, crawlers are mobile, making them more likely to encounter insecticide residues.

If you have an infestation of calico scale, **turn the adult females over to evaluate egg hatch**. Eggs are first white and progressively change to pale pink then a dusty dark pink just before hatching. Crawlers are orange and about the same size as the eggs. If all you find is a **mass of fluffy , white material**, you've already missed crawler hatch. This material is the mass of egg shells left behind by crawlers. At that point, the majority of immature scales have probably already settled on the undersides of leaves where they spend the summer months. This is probably the second best stage to target because they are still very vulnerable to insecticides.

Pale pink calico scale eggs

Photo: Sarah J. Vanek

Dark pink calico scale eggs and newly hatched, orange crawlers

Photo: Sarah J. Vanek

Calico scale crawler hatch typically starts just as the adults start to turn from their brilliant black and white to a dull dark brown.

Photo: Sarah J. Vanek

Water testing and results

Carey Grable, Extension Associate, Nursery Crops

As we approach summer, water quality becomes very important when it comes to producing a healthy crop. For water sources, growers must be conscious of factors such as pH, electrical conductivity, alkalinity, and levels of various macronutrients and micronutrients present. For example, it is increasingly common in Kentucky for growers to have issues with high iron, which can lead to clogged irrigation emitters and discolored plants. Growers should consider conducting regular water tests as all of these factors can change over time. Water tests can be run by the University of Kentucky and sample jars and forms can be obtained through your local county Extension Office.

When you get the results of your water test, you will be presented with several pieces of important information. The first result you will see is the pH. Your irrigation water pH should ideally be between 5.5 and 6.5 for most nursery crops (tough acid loving plants like hollies and azaleas prefer a pH between 4.5 and 5.5). As we mentioned in previous newsletters, pH can affect a plant's ability to uptake many vital nutrients.

The next result you will see is Conductivity. The Electrical Conductivity (or EC) is a measure of the total dissolved salts present in the water. The EC reported on your water test will be measure in mmho/cm. 1 mmho/cm is equivalent to 1 mS/cm (Siemen). This number is important to know when conducting the Pour Through Leachate Extraction test for monitoring your fertilizer levels in container production. It's important to remember that higher levels of salt can lead to plant injury.

Alkalinity is reported next on the water test. This is, as we discussed last month, the measure of the water's ability to neutralize acids. Higher alkalinity levels can lead to increasing pH over time. Most labs report this number in either ppm (parts per million) or meq/l (milliequivalents of calcium carbonate per liter of water). For nursery production, alkalinity of 150ppm or less is generally acceptable. When alkalinity starts to approach 300ppm, growers should consider acid injection or an acidifying fertilizer to help control substrate pH. A very useful tool is available online to help growers with acid injection. AlkCalc, developed by the University of New Hampshire Extension program, is a web-based tool that lets you input your pH, alkalinity of your water sample, and desired pH to calculate water treatment requirements.

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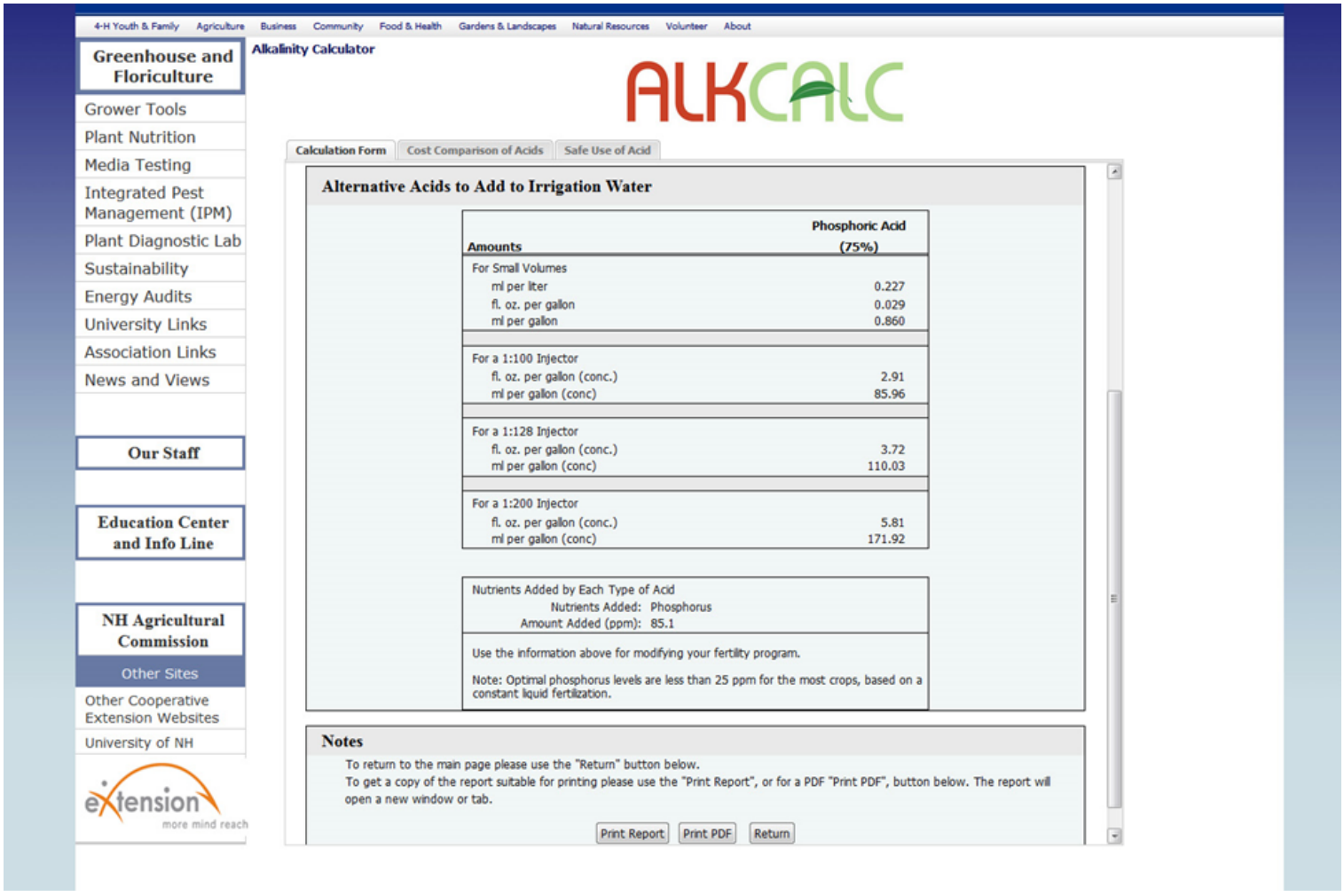
Also included on your water test are the levels present for several different nutrients. The nutrients included on this test are nitrates, phosphorus, potassium, calcium, magnesium, zinc, copper, iron, manganese, boron, and sodium. For a full listing of how each of these nutrients can affect your plants, as well as the optimal ranges these should be, read **Understanding Irrigation Water Test Results and Their Implications on Nursery and Greenhouse Crop Management** - *Dewayne L. Ingram, Horticulture. This publication can be found online on our* Media and Water Testing page.

If you have any questions or concerns about water testing, or interpreting your water test results, contact your local county Extension Agent or feel free to email me at cagrab2@uky.edu.



University of Kentucky
College of Agriculture, Food and Environment

Water Test
Water Source and Nutrient Solution

SECTION I.
Date received by county_____

County _____

Name_____

Address_____

City_____ State____ Zip_____

Telephone Number_____

Owner's Sample Identification Number _____

Lab Use Only:

For County Use Only:

County Code | County Sample #

Billing Code:

SECTION II. TYPE OF SAMPLE
Mark (x) One

Irrigation Water

☐ Well

☐ Pond

☐ Municipal system

☐ Other _____

Nutrient Solution

☐ Fertilizer
Type_____
Rate_____

☐ Epson Salts

☐ Gypsum

☐ Acid
Type _____
Rate_____

SECTION III. IRRIGATION METHOD
Mark (x) One

☐ Overhead ☐ Trickle or low-pressure emitters ☐ Sub (Float, Flood)

SECTION IV. TYPE OF CROP
Mark (x) where appropriate

☐ Vegetable	☐ Ornamental	☐ Tobacco
☐ Greenhouse	☐ Container	☐ Direct seed
☐ Field	☐ Field	☐ Plug and transfer

SECTION V. OTHER INFORMATION

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The University of Kentucky's **Nursery Crop Extension Research Team** is based out of two locations across the bluegrass to better serve our producers.

The **University of Kentucky Research and Education Center (UKREC)** in **Princeton** serves western Kentucky producers while our facilities and personnel on main campus in **Lexington** serve central and eastern Kentucky producers.

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