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ONLINE SURVEY

As we roll on into summer please take a few moments to complete our online survey

We wanted to give you all the opportunity to help us better plan our Central Florida Peach Extension educational program. In the past few years we have tried to hold our meetings in multiple central Florida locations. We feel this has enabled many of you to have the opportunity to meet with other growers within the Central Florida peach growing area. To this end it would be extremely helpful if you would go online and complete our simple survey. The results of this survey can help us to provide you with the most relevant, convenient and timely peach production information (questions/survey web link are on the last page of newsletter).

This year we will be planning on three Central Florida Peach Grower Roundtables. The dates are September 9, 2014, January 13, 2015 and March 10, 2015. The locations will be dependent on the results of the completed surveys. In addition, Dr. Mercy Olmstead our UF/IFAS Peach Extension Specialist typically has a couple of statewide meetings-one in Ft. Pierce and one in Citra during the year. We are also planning on producing four seasonal editions of the Central Florida Peach Newsletter.



As always if you have any questions, comments or suggestions for us, simply click on the agent of your choice from the email links at the bottom of each page or give us a call.



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Additional Information

UF-IFAS Stonefruit Website: <http://hos.ufl.edu/extension/stonefruit>

Peach Nutrition Information for several Southern States: <http://hos.ufl.edu/extension/stonefruit>

Florida Subtropical Peaches: Production Practices: <http://edis.ifas.ufl.edu/pdffiles/HS/HS34800.pdf>.

Resources

Flynn, R., S.T. Ball, and R.D. Baker. 2004. *Sampling for Plant Tissue Analysis*. New Mexico State Cooperative Extension Service. Guide A-123. http://aces.nmsu.edu/pubs/_a/A123.pdf

Lockwood, D.W., M.E. Ferree, and S.C. Myers. <http://www.ent.uga.edu/peach/peachhbk/cultural/nutrition.pdf>

Plank, C. Owen. 1988. *Plant Analysis Handbook for Georgia: Peach*, Cooperative Extension Service, UGA <http://aesl.ces.uga.edu/docbase/publications/plant/plant5.html#PEACH>

Soil and Tissue Sampling Basics

Cami Esmel-McAvoy
Extension Agent Sumter County

Tissue and soil sampling should be the first step in a nutrient management plan for any crop. This article is going to cover the tools needed, how to take samples and assist with understanding the lab results. Typically, stonefruit tissue and soil samples should be collected during the summer months (June to August). This allows time to receive the interpretations and make adjustments to the nutrient management plan for the next growing season.

Before starting to sample, take the time to collect the following suggestions and tools.

- 1) Divide the orchard in to either management areas, along soil types, or areas where issues are occurring.
- 2) Have on hand a plastic bucket, soil probe, scissor (or shears), paper bags, soil sample bags, gallon of distilled water, and marker/pen.
- 3) Label all your soil sample bags and paper bags (for plant tissue) in advance.
- 4) Keep a record of previous soil and tissue sample results that are easy to view and compare, such as in a spreadsheet format.

Soil sampling and analysis is the most inexpensive tool that any grower can use to determine crop nutrient need. The standard soil test will include soil pH, phosphorus, calcium, magnesium. Copper, manganese, and zinc are conducted separately, but are worthwhile to determine. Especially since stonefruit have a high requirement for zinc and the copper levels can be toxic. For each management area, start by randomly collecting 15 to 20 soil cores at a depth of 8 inches within the wetted area of the irrigation system at the drip line. If sampling at random seems overwhelming, work in a zig-zag pattern across the area or make an X pattern in which you select samples. Both of these techniques will sufficiently sample an area. Place

each soil core in a clean plastic bucket and then mix thoroughly. Remove approximately 1 pint of soil or a soil sample bag's worth of soil. This will be a representative sample of the management area. Repeat this procedure over the whole area of the orchard to get a complete picture of the soil nutrients.

Tissue sampling and analysis is an excellent way to monitor tree nutrient status (and thus your nutrient management program) while also identifying potential nutrient deficiency problems. It is important to understand that the tissue sampled needs to be recently matured. For stonefruit, this leaves located at the mid-shoot. Collect at least 100 leaves with petioles attached at random throughout the management area. This size of sample will accurately display the nutrient status of the trees sampled. Choose leaves that do not have the presence of disease or have not been recently sprayed with foliar nutrients. Both of these will cause erroneous results of tree nutrient status. Rinse all the leaves with distilled water and blot dry with paper towels. Allow the tissue sample to air dry and then place it into a marked paper bag.

Nutrient	Deficient Level	Sufficiency Level
N (%)	<1.7	2.75-3.50
P (%)	<0.11	0.12-0.50
K (%)	<0.75	1.50-2.50
S (%)	<0.01	0.12-0.40
Ca (%)	<1.0	1.25-2.50
Mg (%)	<0.20	0.25-0.50
Fe (ppm)	-----	60-400
Cu (ppm)	<3	5-20
Zn (ppm)	<12	15-50
Mn (ppm)	<20	20-150
B (ppm)	<20	20-45

Table 1. Foliar nutrient sufficiency ranges for nutrients in peach leaves, Georgia. Owen, 1988.

PEACH

Symptoms of Zinc Deficiency in Peaches



Figure 1. Rosetted growth (USDA 1976).



Figure 2. Interveinal chlorosis (Johnson 2008).

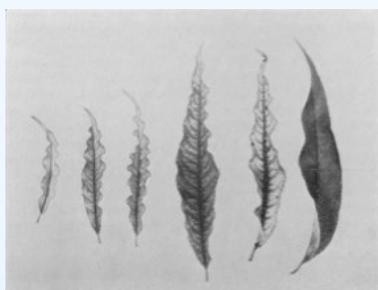


Figure 3. Crinkling, waving chloritic foliage (Gilbert 1948).



Figure 4. Deficient left to healthy right (USDA 1976).

Zinc Nutrition for Peach Trees

Chris Oswalt
Extension Agent Polk County

Elemental zinc (Zn) is not considered very mobile in our sandy Florida soils. Due to this limited mobility, soil zinc is only slightly available to peach trees. The availability of soil zinc is further affected by soil pH. In high pH soils, zinc becomes insoluble and unavailable to peach trees.

Zinc is considered a micronutrient and only small amounts are required by peach trees for proper growth and development. Zinc is a component of many plant enzymes, including those responsible for the plant growth regulator Indole Acetic Acid (IAA). In peach trees, a symptom of zinc deficiency is the development of shortened internodes likely due to a lack of IAA. Seed development, and thus fruit growth, can also be affected by zinc deficiency. Zinc is considered a mobile nutrient within plants and if adequate levels are present in older mature leaves, this zinc will move into the newly developing foliage. If zinc is not adequate in the older foliage, then the deficiency symptoms will first appear on the new foliage.

Symptoms of zinc deficiency in peach trees include the shortened internodes

previously mentioned that result in small pointed leaves forming rosettes at the terminal ends of shoots. The affected leaves will have a chlorotic appearance with interveinal mottling. Leaves will become crinkled or wavy at the leaf margins. Zinc deficiency can cause delayed development of spring flush leaves. The delay in leaf development can result in the inhibition of fruit buds and small misshapen fruit.

Correction of zinc deficiency can be easily and quickly remedied by foliar



applications of zinc. Zinc chelates, neutral zinc and zinc oxide applied as a foliar spray can be applied during the growing season after harvest. Care should be used in applying some formulations of zinc, especially zinc sulfate, during the growing season due to phytotoxicity.

Remember, at higher rates, zinc sulfate is recommended to hasten defoliation in the late fall and winter in Florida.

Applications of zinc sulfate in the late fall and early winter in Florida will also provide some zinc to peach trees. Some of the applied Zn will be taken up by the peach bark and the balance will likely be incidentally available from zinc deposited to the soil. (Sources: Johnson and Urin. Mineral Nutrition. Univ. of Ca. <http://ucanr.org/sites/nm/files/76718.pdf>. Photo credits: http://www.clemson.edu/extension/peach/faq/peach_nutrition.html)

PEACH



Symptoms: Symptoms show up in the new growth first. In a mild deficiency, the young leaves will be light green to yellowish with dark green veins. This is called interveinal chlorosis. Iron is important to the plant in two ways. The first is that with proteins it forms important enzymes that the plant needs. Second, the majority of the iron is involved with chloroplasts and plays a role in synthesizing chlorophyll. This function is why iron is not a mobile element in the plant and why the deficiency shows up in the new leaves first. If the shortage of iron to the plant gets worse then the leaves can become very light colored almost white and if the deficiency continues the leaves will drop which will leave the tops of the limbs bare.



Iron Deficiency in Peach Trees

*Alicia Whidden
Extension Agent Hillsborough County*

Iron deficiency is a common deficiency in peaches as well as many other tree crops. Even though iron may be present in the soil it often exists in a form unavailable to the plant. Iron that is in a form that is available to plants is very soil pH dependent. If your soil has a pH of 3 then iron is available at the maximum concentration but as the soil pH moves toward 6.5 to 7.5 the iron is only minimally available. Since most peach orchards have a soil pH usually around 6.5, there is not much available to the trees. In addition to high pH making the iron unavailable, high concentration of zinc and copper in acid soils, extremely high or low soil temperature, excess soil moisture, nematodes and poor drainage can also cause the plant to show iron deficiency symptoms.

Also iron deficiency has been studied on the effect it will have on fruit. Fruit from iron deficient trees was, not surprisingly, smaller but firmness was not affected. The fruit did not have as much red in the skin color and ripening was delayed. Several organic anions and phenolic compounds were higher and sugar/acid ratios were lower. These changes could mean decreased eating quality of the fruit.

Correcting iron deficiency: The quickest way to help correct the deficiency in the short term is to apply chelated iron to the foliage. This is generally done for high pH induced deficiency. The chelated iron moves into the leaves right to where it is needed quickly. The problem is this does not correct the underlying cause of the problem- high pH. The next thing to do is a soil test to check your pH. Follow the

article on this in this newsletter. If your pH is too high then you can add sulfur. Often foliar iron sprays will need to be repeated throughout the growing season. Also be sure your fertilizer contains some iron. Now is the time to make corrections so there is no adverse effects on next year's fruit. In the spring, I would not recommend applying iron if you have fruit as chelated iron can stain the fruit.

During the summer your field can become waterlogged due to a very active rainy season or tropical system that comes in. This may lead to a temporary iron deficiency due to excess moisture and waterlogged/oxygen deprived roots. Keeping the area as well drained as possible can help alleviate the symptoms. Once the area dries out and roots have adequate oxygen the trees may recover on their own or you may want to help them along by giving a micronutrient foliar spray. Also do not forget if you have very heavy rain that if you are only using granular fertilizer you may have lost all your nutrients so you may need to apply more fertilizer. With fertigation this is not the problem it is with dry fertilizer because you have not lost a lot of nutrients so you would just continue with your regular fertilizer schedule.

References used:

Alvarez-Fernandez, A, Paniagua P, Abadia A. Effects of Fe Deficiency chlorosis on yield and fruit quality in peach (*Prunus persica* L. Batsch). *J Agric. Food Chem.* 2003 Sep;10:51 (19):5738-44.

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Central Florida Peach Grower Survey

For those of you who have access to a computer and the internet the following link (<https://www.surveymonkey.com/s/5S7TTXM>) will direct you to an online survey. Questions 1 and 4 can be answered with multiple answers based on your preferences. If you would, please go through and answer each of the questions and then submit the survey. It is an anonymous survey, I have no way of knowing who you are and I couldn't begin to figure it out if it was even possible to know.

For growers who don't want to complete the online survey I have included the questions here on this last page of the newsletter. If you would answer the questions and mail the completed survey back to my office at the post office box list under my signature including the Drawer number. Thank all of you for taking the time to complete this survey. The answers you provide will help us better focus our resources on the needs of you the grower.

Central Florida Peach Survey Questions

- Which locations do you prefer to have Roundtables? (darken the the circle of your choices)
 - Lake Alfred
 - Bartow
 - Dade City
 - Balm
 - Seffner
 - Other _____
- Would you be interested in field tours as part of our Roundtables?
 - Yes
 - No
- Have you signed up for the Florida Specialty Fruit & Nut Crops Best Management Practices (BMP's)?
 - Yes
 - No
 - Not aware of BMP's
- Please choose or list topics that are of interest to you for upcoming Roundtables.
 - Fertilization
 - Irrigation
 - Weed Control
 - Insect Management
 - Disease Management
 - Nematode Management
 - Pruning
 - Fruit/Blossom Thinning
 - Food Safety
 - Others _____

Thanks and hope you all have a great summer,

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