The Use & Application of Zinc in Pecan Production

In the past homeowners were instructed to make annual applications of Zinc based on the trees diameter. This method was considered the best approach for maintaining sufficient Zn levels in the soil. However, today this approach is no longer considered an acceptable practice as it can result in an overabundance of Zn in the soil and other problems. Also, new scientific discoveries have revealed several interesting facts about Zn that have changed the way it is used in pecan production. Researchers have confirmed that the pecan tree is a poor accumulator and transporter of Zn from the soil to the leaves and nuts via the root system. One important factor that influences Zn uptake is the pH of the soil. Based on these findings it is recommended that proper pecan production must include monitoring and managing Zn by utilizing both soil and leaf tissue analysis in order to correctly manage this essential nutrient.

The first step to proper plant fertility is to have the appropriate amounts of nutrients in the soil. Pecans require a level of 2.5 pounds of Zn per acre for successful growth and development of the tree and nut production. For soils, no additional Zn should be applied without conducting a soil sample to determine the level of Zn and pH of soil. If the level of Zn is found to be adequate no additional Zn should be added, regardless of circumstances. However, if the level of Zn is below adequate then the appropriate amount of this element should be applied according to soil test recommendations. Any zinc deficiencies in the soil can be corrected with an application of either zinc sulfate or zinc oxide. Interestingly, most soils in South Carolina tend to have adequate amounts of Zn.

Soil pH should be maintained between 6.3-7.0. Soil pH outside of this range will result in reduced Zn availability, which results in poor growth and development of the tree and nut yields. If the soil pH requires amending, the recommendations noted in the analysis report should be followed in an effort to correct this condition.
The second step is to be sure proper nutrient levels are present within the plant. The only way to determine if adequate nutrient levels are present within the plant is to conduct a foliar leaf analysis. A foliar leaf analysis is important because it provides the actual levels of nutrients found within the leaf tissue. Whereas the soil sample results provide the amount of nutrients in the soil, they do not show the amount that has been taken up by the plant. Both pieces of information are important.

The recommended range for Zn in the leaf tissue is between 80-120 parts per million (ppm). If a deficiency is noted in the leaf tissue report, it needs to be corrected by utilizing a foliar application(s) of Zn. In many cases multiple applications may be necessary to maintain sufficient Zn levels within the plant. As a preventative measure many growers are now making foliar applications of Zn a standard practice to maintain sufficient levels. Pecan leaf sampling should become an annual practice once trees start to bear nuts. For additional information on how to properly conduct a leaf tissue analysis contact your local Extension Service.

For home growers interested in pecan production, these same practices should be followed. However, foliar Zn applications will present an increasing challenge as the tree matures and grows. Once the tree reaches a certain size, approximately 20 feet and taller, specialized equipment is necessary to properly apply this nutrient on the tree(s). Unfortunately, the cost of this equipment typically outweighs the economic benefit it provides for most home growers.

One other option homeowners can implement to increase the potential of a good crop of nuts is to water the tree(s) during times of a drought. Pecan trees benefit from natural rainfall and typical require 1 to 2 inch of rain per week to ensure a good crop of nuts. One reason is that Zn is more available for uptake when the soils are moist versus being either too dry or wet. Therefore, homeowners may want to consider irrigating the tree(s) once the nuts start to develop until harvest.

For persons interested in pecan production at a commercial level, Zn management will be an integral in order to insure good growth, tree development and nut yields. These individuals are encouraged to seek additional assistance from their local Extension Service on commercial pecan production.

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