

Using Clemson University's Fertilizer Recommendations with Other Lab Results

The Clemson University Agricultural Service Laboratory isn't the only place to have a soil sample tested. Farmers, fertilizer dealers, and consultants may choose to send samples to a private soil-test lab or another state lab for analysis. However, they shouldn't make the mistake of trying to use the Clemson Lab's fertilizer recommendations with the other lab's results.

In testing a sample, labs use a substance called an extractant to help identify available plant nutrients in the soil. After the extractant removes plant nutrients from a soil sample, laboratory equipment can determine how much of each nutrient is present. A lab can then recommend a course of action for improving the soil with fertilizers.

Unfortunately, there are several different extractants used in the United States, and they all extract different amounts of each nutrient. In our region, the most commonly used extractants are Mehlich 1 and Mehlich 3. In addition, some labs may also use a Bray extractant for phosphorus. Results from any extractant can be used to make good fertilizer recommendations, but the information from a test using one extractant can't be applied to recommendations which were calibrated for another extractant.

For example, the Clemson Lab soil-test recommendations for phosphorus, potassium, calcium, magnesium, zinc, and manganese are calibrated for extractions done with Mehlich 1. A sample sent to the state lab in North Carolina will be extracted

with Mehlich 3. Since two different extractant solutions are used, fertilizer recommendations from Clemson's lab would not apply to the results received from the North Carolina lab. Comparing the test results from these labs would be like comparing apples to oranges.

Even if labs use the same extractant, they may use different scales to rate the pounds per acre of extractable nutrients. Results are usually shown as high, medium, or low, but the meaning of those labels can differ from one lab to another. The amount of a nutrient the Clemson Lab considers high might be labeled medium by another lab. The medium rating would call for adding more of that particular nutrient to the soil than a high soil-test rating would recommend.

It is possible, however, to apply Clemson's fertilizer recommendations to another lab's analytical report as long as both labs use the same soil extractant. Follow the guidelines in Clemson's publication EC 476, *Nutrient Management for South Carolina*, to convert the pounds per acre extractable value for each nutrient into a rating of high, medium, or low. Once this interpretation has been made, Clemson recommendations can be used with another lab's soil-test results. If necessary, ask an Extension agent for help in making this comparison.

Still, the best way to apply Clemson's fertilizer recommendations is to have the Clemson Lab conduct the soil test in the first place. It's easy, too: Just send samples to the Clemson Lab through your local Extension office.

See also IL 61, "Splitting Soil Samples to Compare Lab Quality."

This material prepared by Bob Lippert, Extension Agronomist, Clemson University