

Are Secondary Macronutrient And Micronutrient Analyses Needed?

URBANA, ILL.

When crop prices are high, interest increases in selling additional products or services, said Fabian Fernandez, University of Illinois Extension specialist in soil fertility and plant nutrition. More often than not, he said, these products and services do little to nothing for the crop.

“Persuasive advertisements create feelings such as ‘I have to have it,’ or ‘I will forfeit profit if I don’t have it,’ or even ‘it costs so little that it makes sense to get it even if it doesn’t do much, just in case,’” Fernandez said. “Some services are even promoted as ‘no additional cost to you’ or as ‘a package deal that saves you money.’”

Fernandez said one such advertisement receiving a lot of publicity this year is testing for secondary macronutrients (Ca, Mg, and S) and micronutrients (B, Cl, Cu, Fe, Mn, Mo, and Zn).

“While it might be nice to have numbers for the various nutrients, it is important to understand the true value of those numbers,” he said. “When used by themselves, soil testing for these nutrients does little to predict response.”

The Illinois Agronomy Handbook lists a rating for soil tests on a scale of 0 to 100, where 100 is a reliable and cost-effective test and where 0 is a test with little usefulness. Research shows most soil tests for these nutrients are not reliable, Fernandez said.

“If soil test results are high, you know your crop won’t suffer a yield loss due to that particular nutrient,” he said. “But when the test is medium or low, it does not mean that you will get a crop response by applying the nutrient. When test levels are medium to low, that’s when most people start spending money on fertilizers that would likely not produce much difference for the crop. That’s a case where the farmer’s loss is someone else’s gain.”

These tests are also affected by crop and soil conditions, he said. Soil testing for secondary macronutrients and micronutrients is most useful when accompanied by an understanding of crop requirements and the crop, soil and environmental factors that impact availability.

One additional point to remember is that for some nutrients, there are different extraction and analysis procedures used by different test-

ing laboratories, he said. The different procedures can result in vastly different values printed in the report. For example, zinc levels obtained by one method are considered adequate for crop production if they are above 7, while a different method considers zinc test levels to be adequate if the value is above 1.

Know the adequacy value or range for the test you have, Fernandez said. Without it, the information is useless. If that information is not provided, ask the laboratory to provide it.

“Another analysis that is being heavily promoted for secondary macronutrients and micronutrients this year is a plant tissue test,” he said. “While tissue test analysis is in general more reliable than soil testing for secondary macronutrients and micronutrients, I caution that some of the similar concerns I mentioned for soil analysis apply here.”

For most nutrients, the sufficiency range is quite large, partly because of the large uncertainty on what the value is really telling us. Having a value below the sufficiency range does not automatically mean that applying a particular nutrient will cause a yield response.

In addition, tissue test levels are specific to a certain growth stage and plant part. Test information can be of little value and sometimes misleading if applied to a stage or plant part other than what is stated in the recommendation, he said.

“I see the greatest value of tissue testing as a diagnostic tool to check ‘good plants’ from ‘poor plants’ and only when it is considered along with other factors as mentioned above for soil testing,” he said. “By saying tissue testing might be useful for comparison purposes, I also am implying that a secondary macronutrient or micronutrient deficiency will typically be a localized problem within a field. If there is evidence of a nutrient problem and an application of that nutrient can solve it, one should make the application only in the problem area and not on the entire field.”

In deciding whether or not to test for or apply a secondary macronutrient or micronutrient, Fernandez said the old saying, “if it ain’t broken don’t fix it,” is probably a good idea. Δ