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AgriSight®
TRUSTED CROP NUTRITION EXPERTISE℠
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Soil pH Levels Indicate a Need to Adjust P and Zn Fertility in Soybeans

Raising a productive crop depends greatly on the nutrients a plant is able to access during its life cycle. Many factors influence the availability of those nutrients, including soil pH. For instance, as soil pH increases, the availability of phosphorus (P), zinc (Zn) and iron (Fe) decreases. Although variety selection can help manage iron deficiency in soybeans, fertilizer application is still needed to address the P and Zn deficiencies prevalent in high-pH soils.

A recent study from the University of Minnesota showed that as pH increased, both soybean yield and P and Zn availability decreased. As a result, the study concluded that recommendations for P and Zn should not be based on soil test levels alone, but should also be adjusted for soil pH.

Over three years, the Minnesota researchers looked at two sites to determine the soil test levels of P and Zn where yields no longer responded to higher levels of nutrient availability (critical soil test level) in moderately acidic (pH < 6.7), neutral (pH = 6.7–7.2) and moderately alkaline (pH > 7.2) areas of the fields. What they found was that as pH levels rose, critical soil test levels of P and Zn more than doubled current recommendations.

According to the University of Minnesota, soybeans reach yield potential when Olsen soil test P levels are at or above 11 ppm. This is consistent with what researchers found in moderately acidic and neutral soils where the critical soil test P level was 14 and 19 ppm, respectively. However, when soil pH levels were greater than 7.2, critical soil test P level was 36 ppm, more than double the current guidelines.

Zn was above critical soil test levels across all fields, and therefore, no yield response to increasing zinc levels was noticed in moderately acidic and neutral soils. However, when the pH reached levels above 7.2, soybean yields increased in the areas where Zn soil test levels were higher, despite being above critical levels, indicating that higher Zn availability is needed to maximize soybean yield in high-pH soils (over 7.2).

To maximize soybean yields, adequate levels of P and Zn must be available to plants throughout the growing season. Based on current recommendations, this study supports producers increasing P and Zn fertilizer rates when soil pH increases, even if soil test levels suggest adequate P and Zn availability.

These recommendations also underscore how precision agriculture and the right fertilizer technology can maximize productivity and address factors that previously limited yields. When producers utilize these powerful technologies, they are able to ensure that the right fertilizer source is being applied at the right rate and in the right place to address varying pH levels across the field. These tools make it easy to overcome the difficult barriers that varying pH levels once presented.

FACT

According to the University of Minnesota, soybeans reach yield potential when Olsen soil test P levels are at or above 11 ppm. P and Zn recommendations should not be based on soil test levels alone, but should also be adjusted for soil pH.

When you're looking for the right fertilizer source to address this situation, MicroEssentials® SZ™ is the ideal solution. With nitrogen, phosphorus, sulfur and zinc in every granule, MicroEssentials SZ is perfectly positioned to supply balanced nutrition, ensuring uniform distribution and availability of all nutrients, especially Zn. In addition, MicroEssentials SZ helps to ensure that balanced nutrition is available in all pH zones. With its patented Fusion™ technology, MicroEssentials acidifies a small area around the granule, helping to keep P and Zn in plant-available forms, increasing plant uptake.

When determining fertility needs for soybeans, the strong influence of pH on P and Zn needs to be accounted for, and MicroEssentials SZ will deliver balanced nutrition to maximize yields.

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