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Tweaking sampling depths for no-till soils

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Soil sampling is an important aspect of proper nutrient management. Photo by Todd Johnson OSU Ag Communication Services.

In the southern Great Plains, fertilizer recommendations for phosphorous (P) are based on conventional tillage systems, in which soil is constantly inverted. However, in no-till management, nutrients are stratified in the soil. Some research suggests that, when testing acidity in no-till soils, sampling at the right depth results in more accurate liming recommendations. A group of Oklahoma researchers asked if a similar approach would improve P fertilizer recommendations.

The scientists tested P in soil samples taken at different depths prior to planting winter wheat in a P rate study under no-till management with surface application of fertilizer. They later compared how yield responded to the various P applications to determine which sampling depth provided the most accurate reading.

The results showed that soil samples collected in the top 15 cm had the greatest amount of P available and generally had higher correlations with relative yield—with the 5- to 10- and 5- to 15-cm depths having the highest. The results also suggest that, while current fertilizer recommendations are based on testing the whole soil sample (0–15 cm in Oklahoma), that may not work as well for no-till systems where P levels are low from 0–5 cm.

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Reed, V., Finch, B., Souza, J., Watkins, P., & Arnall, B. (2022). Soil sampling depth impact on phosphorus yield response prediction in winter wheat. *Agricultural & Environmental Letters*, *7*, e20067. **https://doi.org/10.1002/ael2.20067**

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