Soybean P Nutrition: Does Soil P Stratification Matter? (S04-grove105545-Oral)

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Abstract:

Stratification of nutrients, observed in soils under continuous no-till management, remains an issue. Two experiments were conducted during 2001 and 2002 to evaluate the effect of stratification on P nutrition of soybean (Glycine max L. Merr.). At the first site there were five blocks with stratified and unstratified main plots and five levels of soil P as subplots. In the second trial there were four blocks with two stratification experiments as main plots, the absence and presence of in-row P (10 kg P/ha) as subplots and four levels of soil P as sub-subplots. The experimental designs were a completely randomized blocks, with a split plot factorial treatment arrangement in both sites. Whole plants were taken at R1 and R5 for P uptake. Grain yield and grain P were measured. In general, P uptake and grain yield were greater with P stratification in soils with lower soil test P. The response to in-row P was similar to that for P stratification. There was little difference due to stratification or in-row P use when soil test P was at medium-high levels. These results indicate P stratification can be beneficial to soybean P nutrition when overall soil P availability is low.

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