Relating Soil Tests and Within-Field Yield Response to Phosphorus and Potassium Using Various Sampling Strategies. (S08-mallarino112615-Poster)

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Abstract:

Alternative soil sampling approaches have been developed to account for soiltest variability and sampling costs. We used a 0.1-ha grid-point scheme (GRID) as the basis to assess the impact of less intensive schemes on estimates of within-field variation of corn and soybean responses to P and K. The approaches used were 1.2-ha grid-cells (CELL), soil series based on soil survey maps, elevation and electrical conductivity zones, yield zones, and an integrated zone approach. Strip-trials were established (15 site-yr) and harvested with yield monitors. Treatments were a check and a high rate of P or K. GRID identified various soil-test interpretation classes in most fields, and confirmed expected relationships between yield response and soil tests. In fields with no whole-field mean yield response, only GRID detected responsive areas (which tested low). In responsive fields, CELL was only slightly less effective than GRID in identifying responsive low-testing areas. Within-field responsive areas identified by the zone approaches seldom were explained by zone-mean soil tests. The zone approaches did not represent nutrient levels and potential yield responses appropriately because of large within-zone variation.

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