Evaluating Soybean Cultivars at Field Productivity Levels using Precision Agriculture Techniques. (A08-watermeier091649-Oral)

Authors:

- N.L.Watermeier* - *Agriculture and Natural Resources, OSU Extension*
- R.Cooper* - *USDA-ARS, Wooster, OH*
- P.Rzewnicki* - *Horticulture and Crop Sciences, OSU Extension*

Abstract:

Replicated trials were conducted to compare the response of a semi-dwarf (Charleston) and a tall drought-tolerant (Croton 3.9) cultivar to varying field productivity levels in a 40-acre field near London, Ohio. The productivity levels were derived using various tools including yield monitor data (since 1998), high-order soil survey (1:2,500) with 9 soil types, elevation, EC, aerial and satellite imagery. Techniques using traditional statistics, normalization and spatial analysis were used to find correlations and classify field productivity zones. The strongest correlation existed between yield monitor data and the high-order soil survey. A 4-meter multispectral satellite image was taken mid-season and the drought-tolerant cultivar showed a greater NDVI response because of it's crop height and larger canopy cover. When evaluating the cultivar yield response on individual soil types, the semi-dwarf cultivar had a greater yield advantage on the higher yielding soils compared to the drought-tolerant cultivar. On the two lowest yielding soils there was no difference in yield between the two cultivars. When classifying field productivity into two zones (low and high) the semi-dwarf yields were significantly greater than the drought-tolerant cultivar in both field productivity zones.

Corresponding Author Information:

Nathan Watermeier
The Ohio State University
26 Ag. Admin Bldg.
Columbus, OH 43210
USA

phone: 614-688-3442
e-mail: watermeier.2@osu.edu

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