Comparison of inferences from classical and spatial analysis of irrigated corn yield. (A03-sadler123027-Poster)

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Abstract:

Spatial variation has been a confounding factor for experimental designs in precision agriculture. To overcome this problem, several new analytical methods have been proposed to objectively evaluate treatment effects in the presence of spatial backgrounds. The objective of this study was to compare the conclusions obtained from several of these techniques, including classical randomized complete block experimental design and analysis of variance within and among soil map units, geostatistical analysis ignoring soil map unit, and state-space analysis, also ignoring soil map unit. The first method assumes that soil map unit is an explanatory class variable; the latter two methods consider the field as strictly spatial data. These analyses were performed on corn yield data from a 3-year experiment with 4 irrigation depths, 2 N rates, and 12 soil map units in a single field. The practical implications of the inferences obtained using these techniques include widely different spatial resolution of the resultant derived irrigation production functions. To a certain extent, the methods complement each other in providing different kinds of inferences from the same dataset.

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Presentation Information:

Presentation Date: Tuesday, November 12, 2002
Presentation Time: 1:00-3:00 pm
Poster Board Number: 438

Keywords: