Crop Models for Analyzing Multiple Years of Yield Maps. (A08-caldwell085432-Oral)

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Abstract:

Five years or more of yield map history are becoming more common among farmers, and a relatively new class of crop simulation models is available for analyzing the spatiotemporal variability in those maps. The models have the standard features of point-specific crop models (e.g., crop growth and development subject to temperature, water, and nutrient stresses) along with algorithms for landscape dynamics such as overland flow and ponding. Examples include the models ecosys, JanuSys, PALMS, and SALUS. Three-dimensional soil profile descriptions normally come from calibrations using remotely sensed (e.g., aerial photography of bare soil and crop) and directly sensed (e.g., soil electrical conductivity) data in combination with soil survey information. The models can account for a significant portion of observed yield variability. New sensors for in-situ measurement of soil parameters will help reduce our dependence on calibrations, and industry initiatives for standardizing field records will help farmers collect the minimum data set they need for analyzing their maps. Once validated the models will help solve a variety of decision support problems in precision agriculture.

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