# Effects of Climate Variability and Change Scenarios on CERES-Maize and SOYGRO. (A03-rosenzweig080917-Oral)

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### **Abstract:**

The effects of changes in climate variability on corn and soybean crop yields were simulated with the CERES and SOYGRO models at 3 sites: Indianapolis, Indiana; Des Moines, Iowa; and Grand Island, Nebraska. The weather-generator generated 2x and .5x temperature and precipitation variance and combinations of both. Corn generally responded negatively to changed variability due partly to optimized base simulations with yields near potential. Soybean experienced more moisture stress during its base case than corn, resulting in either positive or negative responses in yields. Doubling of variability had a greater impact than halving variability for both crops, due to decreased radiation from increased rain days. Crop failures increased under the 2x temperature variability for both crops. Corn failures were due to increased moisture, while soybean failures were due to early frost. Sensitivity tests showed that both corn and soybean had similar negative mean yield response to a +3 C and a -10% precipitation. Soybean at all sites and corn at Grand Island responded negatively to the addition of doubled precipitation and temperature variability to +3 C and +15% precipitation scenarios.

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