The Model Applications in Field Research Community of ASA promotes the application of cropping or range system models in field research to help evaluate and develop optimum agricultural systems and management to achieve long-term economic and environmental sustainability under a changing climate. These models: (1) enhance scientific understanding and explanation of the field experimental results in terms of the physical, chemical, and biological processes and the complex interactions among them; (2) help quantify the results in terms of the fundamental theory and concepts that are broadly applicable, beyond the empirical relationships; (3) predict the experimental results from knowledge of the fundamental factors that determine the plant growth under different environments; and (4) extend the experimental results to longer-term weather conditions beyond the limited duration of the field experiments and to other soil types and climates in the area outside the experimental plots or fields. The extended results can then be used to develop management decision support tools for producers. Model applications to a variety of good data help address knowledge gaps to improve the models and advance science.

Our Activities

The community had both oral and poster sessions at the 2014 Annual Meeting along with conducting a business meeting and hosting a half-day symposium titled “Field-Phenomics: Integrating Simulation Modeling and Proximal Sensing for Crop Research.” Symposium presentations included an overview of proximal sensing and field phenomics, proximal sensing experiences from *Arabidopsis* and *Brassica rapa*, crop modeling to estimate the “unobservable” phenomena, rapid data acquisition for in-field plant phenomics, using crop growth models to phenotype corn under variables of increased carbon dioxide and temperature, and improving model speed and input parameter optimization to support field phenomics. At previous Annual Meetings, our Community held symposia on the applications of models to help optimize the use of limited water in agriculture and evaluating and improving the models in response to climate change variables. This community is involved with the AgMIP (Agricultural Model Intercomparison and Improvement Project) effort, which focuses on the soil water, crop water uptake, water stress effects, and evapotranspiration components of cropping system models.

Our Participants

We are a popular and growing community with international membership. The community currently has 613 members from many different countries with 72% from the USA. We strongly seek, encourage, and value the participation of early career scientists. Our community collaborates with other communities with common interests, and we seek symposium themes representing upcoming and critical areas for model applications in field research.