



# Concurrent Sessions

## Concurrent Session A

**Title:** Drought effects on water resources and crop production in semiarid regions

**Scheduled:** Day 1, 13:30, Room 210AB

**Organizers:** Chad Kruger and Erin Brooks

**Purpose:** To review the impacts of projected climate change on water availability in semiarid cereal production systems and approaches to improving water use efficiency through water management practices, cropping system design, tillage practices and other approaches.

**Scope/focus:** Global scope but focused on water use technologies at different scales, with an emphasis on modeling

**Outcomes:** Improve coordination of research strategies and ideas focused on various semiarid regions of the world.

**Title:** Cropping system improvements and innovation

**Scheduled:** Day 1, 13:30, Room 212AB

**Organizers:** Bill Pan and John Kirkegaard

**Purpose:** Review and compare approaches to diversifying wheat or cereal production systems with cover crops, rotational crops coupled with innovative management to improve resilience to climate change, improved nutrient and water use, and soil productivity.

**Scope/focus:** Cereal production systems globally, with examples of novel rotations and cover crops, their adoption by producers, metrics to assess the resilience they impart to production systems, needs for additional research.

**Outcomes:** Improve understanding of the potential for modifying wheat or other cereal production systems and successes in doing so worldwide. Delineation of a research agenda to continue developing such approaches. Discussion points for the remainder of the project concerning potential integration of the conference.

**Title:** Crop protection

**Scheduled:** Day 1, 13:30, Room 205

**Organizers:** Sanford Eigenbrode and Hans Herren

**Purpose:** Review the current research achievements and challenges for managing pests, weeds and diseases in semiarid cereals undergoing climate change.

**Scope/focus:** Gain an understanding of insect pests, weeds, diseases and their management within cereal cropping systems.

**Outcomes:** Identify research agendas going forward to address issues and ensure integration.

## Concurrent Session B

**Title:** Genetic improvement anticipating climate change

**Scheduled:** Day 1, 15:30, Room 205

**Organizers:** Sanford Eigenbrode and Kulvinder Gill

**Purpose:** Assess the opportunities for genetic improvement to anticipate climate change related stresses and how best to integrate genetic technology into cropping system improvements.

**Scope/focus:** Wheat genetics and breeding in the context of a G x E x M framework.

**Outcomes:** Identified opportunities for improving wheat resilience to climate change related stresses while ensuring germplasm compatibility with emerging cropping system improvements and modifications.

**Title:** Identifying and assessing adaptation strategies

**Scheduled:** Day 1, 13:30, Room 212AB

**Organizers:** John Antle and Bruce McCarl

**Purpose:** Review potential and implemented public and private adaptation strategies, who might implement them and the public role, the interplay between biophysical and economic adaptations. The role of crop models, on farm data and economic models to address these issues will be emphasized.

**Scope/focus:** Global scope but focused on incorporating adaptation better into analyses, with an emphasis on modeling.

**Outcomes:** Improve climate change adaptation of cereals ultimately and in shorter term the identification of possible adaptations and their evaluation with ideas focused on various semiarid regions of the world.

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**Title: Greenhouse gases: Monitoring and approaches to mitigation**

**Scheduled:** Day 1, 15:30, Room 210AB

**Organizers:** Phil Robertson and Brian Lamb

**Purpose:** Assess our current understanding of fluxes of the major greenhouse gases CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> in semiarid cereal cropping systems, with particular attention to measurement and mitigation approaches.

**Scope/focus:** Gain an understanding of the soil, plant, environment, and management factors that govern the contribution of cereal cropping systems to atmospheric greenhouse gas concentrations at multiple spatial and temporal scales.

**Outcomes:** A summary description of the current state of the art, identification of key knowledge gaps, and a description of activities that could help to close these gaps in an integrated way.

## Concurrent Session C

**Title: Cropping system models as platform for integration**

**Scheduled:** Day 2, 10:00, Room 206AB

**Organizers:** Jerry Hatfield and Claudio Stöckle

**Purpose:** Assess approaches for the integrated analysis of cropping systems with particular attention to the use of computer simulation models.

**Scope/focus:** Gain an understanding of the role of models as integrators of diverse scientific disciplines to produce comprehensive analyses of agricultural systems at multiple spatial and temporal scales.

**Outcomes:** A summary description of integrated analyses that can be accomplished with cropping system models detailing needs, limitations, and future developments.

**Title: Collaborative translational science to address climate change in semiarid production systems**

**Scheduled:** Day 2, 10:00, Room 207AB

**Organizers:** Corinne Valdivia and Chad Kruger

**Purpose:** This session addresses collaborative research approaches that connect the knowledge of local decision makers in small holder agriculture around the world, and scientific knowledge, in order to address key issues about learning in contexts of uncertainty and vulnerability.

**Scope/focus:** This session focuses on lessons about the role of perceptions, local and scientific knowledge in informing decisions, derived from participatory research and network analysis in Temperate and Tropical semiarid production systems. Session presenters integrate biophysical and social sciences approaches in soils, pests and diseases, farming practices, networks and landscapes, climate variability and change. Effectiveness of approaches, and the challenges and opportunities in the context of climate change are discussed drawing on experiences with research with farmers in the Inland Pacific Northwest and the Andean Mountain regions, to capture characteristics of developed and developing country contexts.

**Outcomes:** Exposure and learning on approaches in developing and developed countries' agriculture, focusing on adaptation to climate change. Participants will be part of a discussion on collaborative and interdisciplinary and participatory research experiences.

**Title: Data management, interoperability and data sharing to support climate change science for agriculture**

**Scheduled:** Day 2, 10:00, 213AB

**Organizer:** Paul Gessler

**Purpose:** Share information about agricultural data architecture, metadata, policies and opportunities for interoperability to support climate change science regionally and globally.

**Scope/focus:** Repositories for storing baseline and long-term agricultural data exist at various locations around the globe. Opportunities to share tools, applications and insights are evolving to use cloud and distributed computing resources. This session will provide examples from leading research teams and review of approaches we may test for open data to support open science.

**Outcomes:** A plan for leveraging existing efforts to test dynamic analysis tools using interoperability protocols between data repositories from around the globe. This will include discussion of funding opportunities to share data, applications and knowledge and expertise as secure and dependable networking capabilities evolve.



## Saturday Synthesis Session

### **Title: Enhancement of modeling activities and data networks for improvement and utilization of wheat and other cereals**

**Scheduled:** Day 2, 15:30, Room 206A

The efforts of AgMIP exist in a broader context including climate, crop, and economics modeler as well as agricultural researchers providing data sets for calibration and application of models. As a complement, data systems to support models, statistical meta-analyses, and other analytics are needed. How can we provide support and contribute to these efforts to increase the understanding of the interaction between dryland cereal systems and climate?

### **Title: Creating mechanisms to sustain the themes of the conference among ourselves and within our professional societies**

**Scheduled:** Day 2, 15:30, Room 206B

After this conference, mechanisms will be needed to support continuing communication and collaboration by participants and others around themes we initiate here. What are these themes? Example themes include semiarid systems and climate change, crop protection in cereal systems in transition, designing improved resilient cropping systems. We will also need mechanisms to sustain them. Examples include moderated blog or blogs (Wikispaces or equivalent), one or more list serves, establishing or contributing to one or more ASA Communities of Interest (COI). One being entertained is a "Resilient Cereals Community of Interest." These communities can sponsor symposia at future Tri-Societies meetings.

### **Title: Strengthening and contributing to existing U.S. and international partnerships and initiatives**

**Scheduled:** Day 2, 15:30, Room 207A

There are existing collaborative networks, agencies and initiatives in the U.S. and worldwide that include cereal system resilience and productivity in their agendas. Which of these might we coordinate with to carry on conference themes and how should this be accomplished? Examples include the International Wheat Initiative, international agencies (e.g. GAFSP, World Food Program, WOCAT), informal initiatives like System for Wheat Intensification, USDA's LTAR sites where cereals are significant crops.

### **Title: Building capacity and early career support efforts for graduate students working on resilient cereals challenges**

**Scheduled:** Day 2, 15:30, Room 207B

A community of scholars will be needed that is prepared for the collaborative, transdisciplinary efforts required to improve cereal systems and others. How can we better train graduate students and Post Docs for this type of work? How can we work together to ensure this effort is international?

### **Title: Communicating with and informing farmers and food system stakeholders**

**Scheduled:** Day 2, 15:30, Room 213A

Implementation of broader integration will depend on links to industry partners of various sectors including biotechnology, information technology, implements, breeding and genetics. What steps could be taken to identify and sustain these links?

### **Ad hoc session TBD by participants during the conference**

**Scheduled:** Day 2, 15:30, Room 205