

COORDINATED GLOBAL AND REGIONAL ASSESSMENT

Food security is a prominent area of scientific inquiry and popular concern especially related to the potential of climate change to disrupt food systems. Farmers and others in the agricultural and food sectors are faced with the quadruple task of helping to reduce global emissions of carbon dioxide and other greenhouse gases, coping with an already changing climate, delivering healthy nutritious food, and sustainably managing soil and water resources. Agriculture is being called upon to ensure both human and planetary health and well-being.

At the AgMIP-Aspen Global Change Institute Workshop held in September 2015, participants defined three foci of the Coordinated Global and Regional Assessment (CGRA) - risk management, current and future time periods, and nutrition outcomes. Improved agricultural modeling can enable the identification, testing, and development of risk management strategies that are effective even under changing climate conditions. A focus on both current and future time periods links the assessment to real-time deci-

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sion-making as well as planning for emerging food challenges. The focus on nutrition outcomes bridges the gap between agricultural outputs and human well-being. Adaptation, mitigation, food security, and food policy are the main areas for simulations to be included in the CGRA (Figure 1).

The protocol-based CGRA will dramatically improve the consistency and characterization of uncertainty for projections of agricultural and food security impacts including those for IPCC AR6. CGRA protocols will feature consistent multi-model, multi-discipline, and multi-scale assessments of climate impacts on agriculture and food security. Simulations will be rooted in local expertise, historical observations, and climate projections from CMIP5 and CMIP6, and will be driven by scenarios linking the Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs).

CGRA results will provide the information basis for international climate and food policy, regional adaptation and mitigation planning, and development aid. CGRA outputs will be available to inform and improve integrated assessment modeling, nitrogen and carbon cycle simulations, and impact projections of land use, water resources, ecosystems, and urban food supply.

Draft protocols for the CGRA will be developed and posted on the AgMIP website (www.agmip.org) for public comment by the agricultural modeling community. Plans for CGRA will be shared at upcoming conferences, such as iCropM in Berlin in March, 2016. The next full convening for the CGRA will take place at the 6th AgMIP Global Workshop to be held in Montpellier, France in June, 2016.

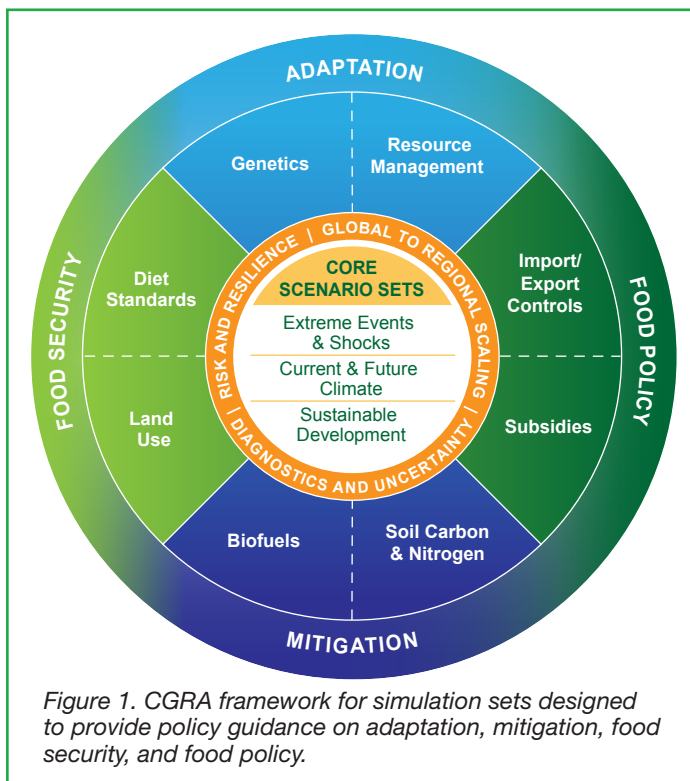


Figure 1. CGRA framework for simulation sets designed to provide policy guidance on adaptation, mitigation, food security, and food policy.

The Agricultural Model Intercomparison and Improvement Project (AgMIP; Rosenzweig et al., 2013), founded in 2010, is a worldwide community of science that includes ~800 climate, crop, livestock, economics, nutrition, and IT experts working to improve the state-of-the-science through model intercomparisons, validation exercises, regional integrated assessments, and global-scale analyses in order to quantify climate and other impacts on food security in the coming decades.