Approximately 120 people gathered at the Cameron Williams Auditorium in the Plant Sciences Bldg. at the University of Kentucky on Monday afternoon, February 20 to hear presentations on climate change and its potential impact on small grain production in Kentucky. The audience included graduate and undergraduate students, faculty, extension agents, and farmers. Experts from five states were invited to report on their research and extension activities in the climate change arena:

**Stu Foster** (KY Climate Center)
An Analysis of Kentucky’s Climate: Recent Trends & Historical Perspectives

**Rezaul Mahmood** (KY Climate Center)
Kentucky Mesonet: Weather & Climate Data Resources Unique to Kentucky

**Jerry Hatfield** (USDA-ARS)
Climate Impacts on Agriculture: Implications for Wheat and Small Grains

**Senthold Asseng** (University of Florida)
Adaptation of Agriculture to Climate Change – A Case from Australia

**Linda Prokopy** (Purdue University)
Engaging Agricultural Stakeholders in Climate Change Adaptation

**Michael Crimmins** (University of Arizona)
Climate Science Extension in Arizona: Lessons from the Road

The following morning, the speakers paired off and met with small groups of interested faculty and stakeholders to address questions that fell into three areas: Climate, Crops, and Outreach. The group discussions were structured around the idea of aligning the strengths and determining the future focus of the UK Climate Change Group. Brainstorming generated the following:

**Climate**
- MesoNet is a unique resource; MesoNet data (from WKU) and agronomic recommendations (from UK) should be linked. For example: In the spring, during the period of rapid stem elongation, the developing wheat head is vulnerable to freeze damage. If the temperature remains below the critical threshold for more than 2 hours, damage is likely and might impact future management decisions. Providing instantaneous freeze warnings, based on MesoNet real time 5 minute temperature updates, could prove valuable to growers, agents, and consultants who make management decisions on wheat crops.
- Need a workshop at UK for county agents and on campus to discuss MesoNet opportunities.
- Develop a common, pilot website for agriculture/MesoNet information (crop models, soil temp, etc.).
- Southeast Climate Consortium: need to explore interaction with this group – joining, collaboration.
- There is a great need for and interest in reliable seasonal forecasts; the model used by University of AZ – The Southwest Climate Outlook ([http://www.climas.arizona.edu/outlooks/swco](http://www.climas.arizona.edu/outlooks/swco)) should be explored.

**Crops**
- We must understand past climate change and variability in order to frame challenge questions and think about future consequences. What has historically limited production? How does climate variability come into play? What do models suggest future conditions will be? What abiotic factors are likely to be important?
- Systems approach is necessary. We should explore developing new systems-level experiments now, guided by these challenge questions.
- Increasing water holding capacity of the soil is critical: one percent increase in organic matter translates to an additional inch of water. Can we manage or improve our soils to increase system resiliency now and for the future?
• Can row spacing or other management be modified for adaptation and increasing water use efficiency?
• Should we focus on breeding for increased heat tolerance?

Outreach:
• Need to identify the target audience through collaboration with county agents; engage this audience in listening sessions (listen to their concerns on topic or lack thereof); and consider how we frame the discussion (perhaps not necessary to use climate change language; conventional production language may be able to adequately address the questions).
• Must clearly define the goals. What are the benefits to stakeholders to understanding climate change? We must present examples that resonate with producers.
• Create a series of op-ed pieces, vetted by county agents, and then send to local newspapers, etc. There is currently a committee of agents to provide feedback on climate change extension/outreach.
• Farmers want to be good stewards. Need to emphasize that climate/atmosphere is another natural resource. Conservation is often win-win (for farmer and environment).
• Commodity organizations are groups that we can utilize to get this info out. They can also generate seed money ideas/discussion/effort and are also leaders with producers. We should engage commodity groups to be more involved in this whole area.

In focusing on these current objectives and opportunities, we also identified important areas that could be strengthened by prioritized future hiring opportunities: Climate Science Extension Specialist and a Crop Modeler.