The date of the event is January 23. 2014

Venue Now the Ag Library Web site is live announced as save the date and a call for posters http://www.ars.usda.gov/News/docs.htm?docid=23494

Program Agenda day of:

8:15 to 9:00 am Registration and poster set-up Continental breakfast

Introductions

9:00 – 9:10 Dr. Joseph Spence

9:10- 9:20 Dr. Shirmohammadi to introduce Dr. Cheng-I Wei

9:20 -9:25 Dr. Lewis Ziska will introduce Charlie Walthall

9:25 -10:10 Charlie Walthall *Overview of ARS research on climate change*

10:10 – 10:25 q & a

10:25- 10:30 Dr. Shirmohammadi to introduce Dr. Don Boesch

10:30- 11:15 Dr. Boesch *Adapting to climate change for natural resources, food and fiber*

11:15 – 11:30 q and a

11:30 -11:40 Bob MacDonald ARS & UMD funding opportunities

11:40 – 11:50 Dr. Lewis Ziska – Jointly funded project *Climate Change and rag weed pollen*

11:50 – 1:15 Lunch and poster session

1:15-2:15 Water (Adel Shirmohammadi)

Water resources are a vital commodity globally, nationally, and regionally, especially so in agriculture, which is the primary user of fresh water. Recent variability in climatic patterns (e.g., uneven distribution of precipitation, rise in global temperature) has brought a significant stress on our water resources. The Ogallala aquifer is still declining despite employment of several efficient irrigation systems. National weather service data indicate an increase of about 1 degree centigrade in the Mid-Atlantic States, including Maryland, over the last 100 years. This increase corresponds to international data that shows a rise of about

1.2 degrees centigrade over the same period. In Maryland, the average monthly precipitation increased in March, April and May and decreased in June, July and August over the last century (1900-2000). This pattern of variability has resulted in farmers investing in overhead irrigation systems, thus creating an economic burden for producers as they adapt to climate change. Such changes in climate will impact our national resources (Soil, Water and Air) in ways unimagined! For example, we may experience water table rise in coastal areas, thus taking land off of production and reducing the amount of potable water for human consumption. Such changes in hydrologic regime will result in reduced accessibility to clean water for domestic use. It will also affect the quality of water by exacerbating flooding and chemical transport. How do we adapt to these conditions in light of climate change is one of the urgent and timely questions for our research and extension programs. We need to identify adaptation strategies (both research and education programs) to keep agriculture sustainable both economically and environmentally.

Adel Shirmohammadi, Kaye Brubaker, Hubert Montas, Vikki Chanse, Paul Leisnham, Ali Sadeghi, are panel particpants

2:15- 3:15 Biogeochemistry and mitigation (Dennis Timlin)

Climate change not only affects agriculture, but agriculture, in turn is a net contributor to greenhouse gas production. These gases consist primarily of carbon dioxide, but contain methane, nitrous oxides, and other complex carbon compounds. The potential impact of climate change on agriculture is large because production depends on almost entirely on weather, especially temperature and rainfall amounts and the stability of these factors. Because the production of these greenhouse gases is global in nature, control at the source is not always possible. Thus, we attempt to reduce the impact of global warming through strategies of adaptation and mitigation. Such strategies involve breeding drought resistant and heat tolerant crops, sequestration of carbon in soil to remove it from the atmosphere, and reduction of the production of nitrous oxides and methane resulting from agricultural practices. There is also a social aspect to mitigation and adaptation in respect to how the general public is involved in these activities and how political and agricultural policies need to support one another. In this panel we will address these issues and discuss agricultural research carried on in the Chesapeake Bay region that contributes to solutions as the climate changes.

a. Primary – Michel Cavagelli, ARS. “Cropping systems approaches to managing Greenhouse gas emissions and carbon sequestration”

i) Steven Smith UMD/PNNL Global management of green house gases
ii) Greg McCarty Carbon Sequestration –Methodology and quantification
iii) Richard Moss or Elizabeth Malone -The Potential for Adoption and Diffusion of Carbon Dioxide Capture and Sequestration

3:15- 4:15 Production systems and modeling (Jim Bunce)

To understand the effects of rising levels of carbon dioxide, increasing mean temperatures, frequency of increasing hot spells and drought, and a combination of those factors, requires measuring the physiological responses and incorporating those measurements into crop prediction models under different climate scenarios. These predictions can be tested and used as decision support services to growers. The research will result in recommendations regarding selection of crop species and varieties within a species, planting dates, the need for irrigation, and pest control requirements. These crop simulation models can also be used at a larger scale to forecast regional crop production as a function of climate change and changes in management practices that would minimize loss and maximize crop production with climate uncertainty.

Primary - Lewis Ziska ARS "Observations of responses of crop systems to climate change" CO2, high temperature, drought effects on crops; intraspecific variation within crop species; responses of weeds and crop-weed competition\

iv) Richard Sicher "Biochemical and molecular responses of crops to climate change Shorter:
v) Dennis Timlin "Incorporating CO_2 responses into crop simulation models (?)"
vi) Allison Thomson (PNL-UMD) Modeling impacts of climate change on crop production"