KSU Initiatives: How can K-State contribute?

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Role of Agronomy

- Climate and weather variability already impact agricultural production
- Producers address this as a strategic operating factor in their choice of production practices and financial management
- How do we help producers adapt to this variability?
Role of Agronomy

- Good and innovative farming practices address both ‘climate change’ and enhance profitability
  - Efficient N fertilizer and manure use
  - Energy efficient practices on farm (alternative fuels, on-farm energy generation)
  - Reduced tillage systems
  - Use of cover crops
  - Local markets
Role of Agronomy

• All crops and pests (weeds, insects, disease) respond to climate change (CO₂, temperature, precipitation, evapotranspiration, humidity) in a complex set of interactions

• Weeds – agronomic, noxious, invasive
  – Economic and environmental consequences
Role of Agronomy

• Effect of CO$_2$
  – C$_3$ weeds could become more competitive and increase crop yield losses

• Effect of temperature
  – Expand range of weed occurrence to higher latitudes or higher altitudes

• Effect of precipitation
  – Drought increases crop stress and increases vulnerability to attack

• Weed control options (new herbicides, tillage, biological control agents)
Kudzu

- With increasing temperatures, kudzu is expected to expand its occurrence northward.
Poison ivy

- Poison ivy grows faster, produces larger leaves, and generates a more allergic form of urushiol – causes dermatitis – with higher CO₂ levels.
Leading questions

• Extension - How to encourage efficiencies (energy, use of N, tillage) when producers are skeptical that climate change is really happening?

• Biological offsets with carbon cap and trade? Will this encourage the producer?