

# **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 (CO<sub>2</sub>, temperature, precipitation, evapotranspiration, humidity) in a complex set of interactions
- Weeds – agronomic, noxious, invasive
  - Economic and environmental consequences

# Role of Agronomy

- **Effect of CO<sub>2</sub>**
  - C<sub>3</sub> 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 CO<sub>2</sub> 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?