ECONOMICS OF USING REMOTE SENSING IN AGRICULTURE

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- Problems
  - Estimated loss: $20 bil. per year
    - Due to fertility, insect, disease, weeds & water problems
- RS in Ag
  - Detection of nutrient deficiencies
  - Soil water content
  - Crop damage due to insect

- Problem
  - RS has Great Potential but low Adoption rate
  - Adoption of RS in Ag
    - 5% of all corn acres
    - 4% of all soybean acres (Daberkow et. al 2002)
    - 12% of US Ag retailers offered satellite RS images in 2003 (Whipker & Akridge, 2003)

- Solution
  - Crossing the Chasm
    - Digital cooperation (Scott Samson, MSU)
    - Profit maximization – farmers' objective

- **Objective**
  - Summarize the economic benefit of RS in Ag

- **Materials and Methods**
  - Review of RS articles
    - Yield, input and/or monetary values
    - Journals, conference proceedings, websites, etc.

- **Results**
  - **12 Studies:**
    - 11 aerial & 1 satellite imageries
  - **Commodities involved:**
    - Wheat, corn, cotton, barley, soybean, beets
  - **Input Reduction**
    - Nitrogen: 10 – 60%
    - Insecticide/herbicide/fungicide: 30%
  - **Yield change**
    - Nitrogen: -8.7 – 10%
    - Insecticide: 18%

- **Profitability**
  - -$10 to $40 per ha

- **Conclusion**
  - Results show RS has the potential to increase Ag profits
  - Only 12% studies reported some economic information
  - Appeal to Researchers
    - Input & output quantities and prices
    - Imagery acquisition cost
    - VRA and other SSM related costs