Dispelling the Ag Technology Myths

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Risk and Profit Conference
Kansas State University
August 22-23, 2019

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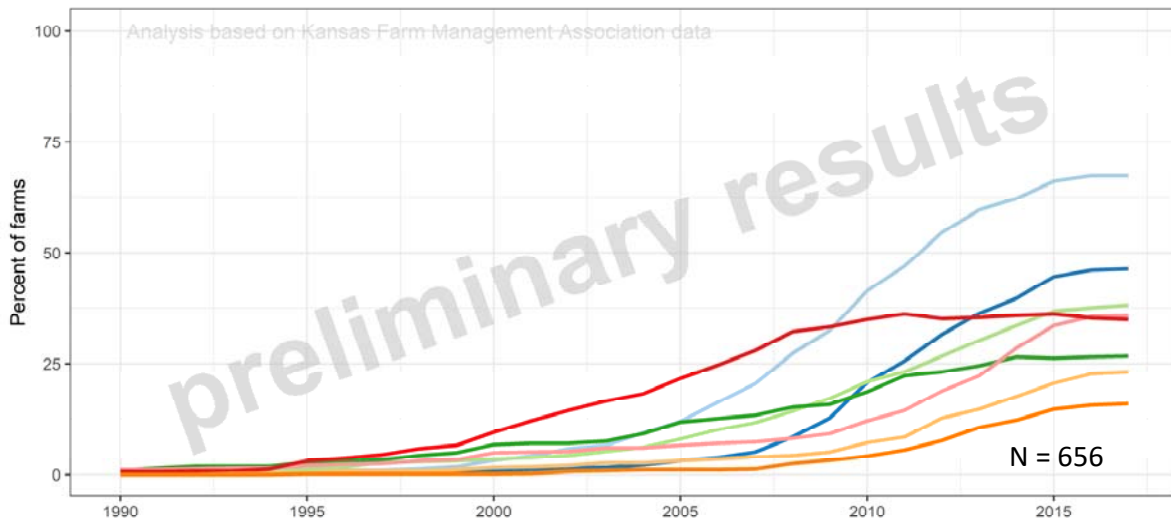U N I V E R S I T Y

Ag Tech Myths

- Everyone else has all the ag technologies
- Yield monitor data doesn't have to be cleaned
  – Field averages same as yield monitor close enough
- I should be using variable rate fertility
- Going off the grid is my best strategy

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- Kansas Farm Management Association (KFMA)
  - Agronomic production & financial data, 1973 - present
  - >2,000 farmer-members, ~1,000 suitable for economic analysis
- KFMA precision agriculture project initiated 2015
  - past & current adoption/abandonment
  - information-intensive & embodied-knowledge technologies
- 656 respondents regarding technology adoption

Analysis based on Kansas Farm Management Association data

preliminary results

N = 656

Legend:
- Automated Guidance
- Automated Section Control
- Combine Yield Monitor (w/ GNSS)
- Combine Yield Monitor (w/out GNSS)
- Grid Soil Sampling
- Lightbar Guidance
- Variable Rate Fertility
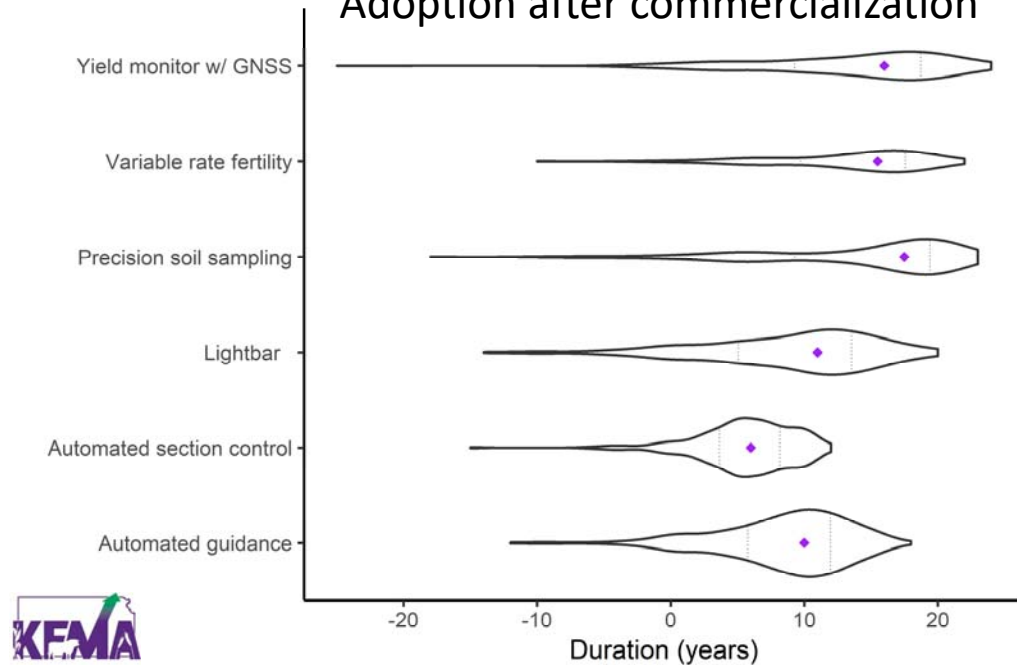- Variable Rate Seeding

Number of technologies used
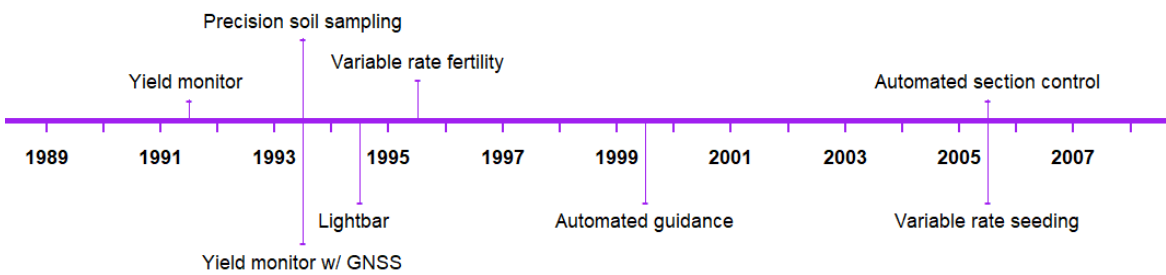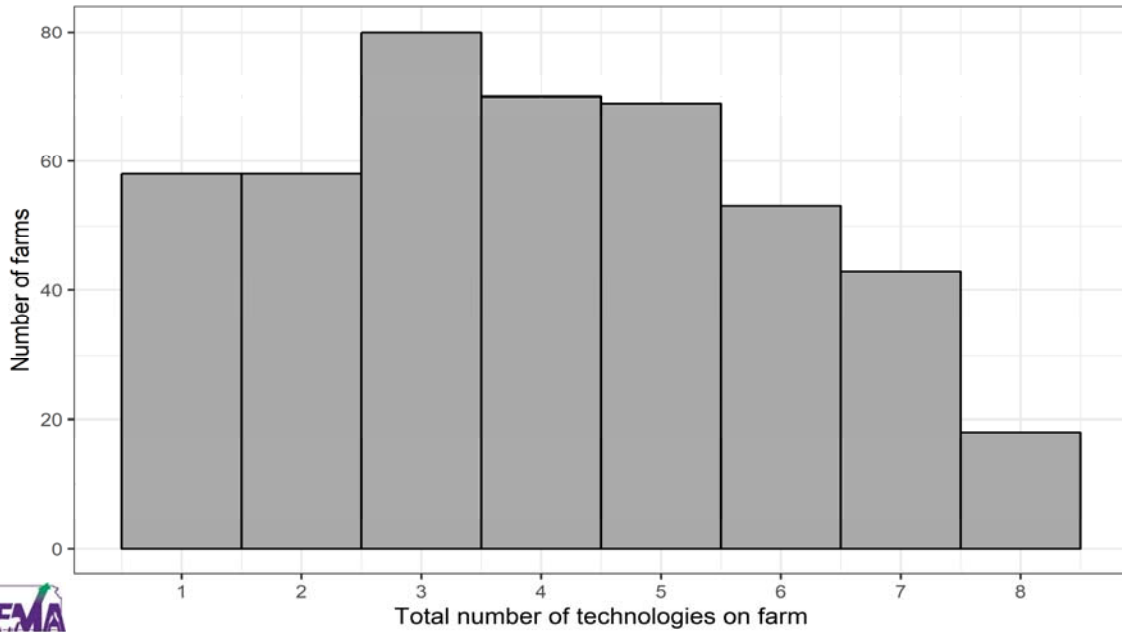
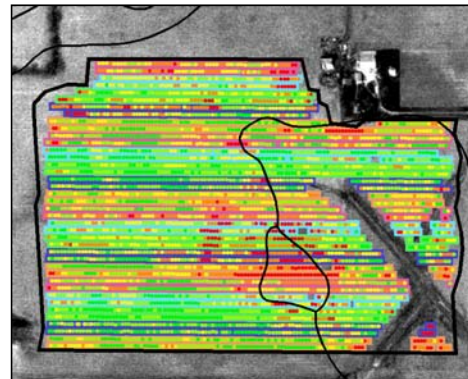Adoption after commercialization

Duration (years)

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5 Ag Tech Myths

- Everyone else has all the ag technologies
  - I'm behind and feel pressure to buy tech
- Yield monitor data doesn't have to be cleaned
  - Field averages same as yield monitor close enough
- I should be using variable rate fertility
- Collecting data and then sell to highest bidder
- Going off the grid is my best strategy

Quality of Farm Data

- Yield monitor data is great, but…
  - Calibration of sensors are crucial
  - Yield cleaning important – USDA Yield Editor
  - Data ≠ truth

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Filtered yield data

Farm Data Quality Litmus Test #1

Unprocessed yield data
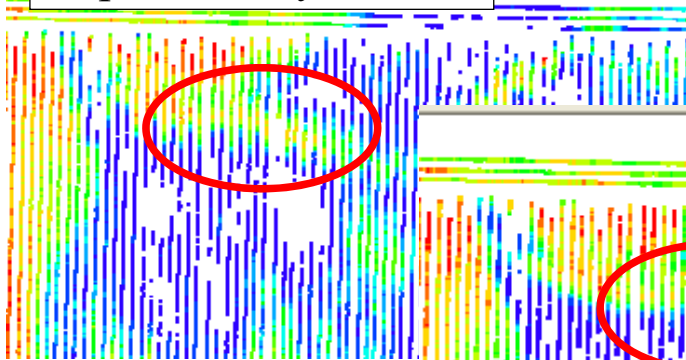
Flow delay set
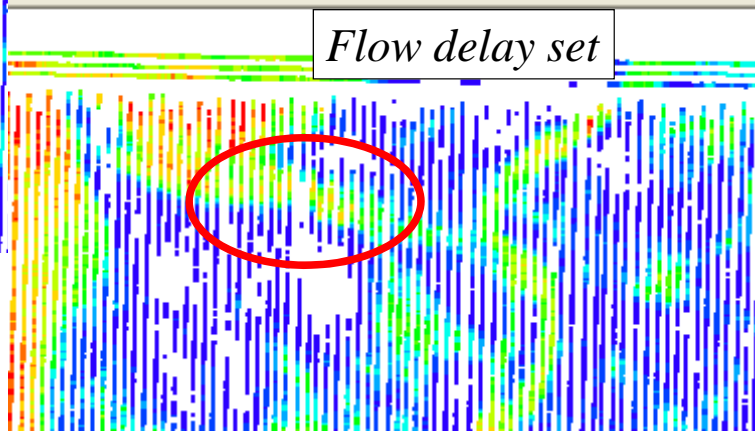
Farm Data Quality Litmus Test #6
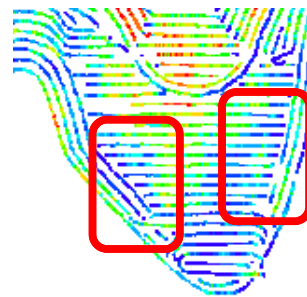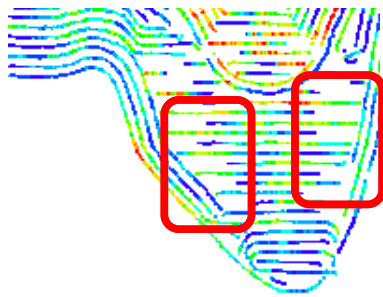
Limited gaps near headlands: "holes in data"

Farm Data as a Resource: Risk

- General reluctance to share data
  - Costs vs. Benefits (perceived or real)
- Data is an intangible resource
  - Source of competitive advantage (real or perceived)
- Ramification of relinquishing control
  - Give up bargaining power

Source: Shanoyan and Griffin

Future Work

- Blockchain applied to farm data
  - Data quality assurance
  - Data security
  - Wireless broadband connectivity
- Is precision technology profitable?
  - Do farmers with money buy technology?
- Optimal adoption path
  - Nothing to something to complete bundle

Defining Precision Agriculture

"Precision Agriculture is a management **strategy** that gathers, processes and analyzes **temporal**, **spatial** and individual data and **combines** it with other information to support management **decisions** according to estimated **variability** for improved resource use **efficiency**, **productivity**, **quality**, **profitability** and **sustainability** of agricultural **production**."

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