WHY ROBOTS?

BENEFITS AND OBSTACLES TO ADOPTING ROBOTIC MILKING TECHNOLOGY

GOALS OF RESEARCH

- Complement other research at the Kellogg Biological Station by examining implementation of:
  - Pasture-based dairy management
  - Robotic milking technology

- Examine how these methods might support the sustainability of small and medium dairy producers in Michigan (< 300 cows)
ROBOTIC MILKING TECHNOLOGY

- 1992: Lely
- 2008: 2400 farms worldwide
- Estimated 200 in the US
- One robot for 60-70 cows
- 24 hour individual milking
- Computer to gather information and alert if problems arise

ROBOTIC MILKING IN MICHIGAN

Graph showing the number of dairy farms and total robots from 2009 to 2012.
IMPACTS OF ROBOTIC MILKING?
STUDIES FROM EUROPE INDICATE:

- 20% reduction in human labor
- Can increase milk production from 6 - 35%
- Flexible schedules for dairy managers
- Enhanced quality of life
- Can reduce farm income in some cases

OUR RESEARCH QUESTIONS

1. What are the social benefits of robotic milking technology?
2. What are the challenges and drawbacks of adopting robotic milking technology?
3. What are the primary barriers to the adoption of robotic milking technology?
4. What approaches could be used to address current challenges and barriers?
RESEARCH METHODS: INTERVIEWS

- Farmers using robotic milking technology in the Upper Midwest with < 300 cows
- Semi-structured interview guide
- 15 interviews conducted:
  - Michigan, Wisconsin, Indiana, and Iowa
  - 20 additional interviews in Europe, pasture-based with robots
- Transcripts analysis

MOTIVATIONS

- What made you want to try robotic milkers?

  - REDUCE LABOR
    - Their own (flexibility, control over hours)
      - “I didn’t want to be married to the cows anymore. I wanted to do it for the kids, to have time for them.”
    - Hired
      - “I’d rather pay a loan than pay a worker.”
MOTIVATIONS

- NEED TO UPGRADE FACILITIES
  - Relative cost difference is reduced
    - “It just depends where you are in the life cycle of the farm, where you are with your facilities and modernizing.”
  - INTERGENERATIONAL TRANSITION
    - Younger generation, children and grandchildren

MOTIVATIONS

- WANT HIGHER PRODUCTION
  - Avoid third milking
  - SEEING ROBOTS IN ACTION
**FLEXIBILITY**

- Control over your time
- Time with wives and families
  - “We slept in until 7 this morning!”
  - “My cousin got married and we could all go. No one had to come back and milk the cows.”
- More options with employees

**BOOST IN PRODUCTION**

- Depends on previous management

**BETTER ANIMAL HEALTH**

- Reduced SCC
- Reduced stress
  - “We spend a lot less treating mastitis than we used to.”
BENEFITS

- BETTER INFORMATION
  - Earlier diagnosis of a problem
  - Better recognition of cows in heat

CHALLENGES

- HIGH COST
  - Debt, especially if already have a high debt load

- TECHNOLOGY FAILURE RISK
  - “It was really scary that the machines could go wrong.”
CHALLENGES

- **LACK OF TECHNICAL SUPPORT**
  - Want faster service
  - Want better training

- **LEARNING NEW TECHNOLOGY**
  - Maintaining the machines
  - Learning the software
    - "It’s a whole new kind of work, more like management. I didn’t know any of this computer stuff before."

CHALLENGES

- **MILK INSPECTORS**
  - Getting better

- **(NOT) TRAINING COWS**
  - Easier than expected

- **(NOT) RETROFITTING BARNs**
  - Work in a wide range of styles and setups
WHAT WE WISH WE KNEW

- HOW HARD THE FIRST YEAR WOULD BE
- MAINTENANCE COSTS

SOLUTIONS

- COSTS
  - Dairy modernization grants
  - Financing options?
  - Iowa study of financial impacts

- SUPPORT AND RESOURCES
  - Robotic Dairy Users Group
  - Online networking
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