Automatic Milking Systems - Producer Survey

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Producer Survey Response

- 8 producers responded
- Avg. installation age: 8 months
- Herd Size Avg: 12% increase
  - Before: 149 cows
  - After: 167 cows
- Average cost per AMS: $185,000 without building costs
Labor Efficiency

• Primary goal when installing an AMS
  – Labor savings valued at $44,030/year
  – Hiring, training, and overseeing employees decreased (37 minutes/day)
  – Records Management labor increased minimally at $212 per year (37.8 minutes/day)
    • Information and records collected from AMS
75% Decrease in Total Milking Labor

Milking Labor
- Before AMS
- After AMS

15.6

Hours of Milking Labor

3.9
Milking Labor Management

• Milking Frequency:
  – Before: 2 times/day
  – After: 2.9 times/day

• Fetching cows 2.25 times per day
  – Average 10 cows fetched per robot per day
70% Decrease in Heat Detection

Heat Detection

- Before AMS: 0.65
- After AMS: 0.2

Hours of Heat Detection
Labor Efficiency

• Cows milked per labor hour
  – Increased from 21.3 to 185.2 cows
    • 781% decrease in milking labor!

• Labor cost per hundredweight
  – Reduced from $1.93 to $0.35/cwt.

• Labor cost per cow
  – Reduced from $1.34 to $0.27 per cow

• For one robot using a 74 cow per robot basis, producers saw milking labor savings of $23,997 per year
Management Practices of Dairy Producers

Cow Housing

- Built new facilities: 50%
- Retrofitted existing free stall barn: 37%
- Converted stanchion barn to AMS: 13%
- 100% housed in free stalls
Management Practices of Dairy Producers

Bedding Type

- Sand: 50%
- Mattress/Sawdust: 37%
- Mattress/Chopped Straw: 13%
Management Practices of Dairy Producers

Barn Cleaning

- Clean barn with automatic scraper: 50%
- Tire Scraper: 25%
- Utilize Slats: 25%
Milk Production and Quality

Milk Production, lbs/day

- Before AMS: 69.25 lbs/day
- After AMS: 77.5 lbs/day

Somatic Cell Count

- Before AMS: 257,000 cells/mL
- After AMS: 165,000 cells/mL

75% of the producers were extremely satisfied to moderately satisfied with using conductivity to manage milk quality.
Feed Management

• Managing the feeding system is critical to the AMS success
• Properly balancing the Partial Mixed Ration (PMR) and pellet drives the success of visits to the AMS.
• Provide fresh, timely, high quality forage in the bunk contributes to AMS success
Feeding Management

• Partial Mixed Ration
  – Avg. 0.73 lbs of PMR fed per pound of milk
  – Costs reported ranged from $0.08 to 0.12 per pound of PMR

– 62.5% of producers are feeding the PMR ration 2 times per day
  • Pushing up feed varied from no push-up to 5-6 times per day to continuous with robotic pusher.
Feeding Management

• Pellet Management
  – Minimum pounds of pellet fed through robot: 5 lbs
    • 37.5% farms decreasing to 2 pounds of pellet per day 14 days prior to dry-off
  – Maximum pounds of pellet fed through robot: 14.5 lbs
    • Early lactation and/or high production
  – Avg. cost per pound of pellet feed: $0.13 per pound

• Pellet Palatability
  – Typical ingredients include corn and a variety of by-products such as linseed, wheat midds, molasses, soybeans, oats, and DDGs.
  – Major driver of AMS success
Reproductive Management

- 87.5% of cows are bred in a natural heat through activity monitoring system
  - Some farms still observe for heat 1-2 times/day in addition to activity monitoring
- Half the farms utilize a synchronization program
  - ranging from 1% for problem cows up to 25% of all cows in the herd.
- 62.5% report using less synchronization programs than in previous system.
- Services per conception decreased
  - 19% to 2.1 services per conception.
- Pregnancy rate increased by 6%.
Other Issues of Concern

• Minimal change in cull rate
• Reasons for culling did not change after AMS
• Decrease in electrical use
• Increase in water and chemical usage; possibly attributed to herd growth
Satisfaction Index

• 100% of producers agree or strongly agree that:
  – The AMS has been a good personal, financial and management investment.
  – The AMS has improved cash flow.
  – The AMS has improved profitability.
  – The AMS has improved quality of life
    • By an average value of $22,500
Reasons for Installing an Automatic Milking System

1. Flexibility in Schedule (n=8)
   - Have more time for family events, improved quality of life

2. Labor Efficiency (n=5)
   - Ability to work in other areas of the farm, labor consistency and availability, and milking frequency

3. Information (n=4)
   - Technology, individualized cow data and mgt.

4. Comparison of another system (n=3)
   - Going to build anyway, similar cost to other systems
Investment Analysis

• High initial investment cost due to the automation of the milking system

• Annual investment cost assuming
  – 15 year useful life:
    • $336.04 per cow or $1.42 per hundredweight
  – 10 year useful life:
    • $402.70 per cow or $1.70 per hundredweight
  – Total annual investment and labor cost:
    • $1.77/cwt. (15 yrs) -- $2.06/cwt. (10 yrs.)
Investment Analysis

• Payback period
  – Based on labor savings and increased milk production
    • 15 year useful life = 6.1 years
    • 10 year useful life = 7.2 years
  – Based on labor savings, increased milk production, and other revenue (reproduction savings potential)
    • 15 year useful life = 5.3 years
    • 10 year useful life = 6.1 years
Summary

• AMS provided a positive quality of life and milking labor advantage over previous system.
  – Average of 12% more cows able to be milked with an average of 75% less labor
  – Production increased 12% while SCC dropped 36%
  – Feeding and housing efficiencies gained

Bottom Line of AMS:
Cows and People like Them!