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VETERINARY MEDICINE

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Science for a Sustainable Future

ANIMAL SCIENCE

Producer Perspectives of Automatic Milking Systems

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Funding: California Dairy Research Foundation

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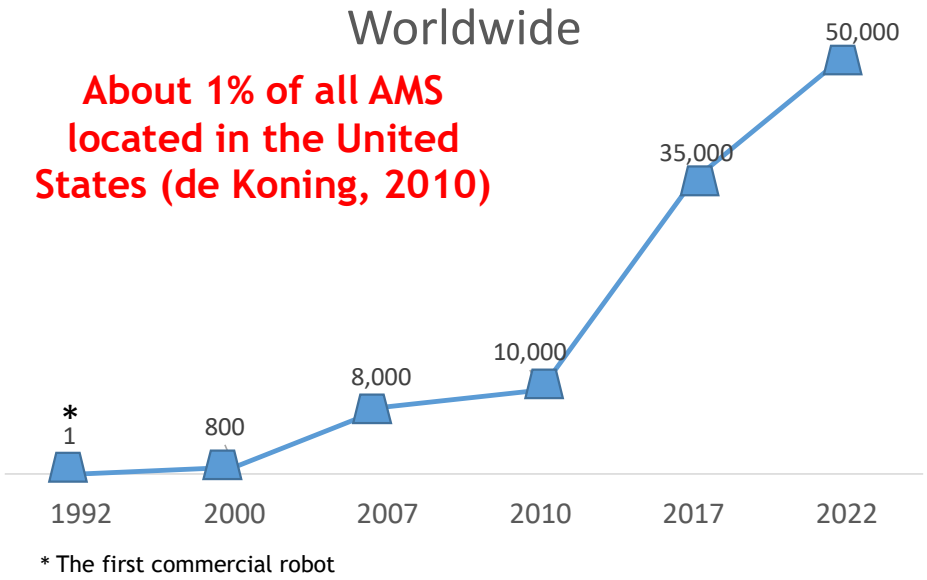
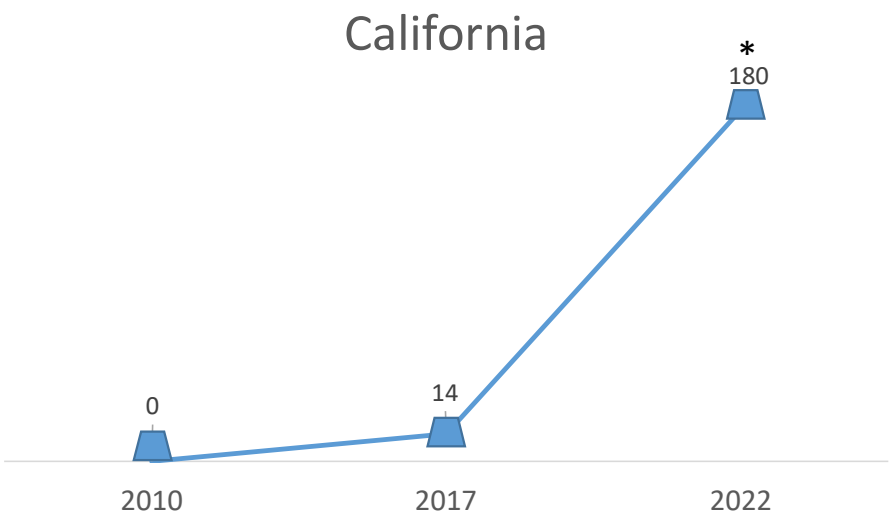
Background



* The first commercial robot



* Completed and to be completed by mid year

Reasons driving the increase in interest in AMS adoption in CA

- Ag labor shortage + increase in labor costs
- Family succession
- Increased interest in animal welfare

Source: Cogato et al, 2021; and personal communication with manufactures

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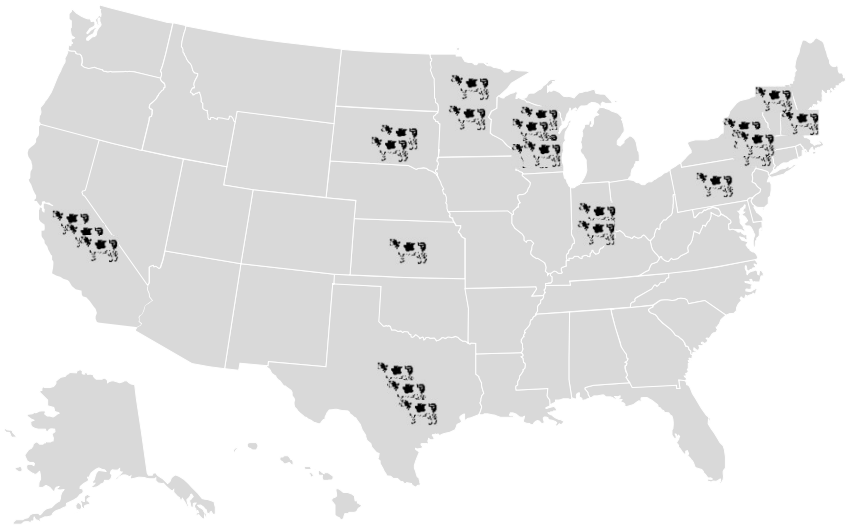
How do large dairies that transitioned to AMS perceive the benefits?

Survey to describe the perceptions of US producers on the implementation of AMS in dairies with ≥ 7 AMS units installed

We **estimate that there are approximately 100 farms** with 7 or more AMS boxes across the US (DeLaval and Lely, personal communication).

55 farms directly contacted.
29 responded **(53%)**
11 states across the US



Follow-up visits with some farms to better explore the answers

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Survey questions

- Farm and farmer profile
  - Barn, bedding, housing
- Installation and expansion plans
  - Why AMS?
  - Conventional
  - Other automated technology
  - Maintenance
- Transition process
  - Employee training
  - Cow training
  - Bar construction
  - Flow
  - Feeding
- Health and reproduction performance
- Labor

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Survey Results

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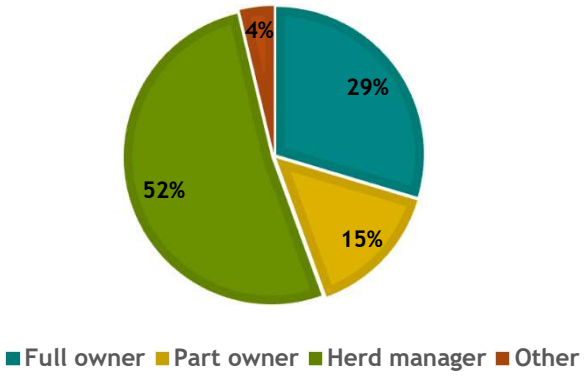
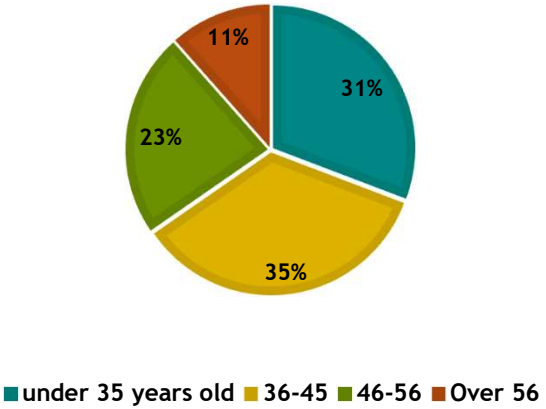
Demographics

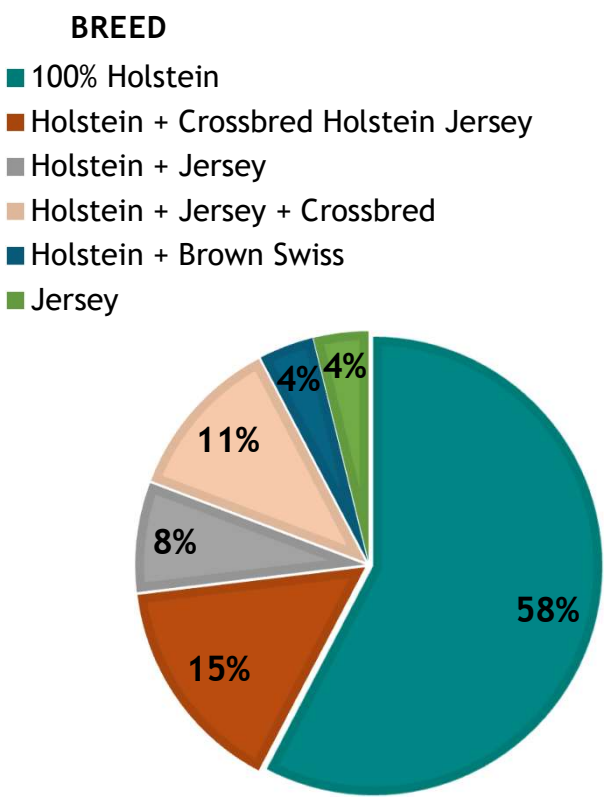
RESPONDENT ROLE



AVERAGE AGE OF RESPONDENTS



BREED



Cows under AMS: 240 – 2,200
AMS units: 7-36
Time since installation: 9mo - >15 yrs

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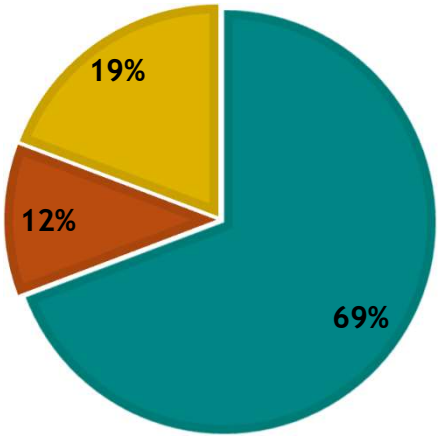
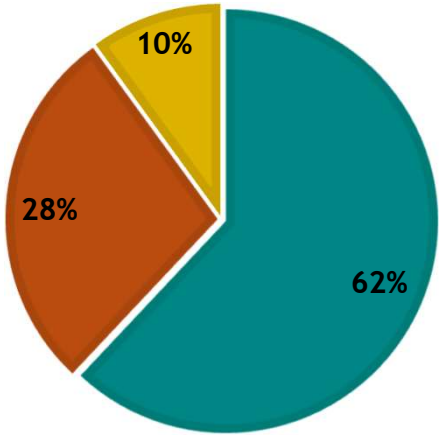
Facility

BARN



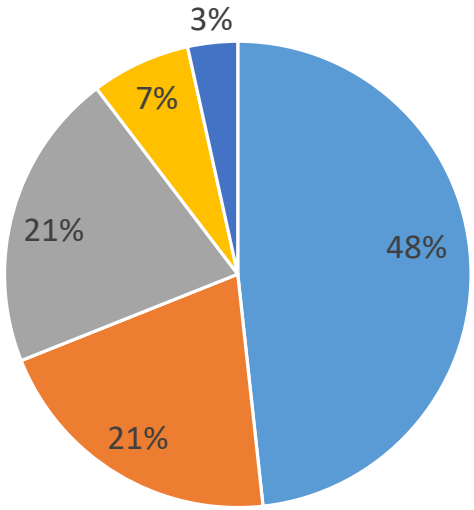
- New barn (s)
- New barn (s) + retrofitted existing barn (s)
- Retrofitted existing barn(s)

FLOW SYSTEM



- Free flow
- Guided flow
- Mixed

Cooling system



- Fans
- Tunnel ventilation
- Cross ventilation
- Soaker
- Other

Free stall and hybrid tunnel ventilation

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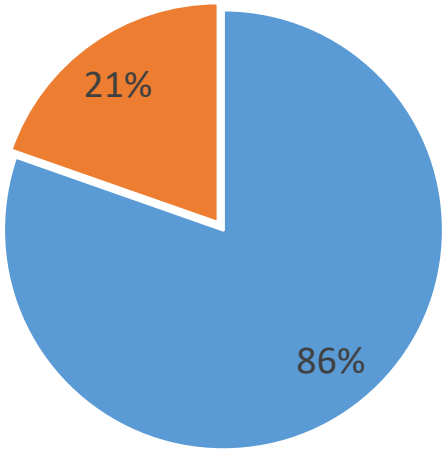
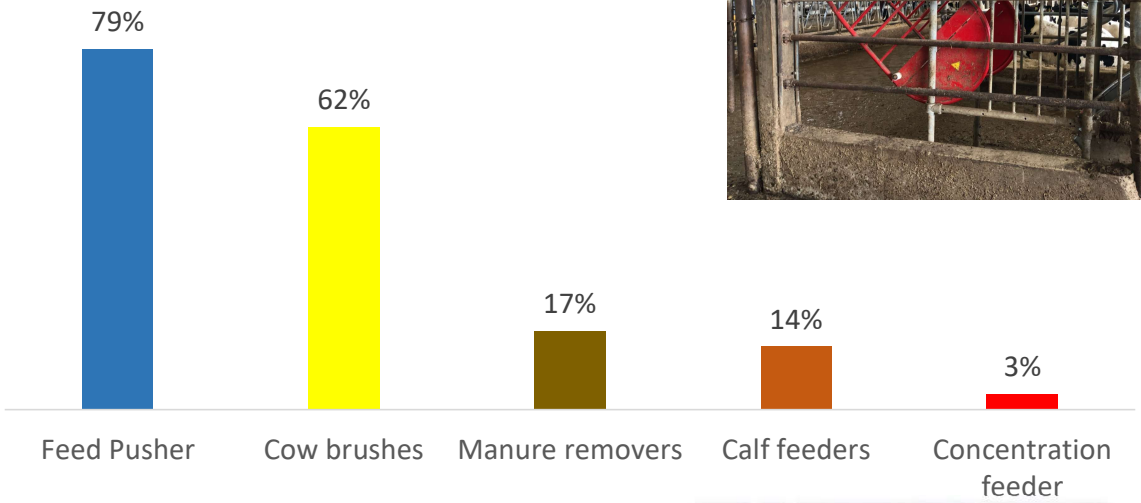
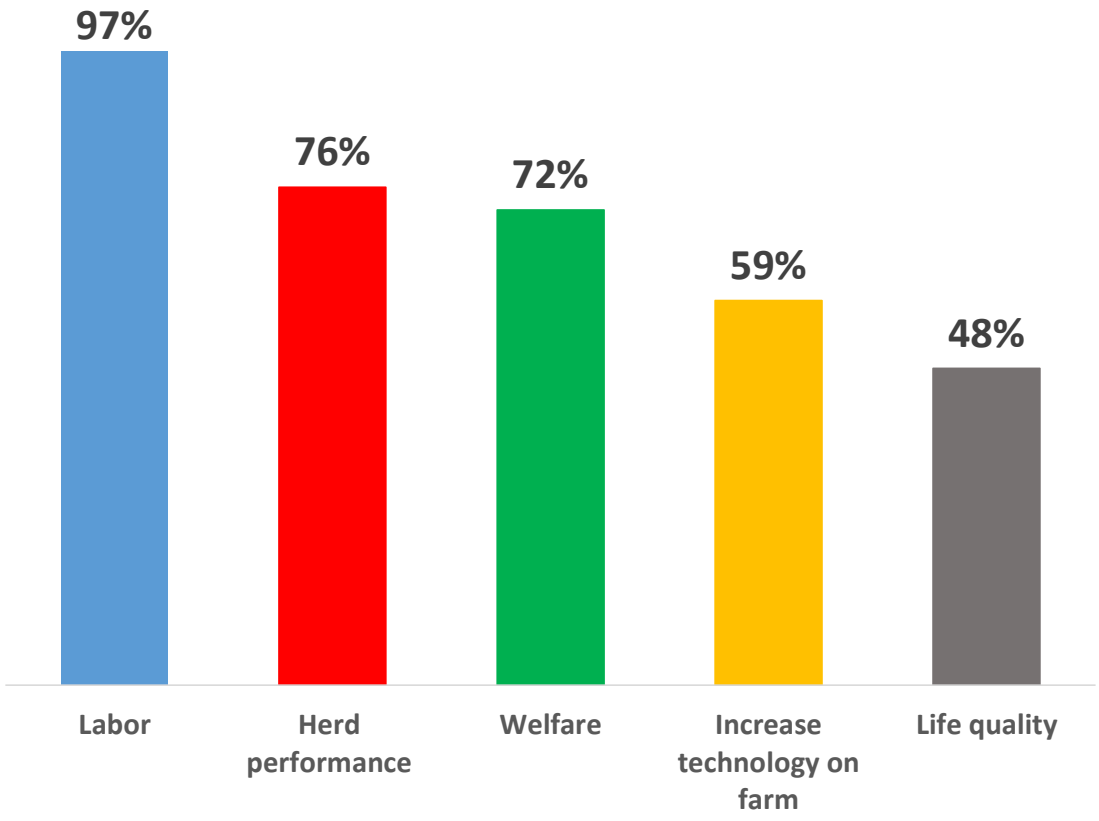
Other automation?





Reasons for transitioning AMS



Concerns with labor availability and costs (Martins et al., 2019)

Consumer's perception of dairy cattle welfare (Beaver et al., 2020)

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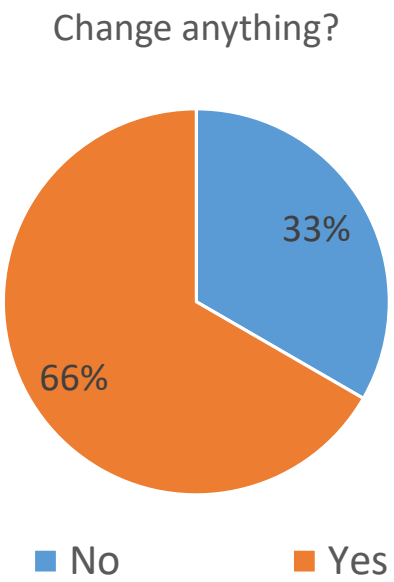
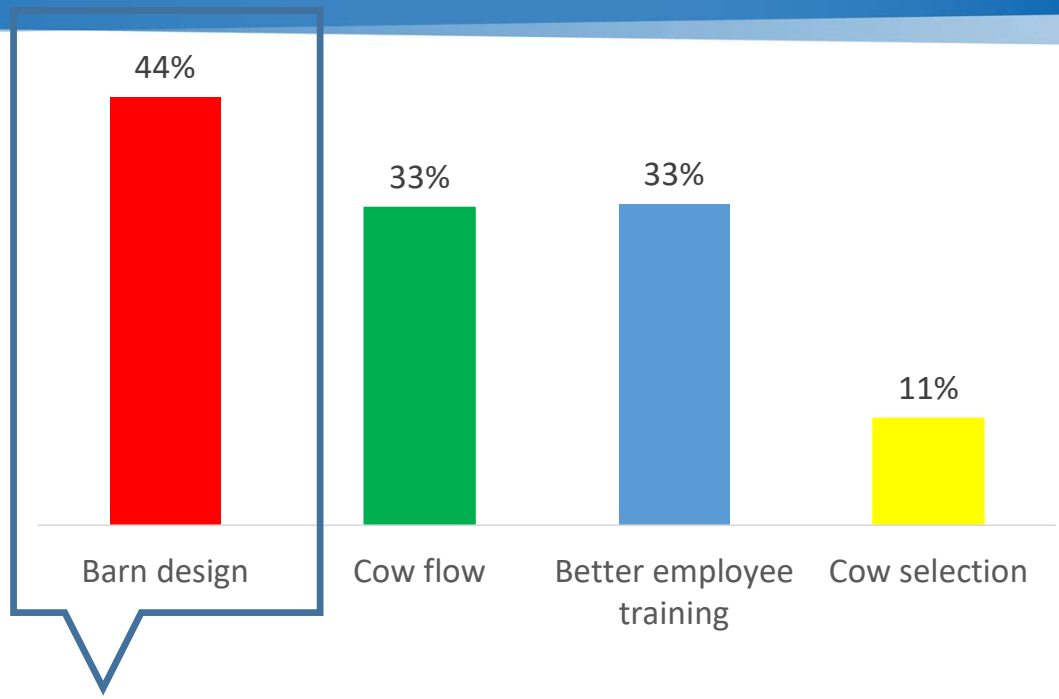
Implementation





- Ventilation system
- Number of robots
- Footbath
- Amount of water throughs
- Number and size of sorting pens

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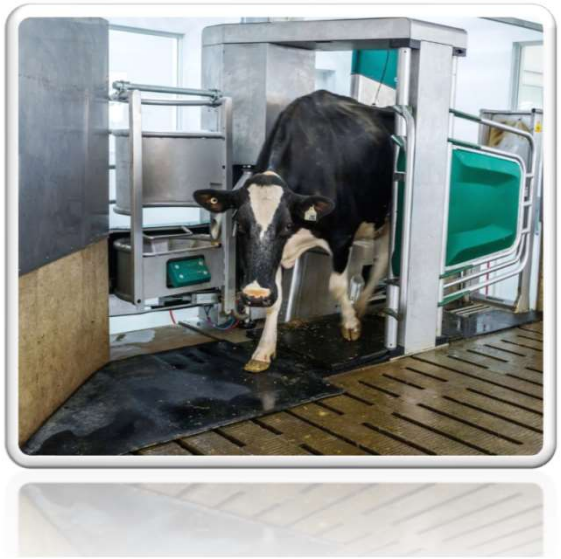
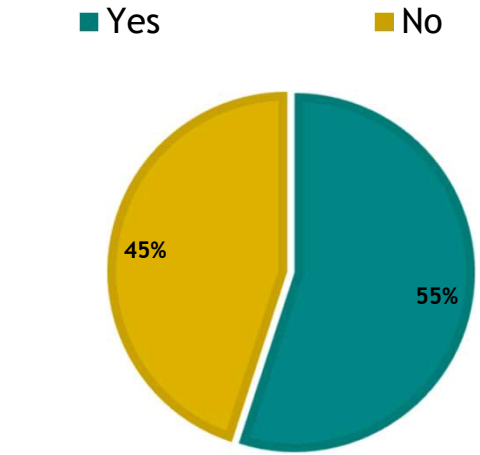
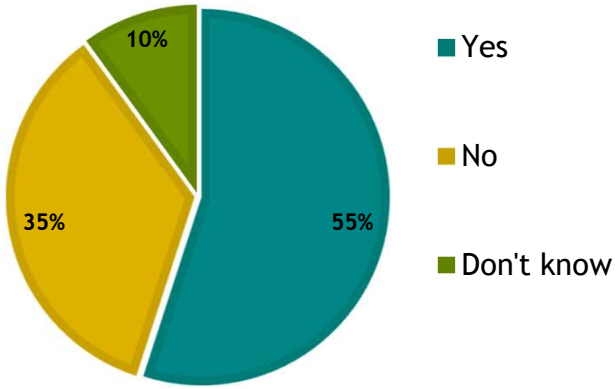
AMS Expansion



HERD EXPANSION



PLAN TO HAVE 100% OF YOUR COWS UNDER AMS



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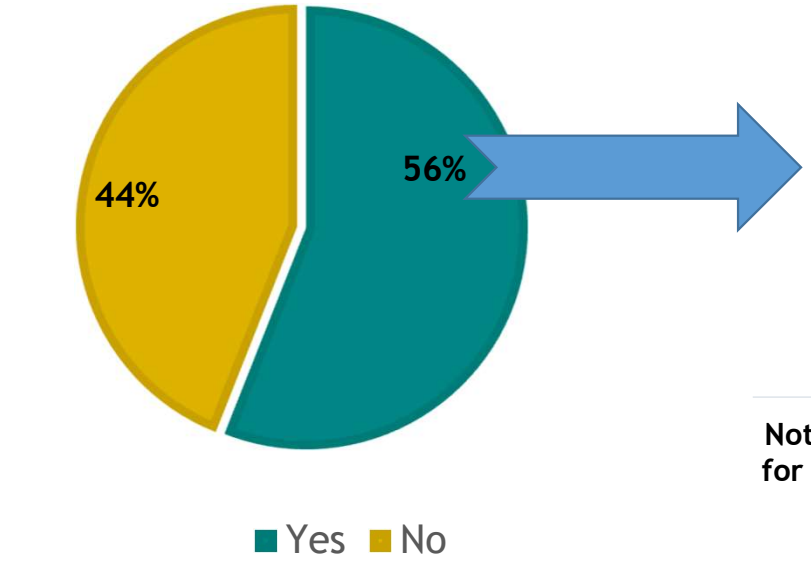
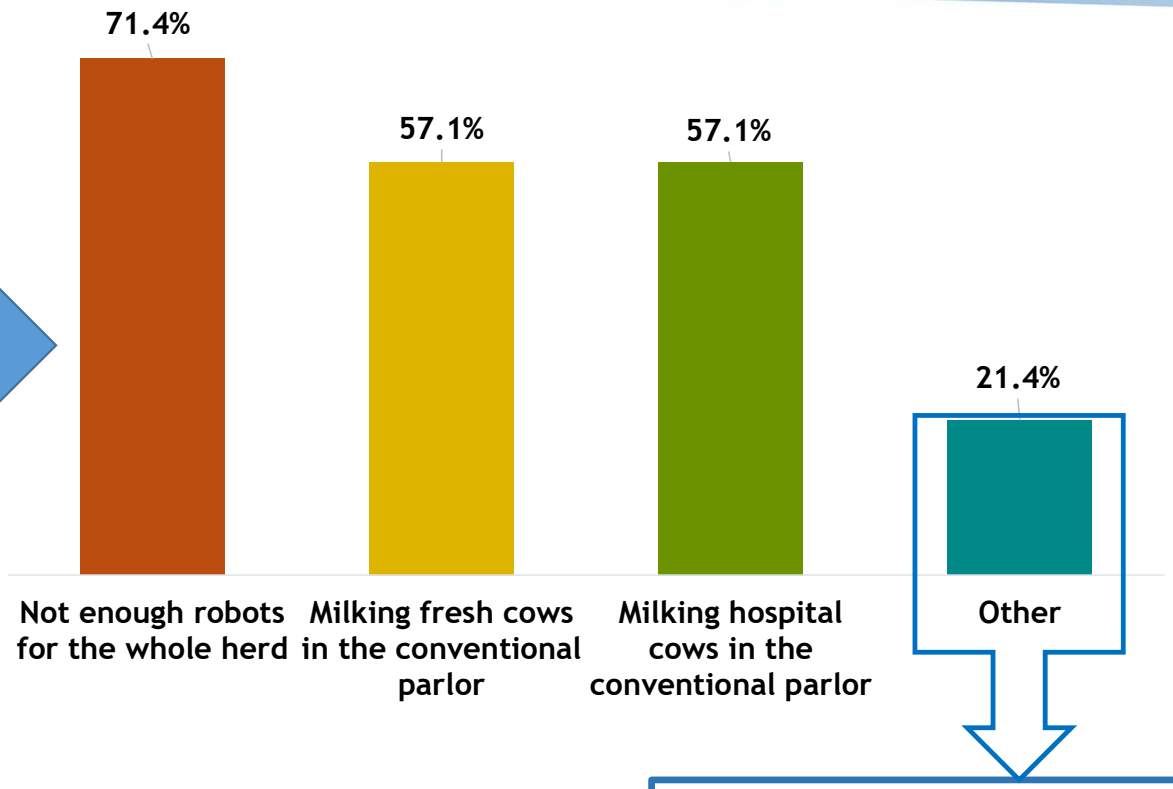
Previous milking parlor





- Not in use
- Backup in case of robot issues
- Cows not adapted to AMS

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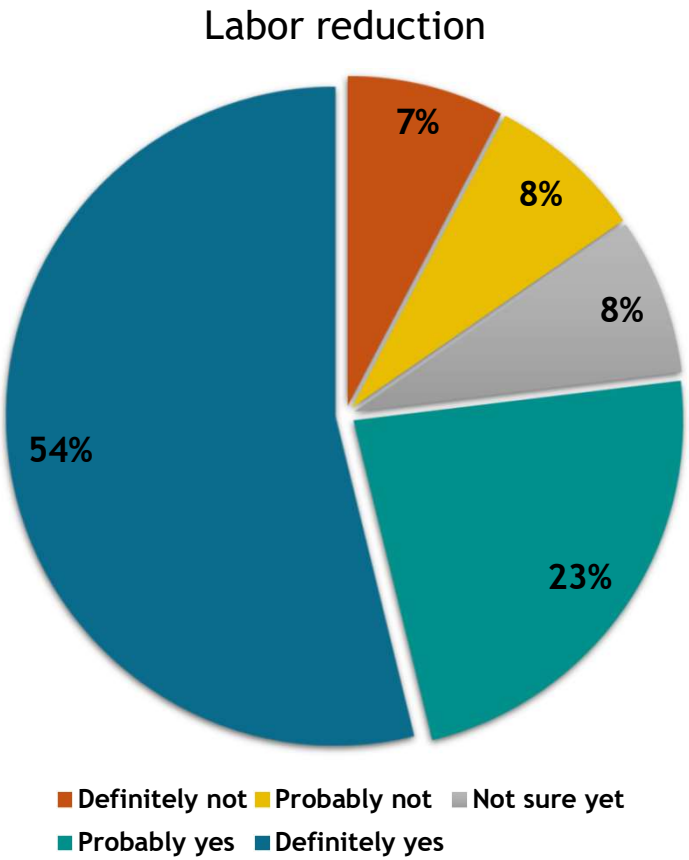
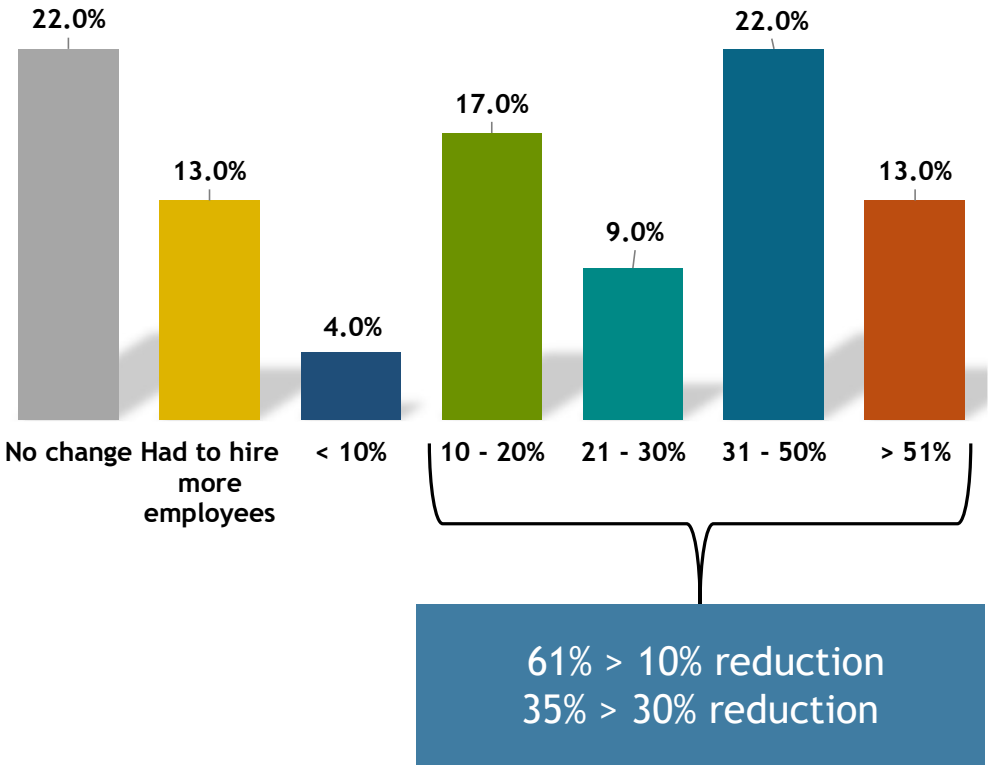
Labor





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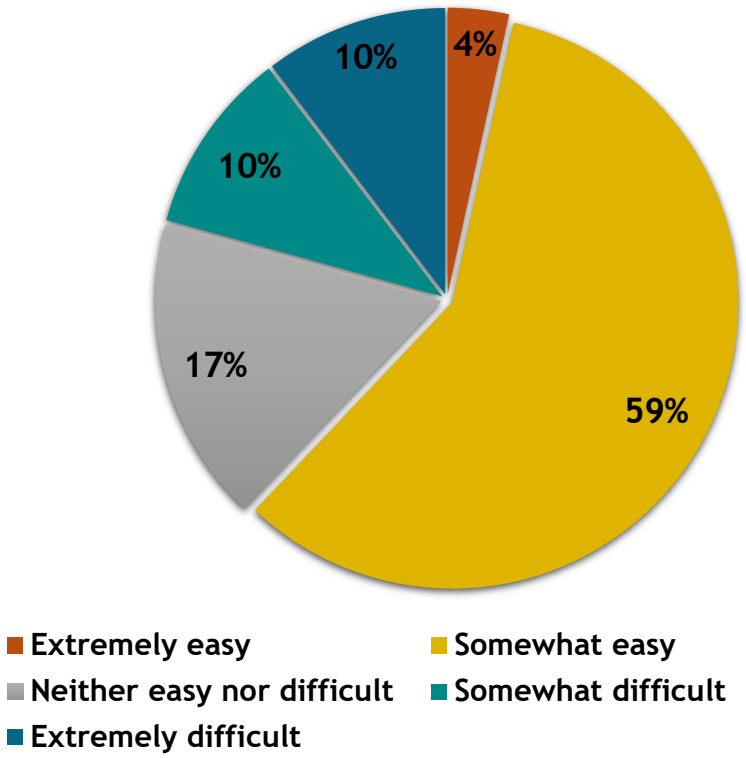
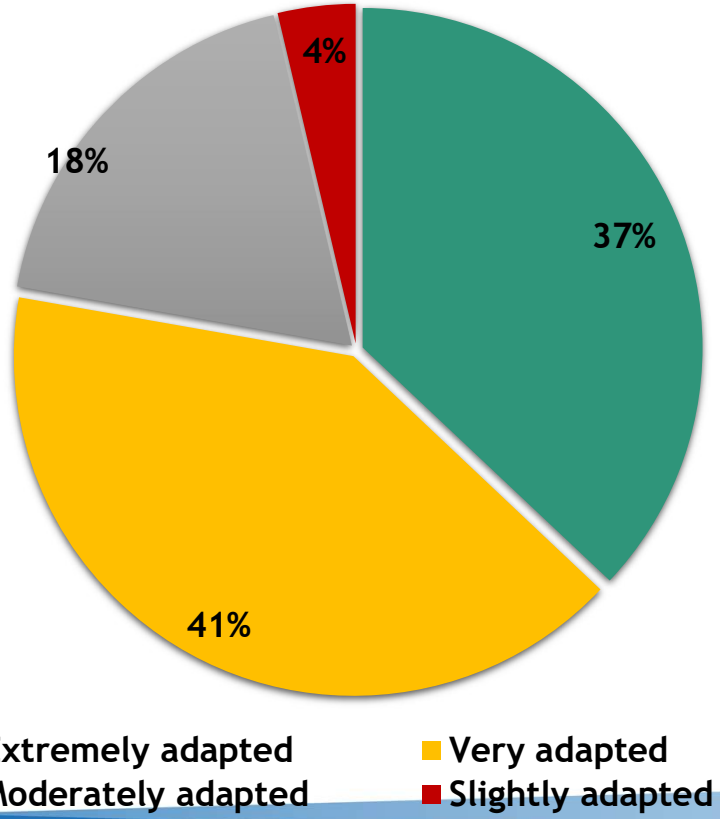
Employee Adaptation

Employee adaptation process to new management system



How adapted are your employees now



Milk Quality, Milk Production and Animal Health

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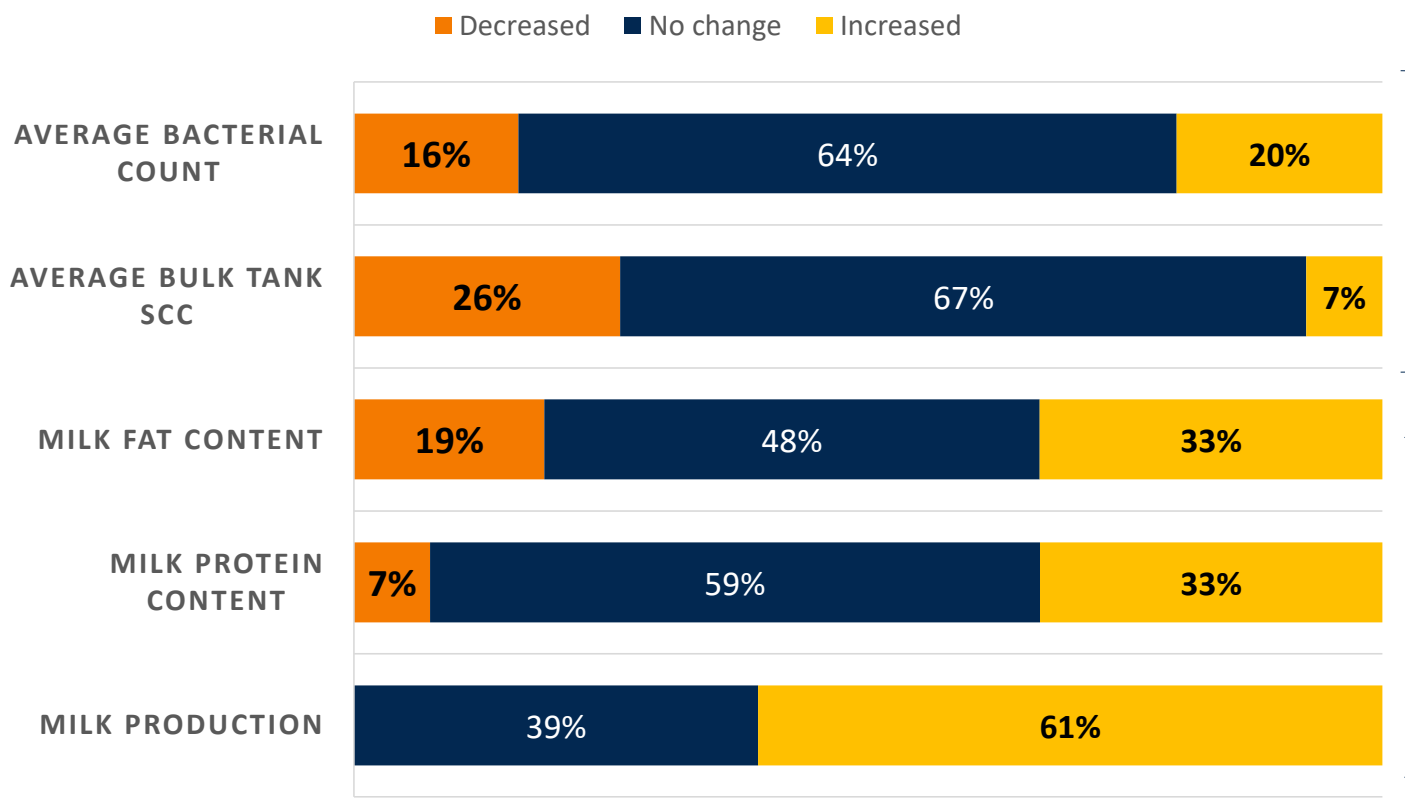
Milk quality and Milk Production



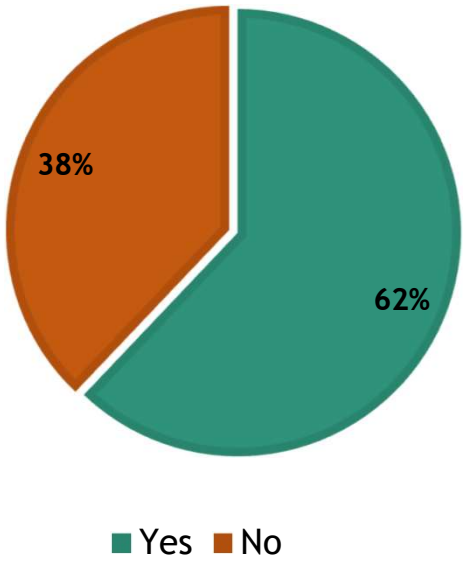
Over 60% reported no changes
26% - decrease in SCC
20% - increase in bacteria count

1/3 reported increase in milk fat and protein content

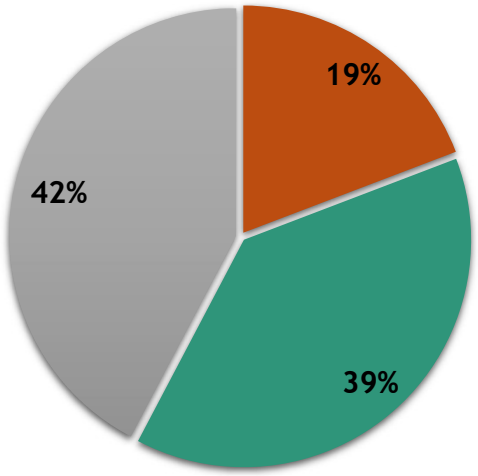
61% observed increase in milk production

Clinical Mastitis

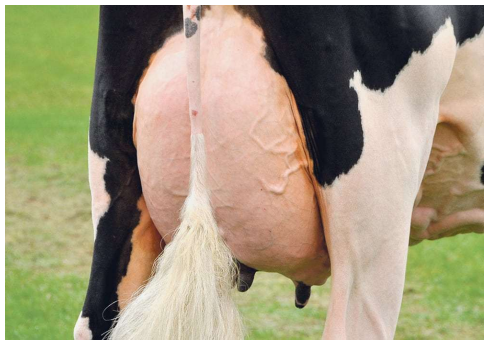
Mastitis management improvement



Clinical mastitis rate



Increased Decreased No change



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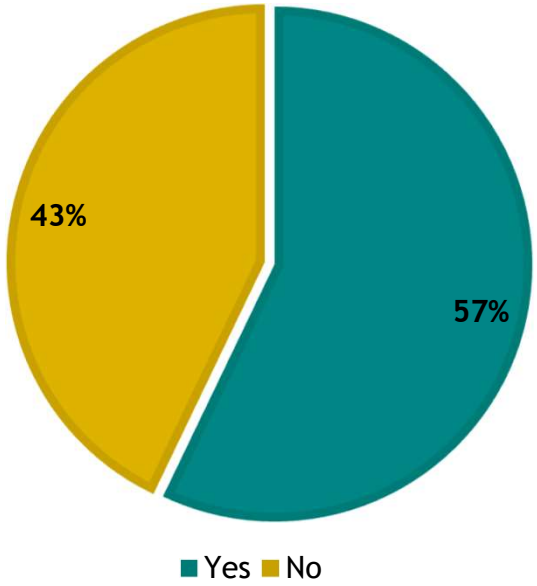
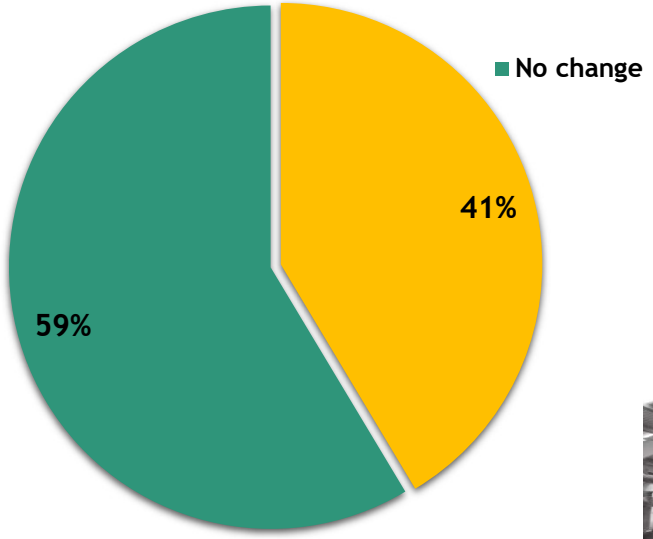
Lameness

Lameness detection improvement



Lameness rate



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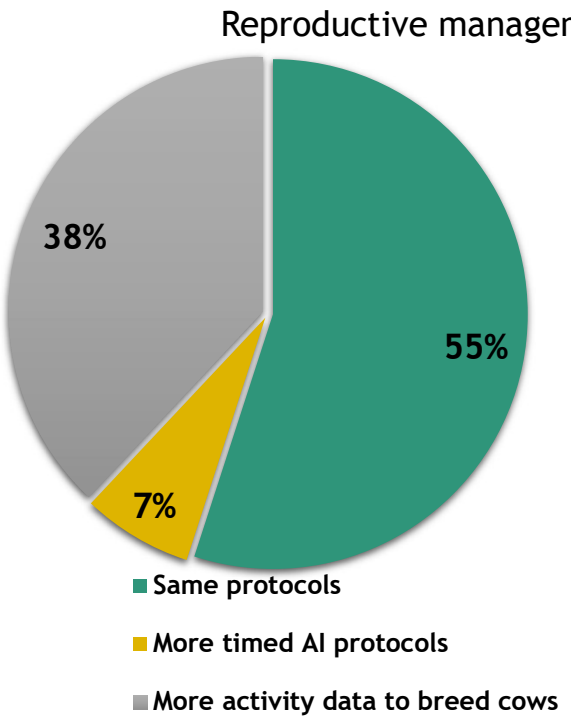
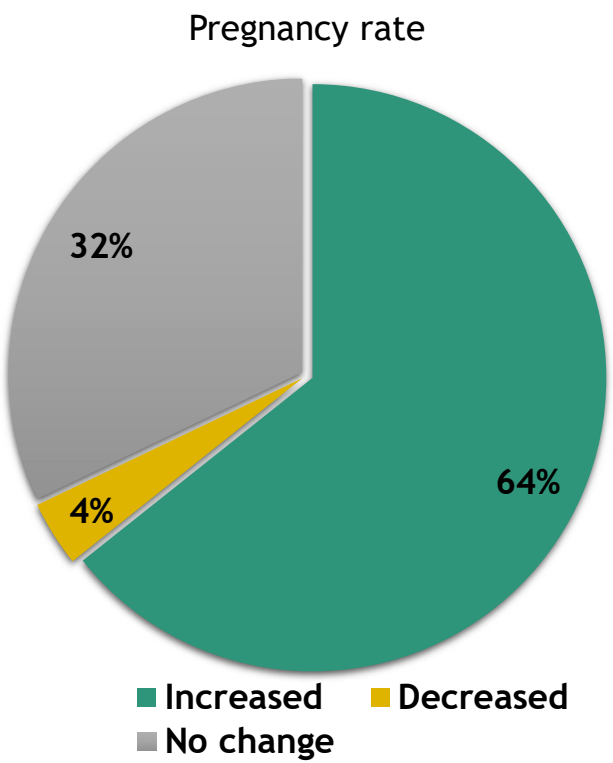
Reproductive management





34% use genomic testing ⟹ 33% use to improve traits related to AMS efficiency

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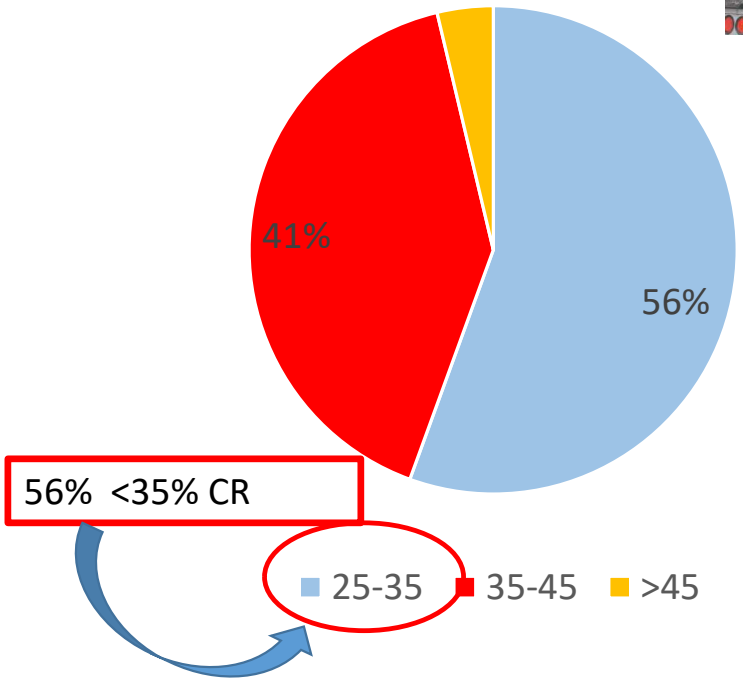
Culling rate

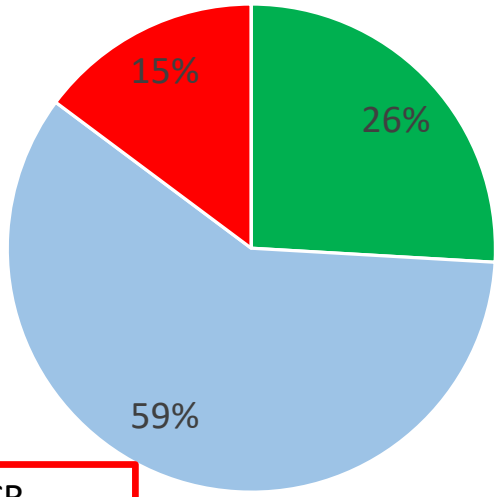
Before AMS



56% <35% CR

45% - decrease CR
48% No change CR

After AMS



85% <35% CR

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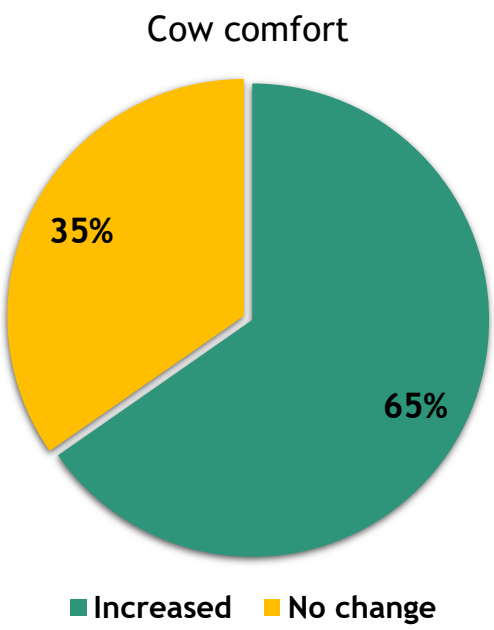
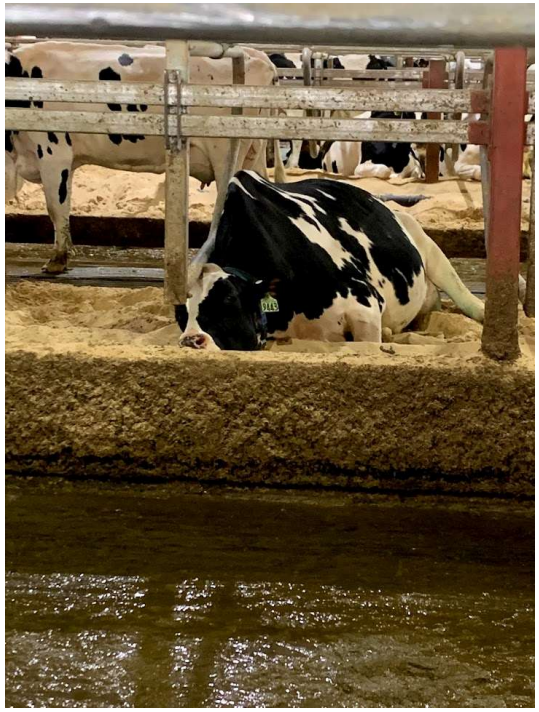
Cow comfort





Changes in animal behavior after transitioning to AMS

91%	Cows are calmer
57%	Cows spend more time lying down
7%	No change

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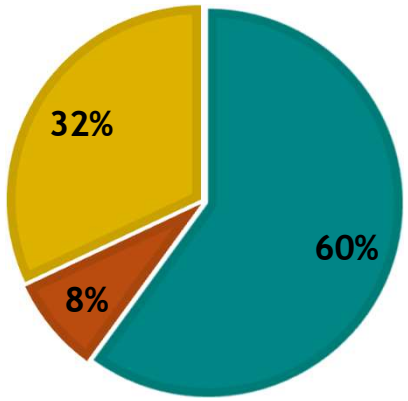
Should other farmers switch to AMS?

RECOMMEND AMS TO OTHERS?



Yes No Maybe*

*****Depends on expectations, short- and long-term goals and mindset
*Depends on relationship and proximity with dealer
Cow should be the focus of the transition – *"I could tell in advance the farmers that would not adapt to AMS"*

Take home messages

- **AMS have met producers' expectations**
  - improving cow production and welfare
  - reducing labor
- The **economic aspect** of the investment is **not clear**
  - relatively recent transition
  - Needs further investigation

Producers

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LELY

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TEXAS A&M UNIVERSITY 1876

DeLaval

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CORNELL UNIVERSITY FOUNDED A.D. 1865

Dairy Tech News

https://ucanr.edu/sites/Dairy/Dairy_Tech_News_396/

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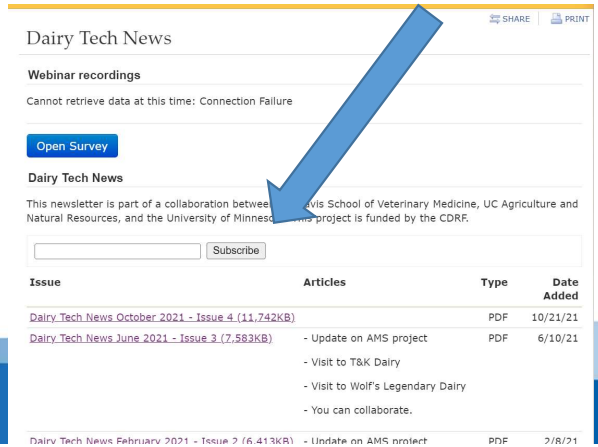

Thank you!!!

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