Using Continuous Monitoring Technology to Improve Cattle Production Success

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Cattle Deaths

- Deaths that occur during calving each year are estimated to be around 500,000 (USDA, 2011)
- Dystocia, or a difficult birth, is thought to be responsible for over 33% of all cattle losses (Whittier, 2009)
- The most common causes of dystocia are an oversized fetus and prolonged calving (Schuenemann, 2012)

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The Main Causes

- The most common reason for dystocia is maternal/fetal disproportion
  - Increased risk in heifers due to smaller size
  - Males calves tend to be larger
- Other causes are abnormal positioning of the calf or problems with the cow

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Use of Technology

- Inclinometers and accelerometers are used to detect tail raising and behavioral changes
- Intravaginal thermometers are used to detect changes in body temperature
- Video surveillance can allow managers to monitor cattle from anywhere with an Internet connection

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Examples of Available Technology

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Advantages of Continuous Video Monitoring

- Reduces number of trips to and from the calving barn
- Allows producers the ability to multitask
  - Multiple barns or locations checked at once
- Provides instant access giving the producer peace of mind

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Disadvantages of Continuous Video Monitoring

- Cost of initial setup, maintenance, and repair
  - Some systems require monthly fees
- Lack of training for recognizing visible behavioral changes
- Poor signal transmission or low-quality video
- Requirement of more confined facilities such as calving or holding pens and associated labor and equipment upkeep

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Available Forms of Training

- Tennessee Advanced Master Beef Producer Programs and Beef Quality Assurance teach producers:
  - How to use EPDs and select and cull cows and heifers
  - About available reproductive technologies
  - The importance of good nutrition and forage management
- Tennessee Beef Heifer Development Program aims to educate producers on proper heifer development and show management techniques to help them reach target weights and be successful breeders

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Methods

- A survey containing 15 questions was sent to 30 Tennessee cattle producers, 27 of which responded
- Questions were related to management practices impacting cow-calf mortality
- Comparisons were made between farms with trained, full-time management who used technology or devices and those without trained on farm management

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Cattle Calving Mortality Management -

Farm Name: Address:
Phone Number:

Please Select Correct One

1. Reproducing herd size **>60 head, >50 head, >40 head, >30 head, >20 head**
2. Number of heifers calved in last 12 months _____
3. Number of cows calved in last 12 months _____
4. Average age of dams at birth **>10 years, 8-10 years, 6-8 years, 4-6 years, 3 years, 2 years**
5. Dam breed:_____
6. Sire Breed:_____
7. Dam body condition score pre-calving **Thin (<3) Good (3-3.5) Fat (>3.5)**
8. How often cattle checked for signs of calving every **24hrs, 12hrs, 6-12hrs, 4-6hrs, 2-4hrs, 1-2hrs, continuous monitor**
9. Average calf birth weight_____
10. List number of sex of calf **Males**_____ **Females**_____
11. Completed producer training such as Master Beef Producer course **Yes or No**
12. Uses video camera technology on farm **Yes or No**
13. Uses labor detection devices **Yes or No**
14. Number of cattle with dystocia episodes in last 12 months _____
15. Total calf or dam deaths in last 12 months during calving _____

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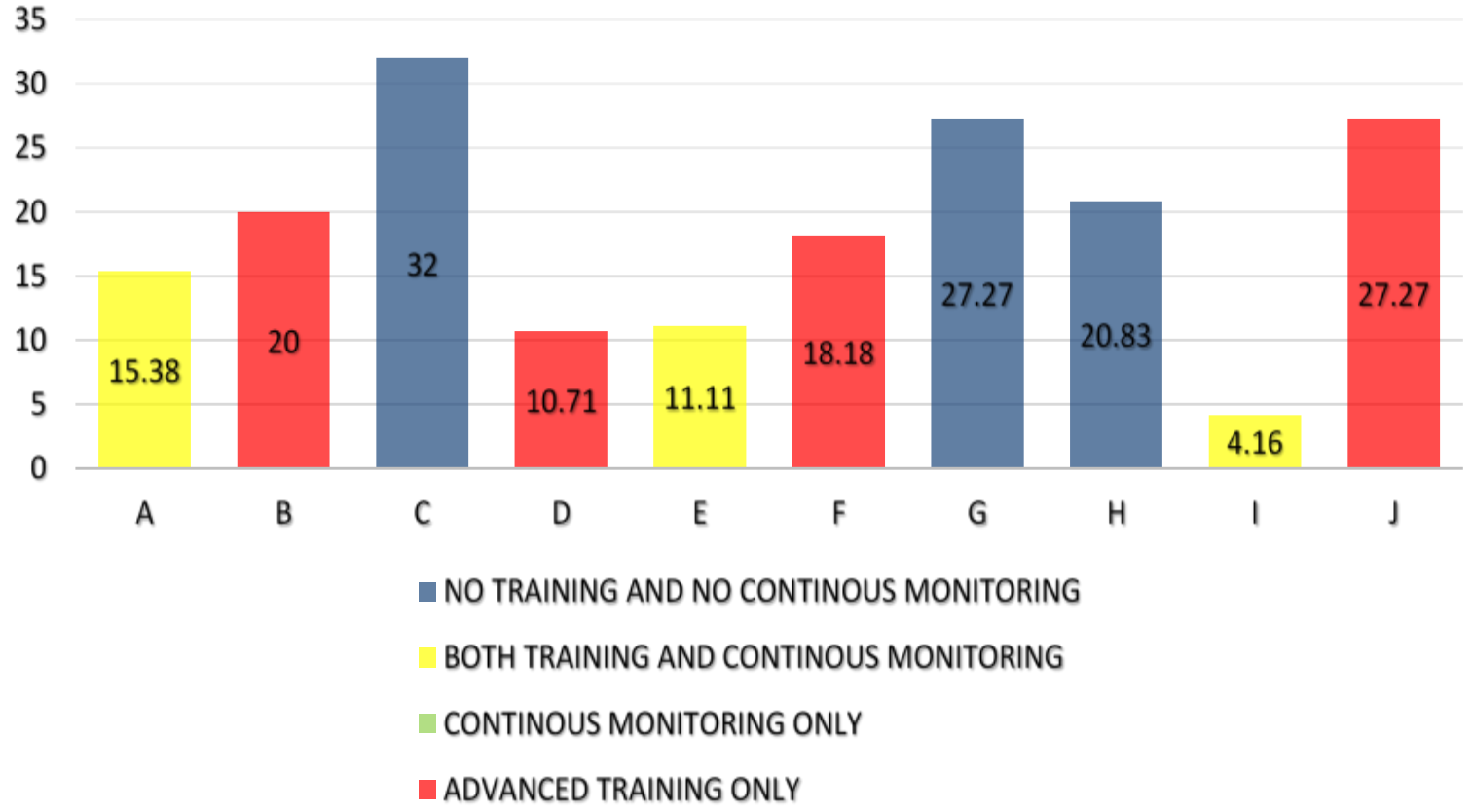
PERCENTAGE OF DYSTOCIA WITH CALVING



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Results

- The herd mortality percentage was significantly lower at farms where producers had completed advanced training and used video technology compared to those with advanced training and not using video (p= .008).
- Herd mortality percentage was lower with slight significance for producers who had advanced education versus those who had none (p= .05).
- Deaths were significantly lower where producers used labor detection devices compared to those that did not (p=.0001).

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Conclusion

- There appears to be positive, synergistic effects when advanced training is combined with the technology available to cattle producers.
- We can say with some confidence that agricultural enhancement programs designed to increase producers knowledge are worth the effort and expense.
- Experience of the producers, type of housing, available labor, and use of expected progeny differences are all factors that were not surveyed that could have provided further insight into the results.

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Beyond the Results

- Further studies could perform cost benefit analyses between different types of video systems used or between the various forms of technology.
- Investigations into the specific types of advanced training that producers completed to attempt to identify topics that may be the most useful for producers.

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References

Schuenemann, Gustavo, (2012). Calving Management in Dairy Herds: Timing of Intervention and Stillbirth. *College of Veterinary Medicine, VME- 29,12*

USDA, 2011. Cattle Death Loss. National Agricultural Statistics Service. Retrieved from http://usda.mannlib.cornell.edu/usda/current/CattDeath/CattDeath-05-12-2011.pdf

Whittier, W. Dee, Currin, Nancy M., Currin, John,F., Hall, John B. (2009). *Calving Emergencies In Beef Cattle: Identification and Prevention.* Virginia Tech. VCE Pub.400-018. Retrieved from http://pubs.ext.vt.edu/400/400-018/400-018.html

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Questions?

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