impact

Increasing skills in assisted reproductive technologies (ART) for beef ranchers

AT A GLANCE

Improvements in beef herd genetics and management are crucial to sustainability of Idaho ranches. Adopting assisted reproductive technologies can improve beef cattle genetics and ranch profitability.

The Situation

Artificial insemination (AI), estrus synchronization, pregnancy detection, pelvic measurements and other reproductive technologies are used by less than 38% of the beef operations in the U.S. Barriers to adoption include time, labor, training and lack of food animal veterinarians. Increasing the use of technology by beef operations through training of ranchers and technicians may have positive impacts on the genetics, management and profitability of ranches.

In Idaho, it is legal for ranchers (or their employees) to artificially inseminate or detect pregnancy in their own animals. Individuals that pass an artificial insemination course and pass the Idaho State Department of Agricultural (ISDA) AI Exam are licensed to AI cows for other ranches.

There is a consistent demand from ranchers to learn artificial insemination either for their own operations or as an alternative enterprise to generate additional income. More recently, there is a strong interest from ranchers wanting to learn pregnancy detection using ultrasonography.

Young rancher learning to use reproductive ultrasound equipment to detect pregnancy in cows. Photo by J. B. Hall.

Our Response

The objective of this Extension program is to train ranchers in performing reproductive technologies. Therefore, we developed two hands-on ART schools — a three-day AI school and a two-day palpation and ultrasound pregnancy detection course. These Extension programs are joint partnerships between the University of Idaho and AI or ultrasound companies. Programs are designed by Extension specialists with training provided by specialists, technicians and industry professionals. The courses included lectures, work with cow reproductive tracts and live animal practice. Class size is kept small (eight to 12 people) to facilitate learning and allow more access to cows. Multiple classes are offered each year. Only beef cows are used. All

courses require a registration fee for cost recovery. All aspects of the course are approved by the U of I Animal Care and Use Committee.

The AI schools were taught from 2014-2025. From 2021-2025, palpation and ultrasound pregnancy detection short courses (Preg Ultrasound) were also offered. At the conclusion of AI School, participants were given a course evaluation which included a self-assessment of skills and knowledge before the beginning and after completing the school. A simple course and instructor satisfaction survey were given at the end of the Preg Ultrasound course. For both courses a long-term follow-survey was conducted.

Program Outcomes

Over 200 ranchers and students were trained in the courses. Participation in AI schools and Preg Ultrasound was 152 and 55 people, respectively. Participant responses from the five most recent years AI courses were analyzed for scores before and after school. Self-evaluation areas included reproductive physiology, AI techniques, management and economics. This experiential learning program resulted in significant skill improvement (Table 1).

Scores indicated that participants needed more practice in palpation and passing the AI rod through the cervix. Analysis of responses on management, economics and genetic selection indicated an increase in knowledge ($P < 0.01$) in these areas; however, the magnitude of the increase in knowledge was less than the reproductive areas. This was probably due to the level of existing knowledge in these areas.

Roughly 30%-40% of AI School participants are taking the ISDA AI licensing exam.

Preg Ultrasound participants rated the class 4.85 (one = poor to five = excellent).

Results from the long-term follow-up survey indicated:

- Operations still using techniques learned were AI 78.6% and pregnancy detection 87.5%.

- Most operations that were artificially inseminating cows were smaller herds (≤ 150 cows), but 15% of operations were large herds (> 300 cows).

- The percentage of operations using pregnancy detection was similar among small (≤ 150 cows), medium (150-300 cows) and large (>300 cows) herds.

- For both courses, participants indicated the value of the training was equal to (42%) or greater than (58%) the cost.

- Annual return on investment was approximately $2,000 per operation for the AI School and $4,000 per operation for the Preg Ultrasound Course. The pregnancy detection course was worth > $10,000 per year for 15% of the participants.

Table 1. Results of participant learning self-assessment in AI School.

Skill	Before	After	Change
Understanding of reproductive anatomy	2.52a	4.60b	2.08
Ability to palpate reproductive tract	1.62a	4.17b	2.55
Competency with passing AI rod	1.21a	3.99b	2.78
Comfort with handling semen	1.98a	4.42b	2.44
Knowledge of estrus detection	3.11a	4.57b	1.46
Understanding estrus synchronization	2.03a	4.14b	2.11

One (limited knowledge, not comfortable) to five (extremely comfortable or proficient); a,b within rows indicates significant difference P<0.001.

Cooperators and Co-Sponsors

Select Sires, Plain City, Ohio; ReproScan, Winterset, Iowa; Riverbend Ranch, Idaho Falls; and Bonneville County Cattlemen's Association.

FOR MORE INFORMATION

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