

AI Cost vs. Return



PHOTO BY SHAUNA ROSE HERMEL

Researchers, producer analyze the costs, marketing opportunities of using synchronization and AI.

by **Kasey Brown**, associate editor; **Katy Kemp**, freelancer; & **Troy Smith**, field editor

Pregnancy has a four times greater economic impact than any other production trait. Females that calve earlier in the calving season stay longer in the herd, Cliff Lamb, professor and associate director of animal science at the University of Florida (UF), told attendees of the 2014 Applied Reproductive Strategies in Beef Cattle (ARSBC) symposium in Stillwater, Okla., last fall.

Estrus synchronization and artificial insemination (AI) are ways to get females to calve earlier in the breeding season. However, many cattlemen balk at hassle factors, like complicated protocols and sire selection, facility requirements, labor for AI and administering products, and the time needed.

Lamb said a cost analysis of using

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synchronization and AI at the UF North Florida Research and Education Center (UF-NFREC) indicates the results may be worth the time and effort.

In a case study using synchronization and AI at the UF-NFREC during the last five years, the center was able to shorten the breeding season by 50 days (see Fig. 1). By the fifth year, every cow could be bred on the first day of the breeding season. Pregnancy rates have also increased by 8%-10%.

The average calving day in 2006 was Day 79.2; in 2013, it was Day 38.7. The added weight on calves born earlier in the season

and the added genetic quality resulted in an added \$169 in value per



PHOTOS BY TROY SMITH

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calf in 2013. The herd increased in value by \$50,700, he reported.

Lamb presented a second case study summarizing information on 1,700 cows in eight herds. The three herds with the highest pregnancy rates using estrus synchronization had used synchronization protocols for

Reproductive ♀♂ Strategies

The impact of fixed-time AI (FTAI) included a 6% increase in weaning rate and 38 pounds more weaning weight for FTAI calves vs. calves in the control group.

several years, with almost 20% higher pregnancy rates than those that had used synchronization once. Herds with continued use of synchronization had a much tighter distribution in days postpartum.

The impact of fixed-time AI (FTAI) included a 6% increase in weaning rate and 38 pounds (lb.) more weaning weight for FTAI calves vs. calves in the control group. When factoring in increased returns through increased value of AI calves; decreased cost of cleanup bulls; and increased costs through labor, semen and AI supplies, the gain per cow exposed to AI vs. a \$3,000 bull is \$84.73. He also shared the gain vs. a \$6,000 bull was \$113.97, and the gain vs. a \$10,000 bull was \$152.97.

Lamb shared a tool called the AI Cowculator for smart mobile devices that can help cattlemen determine whether AI use or natural-service bulls will be more economical in their own situation. It can be downloaded free of charge from the Google Play Store or Apple iTunes.

— by Kasey Brown

Producer testimonial

Of all the cow-calf producers in the United States, relatively few utilize estrus synchronization and AI. Roger Wann believes more producers should consider the advantages of these underutilized technologies. Wann shared the advantages synchronized AI affords his family's operation.

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Fig. 1: Implementation, by year, of synchronization and AI at the UF North Florida Research and Education Center for case study

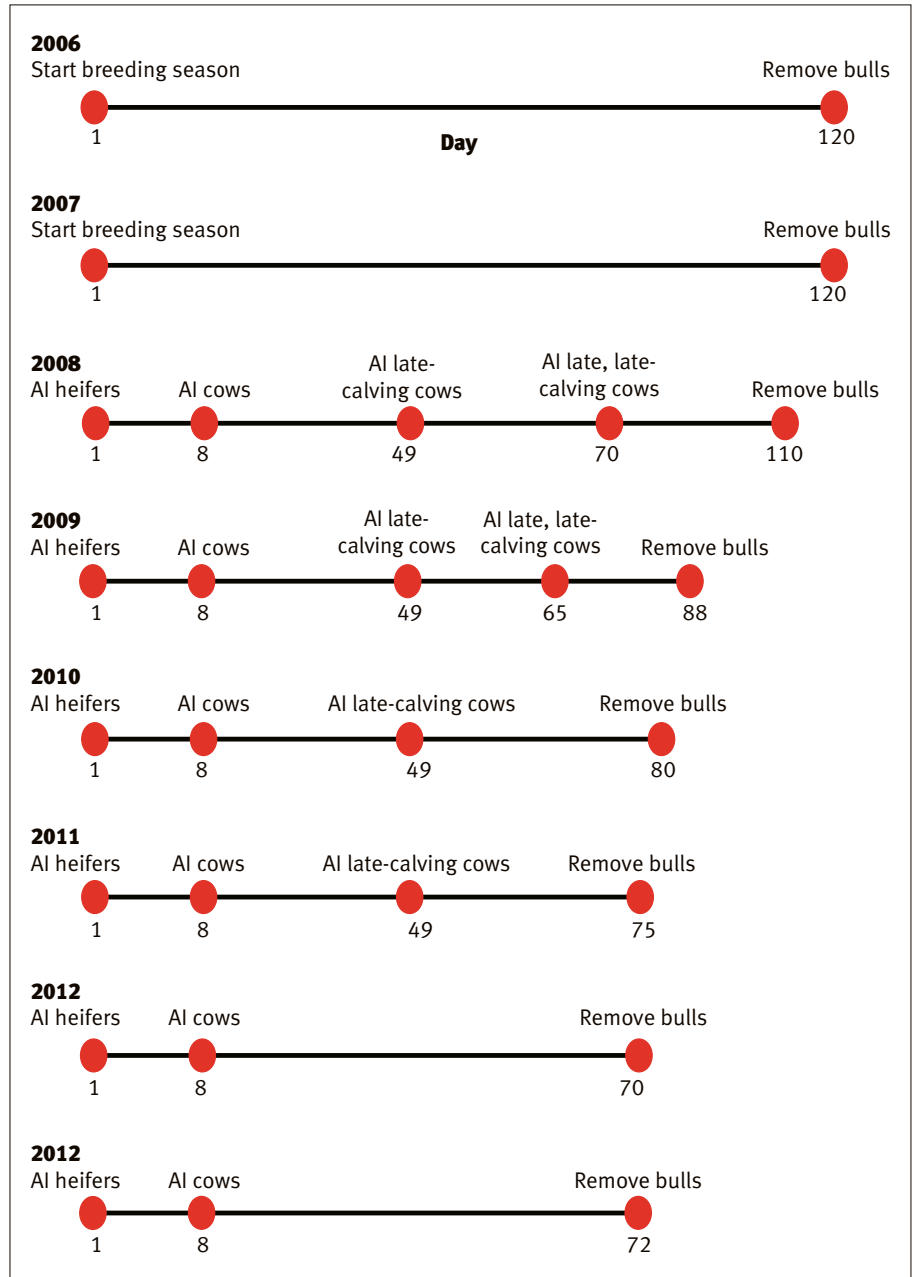


Table 1: Cost analysis case study of implementing synchronization and AI at the UF North Florida Research and Education Center as outlined in Fig. 1

Breeding season pregnancy rates:								
Year	2006	2007	2008	2009	2010	2011	2012	2013
Pregnancy rate	81%	86%	84%	86%	82%	94%	92%	93%
Mean calving day	79.2	80.9	59.2	56.2	53.7	47.2	39.5	38.7
Breeding season length	120	120	110	88	80	75	70	72
Change in calf value:								
Mean calving day	79.2	80.9	59.2	56.2	53.7	47.2	39.5	38.7
Difference from 2006/2007	0	0	21.7	24.7	27.2	33.7	41.4	42.2
Per calf increase in value	0	0	\$87	\$99	\$109	\$135	\$166	\$169
Herd increase in value	0	0	\$19,100	\$29,700	\$32,700	\$40,500	\$49,800	\$50,700

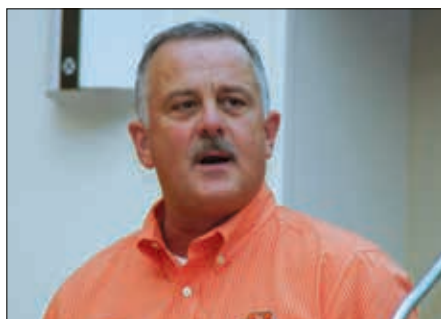
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“Synchronization is the delivery system for genetic improvement that allows us to get cows pregnant through AI,” stated Wann.

Along with his father and brother, Wann operates Wann Ranch in southeastern Oklahoma, where AI has been employed since 1984. They have used several different protocols designed to synchronize estrus in cows and heifers. Wann is convinced that synchronized AI offers benefits to both commercial producers and seedstock breeders.

“For the commercial operation, a big benefit comes from producing calves that are of uniform age and weight when they are marketed,” said Wann. “That’s because more calves will be born in the first 50 days of the calving season. In my experience, those are the calves that generate virtually all of your potential profit.”

Access to superior genetics is a benefit available to both commercial and seedstock producers. Seedstock breeders also benefit



► “For our seedstock enterprise, early-born AI-sired progeny have the most value,” said Roger Wann. “When we started selling bulls, those sired by cleanup bulls typically sold for about \$500 less than AI-sired bulls.”

from producing calves that fit within tight contemporary groups.

“For our seedstock enterprise, early-born AI-sired progeny have the most value,” added Wann. “When we started selling bulls, those sired by cleanup bulls typically sold for about \$500 less than AI-sired bulls. That gap has widened significantly. It’s not just bulls either. Our AI-sired heifers bring \$800 to \$1,000 more than heifers sired by cleanup bulls.”

While some producers go to great lengths in an attempt to get all replacement heifers bred, Wann Ranch does not. Wann even claims to be a fan of brief exposure to cleanup bulls after AI. It’s okay, he says, to have 15% open heifers and, in effect, weed

out heifers that probably weren’t meant to be brood cows.

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— Roger Wann.

“Some of them, maybe 5% to 8%, would not breed anyway. Another 5% to 8% are slow breeders. So we’re getting rid of those,” said Wann. “Long term, we can have a 90% pregnancy rate among young cows. To get there, you have to put pressure on them as heifers.”

To producers contemplating synchronization and AI, Wann recommended strict adherence to whichever protocol is applied to synchronize estrus. Plan to perform all required steps at

the appropriate times.

“You’re actually synchronizing ovulation, and it’s really important to get it right,” stressed Wann.

— by Troy Smith

Marketing opportunities for AI-bred heifers

Now is the time to build a risk-management strategy for long-term growth, said Scott Brown, assistant research professor for agriculture and applied economics at the University of Missouri (MU). We won’t have record cattle prices forever, and feed costs will fluctuate, he reasoned.

Brown predicted current record-low U.S. cattle numbers would not change soon. Cattle producers are experiencing prices and demand not previously observed. Brown said he wished the record prices were because of record demand, not because of record-low numbers. Looking ahead is more important than ever, he warned.

For effective risk management when looking at herd investments, Brown advised

Data from the Missouri Show-Me-Select Replacement Heifer Program show an average premium of \$407 for Tier 2 heifers sold bred to high-accuracy sires used via AI compared to heifers sold bred natural service to low-accuracy sires.

that the best way to determine net present value of bred heifers is to start with projected prices, not historical prices. Using assumption models for future input and output prices, projected calving success, and loan assumptions for bred heifers, producers can more accurately predict future breakevens.

In today’s unprecedented cattle market, genetic improvements gained through use of synchronized AI have more impact and need to be a part of risk mitigation, said Brown. Data from the Missouri Show-Me-Select Replacement Heifer Program show an average premium of \$407 for Tier 2 heifers sold bred to high-accuracy sires used via AI compared to heifers sold bred natural service to low-accuracy sires.

The use of AI may provide cow-calf



► Scott Brown predicted current record-low U.S. cattle numbers will continue.

producers with a greater long-term risk-mitigation strategy. Brown suggested producers should be mindful that quality affects profitability. Real-world data show selling calves above the average market value adds up to \$591 to the valuation of bred heifers.

“Better genetics could be one risk-reducing alternative, and now is the time to invest for long-term growth,” said Brown.

MU offers decision-making tools and calculators for free download at <http://beef.missouri.edu/tools/index.htm> to help producers determine the best return on investment.

— by Katy Kemp



Editor’s Note: Lamb, Brown and Wann spoke during Wednesday’s session focused on the economic impact of reproductive technologies. Visit the Newsroom at www.appliedreprostrategies.com to view their PowerPoints, read their proceedings or listen to their presentations. Compiled by the Angus Journal editorial team, the site is made possible through sponsorship by the Beef Reproduction Task Force and provides comprehensive coverage of the symposium.