

Adding Value to the Calf Crop Through Reproductive Technology

Pedro L. P. Fontes, Ph.D.

A companion article by Dr. Fluharty in this newsletter highlights the changes in carcass quality that have been observed in the beef industry, where over the last couple of decades, our industry has substantially increased the proportion of carcasses grading Choice and Prime. More importantly, while the proportion of superior carcasses have increased, the consumer demand for a higher quality product continues to grow. Cow-calf producers have traditionally struggled to capture value when marketing calves with superior genetics for terminal traits. However, today, this scenario is changing. Cattlemen that produce genetically superior calves that will perform well in the feedlot and produce superior carcasses can take advantage of value-based marketing opportunities to differentiate themselves and add value to their calf crop.

Artificial insemination (AI) is currently the most effective way to rapidly introduce superior terminal genetics into commercial beef herds and consequently increase the genetic merit of the calf crop for carcass-related traits. Cattle producers that utilize AI benefit from the widespread availability of semen obtained from proven bulls that can induce rapid changes in herd genetics. Sires producing semen for AI have expected progeny differences (EPDs) and accuracies of EPDs that are often superior to those available for natural service use.

Even in situations where EPDs between AI and natural service sires are similar, the greater accuracies of the EPDs from AI sires provide cattlemen greater confidence in the performance characteristics of AI-sired offspring. For those reasons, AI represents a great opportunity for commercial producers to rapidly improve the genetics of their next calf crop and take advantage of the current shift that we are observing from commodity-based marketing to value-based marketing.

In the past, a common factor limiting the use of AI in commercial cow-calf herds was the labor associated with detection of estrus. With the development of estrus synchronization, we can now artificially inseminate postpartum cows or replacement heifers using a pre-scheduled fixed-time AI (FTAI) approach and achieve pregnancy rates greater than 50% without the need for estrus detection. More importantly, these pregnancies are generated on the first day of the breeding season. This leads to changes in calving distribution in the subsequent year, where a greater proportion of cows will calve early in the calving season (Rodgers et al., 2012), and shifting the calving distribution results in calves that are older and heavier at weaning (Funston et al., 2012; Cushman et al., 2013).

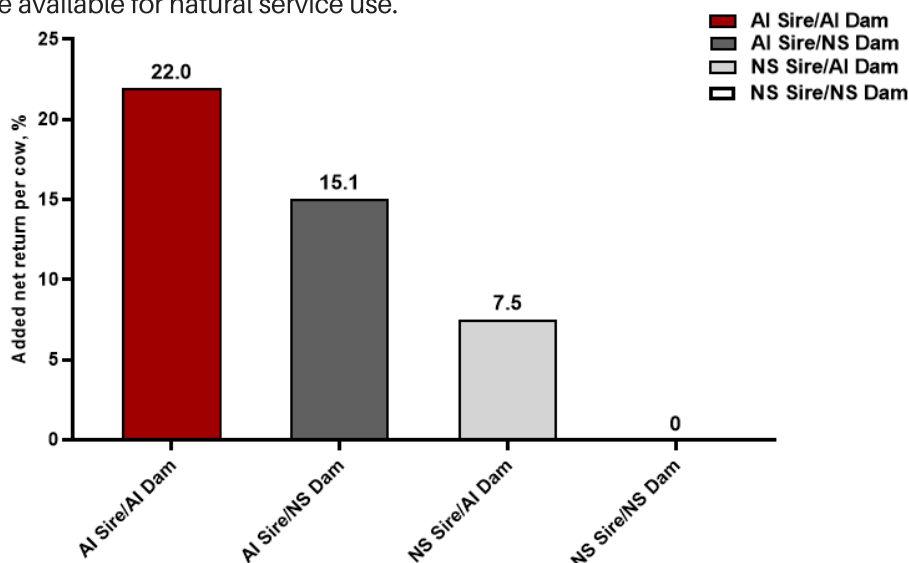


Figure 1. Influence of artificial insemination (AI) on the added return of investment per cow. AI sire: calves were sired by AI. AI dam: calves born from cows that are daughters of AI sires. NS sire: calves were sired by natural service. NS dam: calves born from cows that are daughters of natural service sires.

A classic study by Rodgers et al., (2012) explored the impact of estrus synchronization and FTAI on beef herd profitability. The goal of this study was to evaluate how FTAI alters calf weaning weights as a consequence of changes to the calving distribution. Within the same operations, cows enrolled in this study were either exposed to FTAI followed by natural service or exposed to natural service sires only. Sires chosen for AI had similar EPDs to the sires used in natural service in order to minimize the influence of FTAI on the genetics of the offspring. Results from this study indicated that regardless of genetic improvement, FTAI increased average weaning weights by approximately 40 lbs per cow exposed when compared with cows only subjected to natural service sires (Rodgers et al., 2012). If we apply these numbers to a feeder calf price of \$144/cwt for 500-550 MED&LGE 1 steers (<https://www.ams.usda.gov/mnreports/lswgeorgia.pdf>), the resulting increase in weaning weights associated with FTAI today would represent an added value of at least \$55 (38 lbs * \$1.44 per lb = \$55) per cow exposed to FTAI. It is important to emphasize that this calculation underestimates the actual increase in weaning weight because it assumes that the genetics utilized in the AI program does not result in heavier calves. In other words, this only looks at the effects of FTAI on increasing the proportion of calves being born earlier in the calving season. This clearly shows that regardless of the genetic improvements associated with the use of superior sires, estrus synchronization and FTAI also add value to the calf crop by increasing the average weaning weight of the offspring.

Cattle producers that retain ownership of their cattle through the feedlot have reported increased economic returns associated with the use of AI. A commercial operation in Southeast Virginia evaluated the impact of AI on net return of investment per cow throughout the beef production chain (Sutphin, 2007). This operation evaluated their records based on whether calves were sired by AI or natural service and on whether calves were born from cows that were AI-sired or cows that were sired through natural service. The added return on investment per cow is summarized in **Figure 1**. Calves from cows that were daughters of AI sires and became pregnant to AI (AI-sire/AI-dam) resulted in a 22% greater return on investment compared with calves born from cows that were daughters of natural service sires and became pregnant to natural

service (NS-sire/NS-dam). If a calf was sired by AI but born from cows that were daughters of natural service sires (AI-sire/NS-dam) there was an increase of 15% in the return of investment per cow. Natural service-sired calves resulted in a 7.5% increase in return on investment if they were born from a cow that was sired by AI (NS-sire/AI-dam). These differences in return of investment per cow related to the use of AI were driven by an increase in carcass value associated with a greater proportion of calves grading Choice and Prime.

Collectively, research studies and data from the field clearly indicate that FTAI is an economically viable tool available for cow-calf producers that are looking for alternatives to add value to their calf crop. These reproductive technologies not only add value to the calf crop by increasing the genetic potential of the offspring but also by increasing the proportion of calves that are born in the beginning of the calving season. If you are interested in incorporating FTAI in your herd, please contact your local county extension agent or access www.ugabeef.com.

Literature Cited

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**UNIVERSITY OF
GEORGIA**
EXTENSION

Dr. Pedro Fontes

Assistant Professor
Department of Animal and Dairy
Sciences
College of Agricultural &
Environmental Sciences
University of Georgia