



Beef Cattle Markets for Sexed Semen

Until recently, sexed semen has been priced too high to be economically attractive for beef cattle, with the exception of high value-low volume markets. The challenge remains to price sexed semen where it is competitive with conventional semen for low volume breeders, yet reasonable for high volume markets. In response to this situation, the overall price of sexed semen for beef cattle markets is lower, with significant volume discounts where there are lower returns to breeders (as result of a smaller gender difference) when compared to conventional AI.

The difference in price of sexed semen and conventional semen is the only added cost of implementation, as it does not necessitate a change in management or production practices required for successful use of conventional AI techniques.

The economic analysis of utilizing sexed semen in these markets supports the following conclusions:

- Sexed semen at attractive prices will change the perception that the technology is too expensive to be viable for beef cattle producers.
- These lower prices will facilitate the educational effort required to promote proper use of sexed semen in synchronized breeding systems.

Case studies and controlled research will be helpful to establish the accuracy of sexed semen selection and reproduction rates relative to conventional AI for beef cattle production. (Appendix A identifies data needed to measure performance of alternative breeding systems.)

Beef Cattle Target Markets for Sexed Semen

1. **Seedstock—Breeders** – Selection-oriented breeders aiming to improve genetics. This market generally employs the following characteristics:
 - Collect their bulls; beef breeders are more prone to highly value their bulls.
 - Sell some semen that could be sexed at a better net margin.
 - Use embryo breeding systems and also recipient for their own or cooperators.
 - Use sexed semen to produce heifers from high quality cows, resulting in more donor cows.
 - Breed cows for producers with their semen, creating a valuable market for sexed semen.
 - Provide cleanup bulls.
 - Often have cooperators using their genetics and buy back bull calves from these producers.

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2. **Seedstock—Multipliers** – Use genetics from breeders and stud operations as a foundation for their herd through AI breeding. The following are common within this market:
 - Use embryo breeding systems and also provide recipient cows.
 - Provide cleanup bulls.
 - Desired calf gender can differ by breed, location and year. Sexed semen enables producers to select gender to meet current needs and markets.
 - May use sexed semen to produce donor cows.
3. **Club Calf—Show Steers** – Within this market, there is a large gender difference with a preference for bull calves.
4. **Commercial Cow-Calf Producers**
 - Opportunities exist for producing replacements where there is a significant gender difference within operations currently utilizing, or willing to implement, AI breeding.
 - Some commercial cow-calf producers will find it advantageous to select their best females to breed to maternal superior sexed semen to produce replacements and then breed the remainder of the herd to terminal cross bulls that wean heavier calves thus raising the total herd productive.
 - Brahman breeders producing F1 replacements are particularly favorable due to the heifer premium and discount on bull/steer prices within their respective markets.
 - Any commercial producer utilizing AI breeding where there is a gender value difference as the premium of steer over heifer calves may make using sexed semen if priced right can be profitable at low sexed semen cost.

Production Benefits which Make Sexed Semen Profitable

When cow-calf operators produce quality replacement females, their aim is to achieve that goal with the best genetics possible. In most operations the very best genetics come from heifers. Utilizing female sexed semen enables operators to produce heifers with a 90% degree of accuracy, or purity, in gender selection. Combining this 90% level of accuracy with the “new and improved” genetics of the heifers within the herd ensures replacement females are created from the best genetics possible. In doing so, overall herd performance improves. Additionally, markets favor replacement heifers bred to select bulls.

With an increased number of heifers, producers will have a better selection from which to choose “keeper” heifers. They would be able to keep replacement females from only high performance cows, increasing their pace of genetic improvement. The additional advantage of lower birth weight in heifers reduces calving difficulty, labor costs associated with it, and potential death loss. Also, less stress is placed on heifers, increasing the rebreeding rate. Calf survival rate is important due to missed sales opportunities for excess heifer calves not needed as replacements. In a “big picture” point of view, fewer costly replacement heifers are required to maintain the herd when there is low calf loss.

Estrous synchronization is beneficial to employ along with sexed semen AI breeding, as it results in earlier conception and increased overall pregnancy in the herd. Early conception in heifers helps ensure a productive cow life associated with early-weaned, heavier calves.

Sexed semen is expected to be very important in replacement heifer production. Reproductive traits have not been the focus of attention in beef cattle selection. EPD indexes which focus on carcass traits do not address key reproductive issues that determine the “economics” of beef cows for items such as early puberty and breeding as a heifer, unassisted calving, early rebreeding, longevity and good disposition. In addition, high weaning weights relative to cow body weight is a product of good udder development and milking ability. Selecting sexed semen which focuses on these traits can accelerate the selection of females that meet these productivity standards.

The benefits from cross breeding to capture increases in weaning weights and calves in greater market demand are well documented. Using sexed semen in terminal cross production will increase the percentage of higher valued steer calves. An example would be to use sexed semen from high quality, low birth weight Charolais bulls on moderate framed, efficient Angus cows. An increased spread in feeder price between bulls/steers and heifers makes this a profitable use of sexed semen, as there is a significant gender difference.

Appendix A

Date Components of Sexed Semen Evaluation

There is a need for more documented performance data on the use of sexed semen breeding systems for beef cattle. Suggestions for data that needs to be recorded and analyzed are described below. Computerized cow-calf record systems will facilitate data collection, processing and reporting.

- Description of females exposed
 - Age and body condition score at the beginning of breeding season
 - Nutrition program followed
- Breeding program
 - Sires chosen (registration number)
 - Description of synchronized breeding system protocols (drugs, timing, etc.)
 - Description of pregnancy testing, calving and weaning system in place
 - Cleanup bulls (registration number, age, breeding soundness) and number of females per bull
- Desired data to measure performance for each group, recorded by individual animal
 - Date of breeding(s)
 - Description of sexed semen used
 - Date of pregnancy check, method used and results
 - Date of calving, calving difficulty score and sex of calves

- Pregnancy loss
- Calving loss with calf sex and reason recorded
- Loss between calving and weaning by sex
- Sales or transfer date when weaned
- Weight and gender difference in value
- Written assessment of the experience

The data above will be used to calculate the following for females bred with sexed semen:

- Pregnancy rate
- Calving rate
- Weaning rate and weights
- Production per exposed female
- Gender value
- Losses at each stage of production
- Actual price received for calves when using sexed semen, which will be compared to prices for natural service calves

This production data can be used to identify reproductive performance, find areas for improvement, and in economic evaluation of breeding systems. A better future can be created by measuring performance, as **“you manage what you measure”**.