Sexed Semen AI Advantage Steers Versus Heifers

For cow-calf operation weaning weights and prices of steers are greater than for heifers. This decision aid facilitates the organization of data and calculations to evaluate the **economic advantage** of sexed semen use to produce a larger share of weaned steers versus heifers.

The **economic advantage** of the sexed semen breeding system is the result of the income difference associated with producing more steers or heifers compared to the added cost of using sexed semen versus natural service. Specifically, the added income captured by taking advantage of the higher valued, less the added breeding system cost, results in a significant return on the added investment in breeding system cost.

Using sexed semen allows for a larger portion of the calf crop to come from the most valuable gender.

Sexed semen is expected to produce a conception rate of 90% to 95% of conventional semen. The semen is up to 92% accurate for the selected gender. With cleanup bulls the overall pregnancy is expected to be the same as natural service.

Pregnancy, calving and weaning rates are a result of the entire breeding system including nutrition, management, herd health, synchronized breeding, etc. Semen is one component of the breeding costs, and is not significant. In order to put semen cost into perspective, it needs to be compared to the value of the weaned calf produced.

Calculating the Value of Sexed Semen in Production – Decision Aid

Sheet 1 is used to record prices and weaning weights and other key data that is linked to sheet for calculations. Change in data facilitates "what if" analysis. The sexed semen advantage summary results are reported.

Sheet 2 is used to describe the expected reproduction, production results and expected calves market values. The value of sexed semen as a breeding alternative is calculated by determining the impact of steer versus heifer difference in the higher average weight and net market price for steers versus heifers.

Sexed semen AI calves are expected to have different weaning weights than from natural service which can be reflected in added revenue. Selecting sires with lower weaning weight can help reduce calving weight thus reducing calving loss. This expected difference is recorded in sheet 1. Synchronization can lead to shorter breeding season and more calves born early which can be reflected in ADG and days before weaning.

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Sheet 3 is a description and cost of the breeding protocol. This example protocol must be modified to meet the recommendation of the AI technician and veterinarian involved. There is no that question there is more labor and management involved when using AI. The second page provides a production summary of breeding alternatives.

Sheet 4 is a cost calculator for the natural service cleanup bull. The number of females covered is likely more where AI is being used. The useful life is important as it determines the annual depreciation.

Breeding costs actually are **not the major cost** of cow-calf production. Semen costs are a very small portion of the total calf production costs, as feed, labor and grazing costs overwhelm all other components. Thus, semen cost relative to calf value is low.

Sexed semen can be a part of anyone's program who is using AI breeding. All breeding programs have information on gender value difference.

Decision Aids Operation

The data convention is items in blue are **user input** data. All the cell black numbers are calculated numbers and are protected cells. This is a very comprehensive tool to evaluate the sexed semen breeding alternative.

The spreadsheet also provides the calculation associated with the use of sexed semen for gender selection. These costs are then compared to the revenue from sales differences.

The actual costs of the breeding system can vary between systems used. If experience is lacking it would be good to speak with the technician involved. Get as many details as possible on the protocol followed and record the information in the description sheet. Then modify the data in sheets to do "what if" analysis.

Once all is set up it's good to print the third sheet and check data. Unusual results are normally a product of data entry so check all input data carefully.

Doing "What If" Analysis

The main reason all is set up in a spreadsheet is to facilitate "what if analysis". Key numbers to "play around" are gender prices and reproduction. Sexed semen has advantage where gender value is different. So, it's very logical when sexed semen will pay. The summary sheets have these variables to easily facilitate the impact of these changes on the final return to producer's increase in Breeding Cost on return in investment (ROI) on added cost. Because semen is a small part of total breeding cost, the ROI is very sensitive to changes in gender difference and all reproduction rates. The best way to observe this is to change parameters in the summary sheet and watch the change in ROI.

As noted, **sex semen is a small component total production** system or value related to income per exposed females. All other management, marketing, nutrition and implementation issues must be taken care of before this becomes a cost-effective breeding system. Failure in any aspect of implementation will result in poor reproduction and economic performance.

Summary of Sexed Semen Economics

- The advantage of sexed semen is determined by calculating the **income margin over breeding cost** generated by each system. That is the value of the weaned calves minus the breeding cost. This margin above breeding cost is a measure of the economic performance of the sexed semen system.

- When calculating the advantage of sexed semen is determined by the difference in the gender value of the weaned calves and reproduction rate (weaning percentage) and the breeding cost differences between breeding systems. **Weaned calf values by gender** are very important in determining sexed semen competitiveness.

- Cattle prices are published for steers and heifers by local auctions and USDA state and national sources (see reference list). One must use price data with some caution. Published prices do not include adjustments for marketing costs and quality of cattle differences one could expect for AI genetics. Choice of calf prices to use should be identifies with the anticipated market. Communications with the buyers is valuable. This is especially important when calves are being produced for "program cattle" or value-added markets. Always do "what if" evaluation for prices and weaning weights.

- Calculating the advantage of the sexed semen when the same genetics is used it's a question of the **added revenue being greater than the added cost** of the sexed semen breeding system compared to conventional AI or natural service.

- Breeding costs are reported on the basis of females exposed. Semen cost is reported as percent of breeding cost. This will help keep breeding cost into proper cost perspective. Semen cost is a minor cost for replacement heifer production. The overall pregnancy rate is always the most important factor in determining bred replacement cost.

- **Synchronization** is a big part of making the use of sexed semen profitable. Fixed time AI with heat detection and followed by clean up bulls is especially cost effective and managerially feasible for most produces producing replacement heifers. Heat detection requires more labor and management then timed AI is normally more cost effective as pregnancies are higher.

- In economic terms, **sexed semen** is a small part of the total production costs or value of calves produced.

References:
For information on sexed semen see **www.STgen.com**

For more AI breeding system economic decision aids for evaluation see:
http://agecoext.tamu.edu/resources/decisionaids/beef

Sources of Price Data:
Jordancattle.com Link Auction

http://www.ams.usda.gov/lpgmnarketnewspage

It is valuable to communicate with video and special calf sales marketing representatives on calf prices and requirements to achieve value added prices.