

Take an Economical View on Semen Purchasing

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More so today than in the past, as farms become larger, dairy producers are viewing their operations as businesses. Terms like return on investment, profitability and rate of return have become common vocabulary. Dairymen want to make the decisions that, in turn, will make them the most money. To help producers reach that goal, Genex has developed ACHIEVE™.

ACHIEVE, a science-based predictive model, provides an un-biased answer to financial questions. It allows a dairy owner to use real herd inputs in order to gain an economic analysis of their individual herd. In short, ACHIEVE estimates the economic effects a certain semen purchase will have on a dairy.

Customized for Complete Analysis

One of the unique aspects of ACHIEVE is the ability to combine fertility, genetics, sex ratio and economics of a dairy herd. This ultimately allows the dairy producer to see the changes that will occur if they decide to change the type of semen they purchase.

ACHIEVE's ability for complete customization allows for high accuracy. Variable inputs range from herd size to current semen price. The program also includes several other important variables such as twinning percent, stillbirth rate and calving difficulty. Most commonly, these numbers are national averages reported by the United States Department of Agriculture (USDA). However, these and other statistics can be altered to a herd's specific information when quality data is available.

After the necessary inputs are obtained, a Genex consultant can begin to investigate return on investments for different semen products. It may include different fertility levels, different genetic levels or even sexed semen as any one (or any combination) of these semen selection decisions could ultimately determine which farms are profitable. Through comparisons of the economic analyses, producers can discover their most profitable semen selection options.

Economic Impacts

Semen purchases affect many farm outcomes. We have determined the four main economical outcomes affected are biosecurity, genetics, the balance sheet and reproduction.

Biosecurity plays a very important role in dairy herds, especially herds planning to expand. These herds are attempting to source quality replacements. When a purchase is made, the herd opens the door to numerous biosecurity issues. When a herd is offered an opportunity to grow from within by using a sexed

semen product, biosecurity then becomes an important issue in the decision making process.

Genetics play a significant role when considering any semen purchase. ACHIEVE uses the Lifetime Net Merit (LNMS) index for measuring genetics. This index is developed and maintained by the USDA, and is reported in dollars. This allows the model to compare genetics in dollars and cents. Superior genetics have greater returns to a farm's bottom line than inferior genetics.

When considering any semen purchase, a dairy producer needs to be informed on how the purchase may affect their balance sheet. For instance, a product with higher/lower fertility or a sexed semen product will change the number of heifers born within a year thus affecting the balance sheet. This allows the dairy producer to visually observe how the assets increase or decrease.

Reproductive performance is likely to be effected by the semen purchase as well. The model measures reproductive performance by examining days open in cows and age at first calving (AFC) in heifers. Research has determined an additional day open costs a dairy producer \$2, which is lower than the cost of additional days to AFC which has been determined to be \$3.50. The difference between the two exists because a cow needs additional feed, but provides milk in return. The heifer does not provide any income. Therefore, when semen purchases are being considered, the affect on reproduction becomes a significant driver to the profitability of that product.

Providing Economical Answers

During ACHIEVE's field test stage we developed several interesting "Rules of Thumb" for farms to consider. For example:

- \$10 more in LNM is equal to \$1 more in semen price
- 1% increase in conception rate is equal to \$5 more in semen price
- 1% increase in conception rate is equal to \$50 more of LNM.

Said more practically, the semen purchaser should not give up more than \$50 in LNM to gain only 1% in ERCR. Or, when buying semen an owner should be willing to pay up to \$5 more per unit to gain another point in ERCR.

The table below shows what could happen if a dairy farm increased conception rates in their synchronization program by 2%. This increase could be generated several ways through higher protocol compliance, improved protocols,

Expected Increase in Annual Calves Born SynchSmart™ sires, etc.
2% Increase in CR

| Initial CR | % Synch | 400 cows | 1200 cows | 2000 cows |
|------------|---------|----------|-----------|-----------|
| 25% CR | 25% | 6 | 16 | 28 |
| | 50% | 11 | 33 | 53 |
| | 75% | 16 | 48 | 79 |
| | 100% | 20 | 62 | 104 |
| 35% CR | 25% | 4 | 12 | 20 |
| | 50% | 8 | 23 | 39 |
| | 75% | 12 | 35 | 57 |
| | 100% | 15 | 46 | 76 |
| 45% CR | 25% | 2 | 9 | 15 |
| | 50% | 6 | 18 | 30 |
| | 75% | 9 | 27 | 45 |
| | 100% | 11 | 36 | 60 |

We know reproduction is not linear, meaning at a certain point reproduction can actually cost more to improve than the

benefit of more pregnant animals. Therefore, the chart contains three scenarios. The gray section is a herd with below average conception rates. The orange section is a herd with average conception rates, and the teal section is a herd with above average conception rates.

Look at the percent of cows being synchronized for breeding. Again, some herds only synchronize 25 percent of their breedings, while others synchronize 100 percent. Observe that the gray rows show larger returns (returns are equal to the number of heifer and bull calves being born annually) compared to the teal row. This proves reproduction does not have a linear relationship for financial returns. However, given the teal rows exceptional fertility to begin with, if you could accomplish a two percent increase several more calves could be realized. This table was assembled through ACHIEVE and exhibits the importance of conception rates in synchronized breedings.

ACHIEVE is a peer-reviewed, science-based, unbiased model that reports the net value of a product, in this case semen, back to the herd owner. This allows Genex to provide correct answers and recommendations to members and customers so they may maximize their profits.