An Explanation Of The Breeding Objectives Of My Ranch In South Texas

By Stephen Lukefahr

KINGSVILLE, Texas: This is a continuation of my previous article on breeding objectives in the March issue.

In originally developing a breeding objective for my own operation, I desired to produce a good crossbred animal to fit the hot environment and to also utilize hybrid vigor (heterosis) which makes animals harder in challenging environments such as exist in south Texas.

First, after doing some research by reviewing the literature, I settled on three breeds: Red Angus, Senepol, and Tuli.

Senepol is a tropically adapted breed from the Caribbean and there is also some African ancestry. Senepol also possesses a dominant gene for a slick hair coat (short hair). Studies conducted in Florida have shown no differences between Senepol and Brahman cattle for body temperature in hot weather. This is despite the fact that Senepol is not classified as Bos indicus but rather as Bos taurus.

Unlike Bos indicus, the Senepol is more similar to the European breeds, displaying good dispositions, early maturity, and tender beef.

Tuli is of African origin. The amalgamation of Senepol and Tuli with Red Angus ensures a high level of African genetics, which some experts like Jan Bonsma, John Frisch, and Johann Zelfisman believe is critical for adaptation to (sub)tropical and drought-prone environments that carry a high parasite load, especially ticks.

Out of fairness, I should point out that both Bonsma and Zelfisman were quite impressed with the South Texas developed Beefmaster breed.

Another advantage of using Senepol and Tuli breeds is high fertility during summer breeding, which allows for calves to be born mostly in May. This allows the opportunity to work with nature.

This major advantage is not likely with the use of black-hided breed types in my region.

Like pieces of a puzzle, part of my breeding objective was now fulfilled that reflected use of the new "STAR" composite (S Senepol, T Tuli, and AR Red Angus) that was expected to fit into the south Texas environment due to the genetic effects of both breed complementation and heterosis that would foster adaptation.

The breeding objective begins: To maintain a STAR breeding herd of appropriate genetics for the region where... To complete this objective statement I next had to choose bulls of each breed using artificial insemination, which undoubtedly was another major decision.

Please allow me to briefly digress to make a print about this issue of bull selection involving AI.

AI BULLS TEND TO BE EXTREME

Selecting as AI sires those bulls that are more representative of the
breed should have trait EPDs close to zero, as well as being moderate for other important characters such as frame size, muscling, conformation and structural soundness. This would relate to such bulls more accurately reflecting the true or average merit of the breed.

However, more often than not, when new breeds are introduced to the USA, it is typical that extreme bulls rather than representative bulls are promoted via semen sales. Typically, sire catalogues have featured bulls with high EPDs for traits like weaning weight. Use of such bulls has no doubt disappointed producers (e.g., by having to pull calves and producing big and less efficient cows).

Use of such extreme bulls have, in my opinion, even skewed results in a number of USA breed evaluation studies (compounded by using F1 cows with black hides where black color is not found in the breed being evaluated). The results have sometimes created a false or negative impression of the new breed that otherwise has great potential to realize breeding objectives for commercial producers.

Lighter color breeds seem more heat tolerant and attract less flies.

that involve crossbreeding systems.

As AI sires, and even after contacting or visiting breeders, I chose bulls that were more representative of the Senepol and Tuli breeds. Red Angus bulls chosen were sons of Leachman’s Eleanor. These bulls were used via AI to my original herd of crossbred cows whose breed types are typical for the region.

I also purchased a few Senepol x Red Angus and Tuli x Red Angus F1 heifers, which were artificially inseminated to Tuli and Senepol bulls, respectively. In 2005, all three breeds were combined in calves produced that year. Now it was time to select.

So what is my expanded breeding objective? It follows: To maintain a breeding herd of STAR cattle of appropriate genetics for the region and where selection is applied to promote high fertility and survival in a low input system.

BRED TO SURVIVE ON STOCKPILED FORAGE

More specifically, selection of calves emphasizes those cows that thrive on stockpiled forage, even while coping with drought conditions, and have produced a calf every year since two years of age without any health-related issues.

Bull selection goes deeper by focusing on being from the oldest cows in the herd. In reference to a low input system, hay has not been fed in over 12 years and feed cost (energy and protein supplements) per cow was under $4 in 2014.

Calves are also wintered on their dams. Due to natural immunity and rotational grazing, fecal exams typically are negative so dewormers are not purchased.

Sometimes the breeding objective requires an adjustment or some tweaking. During recent years of severe and relentless drought, I realized that the Red Angus-sired cows were two big and made too much milk and as a result were in poorer body condition. After culling these cows, I purchased a Red Angus bull in 2012 from Pharco Cattle Company. The bull purchased was smaller in frame size and had EPDs for low birth weight and maintenance energy (top 10% of the breed), etc. He also fared well as a calf when compared to his contemporaries for marbling on grass, based on ultrasound tests.

I now have a goodly number of his daughters which have been bred naturally to STAR or artificially to purebred Senepol and Tuli bulls. Because I conduct my own genetic evaluations, it was estimated this year that this bull has a birth weight EPD of -2.8 pounds and a near zero EPD for milk, which is similar to crossbred animals with high Tuli influence in my herd.

Presently, I am developing mating plans for this summer. In addition to my broad breeding objec-

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Breeding Objectives
Continued from p. 9

tive as stated above. I am refining it by adding a few specific parameters.

In the table, I show a sample of these planned matings. First, three STAR bulls (Gray Bull, Red Dawg, and Blanco) will be used. These bulls all have slick coats.

In the last column section (Parameter Criteria), are five additional criteria that support my breeding objective. The matings are assigned to produce a calf that has a minimum 50% combination of Senepol and Tuli genetics and a minimum of 50% heterosis (see Summary section at bottom of table).

These values are calculated using the same Excel spreadsheet table. Heterosis generally has the largest and most positive effects on traits relating to fertility and survival. They are then checked against each calf’s inbreeding coefficient where I have set a limit of 15 percent (using another software program: MTDREML). The 15 percent figure is similar to the inbreeding level of 12.5 percent from a simple half-sib mating.

In a few cases, some cows had to be reassigned to a different bull if these specs were not all met. Of the total matings planned for 2015, averages for combined Senepol and Tuli genetics is 61.4 percent (range of 50.0 to 81.9%) and for heterosis is 69.4 percent (range of 56.3 to 82.4%). Average calculated inbreeding is 4.6 percent (range of 0 to 14.6%). Because I maintain an open herd by periodically introducing less related purebred bulls (via artificial insemination), I can easily control inbreeding.

IMPORTANT OF SLICK HAIR COATS

In addition, I ultimately desire a herd of true breeding slick coated cattle. A genetic test is now available (GeneSeek). I submit hair samples and later am informed which animals are homozygous (2 copies) or heterozygous (1 copy) for the slick gene. The three previously mentioned bulls are all confirmed heterozygous. Soon I can DNA test and then select only calves that are homozygous which are expected to breed true.

I also now prefer lighter color as which involves a co-dominant dilution gene from the Tuli breed. Based largely on observation, lighter cattle seem to be more heat tolerant based on grazing behavior (presumably due to lower body temperatures) and attract fewer flies, among other potential advantages.

In the photo on page 9 of the slick yellow-buff cow, on the same day it was observed that red cows had many more flies, especially if they had hairy rather than slick coats.

A simple genetic lesson is in order. One dilution gene combined with a red gene produces yellow color (similar to what produces yellow calves from Charolais x Hereford matings or palomino foals from sorrel x cremello (white) matings). The bull Blanco has two copies of the dilution gene and as a result is white. It is easy to visually determine phenotypically if a calf has 0, 1 or 2 dilution genes because it is red, yellow or white.

Contrary to other white breeds such as Charolais, my yellow and white colored cattle have dark pigmented hides, muzzles, and eyelids, as well as dark hooves which is more desirable.

In the last two columns of the table are the probabilities of matings producing slick and light colored (yellow or white) calves.

Of the total matings planned for 2015, averages for probabilities for slick and light colored calves are 66.3 percent and 69.9 percent, respectively. In other words, about two out of every three calves produced should be slick coated and about three out of every five calves produced should be light colored. Later, both figures should reach 100%.

Now my breeding objective has been expanded as follows: To maintain a breeding herd of slick and white-colored STAR cattle of appropriate genetics for the region and where selection is applied to promote high fertility and survival in a low input system.

CONCLUSIONS

Every breeder should have a clear breeding objective in mind if...
genetic progress is desired. For the seedstock breeder who typically breeds purebred animals there is much competition, requiring breeders to stay ahead of the cutting edge. It is also important that their genetics is ideally promoted or packaged in such a way that it is first clear that their animals are bred and managed to fit a specific environment (not the other way around) and that animals are selected based on parents and other relatives that conform well in terms of indicator (e.g., fertility and longevity) and/or production traits (e.g., weights and yields) that support the breeding objective.

On the other hand, commercial producers purchase the progress realized by the breeding objectives of seedstock breeders. Because they typically produce crossbred animals their breeding objective ideally should be to select animals that also fit the environment and produce a saleable market product of value.

So, I have shared my own breeding objective with you which I have fine-tuned over the years. What is your breeding objective?

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## 2015 PLANNED MATINGS: SAMPLE

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<th>YEAR</th>
<th>ANIMAL</th>
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<th>DAM</th>
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<td>ROCKY</td>
<td>ALPHA</td>
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<td>0.313</td>
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**SUMMARY:**

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**MINIMUM:**

- RA: 0.188
- SEN: 0.188
- TULI: 0.188

**SUMMARY:**

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<th>BREEDING BULL</th>
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