Breeding Cattle That Can Thrive In A Warmer World

By Steven D. Lukefahr

KINGSVILLE, Texas: What will the earth be like in 100 years? 1,000 years? Global Climate Change (GCC) is real and conditions will likely get worse before they get better.

It is also becoming more evident that GCC entails more than increasing surface temperatures (global warming).

According to NOAA, our planet’s average temperature may be between 2 and nearly 10 degrees F warmer by 2100 than at present.

However, the broader problem involves rising sea levels, rapidly melting polar ice caps, more erratic and intense storms, prolonged droughts, etc. The purpose for this article is to address GCC by proposing combined strategies involving practices that are currently available to beef cattle management in order to remain as a viable industry.

A GRASS-BASED INDUSTRY

The future of the beef industry to a large extent lies in the production and conservation of grass. Free solar-powered grass.

This trend is obviously clear based in part on the hundreds of USA feedlots that declared bankruptcy in recent years. High grain prices, coupled with high feeder cattle prices due largely to prolonged drought were the main causes. Some say that the feedlot model is broken because it was based on cheap grain and cheap fossil fuel, representing an end of an era.

In contrast, the grassfed business is booming and consumers are increasingly demanding grassfed beef for reasons that reflect everything from human health, to the environment, to animal rights.

Another point is that with the growing human population, which may reach 9 to 10 billion by 2050, many experts predict that there will be a substantial release of grain as animal feed for use as human food. This is despite present vast surpluses of grain in a number of developed countries.

What impact this will have on CAFOs (confined animal feeding operations), especially large-scale poultry and swine operations, where livestock are fed mostly grain remains to be seen.

An opportunity exists to utilize breeds and(or) practice genetic selection for cattle that are able to reproduce, grow and fatten readily on grass under GCC conditions.

Another opportunity is for the grassfed industry to develop protocols to further improve beef’s profile of health-benefitting nutrients and compounds, such as CLAs and vitamins that are derived from grass.

In addition, management of polyculture pastures is more secure against...
LEAVE THE HEIFER ON THE COW

Another opportunity for ranchers in regions where hard freezes seldom occur in winter is the practice of wintering heifers on their dams.

In previous years in my operation the development cost per heifer was at least $100 (mostly in feed supplements) during winter. This year the feed cost was zero. Green grass was present at the base of tall stockpiled forage. Consequently, cows maintained good body condition.

Heifers were weaned in early March about two months before their dams calved. There was no weaning stress observed after heifers were moved to another pasture and they were in excellent body condition.

Presently, there is much discussion about low-input management systems. After taking hay out of my business over 12 years ago and greatly limiting, even nearly eliminating, the feeding of energy and protein supplements, the total cow cost per year is now between $300 and $350.

Realistically, I do not believe it is possible to further reduce this figure. Likewise, I do not believe it is possible to further increase the revenue per cow based on heavier calf weaning weights.

For the past several years, 205-day adjusted weaning weights have been around 550 pounds (with limited or no supplements and mostly by 900 to 1,000 pound cows). I certainly do not want heavier calves at weaning.

If I desire to further increase profit, what must I do? First, profit must be based on the land, not on the cow unit. However, I do believe that breeding better cattle is still the best solution so

GCC than monoculture pastures. The polyculture composition of plants that represent the community ecosystem will likely be more robust or tolerant to GCC conditions.

Should only Nature play a role in this process via natural selection of plants that are more heat and/or drought tolerant or should humans also intervene? Likely both will be important, for example, applying grazing pressure at the most critical time and allowing more rest time. Obviously, the ideal ecosystem will vary by region.

STOCKPILING FORAGE CRITICAL

In the face of GCC, especially involving prolonged and devastating droughts, I believe that the practice of stockpiling forage will become even more important than at present. It is possible that there will be lower carrying capacity of pastures in the future. The strategy will be to stockpile forage any time the opportunity exists between droughts and floods.

Here in south Texas after years of exceptional droughts, some 20 inches of rain was received in late summer of 2013. Because most pastures were already long-nested from grazing to maintain plant vigor through the practice of rotational grazing, the supply of forage dramatically increased from about 700 to 3,300 lbs/acre.

Despite the following dry winter and spring, there is presently about a one-years supply of forage on hand. Of course, proper stocking rate (presently at 15.1 AU/acre compared to about 8 AU/acre in previous years) is another key practice that must be combined with other forage management practices.

Of relevance is the recently discovered phenomenon of fat programming. During pregnancy—mostly through fall and winter—it makes sense that the cow could be managed to send early cues to her fetus to prepare for a lifetime of grazing on lower quality (high fiber), stockpiled forage.

Of course, cows should not be starved. Supplements should be provided when necessary. However, when supplements are not necessary, a good cow will maintain her condition and pregnancy while wintering her calf.

Although further research is needed to gain a better understanding on fetal programming, this practice could potentially pay-off in terms of managing cattle that can more readily maintain good condition on low quality forage, especially during droughts.

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that more beef per acre is produced. Cows that are functionally adaptable amidst GCC, producing good calves for 15 or more years, is my business focus.

This intrinsic ability relates to cow longevity. This trait is also similar to a term used by geneticists called generation interval, which is defined as the average age of parents when all their offspring have been born before they are replaced.

Managing a cow herd with proportionately older cows offers some opportunities: 1) we can be more selective in the heifer replacements that we retain, and 2) we can sell more heifers at premium prices as breeding heifers (or as bred heifers to add more value).

Of course, if you are also selling breeding bulls a great plug is that they are from your most productive and older cows. This selection focus on cow longevity is how I will more than likely increase my business bottom line in the future.

**BREEDING STRATEGIES FOR A WARMER WORLD**

To reiterate, utilization of breeds and/or selection for animals that can maintain themselves and produce beef on grass with minimal supplements without pampering will surely become critical. My cattle herd is a composite of Red Angus, Senepol, and Tuli breeds.

Why Senepol and Tuli? The predecessor of the Senepol (a breed called N'Dama) and the Tuli have been evolving in tropical Africa for about 5,000 years. Neither breed is extreme in terms of body frame size or mature weight, muscling or milk production. Gentle dispositions are well noted. They also possess genes for readily fattening on grass.

Moreover, these breeds are observed by traditional ranchers to be adaptable by performing well under conditions of intense combined heat and humidity, prolonged droughts, low quality forage, destructive parasites, etc.

In particular, Senepol has valuable gene(s) for producing a slick hair coat and with numerous vertical skin folds, which explains why these cattle are often observed to be grazing during brutally hot and humid summer afternoons.

Also, Tuli deposits fat more abdominally (rather than as backfat) which explains the same grazing behavior.

There are many other unique genes for useful traits besides these mentioned here. Selection for light hair coat, color and dark pigmented hides and lower fly counts (among other traits) continues to be practiced, although these traits are already well established in my herd, according to recommendations by the late pioneer, tropical cattle breeder, Dr. Jan Bonsma.

Of relevance, both Senepol and Tuli breeds are classified as Bos taurus. For many reasons, I prefer not to use any breeds with Bos indicus influence. The main reason is that they are just too big and less efficient, but this is only my opinion based on experience. Some studies may disagree with my position.

This three-breed amalgamation produces a crossbred with the additional...
Breeding Cattle

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The bonus of hybrid vigor, which gives a boost for performance traits such as fertility, disease resistance and longevity.

Crossbred cows weigh approximately only 1,000 pounds. I can increase profit per acre by running three, 1,000 pound cows rather than two, 1,500 pound cows.

In addition to improved land efficiency, many ranchers know that smaller cows also have better biological efficiency than larger cows in terms of calf weaning weights as a proportion to cows' body weight. A 1,000 pound cow is more likely to wean about half her own body weight than a 1,600 pound cow that will more likely wean only about one-third of her own body weight.

Precious, limited forage is being wasted by selecting for traits that result in excessive mature weights.

SUMMER FERTILITY CRITICAL

In light of GCC, summer fertility is pivotal to my business success. In a conscientious attempt to work with Nature, it is desirable for cows to calve in late spring. The reason is so that cows can consume green grass to increase body condition before calving.

My breeding season is between mid-July and end of August. For non-tropically adapted breed-types, a few days of 100 degrees F temperatures causes a bull to become less fertile (temporary sterility), which is aggravated by high humidity levels.

In contrast, for several years now my herd has had at or near 100% pregnancy rates, no doubt due to the high level of tropical genetics plus hybrid vigor.

The photo on p. 6 with this article is of a composite bull (1/2 Senepol, 1/4 Tuli, and 1/4 Red Angus) that bred four cows on July 25, 2011, at above 100 degrees F' during a drought and without energy or protein supplements. Nine months later, all four cows calved. Several young bull calves were also receiving early training cues.

Bull fertility tests have often revealed high sperm concentration and between 85 to 90 percent live and normal sperm cells. It is likely that such tropically-influenced cattle may move farther north and south in the decades or centuries ahead, possibly dislocating to even more extreme regions those cattle breed-types that fail to adapt.

In addition, it should be borne in mind that certain pathogens (including parasites) are spreading out from tropical regions due to GCC. Tropically adapted cattle are already naturally resistant to many tropical pathogens.

ECOSYSTEM SERVICES
The opportunity presently exists for ranchers to become "ecofarmers" who can provide valuable ecosystem services to society. First, cattle should continue to serve the traditional role as "energy brokers" as ruminants by converting fibrous feeds into beef, a high value product, as human food. Cattle should also be managed sustainably as a tool to control and possibly even reverse GCC trends.

Through appropriate grazing management practices (e.g., MIG and mob density grazing) healthy grasslands, including the action of soil microbes, can absorb carbon dioxide, methane, and nitrous oxide gases from the atmosphere and sequester the carbon in the soil. Some progressive ranchers have already dramatically increased the organic matter content of their soils in only a few years time through management.

A very positive development for ranchers as ecofarmers is the offer by government of tax incentives in the form of carbon credits which translate into tax deductions. What a strong promotion this would be to consumers that beef cattle production through sound ranch management are helping to save rather than destroy the planet.

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