

An Alternative, Sustainable System of Beef Production in South Texas – Part 1: FORAGE PRODUCTION SYSTEM

by Steven Lukefahr PhD

Editors note: This is the first of three articles that will be published in consecutive SGF issues. This first installment focuses on the author's forage production system, the second article will feature his cattle breeding program, and the last article will disclose his future business plans.

KINGSVILLE, Texas: In south Texas, the climatic environment alone poses a major challenge to beef cattle ranchers. It is a unique region to the U.S. that is classified as both semi-arid and sub-tropical. Annual rainfall normally ranges from 14 to 32 inches. In the summer, mid-day temperature and humidity levels hover around the 100 mark. Notwithstanding this, the region is often devastated by hurricanes and prolonged droughts. Of course, any rancher can relate to drought! However, one local rancher, Steven Lukefahr, also an Ag college professor, has met this challenge head-on by adapting a beef and forage production system that can be sustained in this adverse region. But before describing this system, I would like to provide the reader with some necessary background.

Historically, native forage species represented a plethora of grasses, legumes, forbs, shrubs, etc., that were remarkably adaptable, being especially resilient to prolonged droughts. However, introductions of exotics, such as buffelgrass, coastal bermudagrass, guineagrass, and Kleberg bluestem, have largely displaced native stands. Moreover, traditional continuous grazing

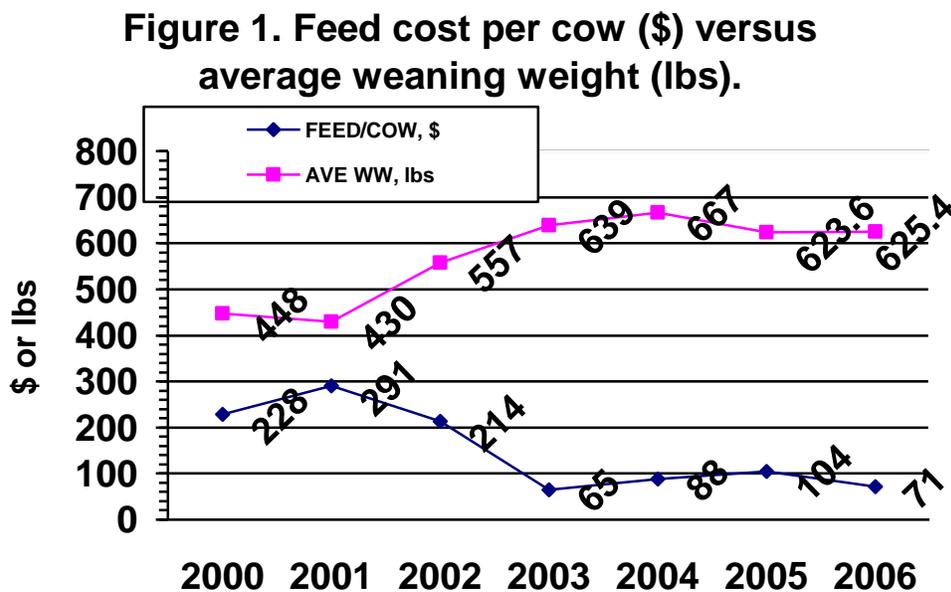
and overstocking practices have resulted in poor range condition and severe brush encroachment (mostly Mesquite), requiring costly chemical and labor inputs. In advanced cases, heavy equipment is used for clearing and stacking brush at a cost of approximately \$125 per acre.

Although several large and famous ranches exist in the region, such as King Ranch, most commercial and part-time ranchers operate herds of less than 500 cows (the majority is probably less than 50 cows!). For the latter group, a popular system of forage production is monoculture or “improved” pastures in coastal bermudagrass, routinely treated with herbicides and fertilizers, which are heavily stocked on a continuous basis. Hay is fed in winter and during droughts. Certainly, this is not a sustainable system because of the dependence on chemicals, fossil fuels, and “heavy metal” machinery, not to mention the negative environmental impact. Alternative practices, such as establishing polyculture pastures (“salad bar”), rotational grazing, and stockpiling forage for winter grazing, are uncommon. Unfortunately, the adverse environment is mismatched with certain traditional forage management practices that largely explain why cattle production in south Texas is a marginally-profitable enterprise.

An alternative, more sustainable production system has been developed by Lukefahr who presently runs between 60 and 70 head on 240 acres of mostly leased land. As an overview to all three articles in this series, the management system for his cow-calf operation consists of: 1) conserving the forage base to enhance native plant diversity and adjusting stocking rates to match forage availability (without the need for feeding hay); 2) safeguarding the environment and promoting wildlife by providing better forage cover and(or) protecting the soil (while limiting use of chemicals and fossil fuels); 3) utilizing appropriate cattle breeds to cope with the adverse environment; and 4) creating opportunities for developing local niche markets (while minimizing economic risk) to increase profits.

FORAGE PRODUCTION SYSTEM

Perhaps it is an unfair advantage that I am an AG professor where helpful advice can be sought from my colleagues in cattle and range management. Nonetheless, about the best advice given to me a few years ago was to use a conservative stocking rate of 8 acres per cow. In 1994, when I started my business, I was running about one cow for about every 3 acres and was always running out of forage! This adjustment was made in 2003. There is now a forage surplus that has enabled me to take the hay out of the cattle business. Now, all pastures are used for grazing. According to Figure 1, a dramatic decline in average feed costs per cow was realized due to no longer feeding hay and providing fewer supplements. In 2006, average feed cost was \$71 per cow (26.5% of total business costs). Besides not cutting hay, I no longer fertilize or renovate (discs) pastures or apply herbicides to control weeds; my cows perform all these activities!



Another major management shift was to a rotational grazing system. Presently, I operate my herd on 240 acres that have been subdivided into 25 smaller pastures or paddocks. In the past few years, as range conditions have improved (especially due to pasture rest from grazing and seed propagation by native species), a gradual transition from a monoculture- to a polyculture-based ecosystem has occurred. It certainly has been exciting to find at least five native forage species return each year, mostly grasses, as pastures approach to the climax community stage. It is good to know, for example, that whenever it rains that the moisture level is probably effectively doubled because of better plant cover and less compaction. I am confident, too, that soil nutrients available to plants and the organic matter content have also improved. In addition, I now observe more Bobwhite quail and turkey as the habitat quality improves.

In addition, stockpiling of forage is a great buffer against drought, as is the general case in any environment. In 2006, a spring with virtually no rain occurred, followed by a hot and dry summer. Many local ranchers reduced their herds and fed hay (costing up to \$100 per round bale). Later in the year, some received government checks as disaster relief. In contrast, I expanded my herd but did not feed hay. Recently, I have applied for an EQUIP loan through NRCS to assist me in adopting a more MIG-style system to better conserve the forage base that will involve the use of electric fence and extension of water lines.

I frequently monitor pasture conditions by horseback to determine when to move cattle. However, because interactions among variables (e.g., rainfall and temperature) with pasture rest time are unique to season, I maintain flexibility by not referring to a calendar when deciding to move cattle. This is always an enjoyable chore that simply involves opening a gate and giving out a whistle or two - moving cattle ala Salatin! The cattle know that by responding to the shepherd's call that they are always rewarded. They do not develop fear of humans.

One advantage that the sub-tropical region occasionally offers is frost-free winters. This winter has been one of these times. Polyculture-type pastures with fences surrounded by mature Mesquite trees further serve as wind breaks against blue northerns. At the time of writing this article in March, due to absence of a hard freeze, green forage was still available for grazing in stockpiled pastures, such that providing energy and protein supplements have not yet become necessary for my easy care cows (the topic of the next article). Only free-choice, loose minerals are offered. However, for cattle in exposed pastures (without wind breaks) or in years with a hard freeze resulting in dormant pastures, whole cottonseeds or cottonseed cubes are fed. Feeding level depends on the cow's body condition and stage of production. The natural protein and fat from cottonseeds support rumen microbes that utilize fiber from forages more efficiently than grain-based supplements. I seldom feed grain to my cattle. Some ranchers sow ryegrass seed for winter grazing, but because the region receives little rainfall in winter, this has not been proven to be a good investment.

Concerning land management and ownership, I mostly lease land (over 90%), which is certainly less risky, a practice I expanded after reading Greg Judy's excellent book, *No Risk Ranching*. If a lease proves later not to work out, I can just walk away from it. Most families that I lease land from do not charge a fee because they are pleased just to qualify for a significant tax break since their land is in Ag use. Of course, this is a true win-win situation. However, in 2006 my largest business expenditure (30.8%) was land lease payments made to other families, mostly at the rate of \$20/acre/year, amounting to \$82.3 per cow - still cheaper than owning land and buying feed! For all my leases, I develop simple contracts in which I agree to maintain fences, control brush, and improve the landowner's pasturelands. In some cases, their land value has increased.

Dr. Lukefahr is a Regents Professor of Genetics in the Animal Science Department at Texas A&M University-Kingsville (e-mail: s-lukefahr@tamuk.edu).