

# Breeding for Maximum Profits

## An excerpt from Buffalo Management & Marketing

Buffalo breeding, like feeding, is easy. Just let them do what comes naturally. You can interfere by helping too much—or you can encourage them in directions that improve on nature.

The first requirement is plenty of room. Large bunches of animals confined to a small lot do not breed dependably. You can't put a bull and a cow in a 15 x 20 foot pen and expect romance to blossom. They just don't have enough room to maneuver and court.

We frequently read that, in the wild, buffalo cows calved every other year. Modern ranchers doubt this. They think probably most cows calved nearly every year, but favored the older sibling over the younger and let the wee one starve. We'll show you here how to wean a 90% or better calf crop, utilizing modern ranchers' experience.

Nature provides a bull calf for every heifer plus a few to spare. In the wild, the dominant bulls established their harems and drove off the competition until age caught up with them. On the ranch, the best bull to cow ratio comes out to 1:10 in big herds; while in small herds, 2:10 or 2:15 insures a better calf crop.

## TWO YEAR OLDS ARE "IFFY"

A two-year-old bull is mature enough to breed, but some ranchers report his callow advances are rejected by mature cows who know about the birds and the bees already. The older lovelies seem to prefer bulls in the three plus age bracket. Many, given the choice of a two or nothing choose celibacy! This can cause you a lot of disappointment come spring when no little red bundles from Up Yonder arrive.

However, two-year-old heifers get along beautifully with two-year-old bulls. The Durham Bar D Ranch has run what they call a co-ed herd: They kept their two-year-old bulls and heifers together, 1:1, separate from the mature breeding herd. The calf crop from the co-ed herd hit 95% the highest they ever got. This practice also saves wear and tear on two-year-old bulls who would otherwise try to fight the big boys and get whupped.

Buffalo come to puberty a year later than domestic cattle. The buffalo heifer usually mates at age two and drops her first calf at three, although a two-year-old mother is sometimes seen. Bulls become dependable breeders at three and remain productive well into their 20's although ranchers find it profitable to retire a bull to the meat factory while still in his prime. Practice varies—some turn their bulls at four, others wait as long as nine years. The older they get, the bigger, stronger, meaner, more dangerous, and harder to handle they become. A four-year-old is still good eating. After that, he begins to give all buffalo flesh a bad name.

Whereas a domestic cow has outlived her profitability at age 10 or 12, buffalo cows routinely reproduce into their 20's and have been known to drop a calf after 40. Bar D retires its cows at nine to help insure reproductive dependability.

## MATING IS A SUMMERTIME THING- ON THE RANGE

Mating begins slowly in mid June and builds to a crashing climax in late July on the central Plains. The rut occurs progressively later northward, peaking in mid August in northern Canada. Thus Mother Nature brings most of her calves into the world late enough to miss the worst spring blizzards.

Estrus (heat)—the time during which the egg is capable of fertilization, lasts about two days. If the cow does not conceive, she comes back into heat in about three weeks. If she is impregnated, estrus does not recur for another twelve months, during which time she will have birthed her calf.

The bull forms a tending relationship with his chosen cow that endures for a day or two. Zoologists call this a "temporary monogamous mateship." During this time, he runs off, if he can, any other buffalo that comes too near whether cow, calf, or bull (he's also likely to run you off, too, so this is a good time to stay away). If a bigger bull displaces him, he seeks another mate. This temporary monogamy explains why you need two bulls for 10 cows in a small herd. You have a spare if the other one is busy when another cow comes into heat.

Pawing, horning the earth, and wallowing are all part of the rutting pattern. Bulls usually limit their competition to a simple poll-to-poll shoving contest, with the loser backing down. Battles to the death are less common. Fatalities are more common in confined herds because the loser can't get away.

On the ranch, under confined conditions, breeding may occur at any season, ranchers report. Buffalo in the wild, or maintained under nearly natural conditions, do not need to be separated by sex, as they will automatically do what comes naturally at the proper time.

On the other hand, buffalo under crowded conditions will begin to cycle like cattle. If you are finding many out of season calves, you would be wise to keep your bulls away from the cows except in mid and late summer. A cow who produces a calf in November won't drop one in May.

The other alternative is to keep her separate from the bulls after she's calved late, and hope she enters the estrus at the proper time the following summer. Perhaps your veterinarian could precipitate her estrus at the time you want with a hormone injection. Ask him.

And remember, for a good calf crop you need good cow nutrition, Roy Houck advises, "Be sure your cows are in good healthy condition; otherwise they will not come in heat. Every time we've had a drought our calf crop has been down 8%-10% the next year."

It's a big advantage to bunch the calves. If calves are all born within a few weeks, that means you round-up, brand vaccinate, wean, dehorn, etc., only once a year, instead of two or three times. This saves labor, expense, and the risk of repeated round-ups. Too, calves of uniform age and size do better at the feed-bunk; otherwise, the big ones hog it.

Cows bred in July and August will calve in April and May, avoiding the worst blizzards

and giving calves enough summer growth to make use of fall pasture. Gestation is the same as the human and bovine; 280-285 days, or just over nine months.

## FLUSHING

Graziers for centuries have known that enriching the animals' diets with higher protein feed about six weeks before breeding improves reproduction rates. Bar D does this for their cows. Putting bulls on a grain ration for about the same period should help them do a good season's work, too.

## SEPARATE OUT THE BULL?

Some ranchers advise keeping bulls and cows separate except during breeding season. This may be good advice on small spreads, especially if the animals are a bit crowded.

The Standing Butte, which has more room than most, finds this unnecessary. "We have never kept our bulls separate from our cows and 90% of our calves are dropped from April 15 to June 1," Roy Houck reports. "Nature has a pretty good way of taking care of this time factor."

## CALF BE NIMBLE, CALF BE QUICK

Buffalo calves are born a cinnamon red and weigh about 40 pounds. Multiple births are extremely rare. The newborn, as soon as he gets some milk, is a marvel of mobility and endurance, capable of following mom, even in a blizzard. A domestic calf born in a blizzard usually is abandoned by its mother and freezes.

The natal red grows darker, until by summer's end, the calves are almost as dark as mom 'n pop, and weigh 100 to 200 pounds. A yearling calf should top 650, a 2½-year-old bull ready for drylot feeding should weigh 1,200 to 1,400 pounds and put on 150 to 200 pounds in 60 days of full feed.

Bulls are full grown at eight, when they weigh around a ton, give or take some. The biggest buffalo of record was Bar D's eight-year-old "Jumbo," who topped the scales at 3,340 pounds in his bare feet in 1969.

## GENETICS

Little is known of buffalo genetics. As are all wild animals, they are highly homozygous (genetically similar), a characteristic doubtless enhanced by their near extinction. Most of the U.S. herd today stems from a few hundred left alive in 1900. They all trace their ancestry back to these few progenitors a relatively few generations back, and therefore carry little genetic variation. This is proved in the virtually identical colors. Differences in size, horn curvature, etc., are thought by breeders to be essentially environmental. The Rocky Mountain herds, for example, have been observed within living memory to change slightly to a form more adapted to their environment—an effect thought to be due strictly to environment. Take them back to the rolling plains and they'd most likely revert to the Plains type in a few generations.

Stormont Laboratories of Woodland, CA, working with the Department of Interior, has blood typed two entire herds. Some basic genetic differences have been found in these separate herds. Both have been closed herds since the early 1900's. Until more entire herds are blood typed, little will be known of the genetic variations in buffalo.

If buffalo maintained a family tree, some could trace their ancestry back to hybridization experiments 40 or more generations ago. The likelihood of your buffalo producing a calf with domestic cattle traits are remote, however. Buffalo-cattle crosses are not a species; they are a hybrid. The species a hybrid breeds with will predominate in exhibited traits, and in several generations the adulterant species will be diluted beyond recognition. At this point, blood typing will indicate domestic blood in your buffalo's genetic history, but it can't tell how much there is or when hybridization occurred.

When a buffalo carrying an identifiable cattle gene breeds with another carrying this gene, there is a possibility of a calf with domestic characteristics. If that calf breeds with a certified pure buffalo, the offspring will be a buffalo, although it may still carry the domestic gene. Somewhere down the road (nobody knows for sure how many generations it takes), the cattle gene disappears entirely and you once more have 100% pure buffalo. For the most part, this is what we have in this country today: pure Plains bison.

The idea of combining the vigor and survivability of the buffalo with the docility of domestic cattle is centuries old. Many have tried it. The first result is terribly high fetal and maternal mortality. The next result is sterile hybrid bulls.

The consensus of nearly all who have tried it is DON'T. The Canadian government tried it for 50 years at Manyberries and Wainwright, then chucked it. If you must give it a whirl, be sure you are financially and emotionally prepared for horrendous losses.

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## BE CAREFUL ABOUT INTRODUCING "NEW BLOOD"

Be careful about buying buffalo out of a zoo or any confinement. "When we were building our herd," reports Roy Houck, "I went into Missouri and bought some. They were in such poor shape we had to tail them up out of the truck. But by spring you couldn't tell them from our own."

"All that was the matter with them was malnutrition. I was lucky I didn't introduce some disease into our herd—I wouldn't buy any like that again. We don't buy any from outside now. We have a healthy herd so why jeopardize it?"

## ALBINOS

The likelihood of your buffalo producing a white calf is even more remote than a throwback from old hybridization experiments. Here again, a family tree would help. Back in the days when millions of buffalo roamed the plains, it was estimated that albinos occurred once in about 10 million births. How accurate that es-

timate is, no one knows. But it was rare indeed. Albinos were so rare as to be held in religious awe by the Indians, who valued an albino buffalo skin beyond all else, for its strong medicine.

We also know that the albino gene survived the slaughter and was carried by at least a few of the thousand or so buffalo that remained at the turn of the century. We know this because a white calf was born on the National Bison Range in Montana in the 1930's. He was entirely white except for a brown topknot and lived to age 26. His offspring were all brown. (Technically, a true albino will have no color whatsoever: white hair, pink skin, eyes, hooves, and horns.)

In the 1960's a white calf was born on the Standing Butte Ranch in South Dakota, but did not survive. In recent years, calves with white patches have been reported. Whether these are the result of albino genes is unknown. They have all been crippled to some degree and have not survived. The white hair may have been an expression of another mutation.

For an albino to be produced, both parents must carry the recessive albino gene. Then the chance of their producing an albino is one in four. There is no way to identify a recessive gene, so you can't breed for this trait until an albino shows up. With no natural intermingling of the species, the likelihood of two critters with the necessary recessive genes getting together are slim to none. Until another albino is born, we won't know if the recessive albino gene has survived modern culling.

## INBREEDING AS A TOOL

"Inbred" is usually pronounced with a sneer denoting decadence and inferiority. Yet inbreeding can be the buffalo raiser's most powerful tool. Like dynamite, it is a power for good or evil, according to how it is used.

Inbreeding is the mating of close relatives. Brother-sister mating is the closest inbreeding possible with mammals; then parent-offspring mating. Linebreeding is the mating of less close-in relatives.

Knowledgeable breeders recognize inbreeding as the most effective and rapid way to "fix" type and isolate "pure" (homozygous) lines. Most wild populations are highly homozygous as can be seen by their similar markings. All buffalo are about the same color, for example.

What inbreeding does is increase genetic purity whether for good or ill. It concentrates recessive as well as dominant genes, giving recessive characteristics a chance to show up. Recessive characteristics are usually less desirable than dominant traits.

A few ranchers are linebreeding and report favorable results from the practice. Too little data is in, however, for NBA to endorse the practice. Stormont cautions that linebreeding or inbreeding can be dangerous to the financial health of your buffalo, as linebred buffalo with little genetic variation to begin with can swiftly succumb to the problems that plague linebred cattle. Usually a small calf crop is one of the many problems you may encounter with this practice.

"Inbreeding," says the *Encyclopedia Britannica*, "does not create defective offspring. It is not harmful in itself." Nor does inbreeding create genes. "... inbreeding usually increases the proportion of defective, weak, slow growing or otherwise undesirable individuals." Again it concen-

trates genes, or, as *Britannica* says more scientifically, the genes are "... brought together in combinations that would be rarer under outbreeding."

In one classic experiment, laboratory mice were inbred for many generations but were rigorously culled and only the top individuals of each litter saved. This strain became bigger, healthier, producing bigger litters, etc. So the secret of inbreeding success is merciless culling.

The Little Buffalo Ranch, Gillette, WY, started in 1922 with two cows and one bull and has never introduced any new blood. The herd today is an excellent one. In harvesting the surplus bulls, the practice is to take out those that are "not as pretty" as the best bulls.

While few scientific studies have come to light, a knowledge of genetic principles of mammals suggests that close mating among buffalo (father/daughter, mother/son, brother/sister) does not carry as much power for good or ill as does the same practice among cattle, because the genetic sameness gives fewer differences to work with.

The reason for the apparent limitation on buffalo selection, as hinted above, is that they do not carry the rich mixture of widely differing genes that cattle, even of the same bloodlines, carry. It is a principle of genetics that, the more widely the parents differ, the more hybrid vigor the offspring will display. Of course, when the parents are of species that differ too widely, either the offspring will be sterile (witness the mule), or conception will not occur.

Until genetics studies have been made and the genes mapped out on the chromosomes, which takes many buffalo generations (and, so far as we know, is not being done), the breeder's best advice is to mate the best to the best and eat the rest. Selecting for size, vigor, feed conversion efficiency, reproduction rates, weaning weights, conformation, meatiness, etc.

In practical ranching, you'll breed any cow capable of dropping a calf and top out your bulls to serve them. Until someone takes the time and expense and trouble to isolate breeding units, to make detailed studies of the physical characteristics, to keep precise records, and to production test his bulls, buffalo genetics is going to remain a misty field of guess, gosh, and try anything that works!

## WHAT DOES A GOOD BUFFALO LOOK LIKE?

Nobody has ever spelt out exactly what we're looking for in a good buffalo. Do we want long, rangy bodies—or short, compact frames with a big hump? Do we want light color or dark? A few breeders are just beginning to work along these lines, developing criteria on exactly what characteristics make up the ideal buffalo.

Also developing is a registration program. This is a herdbook, which will require certification of purity first and then single sire breeding units and detailed parentage records for subsequent steps toward registration and pedigree. Raising registered buffalo is not the goal of most who enter the industry, nor is it feasible for many who do not have the facilities to maintain single sire herds, or the desire to keep detailed records. Most are satisfied to just raise buffalo. But even those folks practice stringent culling and strive to get the best from what they've got.