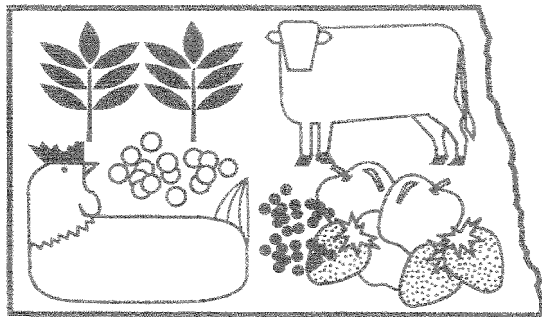




Buffalo

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Raising buffalo has changed from a novelty enterprise to a profitable one. Buffalo may be marketed for their meat and by-products, for recreational hunting, and as breeding stock. The total buffalo (bison) population in North America is estimated at 90,000, and about 85 percent of these animals are owned by private entities.

The demand for buffalo meat has increased, primarily because consumers perceive it to have less intramuscular fat (more lean meat) than beef and pork. Some also believe that this means the meat is lower in cholesterol, though this has not been proven. Some consumers prefer the taste of buffalo over the taste of beef or pork. Other valuable by-products from buffalo include mounted heads, skulls, and hides. A mounted buffalo head and robe is worth about \$600.

Buffalo also may be marketed for recreational hunting. Some buffalo ranchers report charging between \$1,500 and \$3,500 to allow hunters to harvest mature bulls.

The value of buffalo as breeding stock varies considerably, depending on health, age of animal, and bloodlines. Custer State Park in South Dakota has an annual auction of 480 animals, and there a mature 10-year old buffalo cow will usually bring between \$1,200 and \$1,800.

Characteristics

Buffalo are herd animals. In the wild, bulls will form separate herds or bachelor groups and join with the cow herd only during the breeding season. However, buffalo raised domestically will not separate by gender, and will remain in the same herd throughout the year. Buffalo have a highly structured social "pecking" order determined by seniority in the herd, size, and age. The pecking order is much more

rigorously enforced than in domestic cattle, and ignoring the social status can result in serious injury. Buffalo have a higher tolerance to cold temperatures than domestic cattle, and therefore exhibit greater winter hardiness. Because of the buffalo's superior digestion of low quality feeds, it may be better suited for production on marginal rangelands.

Herd Production

Buffalo live longer than domestic cattle. Buffalo cows can remain productive until 20 years of age. The typical replacement rate for buffalo cows is 10 percent. Cows can be bred to calve at three years of age. Bull calves may be used for breeding at two years of age, although they will probably not breed any cows if there is an older, larger, more mature bull in the same pasture. Bull calves can be finished at 1,100 to 1,200 pounds by the age of 24 months; however, 30 months is a more likely average. As with beef cattle, the quality and quantity of feed available to the animal largely determines reproductive performance. In the wild or under tough range conditions, cows may lose considerable condition raising a calf and may only calve every other year. With good nutrition and management, 80 to 90 percent of all mature cows exposed to a bull should wean a calf.

Diseases

Buffalo are susceptible to the same diseases as domestic beef cattle, but their immune system appears to be more resilient. All female calves should be vaccinated for brucellosis between four and nine months of age. The calves and cow herd should be wormed in the fall of the year. Calves should be inoculated against any other diseases your local veterinarian recommends. A "7-way" vaccination is recommended to protect against several forms of clostridium.



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Feeding Guidelines

Buffalo will consume between 1.5 and 2.0 percent of their body weight in feed (100 percent dry matter basis) every day just to maintain body weight. Buffalo are more efficient feed converters than cattle. In fact, in the past buffalo were commonly promoted by stressing how little feed it took to keep them alive. It is possible to pasture three buffalo on the same amount of pasture required for two cows, but feeding animals at these levels does not lead to good production. They should be stocked at the same rate recommended for cattle in your area.

Buffalo will eat the same types of grain, grasses and hay as cattle. While buffalo may consume clover or alfalfa, they tend to prefer grasses to legumes. Buffalo will eat a variety of weeds and brush that cattle do not like. Buffalo calves do not gain weight markedly faster when fed a ration high in concentrates. A recommended feeding regime for finishing buffalo is to allow them to eat roughage free choice from weaning to about 20 months of age. Then allow the animals access to concentrates (pelleted wheat screenings and corn) ad lib for approximately four months to fatten them for slaughter. Buffalo bulls fed in this manner should yield a 600-pound carcass by 30 months of age. Buffalo on a finishing ration will require about 2.5 to 3 percent of their body weight in feed (100 percent dry matter basis) every day. The diet for finishing animals should never contain less than 10 percent roughage.

Calf Production

The breeding (or rutting) season for buffalo generally begins in June. The gestation period for buffalo is about the same as for beef cattle, 287 days. Buffalo calves weigh 45 to 55 pounds at birth, and if impregnated in June should be born about April 15. Some managers wean buffalo calves in the fall of the year. Others let the cows wean the calves. Some advantages to manually weaning the calves in the fall are (1) that the cows will get through the winter in better condition, and (2) that calves will start on grain and fatten more readily. The disadvantages include the increased labor required and the extensive corral system needed to keep animals separate. Also, some cows will not wean their calves, and this can result in the older calf driving the new-born calf away the following spring.

For anyone wanting to begin buffalo production, starting with calves is recommended. Buffalo calves adapt more readily to new surroundings than mature animals. It is best to buy two to three animals from the same herd. Prospective breeding herd producers should buy heifer calves. If the producer is interested in raising animals for meat production, then bull calves should be purchased.

Buying Precautions

Prospective buyers should check into the reputation of the producers. Find out in advance what charges you will be accountable for, what health guarantees are available, and who bears financial responsibility for animals injured or killed during transport. If buffalo are being transported across state lines, be sure to check with each state's veterinarian regarding health requirements. Buffalo bulls should be semen tested. Also, confirm as much information as possible regarding the animals' age, overall condition, teeth and eyes, soundness, and quality. Finally, demand a negative brucellosis and tuberculosis test on all animals, male or female.

Facilities

As a rule of thumb, buffalo facilities will work for cattle but cattle facilities won't work for buffalo. Cattle working chutes, corrals and fences are generally too small and not high enough or strong enough to handle buffalo. The corral and working chutes need to be 7 to 8 feet high. Cat-walks along the outside of chutes and corrals are a good idea for safety. A strong squeeze chute with a crash gate and palpation cage is a must. All gates should be heavy duty, spring-loaded, locking slam gates. A 5- to 6-strand barbed wire fence with posts (wood or steel) 12 to 14 feet apart will keep buffalo in the pasture as long as they have plenty to eat. Buildings or calving sheds are not necessary to efficiently produce buffalo. Trailers need to have a roof to keep buffalo from attempting to jump over the side.

Markets

Demand for buffalo meat is currently greater than supply at a price of \$3.00 per pound. Buffalo producers in the state report selling all the buffalo meat they can produce. This trend is excellent for those buffalo producers currently in operation, but prospective producers (who must purchase breeding stock at premium prices) must consider risk. Producers interested in buffalo production need to explore relationships with potential market outlets before investing in a buffalo herd. Most buffalo produced in North Dakota are marketed as chilled carcasses to restaurants in the eastern United States. Buffalo producers in North Dakota generally butcher and process the buffalo on the farm. The National Buffalo Association is currently investigating the feasibility of building and operating a buffalo slaughtering plant in North Dakota. There is a slaughter plant in Colorado Springs, Colorado, which buys live animals to slaughter at its facility. The price offered by this facility is substantially less than the prices which are obtained in contracts with restaurants.

Economics

Buffalo are a higher-cost enterprise than beef cattle because of handling facility requirements and the breeding herd investment. The retail selling price of buffalo meat is about twice the price of beef. Currently, buffalo meat sells for about \$3.00 per pound for a hanging carcass. Breeding buffalo (male and female) sell for roughly twice the price of beef breeding stock. Although buffalo feed is cheaper than beef cattle feed, buffalo gain weight more slowly than cattle, so feed cost per pound of gain is similar. Buffalo find cheaper, lower-quality feeds to be more palatable than more expensive feeds, and they are more efficient than cattle in digesting poorer quality roughage.

Expected performance criteria, feed requirements and prices used in developing the enterprise budgets for buffalo are shown in Table 1. The feed and mineral requirements to fatten the calves are total requirements to get the calf from 7 to 30 months of age. The weaning weight for buffalo calves is much less than for beef animals. Because buffalo are slower to reach slaughter weight, the cash flow needs of the enterprise need to be considered.

Return to owner management and equity per buffalo cow, and cash flow requirement due to family labor and debt service, are presented in Table 2. The budget was developed assuming a 50-head buffalo cow herd. The interest rate on borrowed capital was assumed to be 9.75 percent. The opportunity cost of equity capital was 4 percent. The enterprise was assumed to be 50 percent leveraged.

Addition of a buffalo herd as an alternative enterprise would require investment in fence, corrals, working chutes, and feeding and water equipment. For purposes of this analysis, additional investment in fence, corrals and so on was assumed to be \$60,500. Depreciation was calculated on a straight-line basis, over 10 years with no salvage value. The 50-head brood cow herd was assumed to be purchased for \$75,000. All feed was purchased except for the pasture. Pasture was assumed to be owned. Calves were assumed to be sold for \$2.35 per pound of hanging carcass F.O.B. Buffalo calves were butchered and the carcasses chilled for \$50 dollars.

Table 1. Feed requirements and production coefficients for North Dakota buffalo herd

Cows per bull	12
Mature animal death loss (%)	1
Calf death loss (%)	2
Culling rate (%)	10
Weaning (%)	80
Weaning weight at 180 days (lbs)	350
Average daily gain to Slaughter (lbs/day)	1.39
Slaughter weight (lbs)	1,100
Carcass weight (lbs)	638
Carcass selling price per pound	\$2.35
Brood cow value	\$1,500
Mature bull value	\$1,700
Grass hay price per ton	\$50
Wheat screening price per ton	\$40
Corn price per bu.	\$2.30
Pelleting cost per ton	\$25
Mineral cost per ton	\$240
Pasture cost per AUM	\$10
Feed requirements	
Pasture-AUMs (6 months @ 1 AUM per cow & bull)	6.5
Roughage-grass hay (lbs per 6 months per cow)	4,800
Pellets to fatten calf (lbs)	5,250
Pellets to cows (lbs)	60
Mineral per cow (lbs)	124
Pellet composition (per ton)	
Wheat screenings (lbs)	1,700
Corn (lbs)	300

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The economic budget is generated by charging market rates for all resources needed for production. It helps answer the question "Is this enterprise profitable?" The bottom line represents a return to labor and management.

The cash flow budget is an estimate of the out-of-pocket cash needed to run the enterprise, including not only direct costs but indirect cash costs such as principle and interest payments, insurance and taxes. It helps answer the question "Can I make meet my cash obligations if I go into this enterprise?" Total cash expenses are subtracted from total cash receipts to calculate the net cash which is available for family living and other needs.

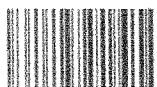
Table 2. Annual enterprise budget per brood cow and break even price per pound of buffalo meat produced for 50 head established herd in North Dakota, 1992

	Economic Budget		Cash Flow Budget	
	Per cow	Per herd	Per cow	Per herd
Returns				
Bull calf receipts	\$587.73	\$29,387	\$587.73	\$29,386
Heifer calf receipts	368.00	18,400	368.00	18,400
Cull cow receipts	67.47	3,374	67.47	3,374
Gross Revenue	\$1,023.20	\$51,160	\$1,023.20	\$51,160
Variable costs per cow				
Feed	335.83	16,791	295.81	14,790
Vet. and medical & butchering	65.00	3,250	65.00	3,250
Breeding expense	18.88	944	18.88	944
Utilities and fuel	10.00	500	10.00	500
Cost of replacements	30.65	1,533	30.65	1,533
Interest	41.90	2,095	37.99	1,900
Total Variable Cost	\$502.26	\$25,113	\$458.33	\$22,917
Fixed costs per cow				
Machinery ownership	32.00	1,600	32.00	1,600
Fencing ownership	8.40	420	8.40	420
Handling and feeding equipment	8.00	400	8.00	400
Depreciation on fixed assets	121.00	6,050		
Depreciation-breeding stock	82.54	4,127		
Breeding stock ownership	65.67	3,283	65.67	3,283
Insurance	16.42	821	16.42	821
Total Fixed Cost	\$334.03	\$16,701	\$130.49	\$6,524
Total Cost	\$836.29	\$41,814	\$588.82	\$29,441
Returns over variable cost	\$520.94	\$26,047	\$564.86	\$28,243
Returns to labor, management & equity	\$186.91	\$9,346	-----	-----
Cash flow (debt service, family living)	---,--	-----	\$434.38	\$21,719

NOTE: Fencing, machinery and facilities for 50-head herd. Revenue from selling 638-pound hanging carcass. Cull cows sold at half price of buffalo calf meat. No principle payment on debt for herd or facilities in cash flow budget.

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