



MICHIGAN BEEF PRODUCTION

Cooperative Extension Service  Michigan State University

Management Systems for Small Beef Herds of 10 Cows or Less

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There may be several reasons for keeping a few beef cows to raise calves up to weaning time at about 7 months of age: (1) utilize land that is unsuited for other uses; (2) utilize excess family labor; (3) utilize buildings, equipment and other resources that may otherwise lie idle; (4) because you enjoy it; (5) a source of supplemental income. The latter should not be the primary reason, because an enterprise of 10 beef cows or less does not have the potential for earning much income. Assuming annual production costs of \$200 per cow unit (cow and calf), it would take \$2000 per year to keep a herd of ten cows. If you were to raise and sell nine calves at an average weight of 400 lbs., they would have to sell for about 55¢ per lb. just to meet expenses ($\$2000 \div 3600 \text{ lb.} = \0.55). In recent years, feeder calf prices have ranged from 20 to 70¢ per lb., but average price has exceeded 55¢ on only one occasion — during the fall of 1973, when cattle prices hit a peak and then declined.

In order to earn a significant level of income, several things must happen: (1) high calf prices; (2) low production costs; (3) heavy calf weights; (4) 90% or more of the cows must raise calves. In a well-managed herd of 10 cows, it would be possible to net \$1500 if you sold ten 500-lb. calves at a price of 60¢ per lb. and annual costs were \$150 per cow. On the other hand, you could lose \$1725 if you sold seven 300-lb. calves at a price of 25¢ per lb. and annual costs were \$225 per cow. In these figures, we have assumed that the entire calf crop is sold; if you were to retain a few heifer calves as herd replacements, your cash income would be less than indicated.

BREAKDOWN OF PRODUCTION COSTS

Following is a compilation of the principal costs involved in maintaining a cow for one year. Land charges and depreciation on improvements are not included. Bull feed and pasture are included in breeding costs.

Item	Estimated Cost/Cow Unit		
	Min.	Avg.	Max.
Winter hay	\$ 50	\$ 85	\$120
Summer pasture	30	40	50
Salt & mineral	4	4	4
Hay for replacement heifers	5	7	10
Grain for replacement heifers	6	9	12
TOTAL FEED COSTS	\$ 95	\$145	\$196
Veterinary & drugs	2	6	10
Livestock machinery; fuel & repairs	4	8	10
Breeding costs	4	7	10
Hired labor	0	10	20
Utilities	1	2	3
Marketing & transportation	1	4	7
Insurance on livestock	1	2	4
Repairs, insurance & interest on improvements	12	16	20
Interest on livestock investment	20	30	40
TOTAL NON-FEED COSTS	\$ 45	\$ 85	\$124
TOTAL ALL COSTS	\$140	\$230	\$320

Feed accounts for about 2/3 of total costs and winter feed alone accounts for about 40% of all costs.

PASTURE AND HAY REQUIREMENTS

Seeded Pastures

On highly fertilized, well-managed pastures composed of the most productive forage species, it is possible to carry two cows and calves per acre; however, this is the exception and not the rule. Most seeded pastures have a summer-long carrying capacity of 1.0 to 3 A. per cow-calf unit, or a total of 10 to 30 A. needed for 10 cows and their calves. The legumes most commonly used in new seedings are alfalfa and birdsfoot trefoil. Grasses commonly sown are brome-grass, orchardgrass, timothy, reed canarygrass and tall fescue. Legume-grass mixtures remain productive throughout the summer. Grass species alone peak in spring and early summer and are not very productive in late summer. When alfalfa is used in mixtures, it should be rotationally grazed because it does not withstand constant grazing pressure. Straight seedings of alfalfa are not recommended for pastures because of the risk of bloat. Alfalfa is the preferred legume in most pasture mixes unless the soil is poorly drained in which case birdsfoot trefoil will persist much better. However, trefoil is very difficult to establish and is not as high yielding as alfalfa. Brome, orchard and timothy are more palatable than canarygrass and fescue. Canarygrass should be used only in extremely wet areas. Fescue is ordinarily used in warmer climates for fall and winter grazing; it is very unpalatable during the summer. Generally speaking, straight grass pasture should receive 40-60 lb. nitrogen per year to maintain high yields. Legume-grass mixtures should receive about 40 lb. of phosphate (P_2O_5) and 80 lb. potash (K_2O) per year. However, a soil test should be used to determine exact requirements. Alfalfa does poorly on acid soils; if pH is below 6.5, lime must be added prior to establishment.

Permanent or Native Pastures

Permanent or native pastures are usually composed of bluegrass or quackgrass. Wild white clover also appears in these pastures if it is encouraged with P_2O_5 and K_2O and kept closely grazed. A good stand of grass alone will respond to nitrogen. If the pasture is heavily wooded and infested with weeds, fertilization may not pay.

Permanent pastures vary greatly in their carrying capacity, depending upon the factors mentioned above. The range is from 2 to 10 acres per cow unit, or a total of 20 to 100 acres required for a 10-cow herd. Their main problem is the fact that they become virtually dormant during the months of July and August, when a few acres of improved legume-grass pasture could prove to be invaluable. Sowing an emergency summer annual such as sudangrass is an alternative but the cost involved makes it a questionable prac-

tice. In a dry year, feeding supplemental hay may be the only way to survive on permanent pasture in late summer. Fall rains will bring permanent pastures back so that they may be grazed up to early or mid-November.

Leasing Pasture

Pastures are normally leased on the basis of a price per animal unit per month (animal unit month or AUM). A spring calving cow and her calf plus her share of the herd sire and replacement heifers is often computed as 1.2 AUM. A normal range in price per AUM is \$4.00 to \$7.00. For 6 months of grazing, the total cost per 1.2 AUM would range from \$28.80 to \$50.40.

Corn Stalk Grazing

In the Corn Belt, stalk fields may be grazed during late fall and early winter. Two acres of good stalks will carry a cow for about 60 days. Supplemental calcium, phosphorus, protein and vitamin A should be provided, especially after the first 30 days of grazing. If hay is worth \$30 per ton, corn stalks are worth a maximum of \$6.80 per cow per month; if hay is \$40/T., stalks are worth \$9.50/cow/mo.; at \$50/T., \$12.20/cow/mo.; at \$60/T., \$14.90/cow/mo.

Stretching the Grazing Season

If you have access to native pasture, seeded legume-grass pasture and corn stalks, you can stretch the grazing season from May to December. Native pasture could be grazed in May and June while a first cutting of hay is taken from legume-grass meadows. In July and August, the latter could be grazed; then, in September and October, the cows could go back to the native pasture. During November and December, corn stalks could be utilized until they are covered by snow.

Winter Hay Requirements

During the winter months, a dry pregnant cow needs about 25 lbs. of hay per day or $\frac{1}{2}$ of a 50-lb. bale. A lactating cow needs about 35 lbs. or nearly $\frac{3}{4}$ of a 50-lb. bale per day. The following table indicates how much hay and hay-producing land is needed for varying lengths of dry and lactating periods during the winter.

WINTER HAY REQUIREMENTS
FOR MATURE BEEF COW

Total Days	Days Dry	Days Lactating	Tons Hay	Acres Required @ 2.5 T/A
120	120	0	1.50	0.60
120	90	30	1.65	0.66
120	60	60	1.80	0.72
150	150	0	1.88	0.75
150	120	30	2.02	0.81
150	90	60	2.18	0.87

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Total Days	Days Dry	Days Lactating	Tons Hay	Acres Required @ 2.5 T/A
150	60	90	2.32	0.93
180	180	0	2.25	0.90
180	150	30	2.40	0.96
180	120	60	2.55	1.02
180	90	90	2.70	1.08
180	60	120	2.85	1.14
210	210	0	2.62	1.05
210	180	30	2.77	1.11
210	150	60	2.93	1.17
210	120	90	3.08	1.23
210	90	120	3.22	1.29

Depending upon the length of the dry and lactating periods as well as the total length of the winter, hay needs range from 1.5 to 3.2 tons per cow. If average hay yield is 2.5 T. per acre, one cow needs from 0.6 to 1.3 acres of hay to meet her winter needs.

A typical situation in the Midwest would be to start feeding hay on November 1, calve on March 1, and go to grass on May 1. This is a total winter period of 180 days; 120 days dry and 60 days lactating. This cow needs about 2.5 tons of hay, and a herd of 10 would require 25 tons or about 10 acres of hay.

If two replacement heifers and a bull were wintered in addition to the cow herd, their requirements would be as follows:

	lb. hay per head per day	Total tons hay for 180 days	Acres required @ 2.5 T per Acre	Acres per cow in 10-cow herd
2 replacement heifers	12	2.16	0.86	0.086
1 herd sire	40	3.60	1.44	0.144
TOTAL	—	5.76	2.30	0.230

In a 10-cow herd, an additional 5.7 tons of hay and 2.3 A. of hay land would have to be budgeted to carry 2 replacement heifers and a herd sire. This would be 2.3 A. in addition to the 10 A. required for the cows alone or a total of 12.3 A. for the entire herd.

Total Land Requirements

If 10 cows were given access to permanent pasture with a carrying capacity of 3 A. per cow during the grazing season, they would need 30 A. of grazing land. The two replacement heifers and herd sire would need an additional 6 A. for a total of 36 A. for the entire herd. This added to the 12 A. of hay would come to a total of 48 A needed to maintain the herd throughout the year.

If native pastures consisted largely of woodland and the hay land only produced 1.0 T. per A., total land required for a 10 cow herd would be about 150 A. On the other hand, if the land could be inten-

sively managed, so as to carry a cow-calf unit on 1 A. during the summer and produce 4 T. of hay, the herd could be run on about 20 A. of land.

GRAIN REQUIREMENTS

Replacement Heifers and Herd Sires

Grain requirements are minimal in a cow-calf enterprise. However, some grain should be budgeted if herd sires and replacement heifers are to be wintered adequately.

	lb. grain per head per day	lb. grain per head for 180 days
Replacement heifer	5	900
Mature herd sire (over 2 yrs.)	5	900
Young herd sire (yrlg. or 2 yrs.)	10	1800

If 2 replacement heifers and one mature herd sire are wintered, the total grain requirement is 2700 lb. or 270 lb. per cow in a 10-cow herd. If grain costs 4 to 6¢ per lb., the total cost is \$81 to \$162 or \$10.80 to \$16.20 per cow per year.

Creep Feeding

Building a creep area where calves can eat grain away from the cows will produce about 1 lb. of additional weight at weaning time for each 8 lb of feed consumed. Spring-born calves will consume an average of about 400 lb. creep per calf, and this will generate an additional 50 lb. of weight. If feeder calves sell for 30¢ lb., you can afford to pay up to \$3.75 per cwt. for creep. If they sell for 60¢ per lb., you can pay up to \$7.50 per cwt.

When calf prices are low and grain is high-priced, creep feeding is not profitable. When grain is cheap and calf prices are high, it may be advisable to consider creep feeding. Creep feeding is more feasible under the following conditions: (1) dried up pastures; (2) poor milking cows; (3) larger, later maturing breeds; (4) if you have a purebred herd. On the other hand, extremely fat creep-fed calves are often discounted by cattle feeders because they tend to gain slower in the feedlot. If you grow your own calves out on a high roughage ration after weaning, the advantage of creep feeding is probably lost.

BUILDING, MACHINERY AND EQUIPMENT REQUIREMENTS

A herd owner with 10 cows or less cannot justify investing much money in buildings, equipment and machinery.

A shed or barn for hay and grain storage and shelter during calving should already be on the premises. Field work such as tillage, seeding, hay harvesting, etc., should be custom hired if at all possible. Unless

the owner has adequate income and the herd is strictly a hobby, new buildings and new machinery are not feasible.

If calves are dropped in warmer weather, little or no housing is required. Trees or some other type of windbreak may be adequate during colder weather. However, newborn calves dropped outside during windy, below-freezing weather are easily chilled and may die of exposure before the cow has a chance to dry them off. After a day or so, the new calf can tolerate sub-zero weather if he can stay dry and has some protection from the wind. Sub-freezing wind blowing on wet calves is extremely stressful. However, locking cows and calves up tight in a barn for extended periods of time is not recommended because it can lead to severe scours and respiratory problems.

Following is a minimum list of facilities and estimated prices:

Fence	\$ 500.00
Automatic freeze-proof waterer	125.00
Small corral with headgate	500.00
Salt-mineral feeders	75.00
2 grain bunks	200.00
Used tractor	2000.00
Manure spreader	300.00
Wagon	300.00
TOTAL INVESTMENT	\$4000.00

In addition to the above, there is a need for a minimum amount of small equipment, as indicated below:

Two calf pulling chains and handles	\$ 10.00
Thermometer	2.25
Drenching syringe (4 oz.)	5.50
Large balling gun for 1 oz. capsules	4.00
British capsule forceps for calves	4.00
Castrating knife	3.25
Box of 12 cc disposable syringes (25)	8.00
Box of 16 gauge disposable needles (100)	13.00
Oral calf feeder for giving fluids	10.00
Nylon rope halter	3.00
Lariat rope	12.00
TOTAL INVESTMENT	\$ 75.00

ESTABLISHING THE HERD

Buying Cows

Commercial cows cost from \$200 to \$600, depending upon quality, age, condition, whether they are bred or open, and the price of feeder cattle and slaughter cows at the time they are purchased. When feeder calves are higher-priced (50 to 70¢), bred commercial cows sell for about \$500 to \$600; when calves are 30 to 50¢, the price ranges from \$300 to \$500; and when calf prices drop below 30¢, bred cows can be bought

for \$200 to \$300. An extremely high or low slaughter cow market can alter these ranges somewhat. Furthermore, a cow with calf at side will bring \$50 to \$150 more, depending upon the size and age of the calf.

A cow is in the prime of her life from 3 to 8 years of age and this is an ideal age to buy. Most cows calve for the first time at 2 to 3 years of age. The beginner should probably not buy heifers calving for the first time at 2 years, because they experience a relatively high incidence of difficult births compared to more mature females (20-60% versus 5-15%). Virgin heifers cost less but they are 2 years away from generating any income compared to a bred female that is only a few months from having a saleable calf. Cows over 8 years of age usually cost less but they have a limited productive life ahead of them. Not many cows lead a productive life beyond 11 or 12 years of age.

Cows should be purchased from a reputable source. Beware of unusual bargains unless you have thoroughly checked them out. If in doubt, seek the help of a knowledgeable cattleman. He could help you avoid some pitfalls.

Health Considerations

Females purchased for breeding in Michigan and a few other states must have been calftuberculin vaccinated for Brucellosis (Bangs disease) at 3-6 mos. of age. Buying cows that were not Bangs vaccinated is illegal in these states.

Unless the herd of origin is certified and accredited free of Bangs and TB, the cattle should be tested for these diseases. There are exceptions, depending upon the age and sex of the animal. Consult a veterinarian for details on the exact regulations. Do not move cattle illegally, especially across state lines; severe penalties can result.

Check the herd and area of origin to be certain that there has not been a recent history of reproductive diseases such as Bangs, leptospirosis, and vibriosis.

If you purchase bred cows, it may prove feasible to have them pregnancy checked before they are shipped unless you are absolutely certain that they are pregnant.

Choice of Breed

If the management and time spent with the herd is minimal, it would be advisable to purchase cows of the traditional British beef breeds; namely, Hereford, Angus and Shorthorn, or crosses thereof. Furthermore, they are more plentiful than other breeds or crosses. Large Continental exotic breeds experience more calving difficulty than British breeds and may not be advisable for the small, part-time herd owner that will often be absent during calving season. Fur-

thermore, the more specialized Continental breeds are not as well adapted to marginal feeding and management conditions. However, if the small herd owner is aware of these facts, and is willing to provide the extra inputs needed, the Continental breeds such as the Charolais, Simmental, Limousin, Maine-Anjou, Chianina, etc. can be very productive because of their extra growth and muscling. For best results, these large, muscular breeds should be crossed with British cattle so as to attain the most desirable end-product. Using dairy blood in a beef herd also necessitates a higher level of feeding and management.

Crossbreeding vs. Straightbreeding

In a small herd, a systematic crossbreeding program is difficult to accomplish if replacement heifers are to be saved. If the herd owner is able to purchase replacement females, crossbreeding is made easier. Artificial insemination makes crossbreeding more practical in a small herd because it eliminates the need for keeping bulls of different breeds. Crossbreeding can increase pounds of calf raised per cow by 10 to 20%.

Regardless of whether crossbreeding or straightbreeding is the system used, it is important to use the best bulls possible.

CALVING SEASON MANAGEMENT

Beware of Calving Difficulty

First-calf heifers are apt to experience some calving difficulty. They should be observed very closely throughout calving season. If you have breeding dates on the herd, make sure you have projected them out to an estimated calving date by adding 280-286 days to the breeding date; gestation calendars are available for this purpose.

Assistance at Calving Time

If a cow has labored for 2 hours with no measurable progress, she should be entered and checked for a possible abnormal delivery. The most commonly observed abnormalities include: (1) too large a calf; (2) backwards calf; (3) leg or head back; (4) twins. Do not hesitate to call a veterinarian if it appears to be a serious problem that you cannot handle yourself. However, most problems can be solved with some experience.

Processing the Calf at Birth

Following are several practices that may be performed on newborn calves. Exactly which ones are adopted depends upon each individual situation. Consult a veterinarian for advice.

1. Dip navel cord in 7% iodine to prevent infections.

2. Make sure calf gets a fill of colostrum milk in first 1 to 4 hours of life. Colostrum is needed for resistance to calfhood diseases.
3. Ear tag for identification.
4. If white muscle disease is a problem in the area, inject with 2 cc of selenium — vitamin E solution (Bo-Se).
5. Scours vaccine if it is indicated.
6. Inject with 2 cc vitamin A & D (optional).
7. Castrate (optional).
8. Dehorn with caustic paste (optional).

Processing the Cow After Calving and Prior to Breeding Season

If leptospirosis and vibriosis are a problem in the area, the cow herd should be vaccinated after calving and before breeding. The same is true for IBR-PI₃ if the cows were not vaccinated at 9-15 months of age.

If a cow had extreme difficulty calving, it may be advisable to have a veterinarian check her prior to breeding season for uterine infection.

Scours and Respiratory Problems in Calves

Baby calves are very susceptible to scours and pneumonia during the first 3 months of life, but especially in the first few weeks following birth. As the calf grows older, he becomes more resistant and is less apt to die if afflicted with these problems.

In a severe scours outbreak, 100% of the calves may become sick and death loss can run as high as 20 to 40%. Many antibiotics and sulfas are available, but professional advice should be sought before indiscriminate use is made of them. Antibiotics are ineffective against viruses. Furthermore, some bacteria are totally insensitive to certain drugs. Your veterinarian can take a rectal swab and send it to a diagnostic lab where the disease-producing organisms can be cultured and identified. The lab can also determine which drugs the organisms are sensitive to.

The real killer of extremely sick calves is usually loss of body fluids. To combat dehydration, 4 to 8 quarts of fluids should be given daily in 2-quart doses. They may be given orally or subcutaneously (under the skin) unless the calf is down. In the latter case, the fluids should be administered intravenously through the jugular vein, but this procedure requires some experience. A commonly recommended solution for oral treatment of dehydrated calves is 1 level tablespoon of baking soda and 100 cc of 50% dextrose solution mixed in a quart of water. A convenient means of oral administration is through an oral calf feeder that can be purchased commercially for about \$10. It consists of a plastic douche bag and stomach

tube with a knob on the end of the tube that prevents it from entering the windpipe.

BREEDING SEASON MANAGEMENT

Selecting and Managing the Herd Sire

Commercial producers pay from \$250 to \$1500 for bulls. For a small herd of 10 cows or less, \$1500 is difficult to justify, but the lower end of this range will not buy a good bull. It generally takes at least \$500 to \$600 to purchase a yearling bull with average or better genetic merit. If possible, purchase a performance tested bull with a 205-day adjusted weaning weight of 500 lb. or higher and a 365-day adjusted yearling weight of 900 lb. or higher. Bulls of the European breeds such as Charolais, etc. should weigh even more. Of course, level of feeding and management should be evaluated when comparing performance of bulls, because it can have a profound effect on their weight-for-age.

A small herd of 10 cows or less can get by with a yearling bull. Bulls 2 years and older can successfully breed 20 to 40 cows in a single breeding season. Therefore, a 10-cow herd does not fully use the reproductive capacity of a mature bull. If a yearling bull is used, care should be taken to make sure that he does not lose too much weight. If he becomes overly thin, he should be fed 5 to 10 lb. of supplemental grain daily while in the breeding pasture.

Artificial insemination (A.I.) can be a real asset to the small herd owner because it is difficult for him to justify spending enough money to buy a top herd sire. A.I. gives him access to the best bulls in any given breed. However, a successful A.I. program requires accurate heat detection and proper cattle handling facilities. A small part-time herd owner may not be able to provide these inputs.

In order to reduce their investment and still secure a good bull, two small herd owners might purchase a bull in partnership if they could agree on some means of sharing his use so that it would not upset either partner's breeding program. Leasing an older, proven bull from a neighbor who is no longer using the bull heavily is another means of obtaining a better sire. If you share a bull, beware of spreading disease from one herd to the other.

Reproductive Characteristics of Cattle

Beef cattle reach puberty at about 1 year of age. Heifers should not be bred until they are 15 months old. At that age, British heifers should weigh at least 600 lb. and exotic heifers at least 700 lb.; if not, breeding should be delayed until these weights are attained.

An average pregnancy lasts for about 283 days. Heat cycles occur every 21 days and a cow is in standing heat for 12 to 18 hours. Ovulation occurs

about 8 to 10 hours after the end of standing heat. The best time to breed or inseminate is near the end of standing heat or shortly thereafter. If a cow is observed in heat in the evening, she should be inseminated the next morning. If she is seen in heat in the morning, she should be bred that night. More mistakes are made by breeding too early than by breeding too late.

Several diseases can lower reproductive efficiency. They include brucellosis, leptospirosis, vibriosis, trichomoniasis, and IBR. Vaccines are available for all of these except trichomoniasis, which is relatively rare. Lowered fertility can result from several nutrient deficiencies: energy, phosphorus, protein, vitamin A, iodine and cobalt.

When to Breed

If you wish to sell heavy feeder calves in October, when many cattle feeders fill their feedlots, you should plan to calve early—January, February or March. However, early calving requires more shelter and better feeding and management. Calving at this time of year means that the breeding season will occur in April, May or June.

If you have a market for later calves, and if you are unable to gear up for early calving, it is probably advisable to calve in April and May, which means breeding in July and August.

Try to avoid calving in June, July or August. Calves born during these hot months are under stress and do not perform as well as those born earlier or later.

SUMMER MANAGEMENT

Summer Pasture Management

In the Midwest, most pastures are ready to be used sometime between April 15 and May 30. They are usually dormant or covered with snow by November 1 to 15. As mentioned before, grass pastures have a problem in that they are overly productive in May and June and get ahead of the cattle. Later in the season, they tend to dry up and the cattle do not have enough forage to meet their needs. Some form of rotational grazing, together with harvesting of the early growth, is advisable if your forage is limited and is composed of straight grass. One method is to divide your acreage up into thirds and proceed as follows: (1) for the first 6-8 weeks, graze $\frac{1}{3}$ intensely and make hay from the other $\frac{2}{3}$; (2) for the next 6-8 weeks, graze the other $\frac{2}{3}$ and allow the first $\frac{1}{3}$ to recover; (3) for the remainder of the grazing season, graze the entire acreage.

Nitrogen fertilization of grass pastures will increase their productivity. Fifty lb. of nitrogen per acre will produce an additional ton of hay. At a price of 20¢ per pound for nitrogen, the cost per acre would be \$10.

If pastures dry up and supplemental feeding becomes necessary, start feeding hay well in advance so that you can extend your pastures as long as possible. Always try to have some hay set aside for emergencies of this kind.

Grain Feeding on Pasture

Feeding grain on high quality pasture is usually not necessary unless the herd is thin and needs some extra energy prior to and during breeding season. Producers on an A.I. breeding program will often flush the herd in early spring with 4 to 5 lbs. of grain per head per day, especially on first-calf heifers being bred back for their second calf. Grass in early spring is highly digestible but is low in dry matter; consequently, it is difficult for young heavy-milking cows that are still growing to consume enough dry matter to meet their daily energy needs.

Protein Supplementation on Pasture

Good pastures usually have plenty of protein to meet the needs of the beef herd.

Mineral and Vitamin Supplementation on Pasture

Forages are marginal in phosphorus. Therefore, a good mineral mix on pasture would be 2 parts bone-meal or dicalcium phosphate and 1 part trace mineral salt. Green forages have plenty of vitamin A. Sunlight supplies the herd with adequate vitamin D.

Cattle on lush pastures in early spring may need a high magnesium mineral mix or other type of magnesium supplement to prevent grass tetany, which can result in death losses. Grass tetany tends to be more prevalent on high quality grass pastures that have been well fertilized with nitrogen.

Fly Control

The main methods of controlling flies are: (1) eliminating large manure piles, which are breeding grounds for flies; (2) spraying the herd; (3) dust bags; (4) back rubbers and oilers; (5) insecticidal salt-mineral mix. Back rubbers and oilers seem to be preferred by many producers but they must be located in areas where the cattle are encouraged and/or forced to use them. Start fly control early in the season before large fly populations hatch out.

Pink Eye

Several causative factors seem to be related to pink eye: (1) face flies; (2) tall, abrasive grasses and weeds; (3) dust and pollen; (4) extended periods of bright sunlight.

Controlling flies and clipping tall pasture grasses should provide some relief. Injecting 1 cc antibiotic into the upper and lower eyelid and covering the eye with a patch to shut out sunlight is considered a

good means of treating pink eye. It is important to treat early before pink eye has an opportunity to go through a large portion of the herd.

Bloat

Bloat is seldom a problem in beef herds except when they are given free access to straight alfalfa pastures early in the grazing season. The herd should be observed closely for bloat anytime they are allowed to graze pastures that contain a high percentage of alfalfa or ladino clover. Bloat is no problem when birdsfoot trefoil is the legume used in pasture mixes. Pasture supplement blocks containing a bloat retarding agent, poloxalene, may be purchased at local feed stores.

WEANING AND MARKETING THE CALF CROP

Weaning normally takes place at about 7 months of age. For example, calves born in March would be weaned in October. Prior to and after weaning, there are several practices that should be performed; exactly which ones depend upon each individual situation. Consult your veterinarian for advice.

Pre-Weaning Vaccinations

1. If blackleg and malignant edema are a problem in the area, vaccinate all calves at 3 to 4 months of age.
2. Vaccinate heifer calves for Bangs between 3 and 6 mos. of age.
3. Vaccinate all calves for IBR and PI₃ at 3 to 4 weeks prior to weaning.

Post-Weaning Vaccinations

1. Revaccinate replacement heifers for IBR and PI₃ at 9 to 12 months of age. This should give them lifetime immunity.
2. Vaccinate replacement heifers at this same time for leptospirosis and vibriosis if these diseases are a problem in the area.

Weaning Time

At weaning time, separate calves as far as possible from the cow herd or the cows may break down gates and fences to get back to their calves. After about 7-10 days, the herd should be settled down. Observe calves closely for signs of sickness due to the stress of weaning. Provide them with some good hay and start slowly on grain. Make sure they have a dry area where they can bed down.

Weaning is a good time to perform the following tasks:

1. Weigh and grade calves if you are on a performance testing program.
2. Vaccinate, dehorn and castrate calves that have not already been done.

3. Pregnancy diagnose cow herd. Sell open cows.
4. Worm cows and calves if necessary.
5. Apply pour-on systemic insecticide to prevent lice and grubs during the winter. Observe cut-off dates for these chemicals.
6. Vaccinate cows for leptospirosis and vibriosis if it was not done earlier. *Never vaccinate pregnant* cows with modified live virus IBR vaccine, because they will abort. This must be done after calving and prior to breeding.

Marketing Your Calves

There are several alternatives for marketing your calves. Examine the various options before making a final decision:

1. Cooperative feeder calf sales in October.
2. Local sale barns.
3. Privately to local cattle feeders.
4. Privately to cattle dealers.
5. Feed them out yourself.

Before selling, be sure you know what feeder calves are worth. Calves that are not dehorned or castrated will sell at a discount. Steer calves sell for more than heifer calves. Breed preferences vary from one region to another. Most states have a market news service that can be called for up-to-the-minute livestock prices.

WINTERING THE COW HERD

Weight Gains

Winter hay requirements have already been discussed. However, it is important to realize that cows going into winter in thin condition will need more feed than fleshy cows in order to be in good shape for calving. Conversely, extremely fat cows can and should lose some weight in early winter. All cows should be maintaining their weight or gaining slightly within 60 days of calving. After calving, they should gain weight for 90 days or until the end of breeding season. Cows that lose weight prior to and after calving may not breed back on schedule or may fail to conceive at all. Visual observation of your cows should tell you how they are doing.

Separating by Age and Condition

It is wise to separate heifers and thin cows from fleshy cows so that they may be fed differently. If not, the fleshy cows may get more than their share of the feed and the heifers and thin cows less than they need.

Energy and Protein Requirements

Class of Cattle	Daily TDN Required, lb.	Daily Ration Needed	Percent Crude Protein Required in Ration
Dry mature cows	9	20-25# hay	5.9%
Lactating cows	16	30-40# hay	9.2%
2-yr.-old pregnant heifers	11	20-25# hay	8.7%
Yearling virgin heifers	8.8	12# hay + 4-5# grain	10.5%
2- and 3-yr-old bulls	16.5	20# hay + 10# grain	8.8%
Mature bulls	15.0	30# hay + grain to condition	8.5%

As a rule of thumb, most hay ranges from 43 to 57% TDN. Crude protein (CP) percentage of hay is even more variable. Early-cut high quality hay may be as high as 17%, but late-cut fibrous hay can be as low as 4% CP. Heat damage in moldy hay further lowers crude protein digestibility.

Grain is much more uniform in nutrient content. Shelled corn is 80% TDN and 8.9% CP; oats averages about 68% TDN and 12% CP; barley, 74% TDN and 12% CP. Corn silage is about 70% TDN and 8% CP.

Mineral and Vitamin Supplementation

The herd should be fed a salt-mineral mix free-choice at all times in a covered feeder to protect it from the weather. In the winter, a mix of 1 part trace mineral salt and 1 part bonemeal or dicalcium phosphate is usually adequate.

If the forage has been late-cut, weather damaged and is lacking in color, it may be low in vitamin A activity. If so, vitamin A can be added to the salt-mineral mix or it may be injected intramuscularly at a level of 1 to 3 million IU. The injection will last for about 100 days.

Forage Analysis

If you are in doubt about the feeding value of your forage, contact your cooperative extension office and inquire about an analysis of its nutrient content. The agricultural agent can provide you with information on how to sample the hay and where to send it for an analysis. Cost is about \$12 to \$15 per sample.

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