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Developing Replacement Beef Heifers

Cooperative Extension South Dakota State University

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South Dakota State University
U. S. Department of Agriculture

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The first winter following weaning is a period of special concern in the growth and development of replacement heifers, particularly for those to be bred as yearlings. Sufficient growth and development of young beef heifers through the first winter reflect proper nutrition plus good health and sanitation practices that will hold sickness and death losses to a minimum.

CARE OF CALVES AT WEANING

Weaning represents one of the greatest stress periods in an animal's life. To wean calves and get them on feed without undue sickness, provide the best possible environment. Calves are very susceptible to infectious diseases during this period of stress, so watch them closely for any signs of sickness. Timely treatment is essential when dealing with calf diseases. Pay special attention to the following:

1. Work and excite calves as little as possible during and immediately after weaning.
2. Isolate calves some distance from cow herd if possible. If practical, move the cows rather than the calves.
3. Provide clean, ice-free water at all times.
4. Provide an adequate supply of palatable feed.
5. Provide a clean rest area, well drained and free of dust.
6. Provide shelter from extreme weather conditions.

Good quality prairie hay or a mixture of alfalfa and prairie hay is probably the most practical feed for newly weaned calves. They are accustomed to grass and will adapt more readily to hay than to other feeds. New hay properly cured will provide the greatest amount of required nutrients. The addition of a bulky concentrate, such as oats, may be made after the calves are accustomed to their new surroundings.

Provide fresh salt and mineral from the start, a few days supply at a time, so the source is always fresh.

There are indications that supplements containing high levels of vitamin A and antibiotics may be beneficial in reducing sickness and weight loss. In some trials "conditioner" supplements appeared to be beneficial; however, research results have not been consistent. Base the decision to feed such a supplement on problems encountered previously. A conditioner supplement may offer some protection during the stress period; however, there is no basis for recommending its use for more than a 30-day period. Never consider vitamin A and antibiotics as substitutes for good management.

NUTRITIVE REQUIREMENTS

Calves differ from older animals in their nutritive requirements, primarily because of differences in type of production. Weight gain of calves (growth) results mainly from an increase in the size of muscles, bones, and body organs, while production in older animals refers to fat deposition or reproduction and milk yield.

Young animals need decidedly more protein and perhaps protein of better quality, more total digestible nutrients per hundred pounds of live weight, and a more continuous supply of minerals and vitamins (see Table 1).

Table 1. Nutrient Requirements for Beef Females, Expressed as Percentage Composition of 90% D. M. Ration*

	Daily Feed lb.	Daily Gain lb.	TDN %	Total Protein %	Dig. Protein %	P %	Carotene mg./lb.
500 lb. Calf	14	1.25	56	10.0	6.2	.18	2.25
1100 lb. Cow	20	-	48	6.5	3.5	.14	2.50

*Adapted from National Research Council, Nutrient Requirements of Beef Cattle, 1970.

POSSIBLE NUTRITIVE DEFICIENCIES

Since calves require a higher percentage of certain nutrients in their diets than mature animals, deficiencies are more likely to occur in younger cattle. In Table 2 shaded areas indicate a probable deficiency. Most

Table 2. Nutrient Requirements for Heifer Calves and Average Composition of Common Feeds (Expressed as Percentage)

	D.M.	TDN	Total Protein	Digestible Protein	P	Carotene mg./lb.
Requirements[1]	90	56	10.0	6.2	.18	2.25
Average composition of feeds (as fed):						
Winter range	92	40	3.0	0.5	.08	0
Prairie hay, poor	91	45	4.1	1.2	.12	0-2
Prairie hay, good	90	46	7.8	3.7	.17	8-12
Alfalfa hay, poor	91	50	12.4	8.3	.18	8-14
Alfalfa hay, good	89	54	18.4	12.9	.21	27-40
Oats hay	88	52	8.7	4.9	.19	15-30
Alfalfa haylage[2]	60	31	12.7	9.3	.23	10-14
Oatlage[2]	55	32	5.3	3.1	.16	10-20
Corn silage[2]	28	20	2.4	1.4	.06	2-10
Sorghum silage[2]	26	16	2.0	1.1	.05	2-10
Corn grain	89	81	8.9	6.7	.28	0-8
Barley	89	74	11.6	8.7	.42	0
Milo	89	74	11.2	6.3	.30	0
Oats	90	68	11.9	8.9	.39	0
Wheat	87	76	12.7	10.0	.39	0

Shaded areas indicate a probable deficiency.

[1]Adapted from National Research Council, Nutrient Requirements of Beef Cattle; 500 pound heifer fed for gain of approximately 1.25 pounds per day.

[2]In comparing the nutritive value of various feeds, remember that haylage may run as high as 45-50% moisture and silage as high as 70%, whereas most of the dry feeds will average about 10%. Therefore, in evaluating the feeding value of haylage and silage, differences in moisture content should be taken into account. For haylage containing about 45% moisture, multiply the nutrient value given by 1.6 and for silage containing about 70% moisture, multiply the nutrient value given by 3 to put haylage and silage on an equal moisture basis with dry feeds.

common roughages are too low in TDN (energy) to provide for moderate growth. In addition, roughages other than the legumes will likely be short of protein. Level of phosphorus (P) and carotene (vitamin A) in roughages is influenced greatly by season. Late-cut hay and late-season grazing (fall and winter) can be quite low in phosphorus and very low in carotene. Grains are an excellent source of energy or TDN and generally contain adequate levels of phosphorus but are invariably low in carotene.

Correcting Ration Deficiencies

Since most home-grown feeds are likely to be deficient in one or more of the needed nutrients, give special attention to formulating the growing ration for heifer calves. The following outline may serve as a general guide for correcting common deficiencies in beef calf rations.

Rations Low in:	Supplement
TDN	Grains, low protein supplements, mill by-products or high quality alfalfa hay
Protein	A mixture of salt and bonemeal or salt and di-
Phosphorus	Alfalfa hay or a commercial protein supplement calcium phosphate, free choice
Vitamin A	New alfalfa hay or a vitamin A supplement, preferably stabilized

RATE OF GAIN DESIRED

The optimum rate of gain for beef heifers during the first winter will depend on (1) whether the heifers are calved first at two or three years of age, (2) weight of the heifer calves selected as replacements, and (3) weaning date and length of time before the heifers are to be bred in the spring. Recommendations for daily rate of gain of calves through winter:

1. Feed heifers that are to be calved first at three years of age for winter gains of .50 to .75 pound per head daily. This should result in relatively low feed costs and allow the producer to capitalize on cheaper gains the following summer on grass.
2. Feed heifers that are to be bred as yearlings and calved at two years of age to gain 1.00 to 1.25 pounds per head daily. Actual gains desired will depend on weight of the calf in the fall and length of the winter feeding period. Generally, heifers that weigh less than 400 pounds at weaning should not be bred to calve at two years of age. Heifers should gain enough during the first winter to weigh at least 650 pounds at breeding time.

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