Developing Replacement Beef Heifers

Cooperative Extension South Dakota State University

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Developing Replacement Beef Heifers

Cooperative Extension Service: South Dakota State University and U. S. Department of Agriculture
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. In order to wean calves and get them on feed without undue sickness, it is important to provide the best possible environment. Some things that should receive special attention during weaning include:

1. Work and excite calves as little as possible while weaning 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 that is well drained and not dusty.
6. Provide shelter from extreme weather conditions.

During this period of stress calves are very susceptible to infectious diseases. Therefore, it is important they be watched closely for any signs of sickness. Timely treatment is essential when dealing with calf diseases.

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 other feeds. This should be new hay properly cured to 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. It is best to put out only 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 very 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 the 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.

Nutritive requirements for growth are quite different from those of maintenance and reproduction. In comparison with mature animals, young animals that are growing 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.

<table>
<thead>
<tr>
<th>Nutrient Requirements of a Calf in Comparison with a Mature Cow, Expressed as Percentage Composition of the Ration*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Protein</td>
</tr>
<tr>
<td>400 lb. Calf</td>
</tr>
<tr>
<td>1000 lb. Cow</td>
</tr>
</tbody>
</table>

*From National Research Council

POSSIBLE NUTRITIVE DEFICIENCIES

Since calves require a higher percentage of certain nutrients in their diet than do mature animals, deficiencies are more likely to occur in younger cattle. As shown in the following table, most 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. Most roughages will contain adequate calcium (Ca) regardless of season or time of harvest; however, 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. The grains are an excellent source of energy or TDN and generally contain adequate levels of phosphorus but are invariably low in calcium and carotene.

### Nutritive Requirements for Heifer Calves and Average Composition of Common Feeds (Expressed as Percentage)

<table>
<thead>
<tr>
<th>Feed</th>
<th>Total Digestible</th>
<th>Protein</th>
<th>TDN</th>
<th>Ca</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements</td>
<td>10.5</td>
<td>6.2</td>
<td>55</td>
<td>.26</td>
<td>.20</td>
</tr>
<tr>
<td>Average composition:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter Range</td>
<td>3.0</td>
<td>0.5</td>
<td>40</td>
<td>.35</td>
<td>.08</td>
</tr>
<tr>
<td>Prairie Hay</td>
<td>7.0</td>
<td>3.0</td>
<td>46</td>
<td>.30</td>
<td>.19</td>
</tr>
<tr>
<td>Alfalfa Hay</td>
<td>15.3</td>
<td>11.0</td>
<td>51</td>
<td>1.47</td>
<td>.24</td>
</tr>
<tr>
<td>Corn Silage*</td>
<td>2.3</td>
<td>1.3</td>
<td>20</td>
<td>.09</td>
<td>.07</td>
</tr>
<tr>
<td>Sorghum Silage*</td>
<td>2.0</td>
<td>1.1</td>
<td>16</td>
<td>.08</td>
<td>.05</td>
</tr>
<tr>
<td>Corn Grain</td>
<td>9.1</td>
<td>7.0</td>
<td>80</td>
<td>.02</td>
<td>.27</td>
</tr>
<tr>
<td>Barley</td>
<td>12.7</td>
<td>10.0</td>
<td>78</td>
<td>.06</td>
<td>.40</td>
</tr>
<tr>
<td>Oats</td>
<td>12.0</td>
<td>9.4</td>
<td>70</td>
<td>.09</td>
<td>.33</td>
</tr>
</tbody>
</table>

*In comparing the nutritive value of various feeds, remember that silages may run as high as 70% moisture, whereas most of the dry feeds will average about 10%. Therefore, in evaluating the feeding value of silage, differences in moisture content should be taken into account. For silages containing about 70% moisture, multiply the nutrient values given by 3 to put silage on an equal moisture basis with dry feed.

### CORRECTING RATION DEFICIENCIES

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

**Ration Low in** | **Supplement**
--- | ---
TDN | Grains, low protein supplements, mill by-products or high quality alfalfa hay
Protein | Alfalfa hay or a commercial protein supplement
Phosphorus | A mixture of salt and bonemeal or salt and di-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 management practices followed in the herd: (1) whether the heifers are calved first at 2 or 3 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 3 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 2 years of age to gain 1.00 to 1.25 pounds per head daily. Actual gains desired will depend on the weight of the calf in the fall and the length of the winter feeding period. Generally, heifers that weigh less than 400 pounds at weaning should not be bred to calve at 2 years of age. Heifers should gain enough during the first winter to weigh at least 650 pounds at breeding time.