



Beef Cattle Handbook



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Feeding The Beef Cow Herd—Part I Factors Affecting the Cow Nutrition Program

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Considerations for getting the most from your beef cow herd are covered in this NebGuide, including calving season, factors affecting nutrient requirements, cow rations and more.

Many factors influence profitability of a cow/calf operation. Four major factors are:

1. Yearly costs of keeping a cow.
2. Number of cows exposed to the bull that wean a calf.
3. Weaning or yearling weight of calves.
4. Price received for calves and cull cows.

The first three factors can be affected by good management practices. Cow/calf managers should continue to explore avenues to reduce yearly cow costs, increase the number of cows weaning a calf, and wean the heaviest calf possible for a given set of feed resources.

Feed costs are the greatest expense in keeping a cow herd, and the nutrition program dictates reproductive performance. The ultimate goal for a cow/calf manager is to keep feed costs low, but still meet the nutrient requirements of the cow herd so reproductive performance is not impaired. Once these two factors are balanced, producers, through new genetics of added growth or milk production, can match increased weaning weight with the most economical feed resources available.

The nutritional program should be simple, and should supply the needed nutrients for the cow to give birth to a strong, healthy calf, milk reasonably well, and rebreed by 80 to 85 days after calving. Managing feed

resources to attain a consistently high reproductive rate at a low cost is important in maintaining profitability for the cow/calf enterprise.

Individual producers have little control over calf prices even though the breeding program yields calves with high market appeal. Calf supply and demand have the biggest influence on the price received.

Type of Program and Calving Season

Spring Calving. Spring calving cows usually graze summer pastures for most of their lactation. In late fall and early winter, a time that coincides with the middle one-third of pregnancy, cattle graze winter range, crop residues, or are fed low quality harvested forages.

Good quality forage is needed to feed cows 30 to 60 days before and after calving so weight and condition losses are minimal before going to spring and summer pastures. Spring calving programs should be synchronized with the forages available so the greatest nutrient requirements of the cow correspond with the time when the nutrient quality of the forage is greatest.

Fall Calving. Cows will be lactating and breeding during a time of the year when non-harvested forage quality usually is low. Therefore, fall calving programs require good quality harvested feeds for adequate milk production and early re-breeding.

Cows must be fed adequately after calving through the end of the breeding season to ensure a high conception rate. Crop residues such as cornstalks, milo stubble, or meadow regrowth are essential feed resources to make a fall calving program economical. Protein for lac-

tating cows not provided by crop residues must be met using an economical protein source.

A major advantage of fall-born calves is that they are old enough to make excellent gains grazing spring and summer pasture.

Winter Calving. Winter calving has the advantage that calves are old enough to use the extra milk from cows grazing high quality grass, and older calves are better able to utilize high quality summer pastures.

A major disadvantage is that cows will have to be fed more liberally during early lactation because breeding likely will occur in drylot and not on high quality spring pasture. In addition, more facilities for calving and protection from winter storms are required to minimize calf death losses.

Summary. Regardless of the calving season, when calves are sold at weaning more emphasis on management and nutrition is necessary to increase weaning weights compared with the time when calves are carried over and sold as yearlings. More calves born early, in a short calving season, and higher-production milking cows help produce heavier calves at weaning. Each requires more feed and emphasis on a well-planned nutritional program.

Factors Affecting Nutrient Requirements

1. Stage of Production

The beef cow's nutritional requirements are influenced by stage of production. The production cycle of cow herds can be divided into four stages: (1) calving to breeding — 70 to 85 days; (2) breeding to weaning — 120 days; (3) mid-gestation — 100 days; and (4) late gestation — 60 to 70 days. Important nutritional considerations in each of the four stages of production are as follows:

Calving to Breeding. Cows are lactating during this stage of production, therefore, nutrient requirements are greater than at any other stage. Cows in moderate body condition need to be fed to meet their nutrient requirements and to maintain body condition during the winter, and to have a short interval from calving to breeding.

Cows in good body condition can lose some condition after calving and still attain a high re-breeding percentage. If cows in good condition are fed to lose weight and body condition after calving, it is essential that spring pastures are early so cattle are maintaining or gaining weight prior to the beginning of the breeding season.

Re-breeding performance for cows calving in thin body condition can be highly variable. If thin cows experience little or no stress from calving to breeding, re-breeding performance can be high. If thin cows experience stresses related to nutrition, weather and calving, re-breeding performance probably will be low. Severely restricting feed to cows in thin and moderate condition after calving will reduce reproductive performance of cows and growth rate of calves.

Breeding to Weaning. Milk production for most beef breeds will be declining during this stage of production and, as a result, nutritional requirements also are declining. Spring-calving cows of average or low milking ability usually will gain weight during this period, if on good summer pasture. Limiting nutrition during this time period will result in lighter calves at weaning. Cows bred for high milk production may lose weight and enter mid-gestation in thin condition. Restricting nutrition to cows at this time has little effect on the developing fetus.

Mid-Gestation. Nutrient requirements for the beef cow are lowest during this stage of production because calves are weaned and the nutrients required by the developing fetus are minimal. Cows in good body condition can lose some weight condition during this period without severely reducing productivity. Cows in thin or moderate body condition must gain or maintain weight and body condition or performance will be reduced.

Late Gestation. The fetus is growing rapidly during this stage of production, causing the nutrient requirements of the cow to increase. The gain in weight of the fetus, fetal fluids, and membranes is about one pound daily for the last 70 days before calving.

Cows in good condition can lose some weight during this period and still give birth to a strong, healthy calf. Cows in thin condition should be fed to maintain or gain weight and body condition. Cows experiencing excessive weight losses during this period will be slow to cycle and re-breed after calving.

2. Age of Cow

After calving, first-calf heifers need to be fed separately from mature cows until spring pasture is available. Rations fed to lactating two-year-olds need to contain a higher percentage of energy, protein, calcium, and phosphorus than those fed to mature cows before and after calving. Handling first-calf heifers separately from mature cows also is important because younger cattle are low in the "pecking order" and tend to get less than their share of the ration.

Managing bred replacement heifers and two-year-olds just weaning their first calves together may be a desirable practice, especially if the two-year-olds are thin at the time their first calves are weaned. Older bred cows that are thin could also be fed with this group.

3. Cow Size and Condition

Large-frame cows need more feed than cows of smaller frame size for satisfactory performance. Weight variation due to differences in condition does not appreciably affect the amount of feed needed for satisfactory production as long as the weather is not severely cold.

For example, a thin 1,000-lb. cow and a fleshy 1,200-lb. cow both need about the same feed as an 1,100-lb. cow of the same frame size during the dry period. However, thin cows need extra energy during

cold stress to maintain normal body temperature.

Healthy, mature cows of different frame sizes and conditions can be fed together before and after calving if rations are fed to appetites.

4. Milking Ability

Superior-milking beef cows require rations containing more energy, protein, calcium, and phosphorus than average-milking beef cows if they are to re-breed and produce a calf every year. First-calf heifers, regardless of milking ability, must be fed to gain weight the first three months of lactation to re-breed. This may require feeding high energy feeds such as grain or corn silage after calving until pasture is available.

In addition, mature, superior-milking cows need top quality forages or feeds high in energy in their rations after calving, or re-breeding performance will be low.

5. Weather

On most winter days, cows fed recommended amounts of feed will produce enough heat to maintain body temperature. In Nebraska, cold weather stress probably does not justify feeding high energy feeds if cattle are fed a full feed of forage properly supplemented with protein.

When weather conditions make it impossible to get adequate feed and water to cattle for long periods of time, cow performance can be reduced. Cows in moderate to good condition can withstand stress situations better than thin cows.

6. Length of Breeding Season

Short breeding seasons require well-managed nutritional programs from 60 days before calving through breeding. To have a successful short breeding season, cows must be in good body condition at calving.

Important Considerations

1. Relative Value of Protein and Energy Supplements

Much of the annual cash outlay for the cow herd is for protein and energy supplements. To remain competitive, cow/calf producers must use the most economical feeding program. It is important to match the available feed resources with nutrient requirements of the cattle and to supplement the most economical way.

Many methods can be used to compare supplement value. Price per ton of supplement is only a starting place. A simple calculation using the following formula can be used to compare the relative cost of supplements when buying them for a specific nutrient.

$$\text{Cost of nutrient} = \frac{\$ / \text{lb, cwt or ton of feed}}{\% \text{ of available nutrient}}$$

For example:

Alfalfa hay cost is 45/ton (\$.0225/lb) and is 18 percent crude protein:

$$\begin{aligned} \underline{\$.0225} &= \$.125/\text{lb of protein} \\ .18 &\quad \text{from alfalfa} \end{aligned}$$

Non-protein nitrogen (NPN) products like urea and biuret in protein supplement, usually are not well utilized when cows are fed low to medium quality forages. For supplements that contain NPN, increase the cost of protein 30 to 50 percent.

For example, if the cost of the nutrient is \$.30/lb of protein and the supplement contained NPN, then the cost of the nutrient increases to \$.40/lb to \$.45/lb of protein.

Calculating the cost of feeds using this formula does not consider convenience or labor of feeding. Each producer attaches a different price to convenience and labor. One feed may be more expensive per unit of nutrient compared to another, and a producer might consider that feed because it fits that producer's feeding program and labor restrictions.

2. Balancing Rations for the Beef Cow

Ingredients for rations fed to the beef cow herd are seldom weighed and mixed as a complete ration. Forages often are grazed or fed to the cow herd to appetite—with the exception of protein and energy supplements or alfalfa hay if it is used as the protein source. Consequently, it is difficult to perfectly balance the cow's ration.

Experienced producers can feed the beef herd by visually watching for changes in body condition. If cows begin to lose body condition, the quality of forage or forage combination is not adequate to meet their nutrient requirements, or nutrients are not properly balanced to ensure proper digestion and utilization.

For example, even though low protein forages may be adequate in quantity, cow performance will be reduced because of low protein and fiber digestibility. When this happens, better quality feeds need to be fed.

Profitability of the cow/calf enterprise is influenced greatly by pregnancy rate; therefore, pregnancy rates must be consistently high. Monitoring body condition can be used as a risk management tool against reduced reproductive rate and overfeeding.

Manage feed resources so cows are in moderate to good body condition at calving. If cows are fat, feed resources are not being economically used and cows probably are being overfed.

Two likely times to check body condition of the cow herd are at weaning, and 60 days before calving. The easiest and most economical time to get condition back on thin cows is between weaning and calving, because the cow's nutrient requirements are low.

It is difficult to economically put condition on cows after calving because of the high nutrient requirement

for lactation. In fact, if cows are in moderate to good body condition at calving, they can lose some condition after calving and still have high conception rates.

3. Quality of Harvested Feeds

Many factors influence the quality of harvested feeds. Knowing the quality of feeds fed to the cow herd can help producers design feeding programs that best use forages of differing quality. A forage analysis can help determine if extra feed resources need to be purchased to meet the nutrient needs of the cow herd. Knowing forage quality allows producers to target low quality feeds to cattle when the nutrient requirements are low, and to target higher quality feeds for cattle with higher nutrient demands, such as superior milking cows or heifers after calving. Knowing the quality of the forage fed and the nutrient requirement of the cows, rations designed to meet the nutrient demands of the cows will avoid surprise changes in body condition.

Testing forages for nutrient content may be a valuable management tool to help design efficient and economical feeding programs.

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