

Section 5: Production Management

Lessons included the *Production Management* section of the eLearning tool:

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Key Takeaway:

Production Management is the term used to describe the best practices, or methods used for managing the many important elements at each stage of beef production.

By completing the *Production Management* section of the eLearning tool, members will be able to:

- Understand how to feed for proper gain at each phase of production for a market steer.
- List the impact that the herd sire has on the calf crop.
- Understand the different requirements of the herd sire in the breeding period and the maintenance period and how to combat phosphorus and vitamin A deficiencies.
- Speak to the differing nutrient requirements of heifers and cows.

Lesson 1: Market Steer Management

Reference Sheet: Getting Started with Feeding a Market Steer

Reference Sheet: Feeding a Market Steer – Growing & Finishing Phases

Lesson 2: Herd Sire Management

Reference Sheet: Herd Sire Health

Reference Sheet: Feeding a Herd Sire

Lesson 3: Cow & Heifer Management

Reference Sheet: Nutrient Requirements of Heifers & Cows

Reference Sheet

Getting Started with Feeding a Market Steer

How you feed a market steer is determined somewhat by what phase of the production cycle the steer is in - the starting phase, growing phase or the finishing phase.

The best way to calculate how to feed is to work backwards from the desired finished weight to the current starting weight. If the starting weight is 677 pounds and the expected finish weight is 1,252 pounds, you simply subtract the starting weight from the expected finish weight. In this case, the total weight gain needs to be 575 pounds.

The next step is to figure out how much the animal needs to gain, on average, each day. We do this by counting the number of days until sale day. So in this case, let's say our achievement activity is June 3rd, and today is near the beginning of the 4-H year, November 17th. So there is 198 days until the sale. If we divide the total weight gain we are looking for by the number of days until the sale, we see that we are looking for an average daily gain of 2.9 pounds.

These calculations are really the basis for getting started on your feeding plan. It tells you where you are starting so you can set goals and develop a plan.

Starting Phase

The starting phase will last about 2-4 weeks, depending on the animal. A key element of the starting phase is monitoring the amount of roughage and the amount of concentrate the calf is receiving. For approximately the first 10 days of the starting phase, it's important to have 80% roughage and 20% concentrate. This will increase to 40% concentrate by the end of the starting phase. Too much concentrate too fast can cause digestive upset. It's a good idea to feed half the concentrate in the morning and half in the evening along with all the good quality hay the steer will eat.

To start, the steer should have 0.75% percent of his body weight in dry feed. By day 14 that will be increased to 2.5% of his body weight in dry feed every day. So for our 677 pound steer, that's about 17 pounds of dry feed by day 14.

For the concentrate, it's important to start off slowly, with approximately 2 pounds of grain each day. Once the calf eats all the grain provided, slowly increase the amount by about 1 pound every second day until the calf is eating 1% of its body weight in grain.

By the end of the first week, the ration will look something like this for our 677 pound steer:

16.93 lbs of total feed per day
- 6.77 lbs of grain (concentrate)
= 10.16 lbs of hay (roughage)

Reference Sheet

Feeding a Market Steer – Growing Phase & Finishing Phases

Growing Phase

The Growing Phase lasts approximately 68 days. During this phase, the calf should eat approximately 1.5% of his body weight in grain.

To calculate how much grain to feed the steer, first estimate its weight. Simply multiply the number of days since weigh-in by an estimated 1.54 lbs, which is approximately what he gained each day of the starting phase, and add that to the starting weight. In this example, we are suggesting the starting phase lasted the full 28 days.

Then, multiply the estimated weight by 1.5%. In this case the calculation tells us that the steer should be eating 10.80 lbs of grain per day.

Like the starting phase, in the growing phase the steer will eat approximately 2.5% of its body weight in dry feed. So the same calculation that is used in the starting phase to determine total feed and forage applies. The calf should gain around 2.49 lbs per day during the growing phase.

Finishing Phase

The finishing phase begins about 3 or 3.5 months before the achievement activity. During the finishing phase it is reasonable to expect the calf to gain between 3.5 and 4 lbs per day.

As is the case in the first two phases, the calf should eat 2.5% of his body weight in dry feed each day. However the grain in the ration needs to be increased to 2% of body weight. This needs to be a gradual increase of about 1 lb every second day. It will take about 15 days to get the animal to the required amount of grain.

Reference Sheet

Herd Sire Health

Herd Sire management is a key element of production management, so it's really important to take great care of the herd sire. This includes good nutrition and making sure you take care of any disease or injury. A good bull can greatly improve herd performance. In fact, the herd sire has a big impact on:

- The Number of calves born each year.
- The Length of the calving season, and when calves are born in the calving season.
- The Difficulty or ease of calving.
- The Growth rate of calves.
- The Genetic potential of the herd.

In the case of the herd sire, his function is breeding. Without proper nutrition and care for this function, his ability to breed cows and heifers can be lowered. So, just as market steers are fed for proper weight gain, herd sires should be fed to be successful breeders. It is important that the bull is taken care of so it is not too fat or too thin. Bulls that are too fat or too thin may have:

- A lower libido.
- Less ability to mate.
- A fat bull in particular may have more feet and leg problems caused by the extra weight he carries around.

Reference Sheet

Feeding a Herd Sire

Breeding Period & Maintenance Period

There are two phases of the feeding cycle for herd sires: The breeding period and the maintenance period.

Feeding for the breeding period starts about six weeks before the breeding season and continues throughout the breeding season. During the breeding season, the bull must be in very good condition and physical shape. He is more active at this time than during the rest of the year because he is breeding cows and heifers.

The maintenance period is the remainder of the year between breeding periods. A well-balanced diet providing the correct amount and types of nutrients is needed to ensure there are no nutritional deficiencies. Winter is generally considered the maintenance period. Proper conditioning of bulls is important because bull fertility has a major impact on determining whether a cow will conceive and whether they calve early or late in the calving season which in turn influences calf weaning weight and uniformity.

Nutritional Deficiencies

Two common nutritional deficiencies in bulls are phosphorus deficiencies and vitamin A deficiencies. Both can lead to great difficulty in breeding. A producer can ensure the bull gets enough phosphorus by supplementing forages with grains. A mature bull needs at least 25 grams of phosphorus per day.

Grains and dry forages are both often low in vitamin A. Green feeds, such as alfalfa or other immature forages are often high in vitamin A. The best indicator of forage being mature is if it has been cut for more than 90 days. It's around that point that the vitamin's precursors are losing strength so the vitamin will not be converted into a useful form in the animal's body. The liver of the beef animal actually stores vitamin A for up to four months, so deficiencies will only occur if the bull has been deficient for several months.

If their animal seems to have a deficiency, producers can provide their bulls with supplements to ensure they are receiving about 60,000 IU of vitamin A per day. Use supplements like a salt-mineral mix, green feeds such as alfalfa or ADE injections.

If a bull is in poor condition prior to the beginning of the breeding season, increase his level of nutrition to get him into good condition before breeding season starts.

Reference Sheet

Nutrient Requirements of Heifers & Cows

The function of heifers and cows is to produce calves. Producing a calf puts great demands on the heifer or cow's body. There are basically five factors that affect the amount of nutrients that cows and heifers will need:

- Age
- Level of activity or exercise
- Climate
- Gestation
- Lactation

Heifers and young cows require a more nutrient dense ration than mature cows because they are still growing. As well, a pregnant heifer requires a higher quality ration than a mature cow. To develop the calf to term, a pregnant heifer requires a more nutrient dense ration because during pregnancy the growing calf consumes much of the nutrients. During pregnancy the heifer is still growing herself, and is unable to consume as much feed as a mature cow; therefore, nutrient density or quality of the ration must be higher than a ration fed to mature cows. At the age of two, a heifer is losing its baby teeth and its adult teeth are emerging. During this time they do not consume as much feed so again, the quality of the ration must be higher.

Cattle grazing on pasture or range land use energy as they move so they need more nutrients than cattle in pens that don't roam as far. As far as climate goes, cold temperatures, strong winds and high humidity increase the amount of nutrients the cattle need. The amount of feed and water they consume changes with their environment.

Gestation is the period of time that the cow is pregnant; from the time she is bred and conceives to the time the calf is born. As the calf develops inside the cow or heifer, she needs more and more nutrients to take care of both of them. Lactation is the period of time when the mother is producing milk. Lactation is when her nutrient requirements are highest. Here is a chart to refer to that shows the amount of protein, energy and calcium needed as a beef cow transitions through the stages of pregnancy.

Minimum Daily Nutrient Requirements of the Beef Cow -20°C			
Cow (500-650 kg)	Protein (kg/day)	Energy DE(Mcal/day)	Calcium (g/day)
Early Pregnancy	0.59-1.45	19.2-27	20-21
Late Pregnancy	0.63-1.45	22.1-32	25-32
Lactating	1.27-1.54	32.2-47	46-57

(Source - cowbytes 2013)