



# How to Finish Cattle in Tennessee

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## INTRODUCTION

The finishing phase is the final stage in the beef production process, where cattle are brought to optimal market weight and quality. Proper finishing not only ensures the best returns for producers but also contributes to overall industry sustainability and consumer satisfaction. This publication aims to provide insights into the essential aspects of finishing beef cattle to help producers maximize profits and produce high-quality beef.

## SELECTING THE RIGHT CATTLE

The finishing phase starts when calves are roughly 800 pounds and with an average daily gain of 3 pounds or more and ends around 1,150–1,300 pounds. The final finishing weight depends on frame size and degree of fat cover. Selection of cattle appropriate for finishing depends on the budget, marketing strategy and product goal of the operation. Various breeds have differing characteristics that make them suitable for finishing. Small-framed dairy or dairy-crossed calves can produce remarkable quality, i.e., marbling, but do not produce large steaks or a high percentage cutability. Large-framed beef breeds with heavy muscling will produce greater cutability but take much longer to reach the same degree of finish, or fat cover. For small scale, farm-raised beef operations, moderate-framed, early maturing breeds are most ideal. Heifers fatten at a lighter body weight, but typically, steers are more feed efficient.

## NUTRITIONAL REQUIREMENTS

It is vital to understand the nutritional requirements of growing and finishing cattle throughout the finishing phase to ensure adequate growth. The main nutrients of concern are energy and protein, coupled with adequate dry matter intake. As body weight increases, protein requirements decrease because the body is shifting from muscle to fat deposition. As body weight increases, energy requirements increase due to greater maintenance requirements. Dry matter intake also increases directly with body weight. A higher target rate of gain will require greater concentrations of energy than a lower rate of gain at the same body weight.

Table 1 illustrates the various requirements for a feeder calf less than 11 months of age to be 1,200 pounds at harvest. Table 2 presents requirements for a feeder calf greater than 11 months of age to reach a 1,200 pound harvest weight. Both tables are adjusted to account for ionophore and implant use, meaning if you do not use these technologies, you may see lower performance than indicated by the table. Daily energy intake is the driver for finishing animal performance. Two energy units or systems can be used to balance rations for cattle: total digestible nutrients (TDN) or net energy (NE). The TDN systems is simply the total amount of nutrients that can be digested as an energy source while the NE system accounts for heat loss and is partitioned into maintenance and growth requirements. Energy is used more efficiently for maintenance

than for growth, and that is why there are two values. The most important thing to remember is that performance is driven by intake of energy, so either system can be used to accomplish the same results if energy intake is sufficient.

## CONSIDERATIONS FOR FINISHING CULL COWS

Cows that have lost weight during periods of low nutrition such as drought have the ability to gain weight rapidly through compensatory gain. However, for these cows to make good candidates for feeding, they should be free of infectious disease or heavy parasite loads. A cow in normal body condition (BCS of 5 to 6) will not gain as efficiently as a cow that is thin. Rapid gain can result from feeding cull

cows grain-based diets for 30 days and up to 2 months. Past that, cost of gain may become prohibitive.

Dry matter intake of a cull cow is usually between 2.5 percent and 3 percent of body weight. Protein requirements are not particularly high for mature animals, so levels between 9 percent and 11 percent are adequate. A diet comprising 60 percent to 80 percent concentrate is sufficient to fatten cull cows. Be sure to consider the financial implications of feeding cull cows based on feed input costs and current cull cow prices.

## FEED RESOURCES

Cattle may be finished on a variety of diet options, including grain-based diets, forage-based diets, or a combination of both. For more information about diet options, see other publications regarding general production considerations for grain and grass finishing cattle in Tennessee.

## MINERALS

The calcium to phosphorus ratio (Ca:P) in the diet is vital in maintaining proper physiological function. The ideal range is approximately 2:1. In grain-based diets, phosphorus is found in greater concentrations than calcium, which is the opposite in forage-based diets. If cattle are finished on grain, it is imperative to

**Table 1. Feeder calf (<11 mos.) requirements for 1200 pound mature weight**

Body Weight	Rate of Gain	DM Intake (lb. DM/d)	Lb. TDN	Mcal Nem	Mcal NEg	Lb. CP
400	1	9.8	5.7	3.9	1.0	1.0
	2	10.1	6.8	3.9	2.2	1.5
	3	9.5	7.8	3.9	3.4	1.9
500	1	11.6	6.7	4.6	1.2	1.1
	2	11.9	8.0	4.6	2.5	1.5
	3	11.3	9.2	4.6	4.0	1.9
600	1	13.3	7.7	5.3	1.4	1.2
	2	13.6	9.2	5.3	2.9	1.6
	3	12.9	10.5	5.3	4.5	1.9
700	1	14.9	8.6	5.9	1.5	1.3
	2	15.3	10.3	5.9	3.3	1.6
	3	14.5	11.8	5.9	5.1	1.9
800	1	16.5	9.5	6.5	1.7	1.3
	2	16.9	11.4	6.5	3.6	1.7
	3	16.1	13.0	6.5	5.6	1.9

Adapted from University of Arkansas Cooperative Extension Service, MP391.

**Table 2. Yearling calf (>11 mos.) requirements for 1200 pound mature weight**

Body Weight	Rate of Gain	DM Intake (lb. DM/d)	Lb. TDN	Mcal Nem	Mcal Neg	Lb. CP
800	1	19.6	10.4	6.5	1.7	1.4
	2	20.0	12.3	6.5	3.6	1.8
	3	19.4	13.9	6.5	5.6	2.1
900	1	21.4	11.3	7.1	1.7	1.5
	2	21.9	13.4	7.1	3.6	1.8
	3	21.2	15.2	7.1	6.2	2.1
1,000	1	23.1	12.3	7.7	2.0	1.5
	2	23.7	14.5	7.7	4.3	1.8
	3	22.9	16.4	7.7	6.7	2.1
1,100	1	24.9	13.2	8.3	2.1	1.6
	2	25.4	15.6	8.3	4.6	1.9
	3	24.6	17.6	8.3	7.2	2.1

Adapted from University of Arkansas Cooperative Extension Service, MP391.



maintain the correct Ca:P ratio to prevent metabolic conditions that would impair growth. Provide a mineral mixture that is specifically formulated for grain-based diets or add a calcium source into the feed ration. A well-balanced, complete mineral will provide macro and micronutrients to maximize animal growth and health.

### FEED MANAGEMENT AND DAYS ON FEED

A total mixed ration (TMR) will provide the most consistent nutrient intake and animal performance. Using a mixed ration results in a balanced diet in every bite, rather than allowing cattle to be selective in what they eat. A TMR should be created with the help of a nutritionist to ensure that it is properly balanced. Particle size and uniformity are important to reduce sorting and palatability issues. If it is not possible to provide feed as a TMR, understand that consumption of different nutrients may be variable and feed management may be more challenging.

Due to the large amount of feed required to finish beef cattle, and its associated cost, it is pertinent to reduce waste in handling and storing feed. A commodity shed or feed bin may be helpful in keeping feed dry. Hay that is used in finishing rations, especially for forage-finishing programs, should be high quality. Proper storage of hay will reduce waste and ensure quality at feed out. Feed bunks must be cleaned out often to remove leftover feed, reducing the potential for spoilage. Cattle that have been fully acclimated to the finishing diet should have ad libitum access to feed, but regular observation of feed bunks will determine feed consumption adequacy. Adjust feeding rates not only to ensure that uneaten feed does not build up in feed troughs but also to ensure that cattle are not without feed for more than about two hours within a 24-hour period. Ideally, cattle should be fed twice daily to maintain a consistent rumen environment, especially on grain-based diets.

Since calves will be transitioning from a forage-based grower diet to a high concentrate finishing diet, it is imperative to give the rumen time to adjust from forage to grain to prevent bloat. A 21- to 28-day adaptation period is the industry standard transition period. Start calves at about 1 percent of their body weight while also providing longer-stem hay, and over the course of three to four weeks, increase the amount of feed by 1- to 2-pound increments every few days until calves are on full feed. Gradually reduce the amount of hay as more feed is introduced. Close management can reduce the risk of ruminal upset, but it is important to keep some form of roughage in the diet through the finishing phase, such as limited access to hay or an ingredient like cottonseed hulls. With careful management, roughage can be less than 10 percent of the diet; if there is concern about feed management lacking the proper rigor, roughage levels of up to 15 percent can be included.

When in a grain-finished system, cattle should be fed for a minimum of 60 days to rid the body tissue of any flavors that have accumulated from forage consumption. Generally, the finishing period is 90–120 days.

### WATER AVAILABILITY

Ensure consistent access to clean and plentiful water sources. Cattle on grain- or hay-based finishing diets receive much less water through feed consumption than cattle on pasture-based diets. Proper hydration is crucial for cattle health and performance. Table 3 presents the approximate daily water intake (gallons) for finishing cattle, depending on ambient temperature.

**Table 3. Approximate daily water intake (gallons) for finishing cattle.**

Weight	40 F	50 F	60 F	70 F	80 F
600 lb.	6.0	6.5	7.4	10.0	14.3
800 lb.	7.3	7.9	9.1	12.3	17.4
1000 lb.	8.7	9.4	10.8	14.5	20.6

Water intake is a function of dry matter intake and ambient temperatures. (Adapted from Oklahoma Cooperative Extension Service, AFS-3302).

### ADJUST FEED MANAGEMENT ACCORDINGLY

As cattle grow and fatten over time, the diet needs to be adjusted to keep up with their body weight and resulting dry matter intake. Weigh calves monthly to determine average daily gain and adjust energy in the ration if desired performance is not being achieved. Also understand the genetic and physical limitations of the cattle being fed. Learn how to evaluate finish on cattle. Look specifically at fat cover over the ribs, at the tailhead and in the brisket. Taking an under-finished animal to harvest can result in lower cutability and quality than may be desirable.

### CONCLUSION

Finishing beef cattle requires a combination of proper nutrition, management and diligence. By implementing effective strategies at each stage of the finishing process, producers can maximize profits, produce high-quality beef and contribute to the sustainability of the beef industry. Continual learning, adaptation to innovative technologies and a commitment to animal welfare and environmental stewardship are key components of successful beef cattle finishing operations.

### REFERENCES

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