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Feeding Steers for Show
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Cooperative Extension Service
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MICHIGAN BEEF PRODUCTION



COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

Feeding Steers for Show

Harlan D. Ritchie and Kenneth R. Geuns, Beef Specialists

WHERE TO BUY A CALF

Local Cow-Calf Producers

If there are producers in your area who have a reputation for raising top quality calves, do not overlook them as a source of show steers. Sometimes the best prospects may be in your own neighborhood.

Feeder Calf Auctions

Most areas have sale yards where feeder calf auctions start in September and continue through November or December. An advantage of such sales is that there are usually larger numbers from which to select. However, single calves are seldom sold in these sales, so it is often necessary to purchase several calves to get the ones you want. In this case it is wise for a group such as a 4-H club to go together and agree ahead of time on which pen(s) they would like to buy.

Special Club Calf Sales

In most states, there are special sales in which top quality calves are sold by one or more consignors. Quite often, they include calves from the consignor's farm plus others purchased in the West. Because these events are well-advertised and ordinarily have a reputation for selling good stock, it is usually necessary to pay a premium for calves purchased in this manner. It is extremely important, regardless of the origin or place of purchase, to be certain of the health of the calf before buying.

WHEN TO BUY CALVES

Most feeder calves are born in the spring and sold in the fall. Furthermore, many counties require that 4-H

calves be enrolled by January 1. Therefore, the logical time to select a calf is sometime from September to December. It is a good idea to have your calf started on feed by December 1.

WHAT WEIGHT TO BUY

Suggested minimum starting weights are listed in Table 1. These weights are based on a starting date of November 20, and vary depending upon the type of calf being fed. Larger, later-maturing types will, and should be, heavier than smaller, earlier-maturing types. It is possible to start calves at lighter weights than indicated in Table 1, but it will be difficult to get them to the desired weight and finish by show time. If you are aiming for a county fair around August 1, larger-framed exotic steers will probably have to be heavier than 500-550 lb. in order to grade Choice by fair time.

WHAT KIND OF STEER TO BUY

It is usually wise to avoid the two extremes in type listed in Table 1; that is, the extremely small-framed earliest-maturing British type and the extremely large-framed, latest-maturing exotic type. Instead, try to select a large-framed British or a large-framed exotic calf.

Extremely early-maturing British calves will stop growing too soon and become fat at too light a weight. Conversely, extremely late-maturing exotics will undergo skeletal growth too long and will not accumulate enough finish to grade Choice until they become extremely heavy. As a general rule, steers should grade Choice when they weigh from 1,000 to 1,350 lb.; an even more desirable range would be 1,100 to 1,300 lb.

Table 1. Performance and Carcass Cutout of Various Type of Steers Fed a High Energy Ration

Item	TYPE OF STEER			
	Small-framed British	Large-framed British	Large-framed Exotic	Extremely Large-framed Exotic
Minimum starting wt.:				
(Nov. 20), lb.:	400	450	500	550
Final weight, lb.:				
For Aug. 1 show	925	1050	1150	1200
For Sept. 1 show	---	1100	1200	1275
For Dec. 1 show	---	---	1325	1400
Av. da. gain, lb.:				
For Aug. 1 show	2.10	2.35	2.55	1.60
For Sept. 1 show	---	2.25	2.50	2.55
For Dec. 1 show	---	---	2.20	2.25
Days on feed:				
For Aug. 1 show	253	253	253	253
For Sept. 1 show	---	284	284	284
For Dec. 1 show	---	---	375	375
Feed per lb. gain, lb.:				
For Aug. 1 show	8.0	8.0	8.0	8.0
For Sept. 1 show	---	8.2	8.2	8.2
For Dec. 1 show	---	---	8.8	8.8
Total feed consumed, lb.:				
For Aug. 1 show	4200	4800	5200	5400
For Sept. 1 show	---	5330	5740	6150
For Dec. 1 show	---	---	7260	7920
Carcass quality grade:				
For Aug. 1 show	Ch-	Ch-	G+	G°
For Sept. 1 show	---	Ch°	Ch-	G+
For Dec. 1 show	---	---	Ch°	Ch-
Fat thickness, in.:				
For Aug. 1 show	.50	.50	.35	.30
For Sept. 1 show	---	.60	.40	.35
For Dec. 1 show	---	---	.55	.50
Rib eye area, sq. in.:				
For Aug. 1 show	10.00	10.50	12.00	12.50
For Sept. 1 show	---	11.00	12.50	13.00
For Dec. 1 show	---	---	13.25	14.00
Carcass yield grade:				
For Aug. 1 show	3.4	3.5	2.9	2.8
For Sept. 1 show	---	3.7	3.0	2.9
For Dec. 1 show	---	---	3.6	3.4

It makes little difference what breed or combination of breeds you buy as long as the calf is of the right type. The important points in selecting such a calf are:

1. Large-framed enough to ensure that the calf will grow, gain and grade Choice at a desirable weight but not so extreme that he will fail to finish in the weight range discussed above.
2. Thick and heavily muscled in the quarter but not so extreme as to indicate double muscling (an extremely muscled condition that is not a desirable trait in the U.S. beef industry).
3. Trim in the brisket, middle and underline, but not too shallow-bodied which would suggest that the calf could be a hard-doer.
4. Straight in the topline and long and reasonably level in the rump.

5. All four legs should be reasonably straight and set out under the corners of the body, indicating natural thickness and constitution.
6. Adequately heavy bone but not excessively coarse.
7. A medium degree of condition is desirable; not too thin and not too fat. An extremely thin calf is difficult to evaluate and may take too long to fatten. An extremely fat calf may become wastey and over-finished before he is shown.
8. If you have an opportunity to see the calf's sire and dam, they could provide a clue as to how he will develop. If you are selecting from among A.I. sired calves, it may be helpful to find out what kind of steers the various sires are known to produce. Nevertheless, the individuality of the calf himself is still the best indication of his eventual outcome.

GETTING THE CALF STARTED

Disease and Parasite Control

Newly purchased calves are extremely susceptible to respiratory and gastrointestinal disorders. The following diseases are widespread throughout the country and it is wise to vaccinate your calf against them.:

- IBR (rednose virus)
 - BVD (bovine virus diarrhea)
 - PI₃ (parainfluenza virus)
 - Pasteurellosis (bacterial pneumonia)
- These two, coupled with stress, can cause "shipping fever."

The first three are virus diseases and the fourth is caused by bacteria. Your veterinarian can advise on when and how to vaccinate and which products to use. He may recommend additional vaccinations for diseases such as leptospirosis and enterotoxemia. Depending upon your situation, he may not recommend the BVD vaccination, which is sometimes of questionable value. Some of the more reputable producers may have already administered these vaccinations. You should consult them or your veterinarian if further vaccinations are required.

If your calf has been on poor quality forage, it may be advisable to inject him with 1 to 2 million units of vitamin A. Other recommended practices are worming to get rid of internal parasites and applying a pour-on systemic insecticide to prevent grub and lice infestations. Do not apply pour-on materials after the manufacturer's recommended cut-off date listed on the label.

Traumatic procedures such as castrating and dehorning should probably be delayed until after the calf is adjusted to his new surroundings, is well started on feed and is past the danger of any disease outbreaks. This may entail waiting for about 30 days.

Again, it is important to seek the advice of your veterinarian if you are in doubt about any of the above procedures.

Getting the Calf Home and Placing in a New Environment

Great care should be taken in shipping your new calf home. Minimize stress by avoiding undue excitement. Electric prods should not be used in loading him. Provide some type of bedding in the truck or trailer so as to prevent slipping which could result in injury or permanent damage. In extremely cold temperatures, the truck or trailer should be partially closed in order to protect from drafts; however, you should allow for some air circulation.

Upon arrival at the calf's new home, a comfortable stress-free environment should be provided. It is important to have some type of shelter that is well ventilated but free of drafts and excessive moisture. Dry bedding should be present to make the calf as comfortable as possible during this high stress period. Sufficient pen size is important at a young age so the calf can exercise and move about. Do not lock the calf up in a barn where there is no ventilation; this may lead to respiratory problems.

Try to familiarize the calf with his new surroundings so that he knows where the water, feed and shelter are located. In short, every effort should be made to ensure the comfort and well-being of the animal.

Starting on Feed

If your calf had been started on grain prior to purchase, try to find out what he has been receiving so that you may duplicate it to some degree for the first few days. Gradually replace it with your own ration over about a 2-week period.

If your calf has never been fed grain, start him on hay free-choice plus 1 lb. of grain per 100 lb. of body weight daily, or on corn silage free-choice plus 1 lb. of protein supplement daily. After the calf is eating 11-15 lb. of hay plus grain or 30-40 lb. of corn silage daily, increase the grain by ½ lb. per day and decrease the hay by ½ lb. or the corn silage by 1½ lb. until the minimum level of roughage desired is reached. Normally, a calf should receive a minimum of ½ lb. of hay or 1½ lb. of silage per 100 lb. of body weight daily. There is less danger of going off feed if the grain, supplement, and silage components are completely mixed. Hay is usually fed in a separate feeder, but it may also be chopped and mixed with the grain. If haylage is used instead of hay, it should be mixed with the grain. If your calf is eating properly, he should consume at least 2.5% of his body weight daily in the form of ration dry matter.

As an example of the above procedure, assume you are starting a 500-lb. calf on a hay-grain diet. Start him on 5 lb. of grain plus a full feed of hay (about 7.5 lb. hay). Gradually increase the grain and decrease the hay until he is eating about 10 lb. grain and 2.5 lb. hay. If he will consume more than this, gradually increase the level of feed until he has reached a maximum, which is about 3% of body weight daily. Beware of going beyond his normal limit and throwing him off feed. Normally, a calf should clean up about ¾ of his grain in the first 30 minutes and nearly all of it after 60 minutes. If grain is still left in the bunk at next feeding, remove all of it and put in fresh feed. Old feed should never be allowed to accumulate or the calf may go off-feed. For best results, feed your calf twice a day and try to feed at the same time each day. An irregular feeding schedule is another reason for calves going off-feed.

The new calf should always have access to clean, fresh water. During the winter, it is important to keep the water from freezing so that he can drink at any time. If this is impossible, the ice on the surface should be broken frequently so that he is not allowed to go thirsty for an extended period. However, he will not drink as much water near the freezing point as compared to water in a heated cup or tank. Manure, bedding or other debris should always be removed from the water. Do not force your calf to drink dirty water. Daily water consumption will average about 8% of body weight during cold weather and up to 19% of body weight during hot weather. Stated in volume, the range would be 5 to 20 gallons of water per head per day.

If salt and minerals are not mixed in the grain ration, they should be provided free-choice in a place where they will stay dry.

NUTRIENT REQUIREMENTS AND RATION INGREDIENTS

Following are the approximate minimum nutrient requirements of a steer calf over the course of his feeding period (on a dry matter basis):

- TDN (energy): 75 to 87% depending on weight, condition, type, purchase date and date of show
- Crude Protein: 13%
- Calcium: 0.4%
- Phosphorus: 0.3%
- Vitamin A: 1000 International Units (IU) per pound of dry matter
- Salt and trace minerals: normally supplied at adequate levels in trace mineral salt.

Following is a list of commonly-fed feedstuffs and their composition on a dry matter basis:

Feed	Expressed as Percent of Dry Matter					Normal Dry Matter, Percent
	TDN %	CP %	Ca %	P %	Vit.A IU/lb	
Corn	91	10	.03	.40	800	85
Barley	83	13.0	.09	.47	---	89
Ground ear corn	82	8.9	.05	.33	600	86
Oats	75	13.0	.10	.43	---	89
Milo	80	11.0	.04	.37	---	88
Wheat	88	12.3	.10	.33	---	89
Molasses, cane	72	4.3	1.20	.11	---	76
Beet pulp	70	9.0	.60	.08	---	91
Soybean meal (44%)	81	48.8	.36	.75	---	90
Corn silage	70	8.0	.28	.21	2,000	35
Wheat bran	67	18.0	.11	1.35	---	89
34% commercial supplement	65	37.7	2.25	1.10	33,000	90
Alfalfa hay or haylage	55	14.0	1.00	.23	8,000	35-90
Grass hay or haylage	50	9.0	.40	.30	4,000	30-90
Dicalcium phosphate	---	---	21.5	18.5	---	100
Limestone	---	---	38.0	---	---	100

As you can see, no single feed can meet all the steer's requirements. Therefore, it is necessary to feed a combination of two or more ingredients.

BASIC GRAIN RATIONS

High Energy Rations (over 83% TDN)

Ration No. 1 (87.8% TDN, 13.6% CP)

85% corn
15% supplement

Ration No. 2 (86.7% TDN, 13.1% CP)

80% corn
10% oats
10% supplement (34% CP)

Ration No. 3 (85.0% TDN, 13.4% CP)

70% corn
20% oats
10% supplement (34% CP)

Ration No. 4 (83.3% TDN, 13.7% CP)

60% corn
30% oats
10% supplement (34% CP)

Medium Energy Rations (80-83% TDN)

Ration No. 1 (81.9% TDN, 13.1% CP)

47% corn
47% oats
6% supplement (34% CP)

Ration No. 2 (80.0% TDN, 13.2% CP)

85% ground ear corn
15% supplement (34% CP)

Ration No. 3 (82.6% TDN, 13.0% CP)

40% corn
30% oats
25% barley
5% supplement (34% CP)

Ration No. 4 (82.9% TDN, 13.7% CP)

65% corn (dry matter basis)
20% corn silage (dry matter basis)
15% supplement (34% CP)

Ration No. 5 (80% TDN, 13.5% CP)

50% corn (dry matter basis)
35% corn silage (dry matter basis)
15% supplement (34% CP)

Ration No. 6 (81.2% TDN, 13.6% CP)

70% corn
20% coarsely chopped or ground alfalfa hay
10% supplement (34% CP)

Ration No. 7 (81.5% TDN, 13% CP)

Shelled corn: 2.0% of body weight daily
Alfalfa haylage: fed to appetite
Supplement: 1.5 lb. of 34% supp. per head per day

Low Energy Rations (75-79% TDN)

Ration No. 1 (76.6% TDN, 13.2% CP)

50% corn silage (dry matter basis)
35% corn (dry matter basis)
15% supplement (34% CP)

Ration No. 2 (75% TDN, 13% CP)

60% corn silage (dry matter basis)
25% corn (dry matter basis)
15% supplement (34% CP)

Ration No. 3 (78.6% TDN, 13.3% CP)

65% oats
30% corn
5% supplement (34% CP)

Ration No. 4 (78.2% TDN, 13.6% CP)

60% oats
20% corn
15% barley
5% supplement (34% CP)

Ration No. 5 (77.3% TDN, 13.3% CP)

60% corn
33% coarsely chopped or ground alfalfa hay
7% supplement (34% CP)

Ration No. 6 (77.1% TDN, 13% CP)

Shelled corn: 1.5% of body weight daily
Alfalfa haylage: fed to appetite
Supplement: 1.25 lb. of 34% supp. per head per day

COMPLEX GRAIN RATIIONS

Ingredient	High Corn	Medium Corn	Low Corn
Cracked corn	60.0	40.0	20.0
Crimped oats	19.2	40.35	61.4
Soybean meal (44%)	7.5	6.25	5.0
Molasses (cane)	7.5	7.5	7.5
Wheat bran	4.0	4.0	4.0
T.M. salt	0.5	0.5	0.5
Dical.	---	0.1	0.5
Limestone	1.0	1.0	0.8
Vitamin ADE	0.3	0.3	0.3
TOTAL	100.0	100.0	100.0
TDN, %	81.6	78.3	74.8
Crude protein, %	13.2	13.4	13.5
Calcium, %	.54	.59	.61
Phosphorus, %	.39	.40	.48

Two-Phase Feeding Systems

It may be advisable, depending on the factors mentioned previously, to consider a two-phase feeding system. This system involves the feeding of a low or medium energy ration during the first half of the feeding period and then switching to a high energy ration when the steer has reached approximately one-half of the expected gain for his particular frame size.

As an example of the above procedure, assume you are starting a 500-lb. calf of the large-framed exotic type on a low or medium diet and planning on showing him at a September 1st show where he would weigh approximately 1200 lbs. When the calf weighs between 800-850 lb., you would gradually switch him to a high energy diet for the remainder of the feeding period. The switch should occur over a 1 to 2 week time span.

The advantages of such a system seem to be as follows: (1) most two-phase systems tend to be slightly more efficient in the utilization of total ration energy; (2) the cost of gain in the first half of the feeding period is less expensive with little or no reduction in performance over the entire feeding period; (3) feeding a low or medium energy diet early in the feeding period permits maximum muscular and skeletal growth and minimizes the risk of the calf becoming too fat too soon.

If the calf is of the extremely large-framed exotic type, he should probably not be put on a two-phase system. Instead, he should very likely be fed a high energy diet from start to finish.

WHAT ENERGY LEVEL TO FEED

Deciding whether to feed your steer a low, medium or high energy grain ration depends on several factors: (1) type or size of frame; (2) starting weight; (3) condition; (4) when you bought him; (5) when he is to be shown.

Table 1 gives the expected gain, feed composition, final weight and carcass cutout of various type of steers fed for an August 1, September 1, or December 1 show.

Assumed starting date is November 20. In this example, the ration was assumed to be a medium to high energy ration.

Most of the time you will want to feed a medium or high energy ration. Most exotic steers should receive a high energy ration. Furthermore, if you are aiming for an early county fair, you will want to feed a high energy ration. If you are feeding British steers and heading for later shows, a medium energy ration may be more appropriate. or, you might start on a medium ration and switch to a high energy ration, as discussed below under the two-phase system.

In this day and age, it is generally not recommended to feed a low energy diet. The exception is if you are feeding smaller-framed British breed steers with the intention of being shown at a later show. However, most British breed steers that are being selected as show steers are of a larger frame type and should be fed either a medium or high energy ration.

PREPARATION OF GRAIN

Coarse Grinding or Crimping Most Desirable

Coarsely cracked corn and lightly crimped oats and barley is probably the most ideal method of processing grain. However, many local elevators are not equipped to do this; they usually make the grain too fine and dusty.

Whole Grain Satisfactory

Feeding whole corn, oats and barley is not quite as desirable as crimping but is preferable to fine grinding. When fed whole, the kernels will be plainly seen in the manure. This no cause for alarm because ground grain passes through also; you just don't see it.

Fine Grinding Least Desirable

Finely ground grain is not as desirable for several reasons: (1) consumption may be lower; (2) the feed balls up in the animal's mouth; (3) he is more apt to go off-feed; (4) greater chance of bloat or digestive upset.

NORMAL FEED CONSUMPTION

In order for your steer to perform at a maximum, he should be fed to the limit of his appetite. Table 2 lists the expected daily dry matter intake for cattle of different weights.

Table 2. Normal Daily Dry Matter Intake of Growing-Finishing Cattle

Body Wt.	DM Intake lb.	Intake as Percent of Body Wt.
300	9.0	3.00
400	10.9	2.73
500	12.9	2.58
600	14.8	2.46
700	16.6	2.37
800	18.3	2.29
900	20.0	2.22
1000	21.4	2.14
1100	22.3	2.03
1200	22.9	1.91
1300	23.1	1.85
1400	23.1	1.65

Most dry grains and hays average about 88% dry matter. Therefore, "as-fed" daily feed consumption will

average about 12% higher than the levels listed in Table 2.

Cattle fed high silage diets will consume slightly less daily dry matter than indicated above (about 0.1 to 0.2% of body weight lower daily intake).

MINERAL MIXES

If minerals are not included in the supplement, they should be offered free-choice in a covered box. Following are acceptable mixtures:

Mixture No. 1

- 1 part trace mineral salt
- 1 part bonemeal or dicalcium phosphate

Mixture No. 2

- 1 part trace mineral salt
- 1 part bonemeal or dicalcium phosphate
- 1 part limestone



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