

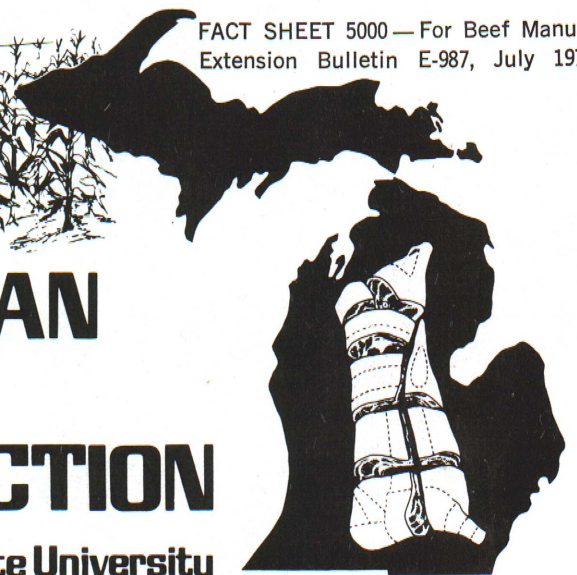
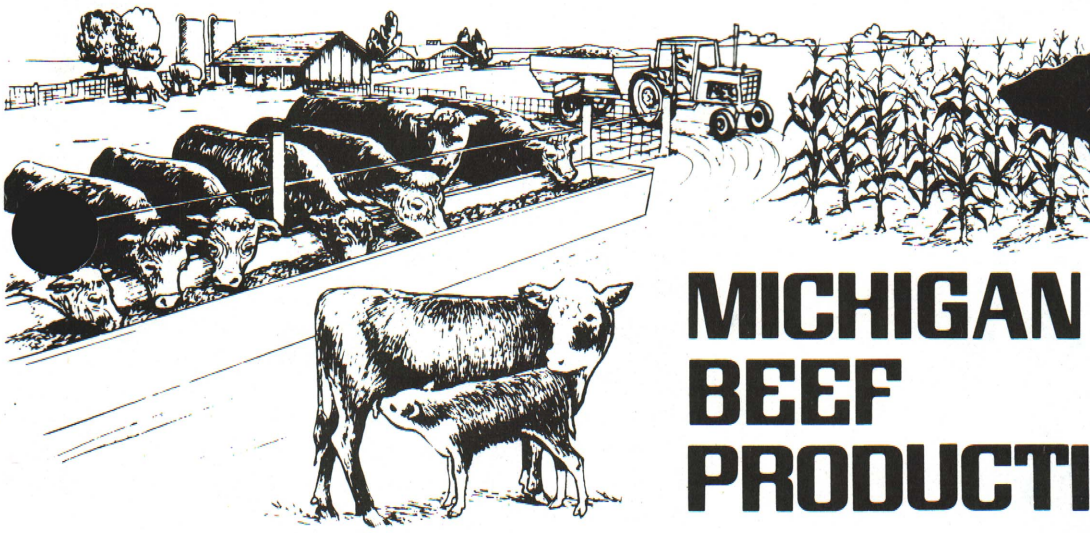
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Feeding Steers for Show  
Michigan State University  
Cooperative Extension Service  
Harlan D. Ritchie Department of Animal Husbandry  
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# MICHIGAN BEEF PRODUCTION

Cooperative Extension Service  Michigan State University

## Feeding Steers for Show

*Harlan D. Ritchie, Department of Animal Husbandry*

### 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 large 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 group(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 not unusual for such sales to average \$250 to \$500 per calf.

### 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 large. As a general rule, steers should grade Choice when they weigh from 1000 to 1350 lb; an even more desirable range would be 1100 to 1300 lb.

It makes little difference what breed or combina-

**Table 1. Performance and Carcass Cutout of Various Type of Steers Fed a High Energy Ration (80% TDN)**

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	2.60
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

tion 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 heavy 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)

PI<sub>3</sub> (parainfluenza virus) } These two, coupled with  
 Pasteurellosis (bacterial } stress, can cause "ship-  
 pneumonia) } ping 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.

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 data listed on the can.

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.

### Starting on Feed

If your calf had been started on grain prior to purchase, try to find out what he had 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 about 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. 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 4 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):** 72 to 84% 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	74	13.0	.10	.43	—	90
Molasses	73	4.1	1.10	.11	—	73
Soybean meal (44%)	81	48.8	.36	.75	—	90
Corn silage	70	8.0	.28	.21	2000	35
Wheat bran	67	18.0	.11	1.45	—	89
34% commercial supplement	65	37.7	2.25	1.10	33,000	90
Alfalfa hay or haylage	55	14.0	1.00	.23	8000	30-90
Grass hay or haylage	50	9.0	.40	.30	4000	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 (80% and higher)

#### Ration No. 1 (85.8% TDN, 13.3% CP)

75% corn  
15% oats  
10% supplement (34% CP)

#### Ration No. 2 (83.3% TDN, 13.6% CP)

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

#### Ration No. 3 (80% TDN, 13.2% CP)

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

#### Ration No. 4 (82.6% TDN, 13.0% CP)

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

#### Ration No. 5 (80.0% TDN, 13% CP)

Shelled corn: 1.5% of body wt. daily  
Corn silage: fed to appetite  
Supplement: 2.0 lb of 34% supp. per head per day

#### 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 wt. daily  
Alfalfa haylage: fed to appetite  
Supplement: 1.5 lb of 34% supp. per head per day

#### Ration No. 8 (81.9% TDN, 13.1% CP)

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

### Medium Energy Rations (76-80% TDN)

#### Ration No. 1 (78.6% TDN, 13.3% CP)

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

#### Ration No. 2 (78.2% TDN, 13.6% CP)

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

#### Ration No. 3 (77% TDN, 13% TDN)

Shelled corn: 1.0% of body wt. daily  
Corn silage: fed to appetite  
Supplement: 2.25 lb of 34% supp. per head per day

#### Ration No. 4 (77.3% TDN, 13.3% CP)

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

#### Ration No. 5 (77.1% TDN, 13% CP)

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

### Low Energy Rations (72-76% TDN)

#### Ration No. 1 (74% TDN, 13% CP)

100% oats plus minerals free-choice

#### Ration No. 2 (74% TDN, 13% CP)

Shelled corn: 0.5% of body wt. daily  
Corn silage: fed to appetite  
Supplement: 2.5 lb of 34% supp. per head per day

#### Ration No. 3 (73.5% TDN, 13.2% CP)

50% corn  
45% coarsely chopped or ground alfalfa hay  
5% supplement (34% CP)

## COMPLEX GRAIN RATIONS

Ingredient	High Energy	Medium Energy	Low Energy
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

## 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) con-

dition; (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 high energy (80% TDN) ration.

Most of the time you will want to feed a medium or high energy grain ration. Most exotic steers should receive a high energy ration. Furthermore, if you are aiming for a 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.

Low energy rations would normally be reserved for steers fed for later shows that are in danger of becoming too fat, especially if they are of a British breed.

#### PREPARATION OF GRAIN

##### Light 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 is 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 90% dry matter. Therefore, "as-fed" daily feed consumption will average about 10% 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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