Value-Based Beef Cattle Production

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Today's beef industry is evolving toward a concept of value-based marketing which prices cattle and carcasses on individual merit rather than averages.

Recognizing that consumer's wants and needs drive beef demand, those who contribute to the added value of superior products should be rewarded. Likewise, the market should penalize those responsible for producing an inferior product.

Whether you are feeding a 4-H steer, an FFA beef project or are a commercial beef producer, this publication is designed to help you learn about the concepts of value-based beef cattle production and marketing. It consists of information you can use to help you take market beef animals from weaning (preconditioning) to finish. The major focus centers around producing a high quality beef end product for the consumer while adding profitability to the beef cattle enterprise.

Value-Based Beef Cattle Production Goals

I. Determine frame scores, beginning weights, desired end weights and calculations needed for average-daily-gains

1. Measure hip-height and weigh beef cattle
2. Calculate frame score, desired end weight and estimated average daily gain needed to reach desired end weight.

II. Building rations to meet goals

1. Develop rations utilizing locally grown feeds to meet the goals for average daily gain and end weight set above.

III. Learn about carcass quality characteristics — what are they, how are they measured and how do they influence value on a live-weight basis?

1. Develop an understanding of carcass quality characteristics, how they are measured and how they relate to both carcass value and live animal value.
2. Develop an awareness of Beef Quality Assurance techniques and issues.

Beef Cattle Frame Scores

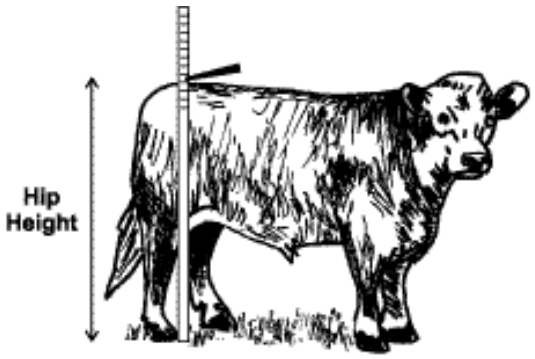
Frame scores are an objective, numerical description of cattle skeletal size which reflect the growth pattern and potential mature size of an animal. Frame score values typically range from 2 to 9 and are calculated from hip height and age. Frame scores are frequently reported as supplementary information to weight and other performance data. They can be used to predict mature size, provide an indication of composition, and characterize performance potential and nutritional requirements of an animal.

Low frame scores are descriptive of cattle which are short in stature for their age, tend to be early maturing, and finish for slaughter and mature at lighter body weights. High frame scores indicate cattle that are tall for their age, have a slower rate of maturity, and finish and mature at relatively heavy body weights. Rate of gain is usually higher for larger framed cattle; however, large differences in rate and efficiency of gain exist in cattle of similar size.

For cattle developed under a consistent and adequate plane of nutrition for normal growth, a calculated frame score should be similar regardless of when the animal was measured. Theoretically an animal should have the same frame score throughout its life. Inconsistent environmental factors and management can alter skeletal growth rate, which may result in cattle developing slightly faster or slower than anticipated. As a result, animals may increase or decrease a frame score over time depending on rate of growth.

The Beef Improvement Federation has recommended in its "Guidelines for Uniform Beef Improvement Programs" that height measurements for the calculation of frame score be taken at the hip directly over the hook bones as illustrated in Figure 1.

Figure 1. Proper position for correctly measuring hip height.



Source: BIF Guidelines for Uniform Beef Improvement Programs, 1990

Height measurements can be collected with hip height measuring sticks marked specifically for that purpose. Such height sticks are constructed with a sliding arm containing a bubble level on a pole scaled in height increments. To make a measurement, the pole is held vertically alongside the animal's hip with the sliding arm positioned level and directly over the hook bones and a measurement read from the pole where the arm attaches. For accurate height measurements it is necessary for the animal to have its legs set squarely and head in a normal position.

An alternative to using a height stick where the accuracy of individual measurements is not as critical is to place a grid marked in height increments inside a scale or working chute. As cattle are being worked, a height can be read off the grid by sighting across the animal's hip. Modifications can also be made to equip cattle handling chutes with a moveable front to back pull-down measuring device calibrated to obtain height measurements.

Beef Improvement Federation recommended procedures are available to adjust actual height measurements to standard performance testing 205-day weaning and 365-day yearling stages. Hip heights adjusted to 205 days should be collected between 160 and 250 days of age similar to the range for calculating adjusted weaning weights. Cattle should be at least 330 days of age for predicting yearling height measurements that are adjusted to 365 days.

A hip height measurement can be converted to a frame score if the animal's age is known. Frame scores can be approximated from "height for age" frame score tables. There are separate charts for bulls and heifers because of differing rates of skeletal growth between sexes. Beef Improvement Federation frame score charts are presented in Table 1.

Table 1. Frame score charts for bulls, steers and heifers.
Values within the tables are reported in inches.

Age in Months	Frame Score 1	2	3	4	5	6	7	8	9
Bulls and Steers									
5	33.5	35.5	37.5	39.5	41.6	43.6	45.6	47.7	49.7

6	34.8	36.8	38.8	40.8	42.9	44.9	46.9	48.9	51.0
7	36.0	38.0	40.0	42.1	44.1	46.1	48.1	50.1	52.2
8	37.2	39.2	41.2	43.2	45.2	47.2	49.3	51.3	53.3
9	38.2	40.2	42.3	44.3	46.3	48.3	50.3	52.3	54.3
10	39.2	41.2	43.3	45.3	47.3	49.3	51.3	53.3	55.3
11	40.2	42.2	44.2	46.2	48.2	50.2	52.2	54.2	56.2
12	41.0	43.0	45.0	47.0	49.0	51.0	53.0	55.0	57.0
13	41.8	43.8	45.8	47.8	49.8	51.8	53.8	55.8	57.7
14	42.5	44.5	46.5	48.5	50.4	52.4	54.4	56.4	58.4
15	43.1	45.1	47.1	49.1	51.1	53.0	55.0	57.0	59.0
16	43.6	45.6	47.6	49.6	51.6	53.6	55.6	57.5	59.5
17	44.1	46.1	48.1	50.1	52.0	54.0	56.0	58.0	60.0
18	44.5	46.5	48.5	50.5	52.4	54.4	56.4	58.4	60.3
19	44.9	46.8	48.8	50.8	52.7	54.7	56.7	58.7	60.6
20	45.1	47.1	49.1	51.0	53.0	55.0	56.9	58.9	60.9
21	45.3	47.3	49.2	51.2	53.2	55.1	57.1	59.1	61.0

Heifers

5	33.1	35.1	37.2	39.3	41.3	43.4	45.5	47.5	49.6
6	34.1	36.2	38.2	40.3	42.3	44.4	46.5	48.5	50.6
7	35.1	37.1	39.2	41.2	43.3	45.3	41.4	49.4	51.5
8	36.0	38.0	40.1	42.1	44.1	46.2	48.2	50.2	52.3
9	36.8	38.9	40.9	42.9	44.9	47.0	49.0	51.0	53.0
10	37.6	39.6	41.6	43.7	45.7	47.7	49.7	51.7	53.8
11	38.3	40.3	42.3	44.3	46.4	48.4	50.4	52.4	54.4
12	39.0	41.0	43.0	45.0	47.0	49.0	51.0	53.0	55.0
13	39.6	41.6	43.6	45.5	47.5	49.5	51.5	53.5	55.5
14	40.1	42.1	44.1	46.1	48.0	50.0	52.0	54.0	56.0
15	40.6	42.6	44.5	46.5	48.5	50.5	52.4	54.4	56.4
16	41.0	43.0	44.9	46.9	48.9	50.8	52.8	54.8	56.7
17	41.4	43.3	45.3	47.2	49.2	51.1	53.1	55.1	57.0
18	41.7	43.6	45.6	47.5	49.5	51.4	53.4	55.3	57.3
19	41.9	43.9	45.8	47.7	49.7	51.6	53.6	55.5	57.4
20	42.1	44.1	46.0	47.9	49.8	51.8	53.7	55.6	57.6
21	42.3	44.2	46.1	48.0	50.0	51.9	53.8	55.7	57.7

As an example of determining a frame score, a bull measuring 48 inches at 330 days of age would be estimated to be about a frame score 5 from the chart. Several beef cattle breed associations have developed their own frame score formulas and charts based on average growth and development within their specific breed. These vary slightly from BIF calculations.

Frame score provides an indication of an animal's growth curve, which can be used to project expected finishing weight for slaughter cattle. Table 2 provides an estimate of expected slaughter weight at finish for steers and heifers by frame score.

Table 2. Relationship of frame size to projected mature cow weight and slaughter weight at Choice Quality Grade.

BIF Numerical Frame Score	USDA Feeder Calf Frame Score	Mature Cow Weight	Steer Slaughter Weight	Heifer Slaughter Weight
2	Small	955	850	700
3		1030	950	800
4	Medium	1100	1050	900
5		1175	1150	1000
6	Large	1250	1250	1100
7		1320	1350	1200
8		1395	1450	1300
9		1470	1550	1400

Source: Adapted from Boggs, South Dakota State University, 1991

These projections are for average cattle; actual weights will also vary due to differences in muscling, body length, condition and other factors.

Large frame size is associated with greater growth potential, longer finishing periods and heavier slaughter weights. The generally preferred range for carcass weights of 650 to 850 pounds suggests the need to produce feeder cattle with a frame score between 5 and 7.

The current USDA feeder cattle grading system is based on the factors of frame size and muscle thickness. Three frame score designations are included: large, medium, and small, which relate to an evaluation by appearance of an animal's skeletal height in relation to its age and the weight at which an animal will produce a choice quality carcass with about 0.5 inches external fat at the 12th rib.

Large frame steers and heifers would not be expected to produce choice carcasses until their live weight exceeds 1250 and 1100 pounds, respectively. Medium frame steers would be expected to produce choice carcasses at live weights of 1050 to 1150 pounds and heifers at 900 to 1000 pounds. Small frame steers and heifers would produce choice carcasses at live weights of less than 950 and 800 pounds, respectively.

An indication of frame score is very important when estimating growing and finishing cattle nutrient requirements and projected feed intake. Although larger framed cattle will generally have increased intakes, energy concentration in the feed that is used for gain (NEg) is lower than that of medium framed cattle.

Furthermore, protein requirements for large framed steers have been based on medium framed steers that weigh 15% less. This results in a greater protein requirement for large compared to medium framed cattle.

Frame score measurements are descriptive of animal type and growth patterns in beef cattle. They are useful in evaluating animal nutritional requirements, characterizing target market weights, and aid in selection decisions.

Example

An April-born calf measured 45 inches at the hip and weighed 625 pounds in December. From April to December is 8 months, and using the bull and steer chart from Table 1, an 8-month-old calf with a hip-height of 45 inches has a frame score of 5. From Table 2, a frame score 5 steer should finish at about 1150 pounds. 1150 minus 625 equals 525 pounds of gain needed to finish.

Assuming an August target date, there are approximately 240 days from December to August. Therefore we need an average daily gain (ADG) of 525 divided by 240 days, which equals 2.2 pounds of gain per day. We can now develop a ration, and adjust it periodically as the steer grows, to meet our goal of an 1150 pound finished steer in August.

ADG Needed = (Finish Weight — Starting Weight) • Number of Days
2.2 = (1150 - 635) • 240

Note:

For show steers, reduce the number of days by about 20 to account for weight losses or reduced weight gain associated with washing, training and hauling prior to the show. In the above sample, 220 days should be used rather than 240.

Diets for Growing/Finishing Steers

Diets in Tables 3 through 8 were formulated using the following assumptions: Angus steers, with an initial age of 9 months, fed to finish. All steers were assumed to be implanted (e.g. Ralgro, Synovex)[1] and fed an ionophore (e.g. Rumensin, Bovatec).[2]

[1] Expected gains will be reduced • pound per day if not implanting.
[2] Expected gains will be reduced • pound per day if not feeding an ionophore.

Table 3. Corn grain and high quality hay.

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Weight	Average Daily Gain	Intake	Grain	Hay	Corn Silage	Protein Supplement	Lime-stone
- Frame Score = 4.0; Slaughter Weight = 1050 pounds -							
500	2.0	14.9	5.3	9.6	0.0	0.0	0.00
	2.5	14.3	8.7	4.2	0.0	1.4	0.06
700	2.0	19.1	6.8	12.3	0.0	0.0	0.00
	2.5	18.5	11.2	5.4	0.0	1.8	0.08
900	2.0	19.9	12.1	5.9	0.0	1.9	0.00
	2.5	--	--	--	--	--	--
- Frame Score = 5.5; Slaughter Weight = 1200 pounds -							
500	2.0	15.0	4.2	10.8	0.0	0.0	0.00
	2.5	14.5	7.2	6.7	0.0	0.6	0.00
	3.0	14.3	10.0	1.4	0.0	2.7	0.19
700	2.0	19.1	5.9	13.2	0.0	0.0	0.00
	2.5	18.8	9.5	8.3	0.0	0.9	0.00
	3.0	17.7	13.8	1.2	0.0	2.5	0.16
900	2.0	22.4	7.3	15.1	0.0	0.0	0.00
	2.5	21.7	12.1	7.7	0.0	1.9	0.00
	3.0	20.5	17.4	1.0	0.0	2.0	0.18
1100	2.0	23.9	10.9	12.9	0.0	0.0	0.00
	2.5	22.5	18.1	2.2	0.0	2.2	0.10
	3.0	--	--	--	--	--	--
- Frame Score = 7.0; Slaughter Weight = 1350 pounds -							
600	2.0	17.1	3.5	13.6	0.0	0.0	0.00
	2.5	16.9	6.9	10.0	0.0	0.0	0.00
	3.0	16.3	10.6	4.0	0.0	1.6	0.14
800	2.0	21.4	4.4	17.0	0.0	0.0	0.00
	2.5	21.1	8.6	12.5	0.0	0.0	0.00
	3.0	20.3	13.2	4.9	0.0	1.9	0.18
1000	2.0	24.4	6.3	18.1	0.0	0.0	0.00
	2.5	26.4	11.0	15.4	0.0	0.0	0.00
	3.0	23.0	16.1	4.5	0.0	2.2	0.20
1200	2.0	25.6	10.5	15.2	0.0	0.0	0.00
	2.5	24.8	15.1	7.3	0.0	2.4	0.00
	3.0	--	--	--	--	--	--

Table 4. Corn grain and medium quality hay.

Weight	Average

Weight	Daily Gain	Intake	Grain	Hay	Corn Silage	Protein Supplement	Lime-stone
- Frame Score = 4.0; Slaughter Weight = 1050 pounds -							
500	2.0	15.2	6.0	7.6	0.0	1.4	0.13
	2.5	14.5	8.7	2.9	0.0	2.8	0.19
700	2.0	19.6	7.8	9.8	0.0	1.9	0.17
	2.5	18.7	11.2	3.7	0.0	3.6	0.25
900	2.0	20.2	12.1	4.0	0.0	3.9	0.18
	2.5	--	--	--	--	--	--
- Frame Score = 5.5; Slaughter Weight = 1200 pounds -							
500	2.0	15.3	4.9	8.9	0.0	1.5	0.00
	2.5	14.9	7.3	5.4	0.0	2.1	0.13
	3.0	13.9	10.4	0.7	0.0	2.7	0.12
700	2.0	19.7	6.3	11.4	0.0	1.9	0.09
	2.5	19.1	9.4	6.9	0.0	2.7	0.17
	3.0	17.9	13.9	1.3	0.0	2.4	0.31
900	2.0	22.9	8.5	11.5	0.0	2.9	0.10
	2.5	22.0	12.1	5.5	0.0	4.2	0.10
	3.0	21.0	16.7	1.0	0.0	3.0	0.18
1100	2.0	24.2	10.9	9.7	0.0	3.5	0.00
	2.5	22.5	17.9	1.6	0.0	2.8	0.20
	3.0	--	--	--	--	--	--
- Frame Score = 7.0; Slaughter Weight = 1350 pounds -							
600	2.0	17.7	4.8	11.4	0.0	1.3	0.16
	2.5	17.3	6.9	7.8	0.0	2.5	0.15
	3.0	16.7	10.0	3.3	0.0	3.2	0.22
800	2.0	22.0	5.9	14.3	0.0	1.7	0.19
	2.5	21.5	8.6	9.7	0.0	3.1	0.19
	3.0	20.7	12.3	4.1	0.0	3.9	0.27
1000	2.0	25.1	7.5	15.0	0.0	2.4	0.22
	2.5	24.6	11.0	9.8	0.0	3.5	0.22
	3.0	23.2	16.2	3.5	0.0	3.3	0.20
1200	2.0	26.5	10.5	13.2	0.0	2.5	0.23
	2.5	25.1	15.1	5.0	0.0	4.8	0.22
	3.0	--	--	--	--	--	--

Table 5. Corn grain, medium quality hay and corn silage.

Average Daily					Corn	Protein	Lime-

Weight	Gain	Intake	Grain	Hay	Silage	Supplement	stone
- Frame Score = 4.0; Slaughter Weight = 1050 pounds -							
500	2.0	25.4	3.8	3.4	16.2	1.8	0.13
	2.5	18.1	7.9	1.4	5.8	2.8	0.19
700	2.0	32.6	4.9	4.4	20.8	2.3	0.17
	2.5	23.4	10.3	1.9	7.5	3.6	0.25
900	2.0	25.3	11.1	2.0	8.1	3.9	0.18
	2.5	--	--	--	--	--	--
- Frame Score = 5.5; Slaughter Weight = 1200 pounds -							
500	2.0	21.8	3.8	6.1	10.2	1.5	0.14
	2.5	22.4	6.0	2.2	11.9	2.1	0.13
	3.0	16.6	9.2	0.0	3.8	3.4	0.19
700	2.0	27.7	4.9	7.8	13.0	1.9	0.09
	2.5	28.7	7.6	2.9	15.3	2.7	0.17
	3.0	22.5	12.6	0.0	7.2	2.6	0.20
900	2.0	32.3	6.9	8.0	15.2	2.2	0.00
	2.5	33.4	10.0	2.2	17.8	3.2	0.10
	3.0	24.2	16.5	0.0	5.5	2.0	0.18
1100	2.0	36.1	9.6	3.6	19.3	3.5	0.11
	2.5	28.6	16.0	0.0	9.1	3.3	0.20
	3.0	--	--	--	--	--	--
- Frame Score = 7.0; Slaughter Weight = 1350 pounds -							
600	2.0	29.4	2.6	6.2	18.8	1.7	0.16
	2.5	24.5	6.0	4.3	11.5	2.5	0.15
	3.0	22.0	9.1	0.8	8.8	3.2	0.15
800	2.0	36.5	3.3	7.6	23.3	2.1	0.19
	2.5	30.3	7.5	5.3	14.2	3.1	0.19
	3.0	27.3	11.3	1.0	10.9	3.9	0.18
1000	2.0	42.0	3.8	8.8	26.8	2.4	0.22
	2.5	34.5	9.7	4.9	16.2	3.5	0.21
	3.0	26.6	15.9	1.1	6.1	3.3	0.20
1200	2.0	39.7	7.9	7.9	21.1	2.5	0.23
	2.5	35.5	13.8	1.3	16.7	3.6	0.22
	3.0	--	--	--	--	--	--

Table 6. Barley grain and high quality hay.

Weight	Average Daily Gain	Intake	Grain	Hay	Corn Silage	Protein Supplement	Lime-stone

- Frame Score = 4.0; Slaughter Weight = 1050 pounds -							
500	2.0	14.9	6.1	8.8	0.0	0.0	0.00
	2.5	14.4	10.1	3.5	0.0	0.7	0.13
700	2.0	19.2	7.8	11.3	0.0	0.0	0.00
	2.5	18.6	13.1	5.4	0.0	0.0	0.00
900	2.0	20.3	13.4	7.0	0.0	0.0	0.00
	2.5	--	--	--	--	--	--
- Frame Score = 5.5; Slaughter Weight = 1200 pounds -							
500	2.0	15.0	4.6	10.4	0.0	0.0	0.00
	2.5	14.7	8.2	6.5	0.0	0.0	0.00
	3.0	--	--	--	--	--	--
700	2.0	19.2	5.9	13.3	0.0	0.0	0.00
	2.5	18.9	10.6	8.4	0.0	0.0	0.00
	3.0	18.2	15.4	0.9	0.0	1.7	0.24
900	2.0	22.5	8.0	14.4	0.0	0.0	0.00
	2.5	21.7	14.7	7.0	0.0	0.0	0.00
	3.0	--	--	--	--	--	--
1100	2.0	24.0	12.2	11.8	0.0	0.0	0.00
	2.5	22.9	20.5	2.2	0.0	0.0	0.20
	3.0	--	--	--	--	--	--
- Frame Score = 7.0; Slaughter Weight = 1350 pounds -							
600	2.0	17.1	3.5	13.6	0.0	0.0	0.00
	2.5	16.9	6.9	10.0	0.0	0.0	0.00
	3.0	16.5	10.0	4.8	0.0	1.6	0.15
800	2.0	21.4	4.4	17.0	0.0	0.0	0.00
	2.5	21.1	8.6	12.5	0.0	0.0	0.00
	3.0	20.5	12.3	6.0	0.0	2.0	0.18
1000	2.0	24.3	6.2	18.0	0.0	0.0	0.00
	2.5	24.0	11.0	13.0	0.0	0.0	0.00
	3.0	23.0	16.1	4.5	0.0	2.2	0.20
1200	2.0	25.6	10.5	15.2	0.0	0.0	0.00
	2.5	24.5	16.1	6.0	0.0	2.4	0.00
	3.0	--	--	--	--	--	--

Table 7. Barley grain and medium quality hay.

Weight	Average Daily Gain	Intake	Grain	Hay	Corn Silage	Protein Supplement	Lime-stone

- Frame Score = 4.0; Slaughter Weight = 1050 pounds -							
500	2.0	15.3	6.9	7.6	0.0	0.7	0.13
	2.5	14.4	10.7	2.1	0.0	1.4	0.19
700	2.0	19.7	9.8	9.8	0.0	0.0	0.17
	2.5	18.8	14.0	3.7	0.0	0.9	0.16
900	2.0	20.6	14.3	5.1	0.0	1.0	0.18
	2.5	--	--	--	--	--	--
- Frame Score = 5.5; Slaughter Weight = 1200 pounds -							
500	2.0	15.6	3.9	11.6	0.0	0.0	0.14
	2.5	15.1	8.9	5.2	0.0	0.7	0.20
	3.0	--	--	--	--	--	--
700	2.0	19.9	7.9	11.9	0.0	0.0	0.17
	2.5	19.4	11.5	6.7	0.0	0.9	0.25
	3.0	18.2	15.4	0.9	0.0	1.7	0.24
900	2.0	23.2	10.3	12.6	0.0	0.0	0.20
	2.5	22.2	15.4	5.5	0.0	1.1	0.19
	3.0	--	--	--	--	--	--
1100	2.0	24.3	15.7	8.4	0.0	0.0	0.21
	2.5	22.7	21.4	1.1	0.0	0.0	0.20
	3.0	--	--	--	--	--	--
- Frame Score = 7.0; Slaughter Weight = 1350 pounds -							
600	2.0	17.7	4.4	11.4	0.0	1.7	0.16
	2.5	17.3	6.9	7.8	0.0	2.5	0.15
	3.0	16.7	10.0	3.3	0.0	3.2	0.22
800	2.0	22.0	5.5	14.3	0.0	2.1	0.19
	2.5	21.5	8.6	9.7	0.0	3.1	0.19
	3.0	20.8	12.4	4.1	0.0	4.0	0.27
1000	2.0	25.1	7.5	15.0	0.0	2.4	0.22
	2.5	24.3	11.6	9.0	0.0	3.5	0.21
	3.0	23.1	16.1	3.5	0.0	3.3	0.20
1200	2.0	26.3	11.8	11.8	0.0	2.5	0.23
	2.5	24.9	16.2	5.0	0.0	3.6	0.22
	3.0	--	--	--	--	--	--

Table 8. Barley grain, medium quality hay and corn silage.

Weight	Average Daily Gain	Intake	Grain	Hay	Corn Silage	Protein Supplement	Lime-stone
- Frame Score = 4.0; Slaughter Weight = 1050 pounds -							

500	2.0	25.3	4.5	3.0	16.1	1.4	0.13
	2.5	19.5	8.7	0.7	7.8	2.1	0.19
700	2.0	32.7	5.9	3.9	20.8	1.9	0.17
	2.5	26.5	12.1	0.9	12.4	0.9	0.16
900	2.0	27.4	12.3	2.0	10.9	2.0	0.18
	2.5	--	--	--	--	--	--
- Frame Score = 5.5; Slaughter Weight = 1200 pounds -							
500	2.0	24.4	3.8	5.4	14.3	0.7	0.14
	2.5	26.7	5.9	0.0	18.9	1.7	0.20
	3.0	15.9	11.5	0.0	2.8	1.3	0.25
700	2.0	31.3	4.9	6.9	18.3	0.9	0.17
	2.5	34.6	7.7	0.0	24.6	2.2	0.17
	3.0	20.5	14.9	0.0	3.6	1.7	0.24
900	2.0	36.2	6.9	6.9	21.3	1.1	0.10
	2.5	36.9	12.1	0.0	23.5	1.1	0.19
	3.0	--	--	--	--	--	--
1100	2.0	40.4	10.9	2.4	25.8	1.2	0.11
	2.5	26.7	20.5	0.0	6.1	0.0	0.20
	3.0	--	--	--	--	--	--
- Frame Score = 7.0; Slaughter Weight = 1350 pounds -							
600	2.0	28.9	2.6	6.7	17.8	1.5	0.16
	2.5	24.5	6.0	4.3	11.5	2.5	0.15
	3.0	20.5	9.8	0.8	6.5	3.1	0.22
800	2.0	35.7	3.3	8.3	22.1	1.9	0.19
	2.5	30.3	7.5	5.3	14.2	3.1	0.19
	3.0	25.4	12.1	1.0	8.1	3.9	0.27
1000	2.0	39.9	3.8	10.0	23.4	2.4	0.22
	2.5	34.5	9.7	4.9	16.2	3.5	0.21
	3.0	26.9	16.1	1.1	6.1	3.3	0.30
1200	2.0	41.7	7.9	6.6	24.5	2.5	0.23
	2.5	31.2	14.9	2.5	10.0	3.6	0.22
	3.0	--	--	--	--	--	--

Environmental conditions included a dry pen, 20 F and a 5 mph wind speed. Steers were acclimated to cold weather. Dry matter intakes were estimated. Feedstuffs were limited to barley or corn grain, high or medium quality hay and corn silage. Protein supplement and limestone as a source of calcium were included in some diets (see chart below).

Nutrient composition (percent on a dry matter basis).

			Total		
		Dry	Digestible	Crude	

Feed	Matter	Nutrients	Protein	Calcium	Phosphorous
	(DM)	(TDN)	(CP)	(Ca)	(P)
Barley	88.0	84.0	13.2	0.05	0.35
Corn	88.0	88.0	9.8	0.03	0.31
Prot. suppl.	92.0	69.0	40.9	0.70	1.20
Alfalfa hay	91.0	60.0	17.0	1.39	0.24
Grass hay	88.0	56.0	10.0	0.29	0.28
Corn silage	33.0	66.0	7.8	0.31	0.27
Limestone	100.0	0.0	0.0	34.00	0.02

Based upon these assumptions, cattle should perform as expected. Steers should gain better than expected if intake is greater than indicated in the following tables or if the average temperature exceeds 20 F. Performance could be depressed if intakes are not maintained or during long periods of extremely cold weather.

For example, you have a frame score 5.5 steer weighing 500 pounds and wish to feed corn grain and alfalfa hay. Example rations for this situation are found in the middle of Table 3. If you desire an average daily gain of 2.0 pounds, you would expect the steer to eat 15.0 pounds of feed daily. To meet the steer's nutritional needs, 4.2 pounds of corn, 10.8 pounds of alfalfa hay and no (0) additional protein or limestone supplemented is needed. If feeding is going to occur more than once per day, the feed should be equally distributed between feedings.

[More]

[Beef Grading] [Physiological Maturity]
[Determining USDA Yield Grade] [Determining Carcass and Live Animal Value]
[Value-Based Beef Cattle Production Goals]

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Information for Prospective Students

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