

Beef Cattle Nutrition Series

# Part 3: Nutrient Requirement Tables

(2018 Revised)



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# Beef Cattle Nutrition Series

## Part 3: Nutrient Requirement Tables



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### ▼ Introduction and Updates

This report is an update to the initially prepared *Nutrient Requirement Tables* (MP391) publication that was based on *Nutrient Requirements of Beef Cattle, Seventh Revised Edition* (1996). Updates to this report were determined based on the need to correct known issues with previous tables, modify tables to better accommodate animal classes and adjust values according to model changes associated with the *Nutrient Requirements of Beef Cattle, Eighth Revised Edition* (2016, a.k.a. NRC).

Tables 7 through 12 were generated using equations presented in the *Nutrient Requirements of Beef Cattle, Eighth Revised Edition* (2016).

**These tables are for educational purposes, and no guarantee is implied to their accuracy.**

Individual animal nutrient requirements and responses to nutrient supply are affected by genetic and environmental factors as well as nutrient imbalances. Animal intake can vary significantly from the predicted intake provided in the tables. Therefore, these values can only serve as a starting point. Monitoring feed intake, rate of weight change and body condition change are necessary to make farm specific adjustments.

### ▼ Table Generation

Tables 7 through 12 were constructed using an R package developed by the author [available through the github repository using the R devtools package and function `install_github("sgadberry/beefnrc")`]. Table generation with the R package will not mimic outputs generated using the Beef Cattle Nutrient Requirements Model 2016 (BCNRM) Excel add-in provided through National Academy Press.

Primary differences include:

- The R package allows recursive table generation when functions are nested within for loops.
- The BCNRM requires manipulating input and tables worksheets, whereas the R package restricts user inputs to table-specific functions.
- The BCNRM solves tables from user TDN input, whereas the R package solves for TDN and thus dry matter intake based on target NEg for growing cattle and target NEm for mature cattle using while loops.
- The R package uses unshrunk weight inputs and prints unshrunk weight summaries.
- The R package attempts to provide table data for first-calf heifers and pregnant, non-lactating beef cows that version 1.0.37.10 and earlier versions of the BCNRM lack.

### ▼ General Concepts Applied to This Version

- Animal weights in the tables are unshrunk body weights. Weights in the previous version were considered shrunk weights.  $\text{Unshrunk weight} \times 0.96 = \text{shrunk weight}$ .
- The multiplicative effect for body condition score on NEm was set to 6. At body condition score 5, adjustment for NEm = 1. At condition score 6, NEm is multiplied by 1.05, which increases the base NEm by 5 percent.

- Tabular values expressed as a percentage of intake throughout represent the NRC 1996, 2000 dry matter intake prediction equations.
- Calf birth weights were calculated as 6.6 percent of either dam's mature weight or 85 percent of dam's mature weight for first-calf heifers.
- NRC recommended adjustments to net energy for maintenance and dry matter intake for growth implant = true and ionophore = true were applied to feeder calves and feeder yearlings and adjustments for growth implant = false and ionophore = false were applied to growing replacement heifers, growing bull calves and growing bull yearlings.

## ▼ Nutrient Requirements and Adjustments Explained

### ▼ Mineral Requirements

At least 17 minerals are required by beef cattle. Macrominerals required include calcium, magnesium, phosphorus, potassium, sodium,

chlorine and sulfur. The microminerals required are chromium, cobalt, copper, iodine, iron, manganese, molybdenum, nickel, selenium and zinc. Other minerals, including arsenic, boron, lead, silicon and vanadium, have been shown to be essential for one or more animal species, but there is no evidence that these minerals are of practical importance in beef cattle.

Calcium and phosphorus requirements are shown in Tables 4 to 12. Calcium requirements are similar to those in the 1984 NRC report because new information is not sufficient to justify a change. Calcium requirements are adjusted to 50 percent true absorption. Phosphorus requirements for maintenance are lower in the 1996 NRC report, and the phosphorus requirements have been adjusted to 68 percent true absorption.

The requirements and maximum tolerable concentrations for other minerals are shown in Table 1. For certain minerals, requirements are not listed because research data are inadequate to determine requirements.

A number of elements that are not required (or required in minute amounts) can cause toxicity in beef cattle. Maximum tolerable concentrations

**Table 1. Mineral and Vitamin Requirements and Maximum Tolerable Concentrations (in Percentage or PPM of Diet Dry Matter)**

| For Dry Matter                |       |                          |           |           |                                    |
|-------------------------------|-------|--------------------------|-----------|-----------|------------------------------------|
| Items                         | Unit  | Growing and<br>Finishing | Cows      |           | Maximum Tolerable<br>Concentration |
|                               |       |                          | Gestating | Lactating |                                    |
| <b>Minerals</b>               |       |                          |           |           |                                    |
| Magnesium                     | %     | 0.10                     | 0.12      | 0.20      | 0.40                               |
| Potassium                     | %     | 0.60                     | 0.60      | 0.70      | 2                                  |
| Sodium                        | %     | 0.07                     | 0.07      | 0.10      |                                    |
| Sulfur                        | %     | 0.15                     | 0.15      | 0.15      | 0.40                               |
| Cobalt                        | ppm   | 0.15                     | 0.15      | 0.15      | 25                                 |
| Copper                        | ppm   | 10.00                    | 10.00     | 10.0      | 40                                 |
| Iodine                        | ppm   | 0.50                     | 0.50      | 0.50      | 50                                 |
| Iron                          | ppm   | 50.00                    | 50.00     | 50.00     | 500                                |
| Manganese                     | ppm   | 20.00                    | 40.00     | 40.00     | 1,000                              |
| Selenium                      | ppm   | 0.10                     | 0.10      | 0.10      | 5                                  |
| Zinc                          | ppm   | 30.00                    | 30.00     | 30.00     | 500                                |
| <b>Vitamins</b>               |       |                          |           |           |                                    |
| A                             | IU/lb | 1,000                    | 1,273     | 1,773     |                                    |
| D                             | IU/lb | 125                      | 125       | 125       |                                    |
| E                             | IU/lb | 16                       | 16        | 16        |                                    |
| E, for stressed feeder calves | IU/d  | 400-500                  |           |           |                                    |

**Source:** Adapted from Table 5-1 in *Nutrient Requirements of Beef Cattle*, National Research Council, 1996. Washington, D.C.: National Academy of Sciences.

several elements known to be toxic to cattle are given in Table 2. The maximum tolerable concentration for a mineral has been defined as “that dietary level that, when fed for a limited period, will not impair animal performance and should not produce unsafe residues in human food derived from the animal” (1980 NRC: p. 3).

**Table 2. Maximum Tolerable Concentrations of Mineral Elements Toxic to Cattle**

| Element   | Concentration (ppm)        |
|-----------|----------------------------|
| Aluminum  | 1,000                      |
| Arsenic   | 50 (100 for organic forms) |
| Bromine   | 200                        |
| Cadmium   | 0.5                        |
| Fluorine  | 40 to 100                  |
| Lead      | 30                         |
| Mercury   | 2                          |
| Strontium | 2,000                      |

**Source:** Adapted from Table 1 in National Research Council, 1980. *Mineral Tolerance of Domestic Animals*. Washington, D.C.: National Academy of Sciences.

## ▼ Vitamin Requirements

The vitamin most likely to be deficient in beef cattle diets is vitamin A. Vitamin A can be stored in the liver to prevent vitamin A deficiency. No more than two to four months of protection from stored vitamin A can be expected.

Beef cattle requirements for vitamin A are 1,000 IU/lb dry feed for beef feedlot cattle; 1,273 IU/lb dry feed for pregnant beef heifers and cows; and 1,773 IU/lb dry feed for lactating cows and breeding bulls.

Vitamin D is synthesized by beef cattle exposed to sunlight or fed sun-cured forages. Therefore, animals rarely require vitamin D supplementation. The vitamin D requirement of beef cattle is 125 IU/lb dry diet.

Determining vitamin E requirements of ruminants is difficult because of its interrelationships with other dietary components. Vitamin E requirements depend on concentrations of antioxidants, sulfur-containing amino acids and selenium in the diet. Vitamin E is not stored in the body in large concentrations. The vitamin E requirement for beef cattle is not well established but is estimated to be 16 IU/lb feed dry matter except for stressed feeder calves; whereby, 400-500 IU/d vitamin E is recommended.

## ▼ Energy and Protein Requirements

In most beef production situations, cattle are fed to appetite with either high forage (stocker, back-grounding, cow-calf) or high-grain diets (growing and finishing cattle) and are supplemented to support the desired level of production, based on group averages. The requirement tables were designed with that in mind. Tables 4 to 12 show energy, protein, calcium and phosphorus requirements as 1) daily nutrient requirements per animal in pounds or Mcal for energy and 2) nutrient density of the diet on a dry-matter basis. The following additional adjustments were applied to maintenance energy for table development.

- Ionophore's increased NEm of the diet using a 1.023 multiplier for feeder calves.
- First-calf heifers had a 1.25 NEm multiplier during lactation.
- Bulls had a 1.15 NEm multiplier.
- No adjustments were made for breed (multiplier = 1).
- Lactation factor multiplier was set to 1.2 during lactation and 1 during gestation.
- No adjustments were made for environmental conditions.
- Fixed body condition score set to 6, increasing base NEm by 5 percent.

## ▼ Dry Matter Intake

Dry matter intake estimates published in Tables 4 through 12 were based on previously developed equations (NRC 1996, 2000) and differed for calves, yearlings and cows less than or equal to 93 or more than 93 days pregnant. Dry matter intake was predicted from shrunk body weight and dietary NEm value with adjustments.

- For growing and yearling feeders, dry matter intake was adjusted by 0.97 for ionophore plus implant responses.
- For bulls and all females, a dry matter intake multiplier of 0.94 was applied to account for implant=false.



- For bulls and all females, a dry matter intake multiplier of 1 was applied to account for ionophore=false.
- Additional factors that were excluded from dry matter intake adjustment include available forage, body fatness, weather and mud.

Dry matter intake alternative equations were presented in the 2016 NRC.

For mature beef cows, an alternative estimate of dry matter intake includes:

- Non-lactating cows
  - 1.8% shrunk body weight for low TDN (< 52%) diets.
  - 2.2% shrunk body weight for moderate TDN diets (52-59%).
  - 2.5% shrunk body weight for high TDN diets (> 59%).
- Lactating cows
  - 2.2% shrunk body weight for low TDN (< 52%) diets.
  - 2.5% shrunk body weight for moderate TDN diets (52-59%).
  - 2.7% shrunk body weight for high TDN diets (> 59%).

For growing cattle, an alternative estimate of dry matter intake includes:

- $DMI = SBW \times (0.01245 + 0.019218 \times NEm_a - 0.007259 \times NEm_a^2) \times \text{Adjustments}$ 
  - SBW is shrunk body weight (kg)
    - $SBW, \text{ lbs} \div 2.2 = SWB, \text{ kg}$
  - NEm<sub>a</sub> is the net energy maintenance content of the diet (Mcal/kg)
    - $NEm_a, \text{ Mcal/lb} \times 2.2 = NEm_a, \text{ Mcal/kg}$

## ▼ Mature Cows

Table 4 for mature cows includes the nutrient requirements of cows for months 1 to 12 since calving. Requirements are shown for mature cow weights 1,100, 1,200, 1,300 and 1,400 pounds and three levels of peak milk production (average peak milk = 18 and relative milk yield adjustments of 3 and 7 equal to 11 and 25 pounds). Lactation was set for 7 months with peak milk occurring at week 8.5 following calving. Table 3 provides information for predicting peak milk production of beef cows. Calf birth weight was assumed  $0.066 \times$  mature shrunk body weight.

**Table 3. Predicted Peak Milk Based on Male Calf Shrunk Weaning Weight at 7 Months**

| Mature Dam<br>Shrunk Weight (lbs) | Peak milk (lb/d) |     |     |     |     |
|-----------------------------------|------------------|-----|-----|-----|-----|
|                                   | 10               | 15  | 20  | 25  | 30  |
| 1,000                             | 460              | 485 | 515 | 545 | 570 |
| 1,100                             | 480              | 510 | 540 | 565 | 590 |
| 1,200                             | 500              | 530 | 560 | 585 | 615 |
| 1,300                             | 520              | 550 | 580 | 605 | 635 |
| 1,400                             | 540              | 570 | 600 | 625 | 655 |

**Source:** Adapted from Appendix Table 12 in National Research Council, 1996. *Nutrient Requirements of Beef Cattle*.

Table 6 includes the nutrient requirements to increase the body condition score (BCS) of beef cows from a BCS 4 to a BCS 6 during the last 90 days of pregnancy. An additional level of protein is suggested, labeled CP<sub>adj</sub>. CP<sub>adj</sub> is based on a diet composition TDN:CP ratio of 6:1.

## ▼ Immature Females

**Two-Year-Old Heifers or First-Calf Cows Calving at 24 Months of Age.** Table 5 shows the requirements for two-year-old heifers with a peak milk production of 74 percent of peak milk (18 pounds) at maturity. Requirements are based on 85 percent of mature body weight at first calving and 90 percent of mature body weight by second calving with mature weights of 1,100 to 1,400 pounds. The table was generated for heifers with 20 pounds of peak milk production. Calf birth weight was assumed  $0.066 \times$  dam's weight at calving.

Table 6 includes the nutrient requirements to increase the body condition score (BCS) of second-calf females from a BCS 4 to a BCS 6 during the last 90 days of pregnancy. An additional level of protein is suggested, labeled CP<sub>adj</sub>. CP<sub>adj</sub> is based on a diet composition TDN:CP ratio of 6:1.

**Bred Replacement Heifers.** Table 7, revised for bred heifers, includes the requirements for animals with mature weights of 1,100 to 1,400 pounds. Nutrient requirements are shown for 9 months. Month 1 is the first month of pregnancy. Target weight at breeding was 60 percent, and target weight at calving was 85 percent of mature body weight. Calf birth weight was set at 6.6 percent heifer's calving weight.



**Growing Replacement Heifers.** Table 8, summarizes the nutrient requirements of growing replacement heifers within estimated mature weight classes of 1,100 to 1,400 pounds. Growing weight classes range from 400 to 800 pounds and average daily gains from 0.5 to 2 pounds per day.

## ▼ Feeder and Finishing Cattle

**Growing Feeder Calves Less Than 12 Months of Age.** Table 9 summarizes the nutrient requirements for this class. Weigh class options at finishing were set at 1,200 and 1,400 pounds. Average daily gain was set for 1 to 3 /d in increments of 0.5 lb/d and weight classes during the growing period range from 400 to 800 pounds.

**Yearling Feeder Cattle.** Table 10 summarizes the nutrient requirements for this class. Weigh class options at finishing were set at 1,200 and 1,400 pounds. Average daily gain was set for 1 to 3 lb/d in increments of 0.5 lb/d plus an average daily gain of 3.3. Weight classes ranged from 600 to 1,100 pounds.

## ▼ Bulls

**Growing Bull Calves Less Than 12 Months of Age.** Table 11 summarizes the nutrient requirements for this class for mature weights of 1,800 and 2,200 pounds. Average daily gain was set for 1 to 3 lb/d in increments of 0.5, and weight ranges spanned from 500 to 900 pounds in 100-pound increments.

**Yearling and Breeding Bulls.** Table 12 contains the nutrient requirements of growing yearling and maintenance of mature bulls. Mature weight classes were set to 1,800 and 2,200 pounds. Average dialy gain ranged from 1 to 3.5 in 0.5-pound increments. Weight range was from 900 to 1,400 pounds and 1,800 pounds for mature weights of 1,800 and 2,200 pounds, respectively.

### Table Abbreviations

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Ca</b>             | Calcium                                      |
| <b>CP</b>             | Crude protein                                |
| <b>CPadj</b>          | Crude protein adjusted to a 6:1 TDN:CP ratio |
| <b>DM</b>             | Dry matter                                   |
| <b>NE<sub>g</sub></b> | Net energy for gain                          |
| <b>NE<sub>m</sub></b> | Net energy for maintenance                   |
| <b>P</b>              | Phosphorus                                   |
| <b>TDN</b>            | Total digestible nutrients                   |

Table 4. Mature Cow Requirements at Mature Unshrunk Weight

| Mature Weight:<br>Peak Milk<br>Period | Month<br>Since<br>Calving | Daily Nutrients Required |               |             |             |            | Daily Nutrients as Percentage of Intake |            |                |           |           |          |
|---------------------------------------|---------------------------|--------------------------|---------------|-------------|-------------|------------|-----------------------------------------|------------|----------------|-----------|-----------|----------|
|                                       |                           | TDN<br>(lbs)             | NEm<br>(Mcal) | CP<br>(lbs) | Ca<br>(lbs) | P<br>(lbs) | Intake<br>lbs DM/d                      | TDN<br>%DM | NEm<br>Mcal/lb | CP<br>%DM | Ca<br>%DM | P<br>%DM |
| 1,100 lbs                             |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| 11 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 13.46                    | 13.1          | 2.26        | 0.06        | 0.04       | 23.2                                    | 58         | 0.56           | 9.7       | 0.26      | 0.17     |
|                                       | 2                         | 14.13                    | 13.9          | 2.46        | 0.066       | 0.044      | 23.9                                    | 59.1       | 0.58           | 10.3      | 0.28      | 0.18     |
|                                       | 3                         | 13.79                    | 13.5          | 2.35        | 0.063       | 0.042      | 23.5                                    | 58.6       | 0.57           | 10        | 0.27      | 0.18     |
| Mid Lactation                         | 4                         | 13.12                    | 12.7          | 2.14        | 0.057       | 0.039      | 22.8                                    | 57.4       | 0.56           | 9.4       | 0.25      | 0.17     |
|                                       | 5                         | 12.52                    | 12            | 1.94        | 0.051       | 0.035      | 22.2                                    | 56.4       | 0.54           | 8.7       | 0.23      | 0.16     |
|                                       | 6                         | 11.94                    | 11.3          | 1.77        | 0.046       | 0.032      | 21.6                                    | 55.3       | 0.52           | 8.2       | 0.21      | 0.15     |
| Mid Gestation                         | 7                         | 11.59                    | 10.9          | 1.64        | 0.042       | 0.03       | 21.2                                    | 54.7       | 0.51           | 7.8       | 0.2       | 0.14     |
|                                       | 8                         | 9.64                     | 8.3           | 1.34        | 0.033       | 0.025      | 19.8                                    | 48.7       | 0.42           | 6.8       | 0.16      | 0.13     |
|                                       | 9                         | 9.91                     | 8.7           | 1.39        | 0.033       | 0.025      | 19.9                                    | 49.9       | 0.44           | 7         | 0.16      | 0.13     |
| Late Gestation                        | 10                        | 10.32                    | 9.3           | 1.47        | 0.054       | 0.034      | 20                                      | 51.6       | 0.46           | 7.4       | 0.27      | 0.17     |
|                                       | 11                        | 11.03                    | 10.3          | 1.61        | 0.054       | 0.034      | 20.3                                    | 54.2       | 0.51           | 7.9       | 0.26      | 0.16     |
|                                       | 12                        | 12.06                    | 11.7          | 1.83        | 0.054       | 0.034      | 20.9                                    | 57.6       | 0.56           | 8.8       | 0.26      | 0.16     |
| 18 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 14.47                    | 14.3          | 2.58        | 0.069       | 0.046      | 24.3                                    | 59.6       | 0.59           | 10.6      | 0.28      | 0.19     |
|                                       | 2                         | 15.38                    | 15.4          | 2.85        | 0.077       | 0.05       | 25.2                                    | 61         | 0.61           | 11.3      | 0.3       | 0.2      |
|                                       | 3                         | 14.88                    | 14.8          | 2.7         | 0.073       | 0.048      | 24.7                                    | 60.3       | 0.6            | 10.9      | 0.29      | 0.19     |
| Mid Lactation                         | 4                         | 14.04                    | 13.8          | 2.43        | 0.065       | 0.043      | 23.8                                    | 59         | 0.58           | 10.2      | 0.27      | 0.18     |
|                                       | 5                         | 13.19                    | 12.8          | 2.15        | 0.057       | 0.039      | 22.9                                    | 57.6       | 0.56           | 9.4       | 0.25      | 0.17     |
|                                       | 6                         | 12.44                    | 11.9          | 1.92        | 0.05        | 0.035      | 22.1                                    | 56.3       | 0.54           | 8.7       | 0.23      | 0.16     |
| Mid Gestation                         | 7                         | 11.93                    | 11.3          | 1.75        | 0.045       | 0.032      | 21.5                                    | 55.4       | 0.52           | 8.1       | 0.21      | 0.15     |
|                                       | 8                         | 9.64                     | 8.3           | 1.34        | 0.033       | 0.025      | 19.8                                    | 48.7       | 0.42           | 6.8       | 0.16      | 0.13     |
|                                       | 9                         | 9.91                     | 8.7           | 1.39        | 0.033       | 0.025      | 19.9                                    | 49.9       | 0.44           | 7         | 0.16      | 0.13     |
| Late Gestation                        | 10                        | 10.32                    | 9.3           | 1.47        | 0.054       | 0.034      | 20                                      | 51.6       | 0.46           | 7.4       | 0.27      | 0.17     |
|                                       | 11                        | 11.03                    | 10.3          | 1.61        | 0.054       | 0.034      | 20.3                                    | 54.2       | 0.51           | 7.9       | 0.26      | 0.16     |
|                                       | 12                        | 12.06                    | 11.7          | 1.83        | 0.054       | 0.034      | 20.9                                    | 57.6       | 0.56           | 8.8       | 0.26      | 0.16     |
| 25 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 15.55                    | 15.6          | 2.91        | 0.078       | 0.051      | 25.4                                    | 61.3       | 0.61           | 11.5      | 0.31      | 0.2      |
|                                       | 2                         | 16.58                    | 16.8          | 3.24        | 0.088       | 0.056      | 26.5                                    | 62.7       | 0.64           | 12.3      | 0.33      | 0.21     |
|                                       | 3                         | 15.98                    | 16.1          | 3.06        | 0.083       | 0.053      | 25.8                                    | 61.8       | 0.62           | 11.8      | 0.32      | 0.21     |
| Mid Lactation                         | 4                         | 14.96                    | 14.9          | 2.72        | 0.073       | 0.048      | 24.8                                    | 60.4       | 0.6            | 11        | 0.29      | 0.19     |
|                                       | 5                         | 13.86                    | 13.6          | 2.37        | 0.063       | 0.042      | 23.6                                    | 58.7       | 0.58           | 10        | 0.27      | 0.18     |
|                                       | 6                         | 12.94                    | 12.5          | 2.08        | 0.055       | 0.037      | 22.6                                    | 57.2       | 0.55           | 9.2       | 0.24      | 0.17     |
| Mid Gestation                         | 7                         | 12.34                    | 11.8          | 1.86        | 0.048       | 0.034      | 21.9                                    | 56.3       | 0.54           | 8.5       | 0.22      | 0.15     |
|                                       | 8                         | 9.64                     | 8.3           | 1.34        | 0.033       | 0.025      | 19.8                                    | 48.7       | 0.42           | 6.8       | 0.16      | 0.13     |
|                                       | 9                         | 9.91                     | 8.7           | 1.39        | 0.033       | 0.025      | 19.9                                    | 49.9       | 0.44           | 7         | 0.16      | 0.13     |
| Late Gestation                        | 10                        | 10.32                    | 9.3           | 1.47        | 0.054       | 0.034      | 20                                      | 51.6       | 0.46           | 7.4       | 0.27      | 0.17     |
|                                       | 11                        | 11.03                    | 10.3          | 1.61        | 0.054       | 0.034      | 20.3                                    | 54.2       | 0.51           | 7.9       | 0.26      | 0.16     |
|                                       | 12                        | 12.06                    | 11.7          | 1.83        | 0.054       | 0.034      | 20.9                                    | 57.6       | 0.56           | 8.8       | 0.26      | 0.16     |
| 1,200 lbs                             |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| 11 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 14.2                     | 13.8          | 2.34        | 0.063       | 0.043      | 24.6                                    | 57.8       | 0.56           | 9.5       | 0.26      | 0.17     |
|                                       | 2                         | 14.8                     | 14.5          | 2.55        | 0.069       | 0.046      | 25.2                                    | 58.6       | 0.57           | 10.1      | 0.27      | 0.18     |
|                                       | 3                         | 14.46                    | 14.1          | 2.43        | 0.066       | 0.044      | 24.9                                    | 58.1       | 0.57           | 9.8       | 0.26      | 0.18     |
| Mid Lactation                         | 4                         | 13.86                    | 13.4          | 2.23        | 0.06        | 0.041      | 24.2                                    | 57.2       | 0.55           | 9.2       | 0.25      | 0.17     |
|                                       | 5                         | 13.2                     | 12.6          | 2.02        | 0.054       | 0.037      | 23.5                                    | 56.1       | 0.54           | 8.6       | 0.23      | 0.16     |
|                                       | 6                         | 12.69                    | 12            | 1.85        | 0.049       | 0.035      | 23                                      | 55.3       | 0.52           | 8.1       | 0.21      | 0.15     |
| Mid Gestation                         | 7                         | 12.34                    | 11.6          | 1.73        | 0.045       | 0.032      | 22.6                                    | 54.7       | 0.51           | 7.7       | 0.2       | 0.14     |
|                                       | 8                         | 10.32                    | 8.9           | 1.43        | 0.035       | 0.027      | 21.1                                    | 48.8       | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 10.59                    | 9.3           | 1.48        | 0.035       | 0.027      | 21.2                                    | 49.9       | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 11.06                    | 10            | 1.58        | 0.059       | 0.037      | 21.4                                    | 51.8       | 0.47           | 7.4       | 0.27      | 0.17     |
|                                       | 11                        | 11.85                    | 11.1          | 1.73        | 0.059       | 0.037      | 21.7                                    | 54.5       | 0.51           | 8         | 0.27      | 0.17     |
|                                       | 12                        | 12.95                    | 12.6          | 1.97        | 0.059       | 0.037      | 22.4                                    | 57.9       | 0.56           | 8.8       | 0.26      | 0.16     |

Table 4. Mature Cow Requirements at Mature Unshrunk Weight continued

| Mature Weight:<br>Peak Milk<br>Period | Month<br>Since<br>Calving | Daily Nutrients Required |               |             |             |            | Daily Nutrients as Percentage of Intake |            |                |           |           |          |
|---------------------------------------|---------------------------|--------------------------|---------------|-------------|-------------|------------|-----------------------------------------|------------|----------------|-----------|-----------|----------|
|                                       |                           | TDN<br>(lbs)             | NEm<br>(Mcal) | CP<br>(lbs) | Ca<br>(lbs) | P<br>(lbs) | Intake<br>lbs DM/d                      | TDN<br>%DM | NEm<br>Mcal/lb | CP<br>%DM | Ca<br>%DM | P<br>%DM |
| 1,200 lbs                             |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| 18 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 15.21                    | 15            | 2.67        | 0.072       | 0.048      | 25.7                                    | 59.3       | 0.58           | 10.4      | 0.28      | 0.19     |
|                                       | 2                         | 16.06                    | 16            | 2.94        | 0.08        | 0.052      | 26.5                                    | 60.5       | 0.6            | 11.1      | 0.3       | 0.2      |
|                                       | 3                         | 15.56                    | 15.4          | 2.79        | 0.076       | 0.05       | 26                                      | 59.8       | 0.59           | 10.7      | 0.29      | 0.19     |
| Mid Lactation                         | 4                         | 14.71                    | 14.4          | 2.52        | 0.068       | 0.045      | 25.1                                    | 58.5       | 0.57           | 10        | 0.27      | 0.18     |
|                                       | 5                         | 13.87                    | 13.4          | 2.24        | 0.06        | 0.041      | 24.2                                    | 57.2       | 0.55           | 9.2       | 0.25      | 0.17     |
|                                       | 6                         | 13.19                    | 12.6          | 2.01        | 0.053       | 0.037      | 23.5                                    | 56.2       | 0.54           | 8.6       | 0.23      | 0.16     |
| Mid Gestation                         | 7                         | 12.68                    | 12            | 1.84        | 0.048       | 0.034      | 22.9                                    | 55.3       | 0.52           | 8         | 0.21      | 0.15     |
|                                       | 8                         | 10.32                    | 8.9           | 1.43        | 0.035       | 0.027      | 21.1                                    | 48.8       | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 10.59                    | 9.3           | 1.48        | 0.035       | 0.027      | 21.2                                    | 49.9       | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 11.06                    | 10            | 1.58        | 0.059       | 0.037      | 21.4                                    | 51.8       | 0.47           | 7.4       | 0.27      | 0.17     |
|                                       | 11                        | 11.85                    | 11.1          | 1.73        | 0.059       | 0.037      | 21.7                                    | 54.5       | 0.51           | 8         | 0.27      | 0.17     |
|                                       | 12                        | 12.95                    | 12.6          | 1.97        | 0.059       | 0.037      | 22.4                                    | 57.9       | 0.56           | 8.8       | 0.26      | 0.16     |
| 25 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 16.23                    | 16.2          | 2.99        | 0.081       | 0.053      | 26.7                                    | 60.7       | 0.61           | 11.2      | 0.3       | 0.2      |
|                                       | 2                         | 17.32                    | 17.5          | 3.33        | 0.091       | 0.059      | 27.8                                    | 62.2       | 0.63           | 12        | 0.33      | 0.21     |
|                                       | 3                         | 16.73                    | 16.8          | 3.15        | 0.086       | 0.056      | 27.2                                    | 61.4       | 0.62           | 11.6      | 0.31      | 0.2      |
| Mid Lactation                         | 4                         | 15.64                    | 15.5          | 2.8         | 0.076       | 0.05       | 26.1                                    | 59.9       | 0.59           | 10.7      | 0.29      | 0.19     |
|                                       | 5                         | 14.54                    | 14.2          | 2.46        | 0.066       | 0.044      | 24.9                                    | 58.3       | 0.57           | 9.8       | 0.26      | 0.18     |
|                                       | 6                         | 13.69                    | 13.2          | 2.17        | 0.058       | 0.04       | 24                                      | 57         | 0.55           | 9         | 0.24      | 0.17     |
| Mid Gestation                         | 7                         | 13.01                    | 12.4          | 1.95        | 0.051       | 0.036      | 23.3                                    | 55.9       | 0.53           | 8.4       | 0.22      | 0.15     |
|                                       | 8                         | 10.32                    | 8.9           | 1.43        | 0.035       | 0.027      | 21.1                                    | 48.8       | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 10.59                    | 9.3           | 1.48        | 0.035       | 0.027      | 21.2                                    | 49.9       | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 11.06                    | 10            | 1.58        | 0.059       | 0.037      | 21.4                                    | 51.8       | 0.47           | 7.4       | 0.27      | 0.17     |
|                                       | 11                        | 11.85                    | 11.1          | 1.73        | 0.059       | 0.037      | 21.7                                    | 54.5       | 0.51           | 8         | 0.27      | 0.17     |
|                                       | 12                        | 12.95                    | 12.6          | 1.97        | 0.059       | 0.037      | 22.4                                    | 57.9       | 0.56           | 8.8       | 0.26      | 0.16     |
| 1,300 lbs                             |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| 11 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 14.87                    | 14.4          | 2.43        | 0.066       | 0.045      | 25.9                                    | 57.4       | 0.56           | 9.4       | 0.25      | 0.17     |
|                                       | 2                         | 15.54                    | 15.2          | 2.63        | 0.072       | 0.048      | 26.6                                    | 58.5       | 0.57           | 9.9       | 0.27      | 0.18     |
|                                       | 3                         | 15.13                    | 14.7          | 2.52        | 0.069       | 0.046      | 26.2                                    | 57.8       | 0.56           | 9.6       | 0.26      | 0.18     |
| Mid Lactation                         | 4                         | 14.53                    | 14            | 2.31        | 0.063       | 0.043      | 25.5                                    | 56.9       | 0.55           | 9.1       | 0.25      | 0.17     |
|                                       | 5                         | 13.86                    | 13.2          | 2.11        | 0.057       | 0.04       | 24.8                                    | 55.8       | 0.53           | 8.5       | 0.23      | 0.16     |
|                                       | 6                         | 13.36                    | 12.6          | 1.94        | 0.052       | 0.037      | 24.3                                    | 55         | 0.52           | 8         | 0.21      | 0.15     |
| Mid Gestation                         | 7                         | 13.01                    | 12.2          | 1.82        | 0.048       | 0.035      | 23.9                                    | 54.5       | 0.51           | 7.6       | 0.2       | 0.15     |
|                                       | 8                         | 10.99                    | 9.5           | 1.52        | 0.038       | 0.029      | 22.4                                    | 49         | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 11.26                    | 9.9           | 1.58        | 0.038       | 0.029      | 22.5                                    | 50         | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 11.8                     | 10.7          | 1.68        | 0.064       | 0.04       | 22.7                                    | 52         | 0.47           | 7.4       | 0.28      | 0.17     |
|                                       | 11                        | 12.59                    | 11.8          | 1.84        | 0.064       | 0.04       | 23.1                                    | 54.5       | 0.51           | 8         | 0.27      | 0.17     |
|                                       | 12                        | 13.84                    | 13.5          | 2.11        | 0.064       | 0.04       | 23.8                                    | 58.1       | 0.57           | 8.8       | 0.27      | 0.17     |
| 18 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 15.88                    | 15.6          | 2.75        | 0.075       | 0.05       | 27                                      | 58.9       | 0.58           | 10.2      | 0.28      | 0.19     |
|                                       | 2                         | 16.72                    | 16.6          | 3.02        | 0.083       | 0.055      | 27.8                                    | 60.1       | 0.6            | 10.9      | 0.3       | 0.2      |
|                                       | 3                         | 16.3                     | 16.1          | 2.88        | 0.079       | 0.052      | 27.4                                    | 59.5       | 0.59           | 10.5      | 0.29      | 0.19     |
| Mid Lactation                         | 4                         | 15.38                    | 15            | 2.6         | 0.071       | 0.048      | 26.4                                    | 58.2       | 0.57           | 9.8       | 0.27      | 0.18     |
|                                       | 5                         | 14.54                    | 14            | 2.32        | 0.063       | 0.043      | 25.5                                    | 56.9       | 0.55           | 9.1       | 0.25      | 0.17     |
|                                       | 6                         | 13.86                    | 13.2          | 2.1         | 0.056       | 0.039      | 24.8                                    | 55.9       | 0.53           | 8.5       | 0.23      | 0.16     |
| Mid Gestation                         | 7                         | 13.42                    | 12.7          | 1.93        | 0.051       | 0.036      | 24.3                                    | 55.3       | 0.52           | 8         | 0.21      | 0.15     |
|                                       | 8                         | 10.99                    | 9.5           | 1.52        | 0.038       | 0.029      | 22.4                                    | 49         | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 11.26                    | 9.9           | 1.58        | 0.038       | 0.029      | 22.5                                    | 50         | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 11.8                     | 10.7          | 1.68        | 0.064       | 0.04       | 22.7                                    | 52         | 0.47           | 7.4       | 0.28      | 0.17     |
|                                       | 11                        | 12.59                    | 11.8          | 1.84        | 0.064       | 0.04       | 23.1                                    | 54.5       | 0.51           | 8         | 0.27      | 0.17     |
|                                       | 12                        | 13.84                    | 13.5          | 2.11        | 0.064       | 0.04       | 23.8                                    | 58.1       | 0.57           | 8.8       | 0.27      | 0.17     |

Table 4. Mature Cow Requirements at Mature Unshrunk Weight continued

| Mature Weight:<br>Peak Milk<br>Period | Month<br>Since<br>Calving | Daily Nutrients Required |               |             |             |            | Daily Nutrients as Percentage of Intake |            |                |           |           |          |
|---------------------------------------|---------------------------|--------------------------|---------------|-------------|-------------|------------|-----------------------------------------|------------|----------------|-----------|-----------|----------|
|                                       |                           | TDN<br>(lbs)             | NEm<br>(Mcal) | CP<br>(lbs) | Ca<br>(lbs) | P<br>(lbs) | Intake<br>lbs DM/d                      | TDN<br>%DM | NEm<br>Mcal/lb | CP<br>%DM | Ca<br>%DM | P<br>%DM |
| 1,300 lbs                             |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| 25 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 16.89                    | 16.8          | 3.08        | 0.084       | 0.055      | 28                                      | 60.3       | 0.6            | 11        | 0.3       | 0.2      |
|                                       | 2                         | 17.99                    | 18.1          | 3.42        | 0.094       | 0.061      | 29.1                                    | 61.7       | 0.62           | 11.7      | 0.32      | 0.21     |
|                                       | 3                         | 17.4                     | 17.4          | 3.23        | 0.089       | 0.058      | 28.5                                    | 61         | 0.61           | 11.3      | 0.31      | 0.2      |
| Mid Lactation                         | 4                         | 16.3                     | 16.1          | 2.89        | 0.079       | 0.052      | 27.4                                    | 59.5       | 0.59           | 10.5      | 0.29      | 0.19     |
|                                       | 5                         | 15.21                    | 14.8          | 2.54        | 0.069       | 0.047      | 26.2                                    | 57.9       | 0.56           | 9.7       | 0.26      | 0.18     |
|                                       | 6                         | 14.36                    | 13.8          | 2.25        | 0.061       | 0.042      | 25.3                                    | 56.7       | 0.55           | 8.9       | 0.24      | 0.17     |
| Mid Gestation                         | 7                         | 13.76                    | 13.1          | 2.04        | 0.054       | 0.038      | 24.6                                    | 55.9       | 0.53           | 8.3       | 0.22      | 0.16     |
|                                       | 8                         | 10.99                    | 9.5           | 1.52        | 0.038       | 0.029      | 22.4                                    | 49         | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 11.26                    | 9.9           | 1.58        | 0.038       | 0.029      | 22.5                                    | 50         | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 11.8                     | 10.7          | 1.68        | 0.064       | 0.04       | 22.7                                    | 52         | 0.47           | 7.4       | 0.28      | 0.17     |
|                                       | 11                        | 12.59                    | 11.8          | 1.84        | 0.064       | 0.04       | 23.1                                    | 54.5       | 0.51           | 8         | 0.27      | 0.17     |
|                                       | 12                        | 13.84                    | 13.5          | 2.11        | 0.064       | 0.04       | 23.8                                    | 58.1       | 0.57           | 8.8       | 0.27      | 0.17     |
| 1,400 lbs                             |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| 11 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 15.54                    | 15            | 2.51        | 0.069       | 0.047      | 27.2                                    | 57.1       | 0.55           | 9.2       | 0.25      | 0.17     |
|                                       | 2                         | 16.21                    | 15.8          | 2.71        | 0.075       | 0.05       | 27.9                                    | 58.1       | 0.57           | 9.7       | 0.27      | 0.18     |
|                                       | 3                         | 15.87                    | 15.4          | 2.6         | 0.071       | 0.049      | 27.5                                    | 57.7       | 0.56           | 9.5       | 0.26      | 0.18     |
| Mid Lactation                         | 4                         | 15.2                     | 14.6          | 2.4         | 0.066       | 0.045      | 26.8                                    | 56.7       | 0.54           | 8.9       | 0.24      | 0.17     |
|                                       | 5                         | 14.53                    | 13.8          | 2.19        | 0.06        | 0.042      | 26.1                                    | 55.6       | 0.53           | 8.4       | 0.23      | 0.16     |
|                                       | 6                         | 14.02                    | 13.2          | 2.02        | 0.055       | 0.039      | 25.6                                    | 54.9       | 0.52           | 7.9       | 0.21      | 0.15     |
| Mid Gestation                         | 7                         | 13.75                    | 12.9          | 1.9         | 0.051       | 0.037      | 25.2                                    | 54.6       | 0.51           | 7.6       | 0.2       | 0.15     |
|                                       | 8                         | 11.59                    | 10            | 1.61        | 0.041       | 0.032      | 23.7                                    | 48.9       | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 11.92                    | 10.5          | 1.67        | 0.041       | 0.032      | 23.8                                    | 50.1       | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 12.47                    | 11.3          | 1.78        | 0.068       | 0.043      | 24                                      | 51.9       | 0.47           | 7.4       | 0.28      | 0.18     |
|                                       | 11                        | 13.4                     | 12.6          | 1.96        | 0.068       | 0.043      | 24.5                                    | 54.8       | 0.52           | 8         | 0.28      | 0.17     |
|                                       | 12                        | 14.73                    | 14.4          | 2.24        | 0.068       | 0.043      | 25.2                                    | 58.4       | 0.57           | 8.9       | 0.27      | 0.17     |
| 18 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 16.54                    | 16.2          | 2.84        | 0.078       | 0.052      | 28.3                                    | 58.6       | 0.57           | 10        | 0.28      | 0.19     |
|                                       | 2                         | 17.39                    | 17.2          | 3.11        | 0.086       | 0.057      | 29.1                                    | 59.7       | 0.59           | 10.7      | 0.29      | 0.19     |
|                                       | 3                         | 16.96                    | 16.7          | 2.96        | 0.082       | 0.054      | 28.7                                    | 59.2       | 0.58           | 10.3      | 0.28      | 0.19     |
| Mid Lactation                         | 4                         | 16.12                    | 15.7          | 2.68        | 0.074       | 0.05       | 27.8                                    | 58         | 0.57           | 9.7       | 0.27      | 0.18     |
|                                       | 5                         | 15.28                    | 14.7          | 2.41        | 0.066       | 0.045      | 26.9                                    | 56.8       | 0.55           | 9         | 0.24      | 0.17     |
|                                       | 6                         | 14.52                    | 13.8          | 2.18        | 0.059       | 0.042      | 26.1                                    | 55.7       | 0.53           | 8.4       | 0.23      | 0.16     |
| Mid Gestation                         | 7                         | 14.09                    | 13.3          | 2.01        | 0.054       | 0.039      | 25.5                                    | 55.1       | 0.52           | 7.9       | 0.21      | 0.15     |
|                                       | 8                         | 11.59                    | 10            | 1.61        | 0.041       | 0.032      | 23.7                                    | 48.9       | 0.42           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 11.92                    | 10.5          | 1.67        | 0.041       | 0.032      | 23.8                                    | 50.1       | 0.44           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 12.47                    | 11.3          | 1.78        | 0.068       | 0.043      | 24                                      | 51.9       | 0.47           | 7.4       | 0.28      | 0.18     |
|                                       | 11                        | 13.4                     | 12.6          | 1.96        | 0.068       | 0.043      | 24.5                                    | 54.8       | 0.52           | 8         | 0.28      | 0.17     |
|                                       | 12                        | 14.73                    | 14.4          | 2.24        | 0.068       | 0.043      | 25.2                                    | 58.4       | 0.57           | 8.9       | 0.27      | 0.17     |
| 25 lb Peak                            |                           |                          |               |             |             |            |                                         |            |                |           |           |          |
| Early Lactation                       | 1                         | 17.56                    | 17.4          | 3.16        | 0.087       | 0.058      | 29.3                                    | 59.9       | 59.9           | 10.8      | 0.3       | 0.2      |
|                                       | 2                         | 18.65                    | 18.7          | 3.5         | 0.097       | 0.063      | 30.4                                    | 61.3       | 61.3           | 11.5      | 0.32      | 0.21     |
|                                       | 3                         | 18.06                    | 18            | 3.31        | 0.092       | 0.06       | 29.8                                    | 60.5       | 60.5           | 11.1      | 0.31      | 0.2      |
| Mid Lactation                         | 4                         | 16.96                    | 16.7          | 2.97        | 0.082       | 0.055      | 28.7                                    | 59.1       | 59.1           | 10.4      | 0.29      | 0.19     |
|                                       | 5                         | 15.95                    | 15.5          | 2.62        | 0.072       | 0.049      | 27.6                                    | 57.8       | 57.8           | 9.5       | 0.26      | 0.18     |
|                                       | 6                         | 15.02                    | 14.4          | 2.34        | 0.063       | 0.044      | 26.6                                    | 56.5       | 56.5           | 8.8       | 0.24      | 0.17     |
| Mid Gestation                         | 7                         | 14.42                    | 13.7          | 2.12        | 0.057       | 0.04       | 25.9                                    | 55.7       | 55.7           | 8.2       | 0.22      | 0.16     |
|                                       | 8                         | 11.59                    | 10            | 1.61        | 0.041       | 0.032      | 23.7                                    | 48.9       | 48.9           | 6.8       | 0.17      | 0.13     |
|                                       | 9                         | 11.92                    | 10.5          | 1.67        | 0.041       | 0.032      | 23.8                                    | 50.1       | 50.1           | 7         | 0.17      | 0.13     |
| Late Gestation                        | 10                        | 12.47                    | 11.3          | 1.78        | 0.068       | 0.043      | 24                                      | 51.9       | 51.9           | 7.4       | 0.28      | 0.18     |
|                                       | 11                        | 13.4                     | 12.6          | 1.96        | 0.068       | 0.043      | 24.5                                    | 54.8       | 54.8           | 8         | 0.28      | 0.17     |
|                                       | 12                        | 14.73                    | 14.4          | 2.24        | 0.068       | 0.043      | 25.2                                    | 58.4       | 58.4           | 8.9       | 0.27      | 0.17     |

Table 5. First Calf Heifers, Peak Milk:13 lbs (74% of Mature Production), NEm × 1.25 During Lactation

| 85% Mature Weight:<br>and<br>Period | Month<br>Since<br>Calving | Daily Nutrients Required |               |                |             |             |            | Daily Nutrients as Percentage of Intake |            |                |                |           |           |          |
|-------------------------------------|---------------------------|--------------------------|---------------|----------------|-------------|-------------|------------|-----------------------------------------|------------|----------------|----------------|-----------|-----------|----------|
|                                     |                           | TDN<br>(lbs)             | NEm<br>(Mcal) | NEg<br>Mcal/lb | CP<br>(lbs) | Ca<br>(lbs) | P<br>(lbs) | Intake<br>lbs DM/d                      | TDN<br>%DM | NEm<br>Mcal/lb | NEg<br>Mcal/lb | CP<br>%DM | Ca<br>%DM | P<br>%DM |
| 935 lb                              |                           |                          |               |                |             |             |            |                                         |            |                |                |           |           |          |
| Early Lactation                     | 1                         | 14.19                    | 14.1          | 0.3            | 2.17        | 0.058       | 0.038      | 22.1                                    | 64.3       | 0.66           | 0.39           | 9.8       | 0.26      | 0.17     |
|                                     | 2                         | 14.87                    | 14.9          | 0.3            | 2.38        | 0.064       | 0.041      | 22.8                                    | 65.3       | 0.67           | 0.39           | 10.4      | 0.28      | 0.18     |
|                                     | 3                         | 14.55                    | 14.5          | 0.3            | 2.27        | 0.061       | 0.039      | 22.5                                    | 64.7       | 0.67           | 0.39           | 10.1      | 0.27      | 0.18     |
| Mid Lactation                       | 4                         | 13.96                    | 13.8          | 0.3            | 2.07        | 0.055       | 0.036      | 21.9                                    | 63.8       | 0.65           | 0.39           | 9.5       | 0.25      | 0.17     |
|                                     | 5                         | 13.37                    | 13.1          | 0.3            | 1.87        | 0.049       | 0.033      | 21.3                                    | 62.8       | 0.64           | 0.39           | 8.8       | 0.23      | 0.15     |
|                                     | 6                         | 12.87                    | 12.5          | 0.3            | 1.71        | 0.044       | 0.03       | 20.8                                    | 61.9       | 0.62           | 0.39           | 8.2       | 0.21      | 0.14     |
| Mid Gestation                       | 7                         | 12.61                    | 12.2          | 0.3            | 1.59        | 0.04        | 0.028      | 20.5                                    | 61.6       | 0.62           | 0.39           | 7.8       | 0.2       | 0.14     |
|                                     | 8                         | 9.22                     | 7.6           | 0.3            | 1.29        | 0.031       | 0.023      | 18.2                                    | 50.8       | 0.45           | 0.39           | 7.1       | 0.17      | 0.12     |
|                                     | 9                         | 9.48                     | 8             | 0.3            | 1.34        | 0.031       | 0.023      | 18.3                                    | 51.8       | 0.47           | 0.39           | 7.3       | 0.17      | 0.12     |
| Late Gestation                      | 10                        | 9.9                      | 8.6           | 0.3            | 1.42        | 0.05        | 0.03       | 18.5                                    | 53.4       | 0.49           | 0.39           | 7.7       | 0.27      | 0.16     |
|                                     | 11                        | 10.51                    | 9.5           | 0.3            | 1.55        | 0.05        | 0.03       | 18.9                                    | 55.6       | 0.53           | 0.39           | 8.2       | 0.27      | 0.16     |
|                                     | 12                        | 11.44                    | 10.8          | 0.3            | 1.75        | 0.05        | 0.03       | 19.5                                    | 58.6       | 0.57           | 0.39           | 9         | 0.26      | 0.16     |
| 1,020 lbs                           |                           |                          |               |                |             |             |            |                                         |            |                |                |           |           |          |
| Early Lactation                     | 1                         | 14.94                    | 14.8          | 0.3            | 2.25        | 0.061       | 0.04       | 23.3                                    | 64         | 0.66           | 0.39           | 9.7       | 0.26      | 0.17     |
|                                     | 2                         | 15.62                    | 15.6          | 0.3            | 2.46        | 0.067       | 0.043      | 24.1                                    | 64.9       | 0.67           | 0.39           | 10.2      | 0.28      | 0.18     |
|                                     | 3                         | 15.39                    | 15.3          | 0.3            | 2.35        | 0.064       | 0.041      | 23.8                                    | 64.6       | 0.66           | 0.39           | 9.9       | 0.27      | 0.17     |
| Mid Lactation                       | 4                         | 14.72                    | 14.5          | 0.3            | 2.16        | 0.058       | 0.038      | 23.2                                    | 63.5       | 0.65           | 0.39           | 9.3       | 0.25      | 0.16     |
|                                     | 5                         | 14.14                    | 13.8          | 0.3            | 1.96        | 0.052       | 0.035      | 22.6                                    | 62.6       | 0.63           | 0.39           | 8.7       | 0.23      | 0.15     |
|                                     | 6                         | 13.71                    | 13.3          | 0.3            | 1.79        | 0.047       | 0.032      | 22.1                                    | 62         | 0.63           | 0.39           | 8.1       | 0.21      | 0.14     |
| Mid Gestation                       | 7                         | 13.38                    | 12.9          | 0.3            | 1.67        | 0.043       | 0.03       | 21.8                                    | 61.4       | 0.62           | 0.39           | 7.7       | 0.2       | 0.14     |
|                                     | 8                         | 9.85                     | 8.1           | 0.3            | 1.38        | 0.034       | 0.025      | 19.4                                    | 50.8       | 0.45           | 0.39           | 7.1       | 0.17      | 0.13     |
|                                     | 9                         | 10.11                    | 8.5           | 0.3            | 1.43        | 0.034       | 0.025      | 19.5                                    | 51.7       | 0.47           | 0.39           | 7.3       | 0.17      | 0.13     |
| Late Gestation                      | 10                        | 10.58                    | 9.2           | 0.3            | 1.52        | 0.055       | 0.033      | 19.8                                    | 53.4       | 0.49           | 0.39           | 7.7       | 0.28      | 0.17     |
|                                     | 11                        | 11.28                    | 10.2          | 0.3            | 1.66        | 0.055       | 0.033      | 20.2                                    | 55.8       | 0.53           | 0.39           | 8.2       | 0.27      | 0.16     |
|                                     | 12                        | 12.27                    | 11.6          | 0.3            | 1.88        | 0.055       | 0.033      | 20.9                                    | 58.8       | 0.58           | 0.39           | 9         | 0.26      | 0.16     |
| 1,105 lbs                           |                           |                          |               |                |             |             |            |                                         |            |                |                |           |           |          |
| Early Lactation                     | 1                         | 15.7                     | 15.5          | 0.3            | 2.34        | 0.064       | 0.042      | 24.6                                    | 63.8       | 0.65           | 0.39           | 9.5       | 0.26      | 0.17     |
|                                     | 2                         | 16.38                    | 16.3          | 0.3            | 2.54        | 0.069       | 0.045      | 25.3                                    | 64.7       | 0.67           | 0.39           | 10        | 0.27      | 0.18     |
|                                     | 3                         | 16.13                    | 16            | 0.3            | 2.44        | 0.066       | 0.044      | 25.1                                    | 64.3       | 0.66           | 0.39           | 9.7       | 0.26      | 0.17     |
| Mid Lactation                       | 4                         | 15.55                    | 15.3          | 0.3            | 2.24        | 0.061       | 0.04       | 24.5                                    | 63.5       | 0.65           | 0.39           | 9.1       | 0.25      | 0.16     |
|                                     | 5                         | 14.88                    | 14.5          | 0.3            | 2.04        | 0.055       | 0.037      | 23.8                                    | 62.4       | 0.63           | 0.39           | 8.6       | 0.23      | 0.15     |
|                                     | 6                         | 14.46                    | 14            | 0.3            | 1.88        | 0.05        | 0.034      | 23.4                                    | 61.8       | 0.62           | 0.39           | 8         | 0.21      | 0.15     |
| Mid Gestation                       | 7                         | 14.12                    | 13.6          | 0.3            | 1.76        | 0.046       | 0.032      | 23                                      | 61.3       | 0.62           | 0.39           | 7.6       | 0.2       | 0.14     |
|                                     | 8                         | 10.46                    | 8.6           | 0.3            | 1.47        | 0.037       | 0.027      | 20.6                                    | 50.8       | 0.45           | 0.39           | 7.1       | 0.18      | 0.13     |
|                                     | 9                         | 10.8                     | 9.1           | 0.3            | 1.52        | 0.037       | 0.027      | 20.8                                    | 52         | 0.47           | 0.39           | 7.3       | 0.18      | 0.13     |
| Late Gestation                      | 10                        | 11.27                    | 9.8           | 0.3            | 1.62        | 0.059       | 0.036      | 21.1                                    | 53.5       | 0.5            | 0.39           | 7.7       | 0.28      | 0.17     |
|                                     | 11                        | 11.96                    | 10.8          | 0.3            | 1.77        | 0.059       | 0.036      | 21.5                                    | 55.7       | 0.53           | 0.39           | 8.3       | 0.28      | 0.17     |
|                                     | 12                        | 13.1                     | 12.4          | 0.3            | 2.01        | 0.059       | 0.036      | 22.2                                    | 59         | 0.58           | 0.39           | 9.1       | 0.27      | 0.16     |
| 1,190 lbs                           |                           |                          |               |                |             |             |            |                                         |            |                |                |           |           |          |
| Early Lactation                     | 1                         | 16.45                    | 16.2          | 0.4            | 2.42        | 0.067       | 0.044      | 25.8                                    | 63.7       | 0.65           | 0.38           | 9.4       | 0.26      | 0.17     |
|                                     | 2                         | 17.14                    | 17            | 0.4            | 2.62        | 0.072       | 0.047      | 26.6                                    | 64.5       | 0.66           | 0.38           | 9.9       | 0.27      | 0.18     |
|                                     | 3                         | 16.81                    | 16.6          | 0.4            | 2.52        | 0.069       | 0.046      | 26.3                                    | 64         | 0.65           | 0.38           | 9.6       | 0.26      | 0.17     |
| Mid Lactation                       | 4                         | 16.22                    | 15.9          | 0.4            | 2.32        | 0.063       | 0.042      | 25.7                                    | 63.1       | 0.64           | 0.38           | 9         | 0.25      | 0.16     |
|                                     | 5                         | 15.64                    | 15.2          | 0.4            | 2.12        | 0.058       | 0.039      | 25.1                                    | 62.3       | 0.63           | 0.38           | 8.4       | 0.23      | 0.16     |
|                                     | 6                         | 15.22                    | 14.7          | 0.4            | 1.96        | 0.053       | 0.036      | 24.6                                    | 61.7       | 0.62           | 0.38           | 7.9       | 0.21      | 0.15     |
| Mid Gestation                       | 7                         | 14.96                    | 14.4          | 0.4            | 1.84        | 0.049       | 0.034      | 24.3                                    | 61.4       | 0.62           | 0.38           | 7.6       | 0.2       | 0.14     |
|                                     | 8                         | 11.08                    | 9.1           | 0.4            | 1.55        | 0.04        | 0.029      | 21.8                                    | 50.9       | 0.45           | 0.38           | 7.1       | 0.18      | 0.13     |
|                                     | 9                         | 11.42                    | 9.6           | 0.4            | 1.62        | 0.04        | 0.029      | 22                                      | 52         | 0.47           | 0.38           | 7.4       | 0.18      | 0.13     |
| Late Gestation                      | 10                        | 11.89                    | 10.3          | 0.4            | 1.72        | 0.064       | 0.039      | 22.2                                    | 53.5       | 0.49           | 0.38           | 7.7       | 0.29      | 0.17     |
|                                     | 11                        | 12.72                    | 11.5          | 0.4            | 1.88        | 0.064       | 0.039      | 22.7                                    | 55.9       | 0.53           | 0.38           | 8.3       | 0.28      | 0.17     |
|                                     | 12                        | 13.93                    | 13.2          | 0.4            | 2.14        | 0.064       | 0.039      | 23.5                                    | 59.3       | 0.58           | 0.38           | 9.1       | 0.27      | 0.16     |

Table 6. Target Body Condition Gain From 4 to 6 During 3rd Trimester, Mature Cows and 2-Year-Old Females (non-lactating)

| Mature Weight and Age                       |                     | Daily Nutrients Required |            |            |          |             | Daily Nutrients as Percentage of Intake |         |                 |         |             |          |        |           |        |       |
|---------------------------------------------|---------------------|--------------------------|------------|------------|----------|-------------|-----------------------------------------|---------|-----------------|---------|-------------|----------|--------|-----------|--------|-------|
|                                             | Month Since Calving | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | CPAdj (lbs) | Ca (lbs)                                | P (lbs) | Intake lbs DM/d | TDN %DM | NEm Mcal/lb | NEg Mcal | CP %DM | CPAdj %DM | Ca %DM | P %DM |
| 1,100 lb Mature Weight, Mature Cow          |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 12.36                    | 12.1       | NA         | 1.47     | 2.1         | 0.054                                   | 0.034   | 21.1            | 58.6    | 0.57        | NA       | 7      | 9.8       | 0.25   | 0.16  |
|                                             | 8                   | 13.26                    | 13.3       | NA         | 1.61     | 2.2         | 0.054                                   | 0.034   | 21.6            | 61.3    | 0.61        | NA       | 7.5    | 10.2      | 0.25   | 0.15  |
|                                             | 9                   | 14.57                    | 15         | NA         | 1.83     | 2.4         | 0.054                                   | 0.034   | 22.5            | 64.9    | 0.67        | NA       | 8.2    | 10.8      | 0.24   | 0.15  |
| 1,200 lb Mature Weight, Mature Cow          |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 13.25                    | 13         | NA         | 1.58     | 2.2         | 0.059                                   | 0.037   | 22.6            | 58.8    | 0.58        | NA       | 7      | 9.8       | 0.26   | 0.16  |
|                                             | 8                   | 14.32                    | 14.4       | NA         | 1.73     | 2.4         | 0.059                                   | 0.037   | 23.2            | 61.7    | 0.62        | NA       | 7.5    | 10.3      | 0.25   | 0.16  |
|                                             | 9                   | 15.7                     | 16.2       | NA         | 1.97     | 2.6         | 0.059                                   | 0.037   | 24.1            | 65.2    | 0.67        | NA       | 8.2    | 10.9      | 0.24   | 0.15  |
| 1,300 lb Mature Weight, Mature Cow          |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 14.14                    | 13.9       | NA         | 1.68     | 2.4         | 0.064                                   | 0.04    | 24              | 58.9    | 0.58        | NA       | 7      | 9.8       | 0.26   | 0.17  |
|                                             | 8                   | 15.28                    | 15.4       | NA         | 1.84     | 2.5         | 0.064                                   | 0.04    | 24.7            | 61.9    | 0.62        | NA       | 7.5    | 10.3      | 0.26   | 0.16  |
|                                             | 9                   | 16.75                    | 17.3       | NA         | 2.11     | 2.8         | 0.064                                   | 0.04    | 25.6            | 65.4    | 0.68        | NA       | 8.2    | 10.9      | 0.25   | 0.15  |
| 1,400 lb Mature Weight, Mature Cow          |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 15.03                    | 14.8       | NA         | 1.78     | 2.5         | 0.068                                   | 0.043   | 25.4            | 59.2    | 0.58        | NA       | 7      | 9.9       | 0.27   | 0.17  |
|                                             | 8                   | 16.25                    | 16.4       | NA         | 1.96     | 2.7         | 0.068                                   | 0.043   | 26.2            | 62.1    | 0.63        | NA       | 7.5    | 10.4      | 0.26   | 0.16  |
|                                             | 9                   | 17.87                    | 18.5       | NA         | 2.24     | 3           | 0.068                                   | 0.043   | 27.2            | 65.8    | 0.68        | NA       | 8.2    | 11        | 0.25   | 0.16  |
| 1,100 lb Mature Weight, Pregnant 2 year old |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 11.19                    | 10.6       | 0.2        | 1.38     | 1.9         | 0.05                                    | 0.03    | 18.8            | 59.4    | 0.59        | 0.33     | 7.3    | 9.9       | 0.27   | 0.16  |
|                                             | 8                   | 11.98                    | 11.7       | 0.2        | 1.5      | 2           | 0.05                                    | 0.03    | 19.3            | 62      | 0.63        | 0.33     | 7.8    | 10.3      | 0.26   | 0.16  |
|                                             | 9                   | 13.1                     | 13.2       | 0.2        | 1.7      | 2.2         | 0.05                                    | 0.03    | 20              | 65.5    | 0.68        | 0.33     | 8.5    | 10.9      | 0.25   | 0.15  |
| 1,200 lb Mature Weight, Pregnant 2 year old |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 12.01                    | 11.4       | 0.3        | 1.48     | 2           | 0.055                                   | 0.033   | 20.1            | 59.6    | 0.59        | 0.33     | 7.3    | 9.9       | 0.27   | 0.16  |
|                                             | 8                   | 12.89                    | 12.6       | 0.3        | 1.61     | 2.1         | 0.055                                   | 0.033   | 20.7            | 62.3    | 0.63        | 0.33     | 7.8    | 10.4      | 0.26   | 0.16  |
|                                             | 9                   | 14.15                    | 14.3       | 0.3        | 1.83     | 2.4         | 0.055                                   | 0.033   | 21.5            | 65.9    | 0.68        | 0.33     | 8.5    | 11        | 0.25   | 0.15  |
| 1,300 lb Mature Weight, Pregnant 2 year old |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 12.84                    | 12.2       | 0.3        | 1.57     | 2.1         | 0.059                                   | 0.036   | 21.4            | 59.9    | 0.59        | 0.33     | 7.3    | 10        | 0.28   | 0.17  |
|                                             | 8                   | 13.79                    | 13.5       | 0.3        | 1.72     | 2.3         | 0.059                                   | 0.036   | 22              | 62.6    | 0.63        | 0.33     | 7.8    | 10.4      | 0.27   | 0.16  |
|                                             | 9                   | 15.13                    | 15.3       | 0.3        | 1.96     | 2.5         | 0.059                                   | 0.036   | 22.9            | 66.2    | 0.69        | 0.33     | 8.6    | 11        | 0.26   | 0.16  |
| 1,400 lb Mature Weight, Pregnant 2 year old |                     |                          |            |            |          |             |                                         |         |                 |         |             |          |        |           |        |       |
|                                             | 7                   | 13.65                    | 13         | 0.3        | 1.67     | 2.3         | 0.064                                   | 0.038   | 22.7            | 60.1    | 0.6         | 0.34     | 7.3    | 10        | 0.28   | 0.17  |
|                                             | 8                   | 14.68                    | 14.4       | 0.3        | 1.83     | 2.4         | 0.064                                   | 0.038   | 23.3            | 62.9    | 0.64        | 0.34     | 7.8    | 10.5      | 0.27   | 0.16  |
|                                             | 9                   | 16.09                    | 16.3       | 0.3        | 2.08     | 2.7         | 0.064                                   | 0.038   | 24.2            | 66.4    | 0.69        | 0.34     | 8.6    | 11.1      | 0.26   | 0.16  |

Table 7. Bred Heifer 60% Mature Weight at Breeding and 85% Mature Weight at Calving as 2 Year Old

| Mature Weight and Range* | Month Since Conception | Daily Nutrients Required |            |               |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|--------------------------|------------------------|--------------------------|------------|---------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                          |                        | TDN (lbs)                | NEm (Mcal) | NEg (Mcal/lb) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,100 lbs</b>         |                        |                          |            |               |          |          |         |                                         |         |             |             |        |        |       |
| <b>690 lbs</b>           | 1                      | 8.83                     | 5.9        | 1.5           | 1.35     | 0.041    | 0.024   | 14.9                                    | 59.1    | 0.58        | 0.32        | 9      | 0.28   | 0.16  |
|                          | 2                      | 9.12                     | 6.1        | 1.6           | 1.37     | 0.042    | 0.025   | 15.4                                    | 59.2    | 0.58        | 0.32        | 8.9    | 0.27   | 0.16  |
|                          | 3                      | 9.39                     | 6.3        | 1.6           | 1.39     | 0.042    | 0.025   | 15.9                                    | 59.2    | 0.58        | 0.32        | 8.8    | 0.27   | 0.16  |
|                          | 4                      | 9.73                     | 6.6        | 1.7           | 1.43     | 0.043    | 0.026   | 16.4                                    | 59.4    | 0.59        | 0.33        | 8.7    | 0.26   | 0.16  |
|                          | 5                      | 10.06                    | 6.9        | 1.7           | 1.47     | 0.043    | 0.026   | 16.9                                    | 59.7    | 0.59        | 0.33        | 8.7    | 0.26   | 0.15  |
|                          | 6                      | 10.51                    | 7.4        | 1.7           | 1.54     | 0.044    | 0.027   | 17.4                                    | 60.3    | 0.6         | 0.34        | 8.8    | 0.25   | 0.15  |
|                          | 7                      | 11.06                    | 8.1        | 1.7           | 1.64     | 0.063    | 0.035   | 18                                      | 61.3    | 0.61        | 0.35        | 9.1    | 0.35   | 0.19  |
|                          | 8                      | 11.85                    | 9.2        | 1.7           | 1.8      | 0.064    | 0.036   | 18.8                                    | 63      | 0.64        | 0.38        | 9.5    | 0.34   | 0.19  |
| <b>1,020 lbs</b>         | 9                      | 12.69                    | 10.5       | 1.5           | 2.04     | 0.067    | 0.037   | 19.6                                    | 64.7    | 0.67        | 0.4         | 10.4   | 0.34   | 0.19  |
| <b>1,200 lbs</b>         |                        |                          |            |               |          |          |         |                                         |         |             |             |        |        |       |
| <b>753 lbs</b>           | 1                      | 9.49                     | 6.3        | 1.7           | 1.44     | 0.045    | 0.026   | 16                                      | 59.4    | 0.59        | 0.33        | 9      | 0.28   | 0.16  |
|                          | 2                      | 9.78                     | 6.5        | 1.8           | 1.47     | 0.046    | 0.027   | 16.5                                    | 59.4    | 0.59        | 0.33        | 8.9    | 0.28   | 0.16  |
|                          | 3                      | 10.08                    | 6.7        | 1.8           | 1.5      | 0.046    | 0.027   | 17                                      | 59.4    | 0.59        | 0.33        | 8.8    | 0.27   | 0.16  |
|                          | 4                      | 10.42                    | 7          | 1.8           | 1.53     | 0.047    | 0.028   | 17.5                                    | 59.6    | 0.59        | 0.33        | 8.8    | 0.27   | 0.16  |
|                          | 5                      | 10.83                    | 7.4        | 1.9           | 1.58     | 0.047    | 0.028   | 18                                      | 60      | 0.59        | 0.33        | 8.8    | 0.26   | 0.16  |
|                          | 6                      | 11.28                    | 7.9        | 1.9           | 1.65     | 0.048    | 0.029   | 18.6                                    | 60.5    | 0.6         | 0.34        | 8.9    | 0.26   | 0.16  |
|                          | 7                      | 11.91                    | 8.7        | 1.9           | 1.76     | 0.069    | 0.038   | 19.3                                    | 61.6    | 0.62        | 0.36        | 9.1    | 0.36   | 0.2   |
|                          | 8                      | 12.69                    | 9.8        | 1.8           | 1.93     | 0.07     | 0.039   | 20.1                                    | 63.1    | 0.64        | 0.38        | 9.6    | 0.35   | 0.19  |
| <b>1,113 lbs</b>         | 9                      | 13.67                    | 11.3       | 1.7           | 2.19     | 0.072    | 0.04    | 21                                      | 65      | 0.67        | 0.4         | 10.4   | 0.34   | 0.19  |
| <b>1,300 lbs</b>         |                        |                          |            |               |          |          |         |                                         |         |             |             |        |        |       |
| <b>816 lbs</b>           | 1                      | 10.07                    | 6.6        | 1.9           | 1.54     | 0.049    | 0.028   | 17                                      | 59.4    | 0.59        | 0.33        | 9.1    | 0.29   | 0.17  |
|                          | 2                      | 10.45                    | 6.9        | 1.9           | 1.57     | 0.049    | 0.029   | 17.5                                    | 59.6    | 0.59        | 0.33        | 8.9    | 0.28   | 0.16  |
|                          | 3                      | 10.75                    | 7.1        | 2             | 1.6      | 0.05     | 0.029   | 18                                      | 59.6    | 0.59        | 0.33        | 8.8    | 0.28   | 0.16  |
|                          | 4                      | 11.18                    | 7.5        | 2             | 1.63     | 0.05     | 0.03    | 18.6                                    | 60      | 0.59        | 0.33        | 8.8    | 0.27   | 0.16  |
|                          | 5                      | 11.6                     | 7.9        | 2.1           | 1.69     | 0.051    | 0.031   | 19.2                                    | 60.3    | 0.6         | 0.34        | 8.8    | 0.26   | 0.16  |
|                          | 6                      | 12.13                    | 8.5        | 2.1           | 1.76     | 0.052    | 0.031   | 19.9                                    | 61      | 0.61        | 0.35        | 8.9    | 0.26   | 0.16  |
|                          | 7                      | 12.76                    | 9.3        | 2.1           | 1.88     | 0.074    | 0.041   | 20.6                                    | 62      | 0.63        | 0.36        | 9.1    | 0.36   | 0.2   |
|                          | 8                      | 13.61                    | 10.5       | 2             | 2.06     | 0.076    | 0.042   | 21.4                                    | 63.5    | 0.65        | 0.38        | 9.6    | 0.35   | 0.2   |
| <b>1,205 lbs</b>         | 9                      | 14.66                    | 12.1       | 1.8           | 2.35     | 0.078    | 0.043   | 22.4                                    | 65.4    | 0.68        | 0.41        | 10.5   | 0.35   | 0.19  |
| <b>1,400 lbs</b>         |                        |                          |            |               |          |          |         |                                         |         |             |             |        |        |       |
| <b>878 lbs</b>           | 1                      | 10.72                    | 7          | 2             | 1.64     | 0.052    | 0.03    | 18                                      | 59.6    | 0.59        | 0.33        | 9.1    | 0.29   | 0.17  |
|                          | 2                      | 11.11                    | 7.3        | 2.1           | 1.66     | 0.053    | 0.031   | 18.6                                    | 59.8    | 0.59        | 0.33        | 9      | 0.28   | 0.17  |
|                          | 3                      | 11.43                    | 7.5        | 2.1           | 1.69     | 0.053    | 0.032   | 19.1                                    | 59.8    | 0.59        | 0.33        | 8.9    | 0.28   | 0.17  |
|                          | 4                      | 11.86                    | 7.9        | 2.2           | 1.73     | 0.054    | 0.032   | 19.7                                    | 60.1    | 0.6         | 0.34        | 8.8    | 0.27   | 0.16  |
|                          | 5                      | 12.29                    | 8.3        | 2.2           | 1.79     | 0.055    | 0.033   | 20.3                                    | 60.4    | 0.6         | 0.34        | 8.8    | 0.27   | 0.16  |
|                          | 6                      | 12.89                    | 9          | 2.2           | 1.87     | 0.056    | 0.034   | 21.1                                    | 61.2    | 0.61        | 0.35        | 8.9    | 0.26   | 0.16  |
|                          | 7                      | 13.6                     | 9.9        | 2.2           | 2        | 0.08     | 0.044   | 21.8                                    | 62.3    | 0.63        | 0.37        | 9.1    | 0.37   | 0.2   |
|                          | 8                      | 14.46                    | 11.1       | 2.2           | 2.19     | 0.081    | 0.045   | 22.7                                    | 63.7    | 0.65        | 0.38        | 9.7    | 0.36   | 0.2   |
| <b>1,298 lbs</b>         | 9                      | 15.63                    | 12.9       | 2             | 2.5      | 0.084    | 0.047   | 23.8                                    | 65.7    | 0.68        | 0.41        | 10.5   | 0.35   | 0.2   |

\*Weight Range includes weight of conceptus.



Table 8. Growing Replacement Heifers (No Implant or Ionophore Adjustment)

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,100 lbs</b>        | <b>0.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.12                     | 3.9        | 0.5        | 0.82     | 0.025    | 0.015   | 9.2                                     | 55.8    | 0.53        | 0.28        | 9      | 0.28   | 0.16  |
| 500 lbs                 |                     | 6.05                     | 4.6        | 0.6        | 0.92     | 0.028    | 0.016   | 10.8                                    | 55.7    | 0.53        | 0.27        | 8.5    | 0.25   | 0.15  |
| 600 lbs                 |                     | 6.95                     | 5.3        | 0.7        | 1.01     | 0.03     | 0.018   | 12.5                                    | 55.8    | 0.53        | 0.28        | 8.1    | 0.24   | 0.15  |
| 700 lbs                 |                     | 7.77                     | 5.9        | 0.8        | 1.1      | 0.032    | 0.02    | 14                                      | 55.7    | 0.53        | 0.27        | 7.9    | 0.23   | 0.15  |
| 800 lbs                 |                     | 8.57                     | 6.5        | 0.8        | 1.18     | 0.034    | 0.022   | 15.4                                    | 55.6    | 0.53        | 0.27        | 7.7    | 0.22   | 0.14  |
|                         | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.81                     | 3.9        | 1.1        | 1.04     | 0.039    | 0.02    | 9.6                                     | 60.6    | 0.6         | 0.34        | 10.8   | 0.4    | 0.21  |
| 500 lbs                 |                     | 6.86                     | 4.6        | 1.2        | 1.12     | 0.04     | 0.021   | 11.3                                    | 60.5    | 0.6         | 0.34        | 9.9    | 0.35   | 0.19  |
| 600 lbs                 |                     | 7.89                     | 5.3        | 1.4        | 1.2      | 0.041    | 0.023   | 13                                      | 60.6    | 0.6         | 0.34        | 9.2    | 0.31   | 0.18  |
| 700 lbs                 |                     | 8.82                     | 5.9        | 1.6        | 1.27     | 0.042    | 0.025   | 14.6                                    | 60.4    | 0.6         | 0.34        | 8.7    | 0.29   | 0.17  |
| 800 lbs                 |                     | 9.74                     | 6.5        | 1.8        | 1.34     | 0.044    | 0.026   | 16.1                                    | 60.4    | 0.6         | 0.34        | 8.3    | 0.27   | 0.16  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.43                     | 3.9        | 1.7        | 1.25     | 0.051    | 0.025   | 9.8                                     | 65.8    | 0.68        | 0.41        | 12.8   | 0.52   | 0.26  |
| 500 lbs                 |                     | 7.59                     | 4.6        | 2          | 1.31     | 0.051    | 0.026   | 11.6                                    | 65.7    | 0.68        | 0.41        | 11.4   | 0.44   | 0.23  |
| 600 lbs                 |                     | 8.72                     | 5.3        | 2.2        | 1.37     | 0.052    | 0.027   | 13.2                                    | 65.9    | 0.68        | 0.41        | 10.4   | 0.39   | 0.21  |
| 700 lbs                 |                     | 9.77                     | 5.9        | 2.6        | 1.43     | 0.052    | 0.028   | 14.9                                    | 65.7    | 0.68        | 0.41        | 9.6    | 0.35   | 0.19  |
| 800 lbs                 |                     | 10.79                    | 6.5        | 2.8        | 1.49     | 0.053    | 0.03    | 16.4                                    | 65.6    | 0.68        | 0.41        | 9      | 0.32   | 0.18  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 7                        | 3.9        | 2.3        | 1.46     | 0.064    | 0.03    | 9.7                                     | 72      | 0.77        | 0.49        | 15     | 0.66   | 0.31  |
| 500 lbs                 |                     | 8.27                     | 4.6        | 2.7        | 1.5      | 0.063    | 0.031   | 11.5                                    | 71.9    | 0.77        | 0.49        | 13.1   | 0.55   | 0.27  |
| 600 lbs                 |                     | 9.5                      | 5.3        | 3.1        | 1.55     | 0.062    | 0.032   | 13.2                                    | 72.1    | 0.77        | 0.49        | 11.7   | 0.47   | 0.24  |
| 700 lbs                 |                     | 10.64                    | 5.9        | 3.5        | 1.59     | 0.062    | 0.032   | 14.8                                    | 71.9    | 0.77        | 0.49        | 10.7   | 0.42   | 0.22  |
| 800 lbs                 |                     | 11.75                    | 6.5        | 3.9        | 1.63     | 0.061    | 0.033   | 16.4                                    | 71.8    | 0.77        | 0.49        | 10     | 0.37   | 0.2   |
| <b>1,200 lbs</b>        | <b>0.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.08                     | 3.9        | 0.5        | 0.82     | 0.026    | 0.015   | 9.2                                     | 55.5    | 0.53        | 0.27        | 9      | 0.28   | 0.16  |
| 500 lbs                 |                     | 5.99                     | 4.6        | 0.6        | 0.92     | 0.028    | 0.017   | 10.8                                    | 55.4    | 0.53        | 0.27        | 8.5    | 0.26   | 0.15  |
| 600 lbs                 |                     | 6.88                     | 5.3        | 0.6        | 1.01     | 0.03     | 0.019   | 12.4                                    | 55.5    | 0.53        | 0.27        | 8.2    | 0.24   | 0.15  |
| 700 lbs                 |                     | 7.7                      | 5.9        | 0.7        | 1.1      | 0.032    | 0.021   | 13.9                                    | 55.4    | 0.52        | 0.27        | 7.9    | 0.23   | 0.15  |
| 800 lbs                 |                     | 8.5                      | 6.5        | 0.8        | 1.19     | 0.035    | 0.023   | 15.4                                    | 55.3    | 0.52        | 0.27        | 7.7    | 0.23   | 0.15  |
|                         | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.74                     | 3.9        | 1          | 1.04     | 0.039    | 0.02    | 9.6                                     | 60      | 0.59        | 0.33        | 10.9   | 0.41   | 0.21  |
| 500 lbs                 |                     | 6.77                     | 4.6        | 1.2        | 1.12     | 0.04     | 0.022   | 11.3                                    | 59.9    | 0.59        | 0.33        | 9.9    | 0.36   | 0.19  |
| 600 lbs                 |                     | 7.79                     | 5.3        | 1.4        | 1.2      | 0.042    | 0.023   | 13                                      | 60      | 0.6         | 0.34        | 9.2    | 0.32   | 0.18  |
| 700 lbs                 |                     | 8.71                     | 5.9        | 1.5        | 1.27     | 0.043    | 0.025   | 14.5                                    | 59.9    | 0.59        | 0.33        | 8.8    | 0.3    | 0.17  |
| 800 lbs                 |                     | 9.62                     | 6.5        | 1.7        | 1.35     | 0.045    | 0.027   | 16.1                                    | 59.8    | 0.59        | 0.33        | 8.4    | 0.28   | 0.17  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.33                     | 3.9        | 1.6        | 1.25     | 0.052    | 0.025   | 9.8                                     | 64.8    | 0.67        | 0.4         | 12.8   | 0.54   | 0.26  |
| 500 lbs                 |                     | 7.48                     | 4.6        | 1.9        | 1.32     | 0.053    | 0.027   | 11.5                                    | 64.8    | 0.67        | 0.4         | 11.4   | 0.46   | 0.23  |
| 600 lbs                 |                     | 8.59                     | 5.3        | 2.1        | 1.38     | 0.053    | 0.028   | 13.2                                    | 64.9    | 0.67        | 0.4         | 10.4   | 0.4    | 0.21  |
| 700 lbs                 |                     | 9.61                     | 5.9        | 2.4        | 1.44     | 0.054    | 0.029   | 14.8                                    | 64.7    | 0.67        | 0.4         | 9.7    | 0.36   | 0.2   |
| 800 lbs                 |                     | 10.61                    | 6.5        | 2.6        | 1.5      | 0.054    | 0.03    | 16.4                                    | 64.7    | 0.66        | 0.4         | 9.1    | 0.33   | 0.19  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.88                     | 3.9        | 2.2        | 1.46     | 0.065    | 0.031   | 9.8                                     | 70.5    | 0.75        | 0.47        | 14.9   | 0.67   | 0.31  |
| 500 lbs                 |                     | 8.12                     | 4.6        | 2.5        | 1.51     | 0.064    | 0.031   | 11.5                                    | 70.4    | 0.75        | 0.47        | 13.1   | 0.56   | 0.27  |
| 600 lbs                 |                     | 9.33                     | 5.3        | 2.9        | 1.56     | 0.064    | 0.032   | 13.2                                    | 70.5    | 0.75        | 0.47        | 11.8   | 0.48   | 0.24  |
| 700 lbs                 |                     | 10.44                    | 5.9        | 3.3        | 1.6      | 0.064    | 0.033   | 14.8                                    | 70.3    | 0.75        | 0.47        | 10.8   | 0.43   | 0.22  |
| 800 lbs                 |                     | 11.53                    | 6.5        | 3.6        | 1.65     | 0.063    | 0.034   | 16.4                                    | 70.2    | 0.75        | 0.47        | 10     | 0.39   | 0.21  |

**Table 8. Growing Replacement Heifers (No Implant or Ionophore Adjustment) continued**

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,300 lbs</b>        | <b>0.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.04                     | 3.9        | 0.4        | 0.82     | 0.026    | 0.015   | 9.1                                     | 55.3    | 0.52        | 0.27        | 9      | 0.29   | 0.16  |
| 500 lbs                 |                     | 5.95                     | 4.6        | 0.5        | 0.92     | 0.028    | 0.017   | 10.8                                    | 55.2    | 0.52        | 0.27        | 8.5    | 0.26   | 0.16  |
| 600 lbs                 |                     | 6.85                     | 5.3        | 0.6        | 1.01     | 0.03     | 0.019   | 12.4                                    | 55.3    | 0.52        | 0.27        | 8.2    | 0.25   | 0.15  |
| 700 lbs                 |                     | 7.64                     | 5.9        | 0.7        | 1.1      | 0.033    | 0.021   | 13.9                                    | 55.2    | 0.52        | 0.27        | 8      | 0.24   | 0.15  |
| 800 lbs                 |                     | 8.43                     | 6.5        | 0.8        | 1.19     | 0.035    | 0.023   | 15.3                                    | 55.1    | 0.52        | 0.27        | 7.8    | 0.23   | 0.15  |
|                         | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.67                     | 3.9        | 1          | 1.04     | 0.04     | 0.02    | 9.5                                     | 59.5    | 0.59        | 0.33        | 10.9   | 0.42   | 0.21  |
| 500 lbs                 |                     | 6.69                     | 4.6        | 1.2        | 1.12     | 0.041    | 0.022   | 11.3                                    | 59.4    | 0.59        | 0.33        | 10     | 0.36   | 0.19  |
| 600 lbs                 |                     | 7.7                      | 5.3        | 1.3        | 1.2      | 0.042    | 0.024   | 12.9                                    | 59.5    | 0.59        | 0.33        | 9.3    | 0.33   | 0.18  |
| 700 lbs                 |                     | 8.61                     | 5.9        | 1.5        | 1.28     | 0.044    | 0.025   | 14.5                                    | 59.4    | 0.59        | 0.33        | 8.8    | 0.3    | 0.17  |
| 800 lbs                 |                     | 9.5                      | 6.5        | 1.6        | 1.35     | 0.046    | 0.027   | 16                                      | 59.3    | 0.59        | 0.33        | 8.4    | 0.28   | 0.17  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.24                     | 3.9        | 1.5        | 1.25     | 0.053    | 0.026   | 9.7                                     | 64      | 0.66        | 0.39        | 12.8   | 0.54   | 0.26  |
| 500 lbs                 |                     | 7.37                     | 4.6        | 1.8        | 1.32     | 0.054    | 0.027   | 11.5                                    | 64      | 0.66        | 0.39        | 11.5   | 0.47   | 0.23  |
| 600 lbs                 |                     | 8.47                     | 5.3        | 2          | 1.39     | 0.054    | 0.028   | 13.2                                    | 64.1    | 0.66        | 0.39        | 10.5   | 0.41   | 0.21  |
| 700 lbs                 |                     | 9.47                     | 5.9        | 2.2        | 1.45     | 0.055    | 0.03    | 14.8                                    | 63.9    | 0.65        | 0.39        | 9.8    | 0.37   | 0.2   |
| 800 lbs                 |                     | 10.46                    | 6.5        | 2.5        | 1.51     | 0.056    | 0.031   | 16.4                                    | 63.9    | 0.65        | 0.39        | 9.2    | 0.34   | 0.19  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.76                     | 3.9        | 2.1        | 1.46     | 0.066    | 0.031   | 9.8                                     | 69.2    | 0.73        | 0.46        | 14.9   | 0.68   | 0.32  |
| 500 lbs                 |                     | 7.99                     | 4.6        | 2.4        | 1.51     | 0.066    | 0.032   | 11.6                                    | 69.1    | 0.73        | 0.46        | 13.1   | 0.57   | 0.28  |
| 600 lbs                 |                     | 9.17                     | 5.3        | 2.7        | 1.57     | 0.066    | 0.033   | 13.2                                    | 69.2    | 0.73        | 0.46        | 11.8   | 0.5    | 0.25  |
| 700 lbs                 |                     | 10.27                    | 5.9        | 3.1        | 1.62     | 0.065    | 0.034   | 14.9                                    | 69.1    | 0.73        | 0.46        | 10.9   | 0.44   | 0.23  |
| 800 lbs                 |                     | 11.34                    | 6.5        | 3.4        | 1.67     | 0.065    | 0.035   | 16.4                                    | 69      | 0.73        | 0.45        | 10.1   | 0.4    | 0.21  |
| <b>1,400 lbs</b>        | <b>0.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5                        | 3.9        | 0.4        | 0.82     | 0.026    | 0.015   | 9.1                                     | 55      | 0.52        | 0.26        | 9.1    | 0.29   | 0.16  |
| 500 lbs                 |                     | 5.91                     | 4.6        | 0.5        | 0.92     | 0.029    | 0.017   | 10.7                                    | 55      | 0.52        | 0.26        | 8.6    | 0.27   | 0.16  |
| 600 lbs                 |                     | 6.79                     | 5.3        | 0.6        | 1.01     | 0.031    | 0.019   | 12.3                                    | 55.1    | 0.52        | 0.27        | 8.2    | 0.25   | 0.15  |
| 700 lbs                 |                     | 7.59                     | 5.9        | 0.6        | 1.1      | 0.033    | 0.021   | 13.8                                    | 54.9    | 0.52        | 0.26        | 8      | 0.24   | 0.15  |
| 800 lbs                 |                     | 8.37                     | 6.5        | 0.7        | 1.19     | 0.035    | 0.023   | 15.3                                    | 54.9    | 0.52        | 0.26        | 7.8    | 0.23   | 0.15  |
|                         | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.61                     | 3.9        | 0.9        | 1.04     | 0.04     | 0.02    | 9.5                                     | 59      | 0.58        | 0.32        | 10.9   | 0.42   | 0.22  |
| 500 lbs                 |                     | 6.62                     | 4.6        | 1          | 1.12     | 0.042    | 0.022   | 11.2                                    | 59      | 0.58        | 0.32        | 10     | 0.37   | 0.2   |
| 600 lbs                 |                     | 7.61                     | 5.3        | 1.2        | 1.21     | 0.043    | 0.024   | 12.9                                    | 59.1    | 0.58        | 0.32        | 9.4    | 0.33   | 0.18  |
| 700 lbs                 |                     | 8.52                     | 5.9        | 1.4        | 1.28     | 0.045    | 0.026   | 14.4                                    | 59      | 0.58        | 0.32        | 8.9    | 0.31   | 0.18  |
| 800 lbs                 |                     | 9.4                      | 6.5        | 1.5        | 1.36     | 0.046    | 0.027   | 16                                      | 58.9    | 0.58        | 0.32        | 8.5    | 0.29   | 0.17  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.16                     | 3.9        | 1.4        | 1.25     | 0.054    | 0.026   | 9.7                                     | 63.3    | 0.65        | 0.38        | 12.9   | 0.55   | 0.27  |
| 500 lbs                 |                     | 7.28                     | 4.6        | 1.7        | 1.32     | 0.054    | 0.027   | 11.5                                    | 63.3    | 0.65        | 0.38        | 11.5   | 0.47   | 0.24  |
| 600 lbs                 |                     | 8.36                     | 5.3        | 1.9        | 1.39     | 0.055    | 0.029   | 13.2                                    | 63.4    | 0.65        | 0.38        | 10.6   | 0.42   | 0.22  |
| 700 lbs                 |                     | 9.35                     | 5.9        | 2.1        | 1.46     | 0.056    | 0.03    | 14.8                                    | 63.2    | 0.64        | 0.38        | 9.9    | 0.38   | 0.2   |
| 800 lbs                 |                     | 10.33                    | 6.5        | 2.3        | 1.52     | 0.057    | 0.031   | 16.3                                    | 63.2    | 0.64        | 0.38        | 9.3    | 0.35   | 0.19  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.66                     | 3.9        | 1.9        | 1.46     | 0.067    | 0.031   | 9.8                                     | 68.1    | 0.72        | 0.44        | 14.9   | 0.69   | 0.32  |
| 500 lbs                 |                     | 7.87                     | 4.6        | 2.3        | 1.52     | 0.067    | 0.032   | 11.6                                    | 68.1    | 0.71        | 0.44        | 13.1   | 0.58   | 0.28  |
| 600 lbs                 |                     | 9.04                     | 5.3        | 2.6        | 1.57     | 0.067    | 0.033   | 13.3                                    | 68.2    | 0.72        | 0.44        | 11.9   | 0.51   | 0.25  |
| 700 lbs                 |                     | 10.12                    | 5.9        | 2.9        | 1.63     | 0.067    | 0.035   | 14.9                                    | 68      | 0.71        | 0.44        | 10.9   | 0.45   | 0.23  |
| 800 lbs                 |                     | 11.17                    | 6.5        | 3.2        | 1.68     | 0.067    | 0.036   | 16.4                                    | 67.9    | 0.71        | 0.44        | 10.2   | 0.41   | 0.22  |

Table 9. Feeder Calves (&lt; 12 months of age) With Adjustments for Implant and Ionophore

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,200 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.67                     | 3.9        | 1          | 1.04     | 0.039    | 0.02    | 9.8                                     | 57.8    | 0.58        | 0.32        | 10.6   | 0.4    | 0.2   |
| 500 lbs                 |                     | 6.7                      | 4.6        | 1.2        | 1.12     | 0.04     | 0.022   | 11.6                                    | 57.8    | 0.58        | 0.32        | 9.7    | 0.35   | 0.19  |
| 600 lbs                 |                     | 7.7                      | 5.3        | 1.4        | 1.2      | 0.042    | 0.023   | 13.3                                    | 57.9    | 0.58        | 0.32        | 9      | 0.31   | 0.17  |
| 700 lbs                 |                     | 8.62                     | 5.9        | 1.5        | 1.27     | 0.043    | 0.025   | 14.9                                    | 57.7    | 0.58        | 0.32        | 8.5    | 0.29   | 0.17  |
| 800 lbs                 |                     | 9.51                     | 6.5        | 1.7        | 1.35     | 0.045    | 0.027   | 16.5                                    | 57.7    | 0.58        | 0.32        | 8.2    | 0.27   | 0.16  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.26                     | 3.9        | 1.6        | 1.25     | 0.052    | 0.025   | 10                                      | 62.3    | 0.65        | 0.39        | 12.4   | 0.52   | 0.25  |
| 500 lbs                 |                     | 7.4                      | 4.6        | 1.9        | 1.32     | 0.053    | 0.027   | 11.9                                    | 62.3    | 0.65        | 0.39        | 11.1   | 0.44   | 0.22  |
| 600 lbs                 |                     | 8.5                      | 5.3        | 2.1        | 1.38     | 0.053    | 0.028   | 13.6                                    | 62.4    | 0.65        | 0.39        | 10.1   | 0.39   | 0.2   |
| 700 lbs                 |                     | 9.51                     | 5.9        | 2.4        | 1.44     | 0.054    | 0.029   | 15.3                                    | 62.2    | 0.65        | 0.38        | 9.4    | 0.35   | 0.19  |
| 800 lbs                 |                     | 10.5                     | 6.5        | 2.6        | 1.5      | 0.054    | 0.03    | 16.9                                    | 62.2    | 0.65        | 0.38        | 8.9    | 0.32   | 0.18  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.81                     | 3.9        | 2.2        | 1.46     | 0.065    | 0.031   | 10.1                                    | 67.5    | 0.73        | 0.45        | 14.5   | 0.65   | 0.3   |
| 500 lbs                 |                     | 8.04                     | 4.6        | 2.5        | 1.51     | 0.064    | 0.031   | 11.9                                    | 67.4    | 0.73        | 0.45        | 12.7   | 0.54   | 0.26  |
| 600 lbs                 |                     | 9.23                     | 5.3        | 2.9        | 1.56     | 0.064    | 0.032   | 13.7                                    | 67.5    | 0.73        | 0.46        | 11.4   | 0.47   | 0.24  |
| 700 lbs                 |                     | 10.34                    | 5.9        | 3.3        | 1.6      | 0.064    | 0.033   | 15.3                                    | 67.4    | 0.73        | 0.45        | 10.5   | 0.42   | 0.22  |
| 800 lbs                 |                     | 11.41                    | 6.5        | 3.6        | 1.65     | 0.063    | 0.034   | 17                                      | 67.3    | 0.73        | 0.45        | 9.7    | 0.37   | 0.2   |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 7.31                     | 3.9        | 2.7        | 1.66     | 0.078    | 0.036   | 9.9                                     | 73.5    | 0.82        | 0.53        | 16.7   | 0.78   | 0.36  |
| 500 lbs                 |                     | 8.63                     | 4.6        | 3.2        | 1.7      | 0.076    | 0.036   | 11.8                                    | 73.5    | 0.82        | 0.53        | 14.5   | 0.65   | 0.31  |
| 600 lbs                 |                     | 9.92                     | 5.3        | 3.7        | 1.73     | 0.075    | 0.037   | 13.5                                    | 73.6    | 0.82        | 0.53        | 12.9   | 0.56   | 0.27  |
| 700 lbs                 |                     | 11.11                    | 5.9        | 4.2        | 1.76     | 0.074    | 0.037   | 15.1                                    | 73.4    | 0.81        | 0.53        | 11.7   | 0.49   | 0.25  |
| 800 lbs                 |                     | 12.27                    | 6.5        | 4.6        | 1.8      | 0.073    | 0.038   | 16.7                                    | 73.3    | 0.81        | 0.53        | 10.7   | 0.43   | 0.23  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 7.77                     | 3.9        | 3.4        | 1.87     | 0.091    | 0.041   | 9.5                                     | 81.5    | 0.93        | 0.63        | 19.6   | 0.95   | 0.43  |
| 500 lbs                 |                     | 9.18                     | 4.6        | 4          | 1.89     | 0.088    | 0.041   | 11.3                                    | 81.4    | 0.93        | 0.63        | 16.7   | 0.78   | 0.36  |
| 600 lbs                 |                     | 10.54                    | 5.3        | 4.5        | 1.9      | 0.086    | 0.041   | 12.9                                    | 81.6    | 0.93        | 0.63        | 14.7   | 0.66   | 0.32  |
| 700 lbs                 |                     | 11.81                    | 5.9        | 5.1        | 1.92     | 0.083    | 0.041   | 14.5                                    | 81.2    | 0.93        | 0.63        | 13.2   | 0.57   | 0.28  |
| 800 lbs                 |                     | 13.04                    | 6.5        | 5.6        | 1.94     | 0.081    | 0.041   | 16.1                                    | 81.1    | 0.92        | 0.62        | 12.1   | 0.51   | 0.26  |
| <b>1,400 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 5.55                     | 3.9        | 0.9        | 1.04     | 0.04     | 0.02    | 9.7                                     | 56.9    | 0.57        | 0.31        | 10.7   | 0.41   | 0.21  |
| 500 lbs                 |                     | 6.55                     | 4.6        | 1.1        | 1.12     | 0.042    | 0.022   | 11.5                                    | 56.9    | 0.57        | 0.31        | 9.8    | 0.36   | 0.19  |
| 600 lbs                 |                     | 7.53                     | 5.3        | 1.2        | 1.21     | 0.043    | 0.024   | 13.2                                    | 57      | 0.57        | 0.31        | 9.1    | 0.33   | 0.18  |
| 700 lbs                 |                     | 8.42                     | 5.9        | 1.4        | 1.28     | 0.045    | 0.026   | 14.8                                    | 56.9    | 0.57        | 0.31        | 8.7    | 0.3    | 0.17  |
| 800 lbs                 |                     | 9.29                     | 6.5        | 1.5        | 1.36     | 0.046    | 0.027   | 16.4                                    | 56.8    | 0.57        | 0.31        | 8.3    | 0.28   | 0.17  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.09                     | 3.9        | 1.4        | 1.25     | 0.054    | 0.026   | 10                                      | 60.9    | 0.63        | 0.37        | 12.5   | 0.54   | 0.26  |
| 500 lbs                 |                     | 7.2                      | 4.6        | 1.7        | 1.32     | 0.054    | 0.027   | 11.8                                    | 60.9    | 0.63        | 0.37        | 11.2   | 0.46   | 0.23  |
| 600 lbs                 |                     | 8.27                     | 5.3        | 1.9        | 1.39     | 0.055    | 0.029   | 13.6                                    | 61      | 0.63        | 0.37        | 10.3   | 0.41   | 0.21  |
| 700 lbs                 |                     | 9.25                     | 5.9        | 2.1        | 1.46     | 0.056    | 0.03    | 15.2                                    | 60.8    | 0.63        | 0.37        | 9.6    | 0.37   | 0.2   |
| 800 lbs                 |                     | 10.22                    | 6.5        | 2.4        | 1.52     | 0.057    | 0.031   | 16.8                                    | 60.8    | 0.63        | 0.36        | 9.1    | 0.34   | 0.19  |

**Table 9. Feeder Calves (< 12 months of age) With Adjustments for Implant and Ionophore** continued

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,400 lbs</b>        | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 6.59                     | 3.9        | 1.9        | 1.46     | 0.067    | 0.031   | 10.1                                    | 65.3    | 0.7         | 0.43        | 14.5   | 0.67   | 0.31  |
| 500 lbs                 |                     | 7.79                     | 4.6        | 2.3        | 1.52     | 0.067    | 0.032   | 11.9                                    | 65.3    | 0.7         | 0.43        | 12.7   | 0.56   | 0.27  |
| 600 lbs                 |                     | 8.94                     | 5.3        | 2.6        | 1.57     | 0.067    | 0.033   | 13.7                                    | 65.4    | 0.7         | 0.43        | 11.5   | 0.49   | 0.24  |
| 700 lbs                 |                     | 10.01                    | 5.9        | 2.9        | 1.63     | 0.067    | 0.035   | 15.4                                    | 65.2    | 0.7         | 0.42        | 10.6   | 0.44   | 0.22  |
| 800 lbs                 |                     | 11.06                    | 6.5        | 3.2        | 1.68     | 0.067    | 0.036   | 17                                      | 65.2    | 0.69        | 0.42        | 9.9    | 0.4    | 0.21  |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 7.06                     | 3.9        | 2.4        | 1.67     | 0.081    | 0.037   | 10                                      | 70.3    | 0.77        | 0.49        | 16.6   | 0.8    | 0.37  |
| 500 lbs                 |                     | 8.34                     | 4.6        | 2.9        | 1.71     | 0.08     | 0.037   | 11.9                                    | 70.3    | 0.77        | 0.49        | 14.4   | 0.67   | 0.32  |
| 600 lbs                 |                     | 9.58                     | 5.3        | 3.3        | 1.76     | 0.079    | 0.038   | 13.6                                    | 70.4    | 0.77        | 0.49        | 12.9   | 0.58   | 0.28  |
| 700 lbs                 |                     | 10.73                    | 5.9        | 3.7        | 1.8      | 0.078    | 0.039   | 15.3                                    | 70.2    | 0.77        | 0.49        | 11.8   | 0.51   | 0.25  |
| 800 lbs                 |                     | 11.84                    | 6.5        | 4.1        | 1.84     | 0.077    | 0.04    | 16.9                                    | 70.1    | 0.77        | 0.49        | 10.9   | 0.46   | 0.23  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 400 lbs                 |                     | 7.5                      | 3.9        | 3          | 1.87     | 0.094    | 0.042   | 9.8                                     | 76.4    | 0.86        | 0.57        | 19.1   | 0.96   | 0.43  |
| 500 lbs                 |                     | 8.86                     | 4.6        | 3.5        | 1.9      | 0.092    | 0.042   | 11.6                                    | 76.3    | 0.86        | 0.57        | 16.4   | 0.79   | 0.37  |
| 600 lbs                 |                     | 10.18                    | 5.3        | 4.1        | 1.93     | 0.09     | 0.043   | 13.3                                    | 76.5    | 0.86        | 0.57        | 14.5   | 0.68   | 0.32  |
| 700 lbs                 |                     | 11.39                    | 5.9        | 4.5        | 1.96     | 0.089    | 0.043   | 15                                      | 76.2    | 0.85        | 0.56        | 13.1   | 0.59   | 0.29  |
| 800 lbs                 |                     | 12.58                    | 6.5        | 5          | 1.99     | 0.087    | 0.044   | 16.5                                    | 76.1    | 0.85        | 0.56        | 12     | 0.53   | 0.26  |

**Table 10. Feeder Yearlings (> 11 months of age) With Adjustments for Implant and Ionophore**

| Mature Weight and Range | Daily BW gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,200 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 8.39                     | 5.3        | 1.4        | 1.26     | 0.042    | 0.023   | 15.8                                    | 53.1    | 0.51        | 0.25        | 8      | 0.26   | 0.15  |
| 700 lbs                 |                     | 9.39                     | 5.9        | 1.5        | 1.33     | 0.043    | 0.025   | 17.7                                    | 53      | 0.51        | 0.25        | 7.5    | 0.24   | 0.14  |
| 800 lbs                 |                     | 10.36                    | 6.5        | 1.7        | 1.4      | 0.045    | 0.027   | 19.6                                    | 53      | 0.51        | 0.25        | 7.2    | 0.23   | 0.14  |
| 900 lbs                 |                     | 11.31                    | 7.1        | 1.8        | 1.47     | 0.046    | 0.028   | 21.4                                    | 52.9    | 0.51        | 0.25        | 6.9    | 0.22   | 0.13  |
| 1,000 lbs               |                     | 12.25                    | 7.7        | 2          | 1.53     | 0.048    | 0.03    | 23.1                                    | 52.9    | 0.51        | 0.25        | 6.6    | 0.21   | 0.13  |
| 1,100 lbs               |                     | 13.18                    | 8.3        | 2.1        | 1.59     | 0.049    | 0.032   | 24.9                                    | 53      | 0.51        | 0.25        | 6.4    | 0.2    | 0.13  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 9.18                     | 5.3        | 2.1        | 1.47     | 0.053    | 0.028   | 16.1                                    | 57.1    | 0.57        | 0.31        | 9.2    | 0.33   | 0.17  |
| 700 lbs                 |                     | 10.28                    | 5.9        | 2.4        | 1.53     | 0.054    | 0.029   | 18                                      | 57      | 0.57        | 0.31        | 8.5    | 0.3    | 0.16  |
| 800 lbs                 |                     | 11.35                    | 6.5        | 2.6        | 1.58     | 0.054    | 0.03    | 19.9                                    | 56.9    | 0.57        | 0.31        | 7.9    | 0.27   | 0.15  |
| 900 lbs                 |                     | 12.4                     | 7.1        | 2.9        | 1.63     | 0.055    | 0.032   | 21.8                                    | 56.9    | 0.57        | 0.31        | 7.5    | 0.25   | 0.15  |
| 1,000 lbs               |                     | 13.43                    | 7.7        | 3.1        | 1.68     | 0.056    | 0.033   | 23.6                                    | 56.9    | 0.57        | 0.31        | 7.1    | 0.24   | 0.14  |
| 1,100 lbs               |                     | 14.45                    | 8.3        | 3.4        | 1.73     | 0.057    | 0.035   | 25.3                                    | 57      | 0.57        | 0.31        | 6.8    | 0.22   | 0.14  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 9.91                     | 5.3        | 2.9        | 1.68     | 0.064    | 0.032   | 16.1                                    | 61.4    | 0.64        | 0.37        | 10.4   | 0.4    | 0.2   |
| 700 lbs                 |                     | 11.1                     | 5.9        | 3.3        | 1.72     | 0.064    | 0.033   | 18.1                                    | 61.3    | 0.64        | 0.37        | 9.5    | 0.35   | 0.18  |
| 800 lbs                 |                     | 12.25                    | 6.5        | 3.6        | 1.75     | 0.063    | 0.034   | 20                                      | 61.2    | 0.63        | 0.37        | 8.8    | 0.32   | 0.17  |
| 900 lbs                 |                     | 13.39                    | 7.1        | 4          | 1.79     | 0.063    | 0.035   | 21.9                                    | 61.2    | 0.63        | 0.37        | 8.2    | 0.29   | 0.16  |
| 1,000 lbs               |                     | 14.5                     | 7.7        | 4.3        | 1.82     | 0.063    | 0.036   | 23.7                                    | 61.2    | 0.63        | 0.37        | 7.7    | 0.27   | 0.15  |
| 1,100 lbs               |                     | 15.59                    | 8.3        | 4.6        | 1.86     | 0.063    | 0.037   | 25.4                                    | 61.3    | 0.64        | 0.37        | 7.3    | 0.25   | 0.15  |

Table 10. Feeder Yearlings (&gt; 11 months of age) With Adjustments for Implant and Ionophore continued

| Mature Weight and Range | Daily BW gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,200 lbs</b>        | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 10.58                    | 5.3        | 3.7        | 1.88     | 0.075    | 0.037   | 16                                      | 66.2    | 0.71        | 0.44        | 11.8   | 0.47   | 0.23  |
| 700 lbs                 |                     | 11.86                    | 5.9        | 4.2        | 1.9      | 0.074    | 0.037   | 18                                      | 66      | 0.71        | 0.44        | 10.6   | 0.41   | 0.21  |
| 800 lbs                 |                     | 13.09                    | 6.5        | 4.6        | 1.92     | 0.073    | 0.038   | 19.8                                    | 66      | 0.71        | 0.43        | 9.7    | 0.37   | 0.19  |
| 900 lbs                 |                     | 14.3                     | 7.1        | 5          | 1.94     | 0.072    | 0.038   | 21.7                                    | 65.9    | 0.71        | 0.43        | 9      | 0.33   | 0.18  |
| 1,000 lbs               |                     | 15.49                    | 7.7        | 5.5        | 1.96     | 0.071    | 0.039   | 23.5                                    | 66      | 0.71        | 0.43        | 8.4    | 0.3    | 0.17  |
| 1,100 lbs               |                     | 16.64                    | 8.3        | 5.9        | 1.98     | 0.07     | 0.04    | 25.2                                    | 66      | 0.71        | 0.44        | 7.9    | 0.28   | 0.16  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 11.21                    | 5.3        | 4.5        | 2.08     | 0.086    | 0.041   | 15.6                                    | 71.8    | 0.79        | 0.51        | 13.3   | 0.55   | 0.26  |
| 700 lbs                 |                     | 12.56                    | 5.9        | 5.1        | 2.09     | 0.083    | 0.041   | 17.6                                    | 71.6    | 0.79        | 0.51        | 11.9   | 0.48   | 0.23  |
| 800 lbs                 |                     | 13.88                    | 6.5        | 5.6        | 2.09     | 0.081    | 0.041   | 19.4                                    | 71.5    | 0.79        | 0.51        | 10.8   | 0.42   | 0.21  |
| 900 lbs                 |                     | 15.16                    | 7.1        | 6.2        | 2.09     | 0.08     | 0.042   | 21.2                                    | 71.5    | 0.79        | 0.51        | 9.9    | 0.38   | 0.2   |
| 1,000 lbs               |                     | 16.41                    | 7.7        | 6.7        | 2.1      | 0.078    | 0.042   | 22.9                                    | 71.6    | 0.79        | 0.51        | 9.1    | 0.34   | 0.18  |
| 1,100 lbs               |                     | 17.64                    | 8.3        | 7.2        | 2.1      | 0.076    | 0.043   | 24.6                                    | 71.6    | 0.79        | 0.51        | 8.5    | 0.31   | 0.17  |
|                         | <b>3.3</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 11.58                    | 5.3        | 5.1        | 2.2      | 0.092    | 0.044   | 15.3                                    | 75.8    | 0.85        | 0.56        | 14.4   | 0.6    | 0.28  |
| 700 lbs                 |                     | 12.96                    | 5.9        | 5.7        | 2.19     | 0.089    | 0.043   | 17.2                                    | 75.5    | 0.84        | 0.56        | 12.8   | 0.52   | 0.25  |
| 800 lbs                 |                     | 14.32                    | 6.5        | 6.3        | 2.19     | 0.087    | 0.044   | 19                                      | 75.4    | 0.84        | 0.56        | 11.5   | 0.46   | 0.23  |
| 900 lbs                 |                     | 15.65                    | 7.1        | 6.8        | 2.18     | 0.084    | 0.044   | 20.7                                    | 75.4    | 0.84        | 0.56        | 10.5   | 0.41   | 0.21  |
| 1,000 lbs               |                     | 16.94                    | 7.7        | 7.4        | 2.17     | 0.082    | 0.044   | 22.4                                    | 75.5    | 0.84        | 0.56        | 9.7    | 0.37   | 0.2   |
| 1,100 lbs               |                     | 18.21                    | 8.3        | 8          | 2.17     | 0.08     | 0.044   | 24.1                                    | 75.6    | 0.85        | 0.56        | 9      | 0.33   | 0.18  |
| <b>1,400 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 8.21                     | 5.3        | 1.2        | 1.26     | 0.043    | 0.024   | 15.7                                    | 52.3    | 0.5         | 0.24        | 8      | 0.27   | 0.15  |
| 700 lbs                 |                     | 9.19                     | 5.9        | 1.4        | 1.33     | 0.045    | 0.026   | 17.6                                    | 52.2    | 0.49        | 0.24        | 7.6    | 0.25   | 0.14  |
| 800 lbs                 |                     | 10.14                    | 6.5        | 1.5        | 1.41     | 0.046    | 0.027   | 19.4                                    | 52.1    | 0.49        | 0.24        | 7.2    | 0.24   | 0.14  |
| 900 lbs                 |                     | 11.08                    | 7.1        | 1.6        | 1.48     | 0.048    | 0.029   | 21.2                                    | 52.2    | 0.49        | 0.24        | 6.9    | 0.23   | 0.14  |
| 1,000 lbs               |                     | 12                       | 7.7        | 1.8        | 1.54     | 0.05     | 0.031   | 23                                      | 52.2    | 0.49        | 0.24        | 6.7    | 0.22   | 0.13  |
| 1,100 lbs               |                     | 12.91                    | 8.3        | 1.9        | 1.61     | 0.051    | 0.033   | 24.7                                    | 52.2    | 0.49        | 0.24        | 6.5    | 0.21   | 0.13  |
| 1,200 lbs               |                     | 13.81                    | 8.9        | 2          | 1.68     | 0.053    | 0.034   | 26.4                                    | 52.3    | 0.5         | 0.24        | 6.4    | 0.2    | 0.13  |
| 1,300 lbs               |                     | 14.62                    | 9.4        | 2.2        | 1.74     | 0.055    | 0.036   | 28                                      | 52.2    | 0.49        | 0.24        | 6.2    | 0.2    | 0.13  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 8.95                     | 5.3        | 1.9        | 1.47     | 0.055    | 0.029   | 16                                      | 55.9    | 0.55        | 0.3         | 9.2    | 0.34   | 0.18  |
| 700 lbs                 |                     | 10.02                    | 5.9        | 2.1        | 1.53     | 0.056    | 0.03    | 18                                      | 55.7    | 0.55        | 0.29        | 8.5    | 0.31   | 0.17  |
| 800 lbs                 |                     | 11.07                    | 6.5        | 2.4        | 1.59     | 0.057    | 0.031   | 19.9                                    | 55.7    | 0.55        | 0.29        | 8      | 0.29   | 0.16  |
| 900 lbs                 |                     | 12.09                    | 7.1        | 2.6        | 1.65     | 0.058    | 0.033   | 21.7                                    | 55.7    | 0.55        | 0.29        | 7.6    | 0.27   | 0.15  |
| 1,000 lbs               |                     | 13.09                    | 7.7        | 2.8        | 1.7      | 0.059    | 0.034   | 23.5                                    | 55.7    | 0.55        | 0.29        | 7.3    | 0.25   | 0.15  |
| 1,100 lbs               |                     | 14.08                    | 8.3        | 3          | 1.76     | 0.06     | 0.036   | 25.2                                    | 55.8    | 0.55        | 0.29        | 7      | 0.24   | 0.14  |
| 1,200 lbs               |                     | 15.05                    | 8.9        | 3.2        | 1.81     | 0.061    | 0.037   | 26.9                                    | 55.8    | 0.55        | 0.29        | 6.7    | 0.23   | 0.14  |
| 1,300 lbs               |                     | 15.95                    | 9.4        | 3.4        | 1.87     | 0.062    | 0.039   | 28.6                                    | 55.8    | 0.55        | 0.29        | 6.5    | 0.22   | 0.14  |

Table 10. Feeder Yearlings (&gt; 11 months of age) With Adjustments for Implant and Ionophore continued

| Mature Weight and Range | Daily BW gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,400 lbs</b>        | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 9.62                     | 5.3        | 2.6        | 1.67     | 0.067    | 0.033   | 16.1                                    | 59.6    | 0.61        | 0.35        | 10.4   | 0.41   | 0.21  |
| 700 lbs                 |                     | 10.78                    | 5.9        | 2.9        | 1.72     | 0.067    | 0.035   | 18.1                                    | 59.5    | 0.61        | 0.35        | 9.5    | 0.37   | 0.19  |
| 800 lbs                 |                     | 11.91                    | 6.5        | 3.2        | 1.77     | 0.067    | 0.036   | 20                                      | 59.4    | 0.61        | 0.35        | 8.8    | 0.34   | 0.18  |
| 900 lbs                 |                     | 13.01                    | 7.1        | 3.5        | 1.81     | 0.067    | 0.037   | 21.9                                    | 59.5    | 0.61        | 0.35        | 8.3    | 0.31   | 0.17  |
| 1,000 lbs               |                     | 14.08                    | 7.7        | 3.8        | 1.86     | 0.068    | 0.038   | 23.7                                    | 59.5    | 0.61        | 0.35        | 7.8    | 0.29   | 0.16  |
| 1,100 lbs               |                     | 15.14                    | 8.3        | 4.1        | 1.9      | 0.068    | 0.039   | 25.4                                    | 59.5    | 0.61        | 0.35        | 7.5    | 0.27   | 0.15  |
| 1,200 lbs               |                     | 16.18                    | 8.9        | 4.4        | 1.94     | 0.068    | 0.04    | 27.1                                    | 59.6    | 0.61        | 0.35        | 7.2    | 0.25   | 0.15  |
| 1,300 lbs               |                     | 17.15                    | 9.4        | 4.6        | 1.98     | 0.069    | 0.042   | 28.8                                    | 59.5    | 0.61        | 0.35        | 6.9    | 0.24   | 0.14  |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 10.25                    | 5.3        | 3.3        | 1.88     | 0.079    | 0.038   | 16.1                                    | 63.7    | 0.67        | 0.4         | 11.7   | 0.49   | 0.24  |
| 700 lbs                 |                     | 11.48                    | 5.9        | 3.7        | 1.91     | 0.078    | 0.039   | 18.1                                    | 63.6    | 0.67        | 0.4         | 10.6   | 0.43   | 0.22  |
| 800 lbs                 |                     | 12.68                    | 6.5        | 4.1        | 1.94     | 0.077    | 0.04    | 20                                      | 63.5    | 0.67        | 0.4         | 9.7    | 0.39   | 0.2   |
| 900 lbs                 |                     | 13.85                    | 7.1        | 4.5        | 1.98     | 0.077    | 0.041   | 21.8                                    | 63.5    | 0.67        | 0.4         | 9.1    | 0.35   | 0.19  |
| 1,000 lbs               |                     | 15                       | 7.7        | 4.9        | 2.01     | 0.076    | 0.041   | 23.6                                    | 63.5    | 0.67        | 0.4         | 8.5    | 0.32   | 0.18  |
| 1,100 lbs               |                     | 16.12                    | 8.3        | 5.2        | 2.04     | 0.076    | 0.042   | 25.4                                    | 63.6    | 0.67        | 0.4         | 8      | 0.3    | 0.17  |
| 1,200 lbs               |                     | 17.23                    | 8.9        | 5.6        | 2.07     | 0.076    | 0.043   | 27.1                                    | 63.7    | 0.67        | 0.4         | 7.6    | 0.28   | 0.16  |
| 1,300 lbs               |                     | 18.27                    | 9.4        | 5.9        | 2.1      | 0.075    | 0.044   | 28.7                                    | 63.6    | 0.67        | 0.4         | 7.3    | 0.26   | 0.15  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 10.84                    | 5.3        | 4.1        | 2.08     | 0.09     | 0.043   | 15.9                                    | 68.3    | 0.74        | 0.47        | 13.1   | 0.57   | 0.27  |
| 700 lbs                 |                     | 12.14                    | 5.9        | 4.5        | 2.1      | 0.089    | 0.043   | 17.8                                    | 68.1    | 0.74        | 0.46        | 11.8   | 0.5    | 0.24  |
| 800 lbs                 |                     | 13.41                    | 6.5        | 5          | 2.12     | 0.087    | 0.044   | 19.7                                    | 68      | 0.74        | 0.46        | 10.7   | 0.44   | 0.22  |
| 900 lbs                 |                     | 14.65                    | 7.1        | 5.5        | 2.14     | 0.086    | 0.044   | 21.5                                    | 68.1    | 0.74        | 0.46        | 9.9    | 0.4    | 0.21  |
| 1,000 lbs               |                     | 15.86                    | 7.7        | 5.9        | 2.15     | 0.085    | 0.045   | 23.3                                    | 68.1    | 0.74        | 0.46        | 9.2    | 0.36   | 0.19  |
| 1,100 lbs               |                     | 17.05                    | 8.3        | 6.4        | 2.17     | 0.083    | 0.045   | 25                                      | 68.2    | 0.74        | 0.46        | 8.7    | 0.33   | 0.18  |
| 1,200 lbs               |                     | 18.22                    | 8.9        | 6.8        | 2.19     | 0.082    | 0.046   | 26.7                                    | 68.3    | 0.74        | 0.46        | 8.2    | 0.31   | 0.17  |
| 1,300 lbs               |                     | 19.32                    | 9.4        | 7.2        | 2.21     | 0.082    | 0.047   | 28.4                                    | 68.1    | 0.74        | 0.46        | 7.8    | 0.29   | 0.17  |
|                         | <b>3.3</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 600 lbs                 |                     | 11.17                    | 5.3        | 4.5        | 2.2      | 0.097    | 0.046   | 15.7                                    | 71.4    | 0.79        | 0.5         | 14.1   | 0.62   | 0.29  |
| 700 lbs                 |                     | 12.53                    | 5.9        | 5.1        | 2.21     | 0.095    | 0.046   | 17.6                                    | 71.2    | 0.78        | 0.5         | 12.6   | 0.54   | 0.26  |
| 800 lbs                 |                     | 13.83                    | 6.5        | 5.6        | 2.22     | 0.093    | 0.046   | 19.4                                    | 71.1    | 0.78        | 0.5         | 11.4   | 0.48   | 0.24  |
| 900 lbs                 |                     | 15.11                    | 7.1        | 6.1        | 2.23     | 0.091    | 0.046   | 21.2                                    | 71.1    | 0.78        | 0.5         | 10.5   | 0.43   | 0.22  |
| 1,000 lbs               |                     | 16.35                    | 7.7        | 6.6        | 2.24     | 0.09     | 0.047   | 23                                      | 71.2    | 0.78        | 0.5         | 9.7    | 0.39   | 0.2   |
| 1,100 lbs               |                     | 17.58                    | 8.3        | 7.1        | 2.25     | 0.088    | 0.047   | 24.7                                    | 71.2    | 0.78        | 0.5         | 9.1    | 0.36   | 0.19  |
| 1,200 lbs               |                     | 18.79                    | 8.9        | 7.6        | 2.26     | 0.087    | 0.048   | 26.3                                    | 71.4    | 0.79        | 0.5         | 8.6    | 0.33   | 0.18  |
| 1,300 lbs               |                     | 19.93                    | 9.4        | 8          | 2.27     | 0.085    | 0.048   | 28                                      | 71.2    | 0.78        | 0.5         | 8.1    | 0.3    | 0.17  |

Table 11. Growing Bull Calves (&lt; 12 months of age)

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,800 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 6.87                     | 5.3        | 0.8        | 1.15     | 0.043    | 0.023   | 11.3                                    | 60.5    | 0.6         | 0.34        | 10.1   | 0.38   | 0.2   |
| 600 lbs                 |                     | 7.89                     | 6.1        | 1          | 1.23     | 0.045    | 0.025   | 13                                      | 60.6    | 0.6         | 0.34        | 9.5    | 0.35   | 0.19  |
| 700 lbs                 |                     | 8.82                     | 6.8        | 1.1        | 1.31     | 0.047    | 0.026   | 14.6                                    | 60.4    | 0.6         | 0.34        | 9      | 0.32   | 0.18  |
| 800 lbs                 |                     | 9.75                     | 7.5        | 1.2        | 1.39     | 0.049    | 0.028   | 16.1                                    | 60.4    | 0.6         | 0.34        | 8.6    | 0.3    | 0.17  |
| 900 lbs                 |                     | 10.66                    | 8.2        | 1.3        | 1.47     | 0.051    | 0.03    | 17.6                                    | 60.4    | 0.6         | 0.34        | 8.3    | 0.29   | 0.17  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 7.4                      | 5.3        | 1.4        | 1.36     | 0.057    | 0.028   | 11.5                                    | 64.3    | 0.66        | 0.39        | 11.8   | 0.49   | 0.25  |
| 600 lbs                 |                     | 8.5                      | 6.1        | 1.5        | 1.43     | 0.058    | 0.03    | 13.2                                    | 64.4    | 0.66        | 0.39        | 10.9   | 0.44   | 0.23  |
| 700 lbs                 |                     | 9.53                     | 6.8        | 1.8        | 1.51     | 0.059    | 0.031   | 14.8                                    | 64.2    | 0.66        | 0.39        | 10.2   | 0.4    | 0.21  |
| 800 lbs                 |                     | 10.51                    | 7.5        | 2          | 1.58     | 0.061    | 0.033   | 16.4                                    | 64.2    | 0.66        | 0.39        | 9.6    | 0.37   | 0.2   |
| 900 lbs                 |                     | 11.49                    | 8.2        | 2.1        | 1.64     | 0.062    | 0.035   | 17.9                                    | 64.2    | 0.66        | 0.39        | 9.2    | 0.35   | 0.19  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 7.91                     | 5.3        | 1.9        | 1.57     | 0.071    | 0.034   | 11.6                                    | 68.4    | 0.72        | 0.45        | 13.6   | 0.61   | 0.29  |
| 600 lbs                 |                     | 9.09                     | 6.1        | 2.2        | 1.63     | 0.071    | 0.035   | 13.3                                    | 68.6    | 0.72        | 0.45        | 12.3   | 0.54   | 0.26  |
| 700 lbs                 |                     | 10.17                    | 6.8        | 2.5        | 1.7      | 0.072    | 0.036   | 14.9                                    | 68.3    | 0.72        | 0.45        | 11.4   | 0.48   | 0.24  |
| 800 lbs                 |                     | 11.23                    | 7.5        | 2.6        | 1.76     | 0.072    | 0.038   | 16.4                                    | 68.3    | 0.72        | 0.44        | 10.7   | 0.44   | 0.23  |
| 900 lbs                 |                     | 12.27                    | 8.2        | 3          | 1.81     | 0.073    | 0.039   | 18                                      | 68.3    | 0.72        | 0.45        | 10.1   | 0.41   | 0.22  |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 8.38                     | 5.3        | 2.4        | 1.78     | 0.084    | 0.039   | 11.5                                    | 73.1    | 0.79        | 0.51        | 15.5   | 0.73   | 0.34  |
| 600 lbs                 |                     | 9.63                     | 6.1        | 2.7        | 1.83     | 0.084    | 0.04    | 13.1                                    | 73.3    | 0.79        | 0.51        | 13.9   | 0.64   | 0.31  |
| 700 lbs                 |                     | 10.78                    | 6.8        | 3.2        | 1.88     | 0.084    | 0.041   | 14.8                                    | 73.1    | 0.79        | 0.51        | 12.7   | 0.57   | 0.28  |
| 800 lbs                 |                     | 11.9                     | 7.5        | 3.3        | 1.93     | 0.084    | 0.042   | 16.3                                    | 72.9    | 0.78        | 0.5         | 11.8   | 0.51   | 0.26  |
| 900 lbs                 |                     | 13.01                    | 8.2        | 3.7        | 1.98     | 0.084    | 0.043   | 17.8                                    | 73      | 0.79        | 0.5         | 11.1   | 0.47   | 0.24  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 8.49                     | 5.3        | 2.5        | 1.99     | 0.101    | 0.046   | 11.4                                    | 74.3    | 0.8         | 0.52        | 17.4   | 0.89   | 0.4   |
| 600 lbs                 |                     | 9.75                     | 6.1        | 2.9        | 2.04     | 0.101    | 0.047   | 13.1                                    | 74.5    | 0.81        | 0.52        | 15.6   | 0.77   | 0.36  |
| 700 lbs                 |                     | 10.92                    | 6.8        | 3.2        | 2.09     | 0.101    | 0.048   | 14.7                                    | 74.3    | 0.8         | 0.52        | 14.2   | 0.68   | 0.33  |
| 800 lbs                 |                     | 12.06                    | 7.5        | 3.6        | 2.14     | 0.1      | 0.049   | 16.3                                    | 74.2    | 0.8         | 0.52        | 13.2   | 0.62   | 0.3   |
| 900 lbs                 |                     | 13.18                    | 8.2        | 3.9        | 2.19     | 0.1      | 0.05    | 17.8                                    | 74.2    | 0.8         | 0.52        | 12.3   | 0.56   | 0.28  |
| <b>2,200 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 6.73                     | 5.3        | 0.8        | 1.15     | 0.044    | 0.023   | 11.3                                    | 59.6    | 0.59        | 0.33        | 10.2   | 0.39   | 0.21  |
| 600 lbs                 |                     | 7.73                     | 6.1        | 0.8        | 1.24     | 0.046    | 0.025   | 12.9                                    | 59.7    | 0.59        | 0.33        | 9.5    | 0.36   | 0.19  |
| 700 lbs                 |                     | 8.65                     | 6.8        | 1          | 1.32     | 0.048    | 0.027   | 14.5                                    | 59.6    | 0.59        | 0.33        | 9.1    | 0.33   | 0.19  |
| 800 lbs                 |                     | 9.55                     | 7.5        | 1.1        | 1.4      | 0.05     | 0.029   | 16                                      | 59.5    | 0.59        | 0.33        | 8.7    | 0.31   | 0.18  |
| 900 lbs                 |                     | 10.43                    | 8.2        | 1.2        | 1.48     | 0.052    | 0.031   | 17.5                                    | 59.5    | 0.59        | 0.33        | 8.5    | 0.3    | 0.18  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 7.2                      | 5.3        | 1.2        | 1.36     | 0.059    | 0.029   | 11.5                                    | 62.8    | 0.64        | 0.37        | 11.9   | 0.51   | 0.25  |
| 600 lbs                 |                     | 8.27                     | 6.1        | 1.4        | 1.44     | 0.06     | 0.031   | 13.2                                    | 62.9    | 0.64        | 0.37        | 10.9   | 0.46   | 0.23  |
| 700 lbs                 |                     | 9.26                     | 6.8        | 1.5        | 1.52     | 0.062    | 0.032   | 14.8                                    | 62.7    | 0.64        | 0.37        | 10.3   | 0.42   | 0.22  |
| 800 lbs                 |                     | 10.23                    | 7.5        | 1.7        | 1.59     | 0.063    | 0.034   | 16.3                                    | 62.7    | 0.64        | 0.37        | 9.8    | 0.39   | 0.21  |
| 900 lbs                 |                     | 11.17                    | 8.2        | 1.8        | 1.66     | 0.065    | 0.036   | 17.8                                    | 62.7    | 0.64        | 0.37        | 9.3    | 0.36   | 0.2   |



**Table 11. Growing Bull Calves (< 12 months of age)** continued

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>2,200 lbs</b>        | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 7.66                     | 5.3        | 1.6        | 1.57     | 0.073    | 0.035   | 11.6                                    | 66.3    | 0.69        | 0.42        | 13.6   | 0.63   | 0.3   |
| 600 lbs                 |                     | 8.8                      | 6.1        | 1.9        | 1.64     | 0.074    | 0.036   | 13.3                                    | 66.4    | 0.69        | 0.42        | 12.4   | 0.56   | 0.27  |
| 700 lbs                 |                     | 9.84                     | 6.8        | 2.1        | 1.71     | 0.075    | 0.038   | 14.9                                    | 66.2    | 0.69        | 0.42        | 11.5   | 0.5    | 0.25  |
| 800 lbs                 |                     | 10.87                    | 7.5        | 2.3        | 1.78     | 0.076    | 0.039   | 16.4                                    | 66.1    | 0.69        | 0.42        | 10.8   | 0.46   | 0.24  |
| 900 lbs                 |                     | 11.88                    | 8.2        | 2.6        | 1.84     | 0.077    | 0.041   | 18                                      | 66.1    | 0.69        | 0.42        | 10.3   | 0.43   | 0.23  |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 8.09                     | 5.3        | 2          | 1.78     | 0.087    | 0.041   | 11.5                                    | 70.1    | 0.74        | 0.47        | 15.4   | 0.76   | 0.35  |
| 600 lbs                 |                     | 9.29                     | 6.1        | 2.4        | 1.84     | 0.087    | 0.042   | 13.2                                    | 70.2    | 0.75        | 0.47        | 13.9   | 0.66   | 0.31  |
| 700 lbs                 |                     | 10.4                     | 6.8        | 2.7        | 1.9      | 0.088    | 0.043   | 14.9                                    | 70      | 0.74        | 0.47        | 12.8   | 0.59   | 0.29  |
| 800 lbs                 |                     | 11.48                    | 7.5        | 2.9        | 1.96     | 0.088    | 0.044   | 16.4                                    | 69.9    | 0.74        | 0.47        | 11.9   | 0.54   | 0.27  |
| 900 lbs                 |                     | 12.55                    | 8.2        | 3.2        | 2.02     | 0.089    | 0.045   | 17.9                                    | 69.9    | 0.74        | 0.47        | 11.2   | 0.49   | 0.25  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 500 lbs                 |                     | 8.49                     | 5.3        | 2.5        | 1.99     | 0.101    | 0.046   | 11.4                                    | 74.3    | 0.8         | 0.52        | 17.4   | 0.89   | 0.4   |
| 600 lbs                 |                     | 9.75                     | 6.1        | 2.9        | 2.04     | 0.101    | 0.047   | 13.1                                    | 74.5    | 0.81        | 0.52        | 15.6   | 0.77   | 0.36  |
| 700 lbs                 |                     | 10.92                    | 6.8        | 3.2        | 2.09     | 0.101    | 0.048   | 14.7                                    | 74.3    | 0.8         | 0.52        | 14.2   | 0.68   | 0.33  |
| 800 lbs                 |                     | 12.06                    | 7.5        | 3.6        | 2.14     | 0.1      | 0.049   | 16.3                                    | 74.2    | 0.8         | 0.52        | 13.2   | 0.62   | 0.3   |
| 900 lbs                 |                     | 13.18                    | 8.2        | 3.9        | 2.19     | 0.1      | 0.05    | 17.8                                    | 74.2    | 0.8         | 0.52        | 12.3   | 0.56   | 0.28  |

**Table 12. Growing Bull Yearlings (> 11 months of age)**

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,800 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 11.5                     | 8.2        | 1.4        | 1.55     | 0.051    | 0.03    | 20.9                                    | 55.2    | 0.52        | 0.27        | 7.4    | 0.24   | 0.14  |
| 1,000 lbs               |                     | 12.46                    | 8.9        | 1.5        | 1.62     | 0.053    | 0.032   | 22.6                                    | 55.2    | 0.52        | 0.27        | 7.2    | 0.23   | 0.14  |
| 1,100 lbs               |                     | 13.35                    | 9.5        | 1.6        | 1.69     | 0.055    | 0.034   | 24.2                                    | 55.1    | 0.52        | 0.27        | 7      | 0.22   | 0.14  |
| 1,200 lbs               |                     | 14.29                    | 10.2       | 1.7        | 1.76     | 0.056    | 0.036   | 25.9                                    | 55.2    | 0.52        | 0.27        | 6.8    | 0.22   | 0.14  |
| 1,300 lbs               |                     | 15.15                    | 10.8       | 1.8        | 1.83     | 0.058    | 0.037   | 27.5                                    | 55.1    | 0.52        | 0.27        | 6.6    | 0.21   | 0.14  |
| 1,400 lbs               |                     | 16                       | 11.4       | 1.9        | 1.89     | 0.06     | 0.039   | 29                                      | 55.1    | 0.52        | 0.27        | 6.5    | 0.21   | 0.14  |
|                         | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 12.35                    | 8.2        | 2.1        | 1.76     | 0.062    | 0.035   | 21.1                                    | 58.5    | 0.57        | 0.31        | 8.3    | 0.29   | 0.16  |
| 1,000 lbs               |                     | 13.39                    | 8.9        | 2.3        | 1.82     | 0.063    | 0.036   | 22.9                                    | 58.5    | 0.57        | 0.31        | 8      | 0.28   | 0.16  |
| 1,100 lbs               |                     | 14.34                    | 9.5        | 2.5        | 1.88     | 0.065    | 0.038   | 24.6                                    | 58.4    | 0.57        | 0.31        | 7.7    | 0.26   | 0.15  |
| 1,200 lbs               |                     | 15.34                    | 10.2       | 2.6        | 1.94     | 0.066    | 0.039   | 26.2                                    | 58.5    | 0.57        | 0.31        | 7.4    | 0.25   | 0.15  |
| 1,300 lbs               |                     | 16.28                    | 10.8       | 2.7        | 1.99     | 0.068    | 0.041   | 27.8                                    | 58.5    | 0.57        | 0.31        | 7.2    | 0.24   | 0.15  |
| 1,400 lbs               |                     | 17.2                     | 11.4       | 2.9        | 2.05     | 0.069    | 0.043   | 29.4                                    | 58.4    | 0.57        | 0.31        | 7      | 0.23   | 0.15  |

Table 12. Growing Bull Yearlings (&gt; 11 months of age) continued

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>1,800 lbs</b>        | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 13.14                    | 8.2        | 2.9        | 1.97     | 0.073    | 0.039   | 21.2                                    | 61.9    | 0.62        | 0.36        | 9.3    | 0.34   | 0.18  |
| 1,000 lbs               |                     | 14.23                    | 8.9        | 3.2        | 2.02     | 0.074    | 0.04    | 22.9                                    | 62      | 0.63        | 0.36        | 8.8    | 0.32   | 0.18  |
| 1,100 lbs               |                     | 15.25                    | 9.5        | 3.3        | 2.06     | 0.074    | 0.042   | 24.6                                    | 61.9    | 0.62        | 0.36        | 8.4    | 0.3    | 0.17  |
| 1,200 lbs               |                     | 16.31                    | 10.2       | 3.6        | 2.11     | 0.075    | 0.043   | 26.3                                    | 62      | 0.63        | 0.36        | 8      | 0.29   | 0.16  |
| 1,300 lbs               |                     | 17.31                    | 10.8       | 3.8        | 2.16     | 0.076    | 0.045   | 27.9                                    | 61.9    | 0.62        | 0.36        | 7.7    | 0.27   | 0.16  |
| 1,400 lbs               |                     | 18.29                    | 11.4       | 4          | 2.2      | 0.077    | 0.046   | 29.5                                    | 61.9    | 0.62        | 0.36        | 7.5    | 0.26   | 0.16  |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 13.87                    | 8.2        | 3.7        | 2.17     | 0.084    | 0.043   | 21.1                                    | 65.7    | 0.68        | 0.41        | 10.3   | 0.4    | 0.21  |
| 1,000 lbs               |                     | 15.03                    | 8.9        | 4          | 2.21     | 0.084    | 0.045   | 22.8                                    | 65.8    | 0.68        | 0.41        | 9.7    | 0.37   | 0.19  |
| 1,100 lbs               |                     | 16.1                     | 9.5        | 4.3        | 2.24     | 0.084    | 0.046   | 24.5                                    | 65.6    | 0.68        | 0.41        | 9.1    | 0.34   | 0.19  |
| 1,200 lbs               |                     | 17.23                    | 10.2       | 4.6        | 2.28     | 0.084    | 0.047   | 26.2                                    | 65.8    | 0.68        | 0.41        | 8.7    | 0.32   | 0.18  |
| 1,300 lbs               |                     | 18.27                    | 10.8       | 4.9        | 2.32     | 0.085    | 0.048   | 27.8                                    | 65.7    | 0.68        | 0.41        | 8.3    | 0.3    | 0.17  |
| 1,400 lbs               |                     | 19.31                    | 11.4       | 5.2        | 2.35     | 0.085    | 0.049   | 29.4                                    | 65.7    | 0.68        | 0.41        | 8      | 0.29   | 0.17  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 14.56                    | 8.2        | 4.6        | 2.37     | 0.094    | 0.048   | 20.8                                    | 69.9    | 0.74        | 0.47        | 11.4   | 0.45   | 0.23  |
| 1,000 lbs               |                     | 15.78                    | 8.9        | 4.9        | 2.4      | 0.094    | 0.049   | 22.5                                    | 70      | 0.74        | 0.47        | 10.6   | 0.42   | 0.22  |
| 1,100 lbs               |                     | 16.91                    | 9.5        | 5.2        | 2.42     | 0.094    | 0.05    | 24.2                                    | 69.8    | 0.74        | 0.46        | 10     | 0.39   | 0.2   |
| 1,200 lbs               |                     | 18.09                    | 10.2       | 5.7        | 2.45     | 0.093    | 0.05    | 25.9                                    | 70      | 0.74        | 0.47        | 9.5    | 0.36   | 0.2   |
| 1,300 lbs               |                     | 19.19                    | 10.8       | 6.1        | 2.47     | 0.093    | 0.051   | 27.5                                    | 69.9    | 0.74        | 0.47        | 9      | 0.34   | 0.19  |
| 1,400 lbs               |                     | 20.28                    | 11.4       | 6.3        | 2.5      | 0.093    | 0.052   | 29                                      | 69.8    | 0.74        | 0.46        | 8.6    | 0.32   | 0.18  |
|                         | <b>3.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 15.23                    | 8.2        | 5.4        | 2.57     | 0.105    | 0.052   | 20.4                                    | 74.7    | 0.81        | 0.53        | 12.6   | 0.52   | 0.26  |
| 1,000 lbs               |                     | 16.49                    | 8.9        | 5.9        | 2.58     | 0.104    | 0.053   | 22.1                                    | 74.8    | 0.81        | 0.53        | 11.7   | 0.47   | 0.24  |
| 1,100 lbs               |                     | 17.69                    | 9.5        | 6.2        | 2.6      | 0.103    | 0.053   | 23.7                                    | 74.6    | 0.81        | 0.52        | 11     | 0.43   | 0.22  |
| 1,200 lbs               |                     | 18.91                    | 10.2       | 6.7        | 2.61     | 0.102    | 0.054   | 25.3                                    | 74.8    | 0.81        | 0.53        | 10.3   | 0.4    | 0.21  |
| 1,300 lbs               |                     | 20.06                    | 10.8       | 7.2        | 2.62     | 0.101    | 0.055   | 26.9                                    | 74.7    | 0.81        | 0.53        | 9.8    | 0.38   | 0.2   |
| 1,400 lbs               |                     | 21.2                     | 11.4       | 7.4        | 2.64     | 0.1      | 0.055   | 28.4                                    | 74.7    | 0.81        | 0.52        | 9.3    | 0.35   | 0.2   |
| <b>2,200 lbs</b>        | <b>1</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 11.27                    | 8.2        | 1.2        | 1.54     | 0.052    | 0.031   | 20.7                                    | 54.3    | 0.51        | 0.25        | 7.4    | 0.25   | 0.15  |
| 1,000 lbs               |                     | 12.21                    | 8.9        | 1.3        | 1.62     | 0.054    | 0.033   | 22.5                                    | 54.4    | 0.51        | 0.26        | 7.2    | 0.24   | 0.15  |
| 1,100 lbs               |                     | 13.08                    | 9.5        | 1.4        | 1.69     | 0.057    | 0.035   | 24.1                                    | 54.3    | 0.51        | 0.25        | 7      | 0.23   | 0.14  |
| 1,200 lbs               |                     | 14                       | 10.2       | 1.5        | 1.76     | 0.059    | 0.036   | 25.7                                    | 54.4    | 0.51        | 0.26        | 6.9    | 0.23   | 0.14  |
| 1,300 lbs               |                     | 14.85                    | 10.8       | 1.5        | 1.83     | 0.061    | 0.038   | 27.3                                    | 54.3    | 0.51        | 0.25        | 6.7    | 0.22   | 0.14  |
| 1,400 lbs               |                     | 15.68                    | 11.4       | 1.6        | 1.9      | 0.063    | 0.04    | 28.9                                    | 54.3    | 0.51        | 0.25        | 6.6    | 0.22   | 0.14  |
| 1,500 lbs               |                     | 16.51                    | 12         | 1.7        | 1.97     | 0.065    | 0.042   | 30.4                                    | 54.3    | 0.51        | 0.25        | 6.5    | 0.21   | 0.14  |
| 1,600 lbs               |                     | 17.33                    | 12.6       | 1.8        | 2.04     | 0.067    | 0.044   | 31.9                                    | 54.3    | 0.51        | 0.25        | 6.4    | 0.21   | 0.14  |
| 1,700 lbs               |                     | 18.15                    | 13.2       | 1.9        | 2.1      | 0.069    | 0.046   | 33.4                                    | 54.3    | 0.51        | 0.25        | 6.3    | 0.21   | 0.14  |
| 1,800 lbs               |                     | 18.96                    | 13.8       | 2          | 2.17     | 0.072    | 0.048   | 34.9                                    | 54.3    | 0.51        | 0.25        | 6.2    | 0.21   | 0.14  |

Table 12. Growing Bull Yearlings (&gt; 11 months of age) continued

| Mature Weight and Range | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|-------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                         |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>2,200 lbs</b>        | <b>1.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 12.03                    | 8.2        | 1.8        | 1.75     | 0.065    | 0.036   | 21                                      | 57.2    | 0.55        | 0.3         | 8.3    | 0.31   | 0.17  |
| 1,000 lbs               |                     | 13.03                    | 8.9        | 2          | 1.82     | 0.066    | 0.037   | 22.8                                    | 57.2    | 0.55        | 0.3         | 8      | 0.29   | 0.16  |
| 1,100 lbs               |                     | 13.97                    | 9.5        | 2.1        | 1.89     | 0.068    | 0.039   | 24.5                                    | 57.1    | 0.55        | 0.29        | 7.7    | 0.28   | 0.16  |
| 1,200 lbs               |                     | 14.94                    | 10.2       | 2.3        | 1.95     | 0.069    | 0.041   | 26.1                                    | 57.2    | 0.55        | 0.3         | 7.5    | 0.27   | 0.16  |
| 1,300 lbs               |                     | 15.86                    | 10.8       | 2.4        | 2.01     | 0.071    | 0.043   | 27.7                                    | 57.2    | 0.55        | 0.3         | 7.3    | 0.26   | 0.15  |
| 1,400 lbs               |                     | 16.74                    | 11.4       | 2.5        | 2.07     | 0.073    | 0.044   | 29.3                                    | 57.1    | 0.55        | 0.29        | 7.1    | 0.25   | 0.15  |
| 1,500 lbs               |                     | 17.64                    | 12         | 2.6        | 2.13     | 0.075    | 0.046   | 30.9                                    | 57.1    | 0.55        | 0.29        | 6.9    | 0.24   | 0.15  |
| 1,600 lbs               |                     | 18.51                    | 12.6       | 2.8        | 2.19     | 0.076    | 0.048   | 32.4                                    | 57.1    | 0.55        | 0.29        | 6.8    | 0.24   | 0.15  |
| 1,700 lbs               |                     | 19.38                    | 13.2       | 2.9        | 2.25     | 0.078    | 0.05    | 33.9                                    | 57.1    | 0.55        | 0.29        | 6.6    | 0.23   | 0.15  |
| 1,800 lbs               |                     | 20.24                    | 13.8       | 3.1        | 2.31     | 0.08     | 0.051   | 35.4                                    | 57.2    | 0.55        | 0.3         | 6.5    | 0.23   | 0.15  |
|                         | <b>2</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 12.74                    | 8.2        | 2.6        | 1.96     | 0.077    | 0.041   | 21.2                                    | 60.1    | 0.6         | 0.34        | 9.3    | 0.36   | 0.19  |
| 1,000 lbs               |                     | 13.8                     | 8.9        | 2.7        | 2.02     | 0.078    | 0.042   | 22.9                                    | 60.2    | 0.6         | 0.34        | 8.8    | 0.34   | 0.18  |
| 1,100 lbs               |                     | 14.79                    | 9.5        | 3          | 2.08     | 0.079    | 0.044   | 24.6                                    | 60.1    | 0.6         | 0.34        | 8.4    | 0.32   | 0.18  |
| 1,200 lbs               |                     | 15.82                    | 10.2       | 3.2        | 2.13     | 0.08     | 0.045   | 26.3                                    | 60.2    | 0.6         | 0.34        | 8.1    | 0.3    | 0.17  |
| 1,300 lbs               |                     | 16.79                    | 10.8       | 3.4        | 2.19     | 0.081    | 0.047   | 27.9                                    | 60.1    | 0.6         | 0.34        | 7.8    | 0.29   | 0.17  |
| 1,400 lbs               |                     | 17.74                    | 11.4       | 3.6        | 2.24     | 0.082    | 0.048   | 29.5                                    | 60.1    | 0.6         | 0.34        | 7.6    | 0.28   | 0.16  |
| 1,500 lbs               |                     | 18.67                    | 12         | 3.8        | 2.29     | 0.084    | 0.05    | 31.1                                    | 60.1    | 0.6         | 0.34        | 7.4    | 0.27   | 0.16  |
| 1,600 lbs               |                     | 19.6                     | 12.6       | 3.9        | 2.34     | 0.085    | 0.051   | 32.6                                    | 60.1    | 0.6         | 0.34        | 7.2    | 0.26   | 0.16  |
| 1,700 lbs               |                     | 20.52                    | 13.2       | 4.1        | 2.39     | 0.086    | 0.053   | 34.1                                    | 60.1    | 0.6         | 0.34        | 7      | 0.25   | 0.16  |
| 1,800 lbs               |                     | 21.43                    | 13.8       | 4.3        | 2.44     | 0.088    | 0.055   | 35.6                                    | 60.1    | 0.6         | 0.34        | 6.9    | 0.25   | 0.15  |
|                         | <b>2.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 13.41                    | 8.2        | 3.2        | 2.17     | 0.089    | 0.045   | 21.2                                    | 63.3    | 0.64        | 0.38        | 10.2   | 0.42   | 0.21  |
| 1,000 lbs               |                     | 14.52                    | 8.9        | 3.5        | 2.21     | 0.089    | 0.047   | 22.9                                    | 63.3    | 0.65        | 0.38        | 9.7    | 0.39   | 0.2   |
| 1,100 lbs               |                     | 15.56                    | 9.5        | 3.7        | 2.26     | 0.09     | 0.048   | 24.6                                    | 63.2    | 0.64        | 0.38        | 9.2    | 0.36   | 0.19  |
| 1,200 lbs               |                     | 16.65                    | 10.2       | 4          | 2.31     | 0.09     | 0.049   | 26.3                                    | 63.3    | 0.65        | 0.38        | 8.8    | 0.34   | 0.19  |
| 1,300 lbs               |                     | 17.66                    | 10.8       | 4.2        | 2.35     | 0.091    | 0.051   | 27.9                                    | 63.3    | 0.64        | 0.38        | 8.4    | 0.33   | 0.18  |
| 1,400 lbs               |                     | 18.66                    | 11.4       | 4.4        | 2.4      | 0.092    | 0.052   | 29.5                                    | 63.2    | 0.64        | 0.38        | 8.1    | 0.31   | 0.18  |
| 1,500 lbs               |                     | 19.64                    | 12         | 4.7        | 2.44     | 0.093    | 0.053   | 31.1                                    | 63.2    | 0.64        | 0.38        | 7.9    | 0.3    | 0.17  |
| 1,600 lbs               |                     | 20.63                    | 12.6       | 4.9        | 2.49     | 0.093    | 0.055   | 32.6                                    | 63.2    | 0.64        | 0.38        | 7.6    | 0.29   | 0.17  |
| 1,700 lbs               |                     | 21.59                    | 13.2       | 5.1        | 2.53     | 0.094    | 0.056   | 34.1                                    | 63.2    | 0.64        | 0.38        | 7.4    | 0.28   | 0.16  |
| 1,800 lbs               |                     | 22.55                    | 13.8       | 5.3        | 2.57     | 0.095    | 0.058   | 35.6                                    | 63.3    | 0.64        | 0.38        | 7.2    | 0.27   | 0.16  |
|                         | <b>3</b>            |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                 |                     | 14.04                    | 8.2        | 3.9        | 2.37     | 0.1      | 0.05    | 21.1                                    | 66.6    | 0.69        | 0.42        | 11.2   | 0.48   | 0.24  |
| 1,000 lbs               |                     | 15.2                     | 8.9        | 4.2        | 2.41     | 0.1      | 0.051   | 22.8                                    | 66.7    | 0.69        | 0.42        | 10.6   | 0.44   | 0.22  |
| 1,100 lbs               |                     | 16.29                    | 9.5        | 4.5        | 2.45     | 0.1      | 0.052   | 24.5                                    | 66.5    | 0.69        | 0.42        | 10     | 0.41   | 0.21  |
| 1,200 lbs               |                     | 17.43                    | 10.2       | 4.8        | 2.48     | 0.1      | 0.053   | 26.1                                    | 66.7    | 0.69        | 0.42        | 9.5    | 0.38   | 0.2   |
| 1,300 lbs               |                     | 18.49                    | 10.8       | 5.1        | 2.52     | 0.101    | 0.055   | 27.7                                    | 66.6    | 0.69        | 0.42        | 9.1    | 0.36   | 0.2   |
| 1,400 lbs               |                     | 19.54                    | 11.4       | 5.4        | 2.56     | 0.101    | 0.056   | 29.3                                    | 66.6    | 0.69        | 0.42        | 8.7    | 0.34   | 0.19  |
| 1,500 lbs               |                     | 20.58                    | 12         | 5.7        | 2.59     | 0.101    | 0.057   | 30.9                                    | 66.6    | 0.69        | 0.42        | 8.4    | 0.33   | 0.18  |
| 1,600 lbs               |                     | 21.59                    | 12.6       | 5.9        | 2.63     | 0.102    | 0.058   | 32.4                                    | 66.6    | 0.69        | 0.42        | 8.1    | 0.31   | 0.18  |
| 1,700 lbs               |                     | 22.61                    | 13.2       | 6.2        | 2.66     | 0.102    | 0.059   | 33.9                                    | 66.6    | 0.69        | 0.42        | 7.8    | 0.3    | 0.17  |
| 1,800 lbs               |                     | 23.61                    | 13.8       | 6.5        | 2.7      | 0.102    | 0.061   | 35.4                                    | 66.7    | 0.69        | 0.42        | 7.6    | 0.29   | 0.17  |

**Table 12. Growing Bull Yearlings (> 11 months of age)** continued

| Mature Weight and Range   | Daily BW Gain (lbs) | Daily Nutrients Required |            |            |          |          |         | Daily Nutrients as Percentage of Intake |         |             |             |        |        |       |
|---------------------------|---------------------|--------------------------|------------|------------|----------|----------|---------|-----------------------------------------|---------|-------------|-------------|--------|--------|-------|
|                           |                     | TDN (lbs)                | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (lbs) | P (lbs) | Intake lbs DM/d                         | TDN %DM | NEm Mcal/lb | NEg Mcal/lb | CP %DM | Ca %DM | P %DM |
| <b>2,200 lbs</b>          | <b>3.5</b>          |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 900 lbs                   |                     | 14.64                    | 8.2        | 4.6        | 2.57     | 0.112    | 0.055   | 20.8                                    | 70.4    | 0.75        | 0.47        | 12.3   | 0.54   | 0.26  |
| 1,000 lbs                 |                     | 15.85                    | 8.9        | 5          | 2.6      | 0.111    | 0.056   | 22.5                                    | 70.4    | 0.75        | 0.47        | 11.5   | 0.49   | 0.25  |
| 1,100 lbs                 |                     | 17                       | 9.5        | 5.4        | 2.63     | 0.111    | 0.057   | 24.2                                    | 70.3    | 0.75        | 0.47        | 10.9   | 0.46   | 0.23  |
| 1,200 lbs                 |                     | 18.18                    | 10.2       | 5.7        | 2.66     | 0.111    | 0.057   | 25.8                                    | 70.4    | 0.75        | 0.47        | 10.3   | 0.43   | 0.22  |
| 1,300 lbs                 |                     | 19.28                    | 10.8       | 6.1        | 2.69     | 0.11     | 0.058   | 27.4                                    | 70.3    | 0.75        | 0.47        | 9.8    | 0.4    | 0.21  |
| 1,400 lbs                 |                     | 20.37                    | 11.4       | 6.5        | 2.71     | 0.11     | 0.059   | 29                                      | 70.3    | 0.75        | 0.47        | 9.4    | 0.38   | 0.2   |
| 1,500 lbs                 |                     | 21.45                    | 12         | 6.8        | 2.74     | 0.11     | 0.06    | 30.5                                    | 70.3    | 0.75        | 0.47        | 9      | 0.36   | 0.2   |
| 1,600 lbs                 |                     | 22.52                    | 12.6       | 7.1        | 2.77     | 0.11     | 0.061   | 32                                      | 70.3    | 0.75        | 0.47        | 8.6    | 0.34   | 0.19  |
| 1,700 lbs                 |                     | 23.57                    | 13.2       | 7.5        | 2.79     | 0.11     | 0.062   | 33.5                                    | 70.3    | 0.75        | 0.47        | 8.3    | 0.33   | 0.19  |
| 1,800 lbs                 |                     | 24.62                    | 13.8       | 7.8        | 2.82     | 0.11     | 0.063   | 35                                      | 70.4    | 0.75        | 0.47        | 8.1    | 0.31   | 0.18  |
| <b>Mature Maintenance</b> |                     |                          |            |            |          |          |         |                                         |         |             |             |        |        |       |
| 1,800 lbs                 |                     | 16                       | 13.8       |            | 1.86     | 0.053    | 0.041   | 32.7                                    | 48.9    | 0.42        | 0.18        | 5.7    | 0.16   | 0.12  |
| 2,200 lbs                 |                     | 18.6                     | 16         |            | 2.16     | 0.065    | 0.05    | 38                                      | 48.9    | 0.42        | 0.18        | 5.7    | 0.17   | 0.13  |

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*Part 1. Nutrient Basics (FSA3078)*

*Part 2. Establishing Nutritional Requirements (FSA3079)*

*Part 3. Nutrient Requirement Tables (MP391)*

*Part 4. Formulating Rations (FSA3080)*

Some of the information in this publication was taken from *Nutrient Requirements of Beef Cattle, Eighth Edition* (2016 NRC). Tabular values were compiled from the Beef Cattle Nutrient Requirements Model 2016 Version 1.0.37.9 or software provided with the 1996 NRC publication.



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