

**Table 2. Nutrient requirements of beef cows.**

**Gestating cow, middle 1/3 of pregnancy**

| Weight<br>(lbs) | Expected calf<br>birth weight (lbs) | DM intake<br>(lbs/day) | DM intake<br>% of BW | Diet nutrient density |                  |              |             |             | Daily nutrients per animal |               |             |           |          |
|-----------------|-------------------------------------|------------------------|----------------------|-----------------------|------------------|--------------|-------------|-------------|----------------------------|---------------|-------------|-----------|----------|
|                 |                                     |                        |                      | TDN<br>(% DM)         | NEm<br>(Mcal/lb) | CP<br>(% DM) | Ca<br>(%DM) | P<br>(% DM) | TDN<br>(lbs)               | NEm<br>(Mcal) | CP<br>(lbs) | Ca<br>(g) | P<br>(g) |
| 900             | 64                                  | 16.6                   | 1.8                  | 50                    | 0.44             | 7.5          | 0.28        | 0.17        | 8.3                        | 7.1           | 1.35        | 21        | 13       |
| 1,000           | 70                                  | 18.0                   | 1.8                  | 50                    | 0.44             | 7.5          | 0.28        | 0.17        | 9.0                        | 7.7           | 1.35        | 23        | 14       |
| 1,100           | 75                                  | 19.3                   | 1.8                  | 50                    | 0.44             | 7.5          | 0.29        | 0.18        | 9.7                        | 8.2           | 1.45        | 25        | 16       |
| 1,200           | 83                                  | 21.4                   | 1.7                  | 50                    | 0.44             | 7.5          | 0.29        | 0.18        | 10.7                       | 9.1           | 1.6         | 28        | 18       |
| 1,300           | 85                                  | 21.9                   | 1.7                  | 50                    | 0.44             | 7.5          | 0.29        | 0.18        | 11.0                       | 9.3           | 1.64        | 29        | 18       |
| 1,400           | 90                                  | 23.1                   | 1.7                  | 50                    | 0.44             | 7.5          | 0.30        | 0.18        | 11.6                       | 9.9           | 1.73        | 31        | 19       |
| 1,500           | 95                                  | 24.4                   | 1.6                  | 50                    | 0.44             | 7.5          | 0.30        | 0.19        | 12.2                       | 10.4          | 1.83        | 33        | 21       |

**Gestating cow, last 1/3 of pregnancy**

|       |    |      |     |    |      |     |      |      |      |      |      |    |    |
|-------|----|------|-----|----|------|-----|------|------|------|------|------|----|----|
| 900   | 64 | 18.6 | 2.1 | 54 | 0.51 | 7.5 | 0.25 | 0.16 | 10.1 | 9.4  | 1.4  | 21 | 14 |
| 1,000 | 70 | 20.1 | 2.0 | 54 | 0.51 | 7.5 | 0.25 | 0.17 | 10.9 | 10.2 | 1.51 | 23 | 15 |
| 1,100 | 75 | 21.6 | 2.0 | 54 | 0.51 | 7.5 | 0.26 | 0.17 | 11.7 | 10.9 | 1.62 | 25 | 17 |
| 1,200 | 83 | 23.9 | 1.9 | 54 | 0.51 | 7.5 | 0.26 | 0.17 | 13.0 | 12.1 | 1.8  | 28 | 19 |
| 1,300 | 85 | 24.5 | 1.9 | 54 | 0.51 | 7.5 | 0.26 | 0.18 | 13.3 | 12.4 | 1.84 | 29 | 20 |
| 1,400 | 90 | 25.9 | 1.8 | 54 | 0.51 | 7.5 | 0.27 | 0.18 | 14.1 | 13.1 | 1.94 | 31 | 21 |
| 1,500 | 95 | 27.3 | 1.8 | 54 | 0.51 | 7.5 | 0.27 | 0.18 | 14.8 | 13.8 | 2.20 | 33 | 22 |

**Lactating cow, first 90 days after calving**

| Weight<br>(lbs) | Peak<br>milk<br>lb/day | DM intake<br>lb/day | DM Int<br>% of BW | TDN<br>% DM | NEm<br>Mcal/lb | CP<br>% of DM | Ca<br>Req<br>% of DM | Phos<br>Req<br>% of DM | TDN<br>lb/day | NEm<br>Mcal/day | CP<br>lb/day | Ca<br>g/day | Phos<br>g/day |
|-----------------|------------------------|---------------------|-------------------|-------------|----------------|---------------|----------------------|------------------------|---------------|-----------------|--------------|-------------|---------------|
| 900             | 10                     | 21.3                | 2.4               | 56          | 0.53           | 8.8           | 0.24                 | 0.16                   | 12.0          | 11.4            | 1.9          | 23          | 16            |
|                 | 15                     | 23.3                | 2.6               | 58          | 0.56           | 9.8           | 0.27                 | 0.18                   | 13.4          | 13.0            | 2.3          | 29          | 19            |
|                 | 20                     | 25.1                | 2.8               | 59          | 0.58           | 10.6          | 0.30                 | 0.19                   | 14.9          | 14.7            | 2.7          | 34          | 22            |
| 1,000           | 15                     | 24.7                | 2.5               | 58          | 0.55           | 9.6           | 0.27                 | 0.18                   | 14.2          | 13.7            | 2.4          | 30          | 20            |
|                 | 20                     | 26.6                | 2.7               | 59          | 0.58           | 10.4          | 0.30                 | 0.19                   | 15.7          | 15.3            | 2.8          | 36          | 23            |
|                 | 25                     | 28.4                | 2.8               | 60          | 0.60           | 11.1          | 0.32                 | 0.20                   | 17.1          | 17.0            | 3.1          | 41          | 26            |
| 1,100           | 20                     | 28.0                | 2.5               | 59          | 0.57           | 10.1          | 0.29                 | 0.19                   | 16.4          | 16.0            | 2.8          | 37          | 24            |
|                 | 25                     | 29.9                | 2.7               | 60          | 0.59           | 10.8          | 0.31                 | 0.20                   | 17.9          | 17.6            | 3.2          | 43          | 27            |
|                 | 30                     | 31.7                | 2.9               | 61          | 0.61           | 11.4          | 0.34                 | 0.21                   | 19.3          | 19.2            | 3.6          | 48          | 30            |
| 1,200           | 17.7                   | 29.6                | 2.3               | 57          | 0.55           | 9.5           | 0.27                 | 0.18                   | 16.9          | 16.3            | 2.8          | 37          | 24            |
|                 | 25                     | 31.3                | 2.6               | 59          | 0.58           | 10.6          | 0.31                 | 0.20                   | 18.5          | 18.3            | 3.3          | 44          | 28            |
|                 | 30                     | 33.1                | 2.8               | 61          | 0.60           | 11.2          | 0.33                 | 0.21                   | 20.0          | 19.9            | 3.7          | 50          | 31            |
| 1,300           | 25                     | 32.6                | 2.5               | 59          | 0.58           | 10.4          | 0.31                 | 0.20                   | 19.3          | 18.9            | 3.4          | 45          | 29            |
|                 | 30                     | 34.4                | 2.6               | 60          | 0.60           | 11.0          | 0.33                 | 0.21                   | 20.7          | 20.5            | 3.8          | 51          | 32            |
|                 | 35                     | 36.3                | 2.8               | 61          | 0.61           | 11.5          | 0.34                 | 0.22                   | 22.2          | 22.1            | 4.2          | 57          | 36            |
| 1,400           | 25                     | 33.9                | 2.4               | 59          | 0.57           | 10.3          | 0.30                 | 0.20                   | 20.0          | 19.5            | 3.5          | 47          | 30            |
|                 | 30                     | 35.8                | 2.6               | 60          | 0.59           | 10.8          | 0.32                 | 0.21                   | 21.4          | 21.1            | 3.9          | 52          | 33            |
|                 | 35                     | 37.6                | 2.7               | 61          | 0.60           | 11.3          | 0.34                 | 0.21                   | 22.9          | 22.7            | 4.3          | 58          | 37            |
| 1,500           | 25                     | 35.2                | 2.3               | 59          | 0.57           | 10.1          | 0.30                 | 0.20                   | 20.6          | 20.1            | 3.6          | 48          | 31            |
|                 | 30                     | 37.1                | 2.5               | 60          | 0.59           | 10.7          | 0.32                 | 0.20                   | 22.1          | 21.7            | 4.0          | 54          | 34            |
|                 | 35                     | 38.9                | 2.6               | 61          | 0.60           | 11.2          | 0.34                 | 0.21                   | 23.5          | 23.4            | 4.3          | 59          | 38            |

Table 3. Pregnant yearling replacement heifer, middle 1/3 of pregnancy.

| Pregnant yearling replacement heifer, middle 1/3 of pregnancy |                   |                   |                   |                         |                       |                       |         |        |      |           |        |               |         |         |         |             |         |      |
|---|-------------------|-------------------|-------------------|-------------------------|-----------------------|-----------------------|---------|--------|------|-----------|--------|---------------|---------|---------|---------|-------------|---------|------|
| Current weight (lbs)  | Current BCS (1-9) | Mature Wt @ BCS=5 | Calf birth weight | Maternal tissue ADG, lb | Gravid uterus ADG, lb | Diet nutrient density |         |        |      |           |        |               |         |         |         |             |         |      |
|   |                   |                   |                   |                         |                       | DM intake             |         | lb/day | % DM | Nem, Mcal |        | Crude Protein |         | Calcium |         | Phosphorous |         |      |
|   |                   |                   |                   |                         |                       | lb/day                | % of BW |        |      | per day   | per lb | lb/day        | % of DM | g/day   | % of DM | g/day       | % of DM |      |
| 600   | 5                 | 1000              | 75                | 1.0                     | 0.29                  | 16.4                  | 2.7     | TDN    | 9.1  | 55.5      | 8.6    | 0.52          | 1.4     | 8.3     | 29      | 0.39        | 12      | 0.16 |
| 600   | 5                 | 1000              | 75                | 1.5                     | 0.29                  | 16.6                  | 2.8     |        | 10.0 | 60.0      | 9.9    | 0.59          | 1.6     | 9.5     | 34      | 0.45        | 14      | 0.19 |
| 600   | 5                 | 1000              | 75                | 2.0                     | 0.29                  | 16.6                  | 2.8     |        | 10.9 | 66.0      | 11.3   | 0.68          | 1.8     | 11.0    | 39      | 0.52        | 17      | 0.22 |
| 700   | 6                 | 1000              | 75                | 1.0                     | 0.29                  | 18.4                  | 2.6     | 10.3   | 56.0 | 9.9       | 0.53   | 1.4           | 7.7     | 30      | 0.36    | 13          | 0.15    |      |
| 700   | 6                 | 1000              | 75                | 1.5                     | 0.29                  | 18.7                  | 2.7     | 11.4   | 61.0 | 11.4      | 0.61   | 1.6           | 8.7     | 34      | 0.40    | 15          | 0.18    |      |
| 700   | 6                 | 1000              | 75                | 2.0                     | 0.29                  | 18.6                  | 2.7     | 12.3   | 66.0 | 12.7      | 0.68   | 1.8           | 9.7     | 38      | 0.45    | 17          | 0.20    |      |
| 800   | 7                 | 1000              | 75                | 1.0                     | 0.29                  | 20.5                  | 2.6     | 11.7   | 57.0 | 11.2      | 0.55   | 1.5           | 7.5     | 31      | 0.33    | 14          | 0.15    |      |
| 800   | 7                 | 1000              | 75                | 1.5                     | 0.29                  | 20.7                  | 2.6     | 12.8   | 62.0 | 12.9      | 0.62   | 1.7           | 8.1     | 35      | 0.37    | 16          | 0.17    |      |
| 800   | 7                 | 1000              | 75                | 2.0                     | 0.29                  | 20.5                  | 2.6     | 13.7   | 67.0 | 14.3      | 0.70   | 1.8           | 8.9     | 38      | 0.41    | 17          | 0.18    |      |
| 750   | 5                 | 1200              | 80                | 1.0                     | 0.31                  | 19.2                  | 2.6     | 10.4   | 54.0 | 9.6       | 0.50   | 1.5           | 7.8     | 31      | 0.36    | 14          | 0.16    |      |
| 750   | 5                 | 1200              | 80                | 1.5                     | 0.31                  | 19.6                  | 2.6     | 11.5   | 58.5 | 11.2      | 0.57   | 1.7           | 8.8     | 37      | 0.41    | 16          | 0.18    |      |
| 750   | 5                 | 1200              | 80                | 2.0                     | 0.31                  | 19.7                  | 2.6     | 12.4   | 63.0 | 12.5      | 0.64   | 1.9           | 9.9     | 41      | 0.46    | 18          | 0.20    |      |
| 850   | 6                 | 1200              | 80                | 1.0                     | 0.31                  | 21.2                  | 2.5     | 11.7   | 55.0 | 11.0      | 0.52   | 1.6           | 7.5     | 33      | 0.34    | 15          | 0.15    |      |
| 850   | 6                 | 1200              | 80                | 1.5                     | 0.31                  | 21.6                  | 2.5     | 12.7   | 59.0 | 12.5      | 0.58   | 1.8           | 8.2     | 37      | 0.38    | 17          | 0.17    |      |
| 850   | 6                 | 1200              | 80                | 2.0                     | 0.31                  | 21.6                  | 2.5     | 13.8   | 64.0 | 14.1      | 0.65   | 2.0           | 9.2     | 41      | 0.42    | 19          | 0.19    |      |
| 950   | 7                 | 1200              | 80                | 1.0                     | 0.31                  | 22.0                  | 2.5     | 12.2   | 55.5 | 11.5      | 0.52   | 1.6           | 7.5     | 33      | 0.33    | 15          | 0.15    |      |
| 950   | 7                 | 1200              | 80                | 1.5                     | 0.31                  | 23.5                  | 2.5     | 14.1   | 60.0 | 13.9      | 0.59   | 1.8           | 7.8     | 37      | 0.35    | 17          | 0.16    |      |
| 950   | 7                 | 1200              | 80                | 2.0                     | 0.31                  | 23.5                  | 2.5     | 15.0   | 64.0 | 15.3      | 0.65   | 2.0           | 8.4     | 41      | 0.38    | 19          | 0.18    |      |
| 900   | 5                 | 1400              | 85                | 1.0                     | 0.33                  | 21.9                  | 2.4     | 11.7   | 53.5 | 10.8      | 0.49   | 1.6           | 7.5     | 35      | 0.35    | 15          | 0.15    |      |
| 900   | 5                 | 1400              | 85                | 1.5                     | 0.33                  | 22.4                  | 2.5     | 12.8   | 57.0 | 12.2      | 0.55   | 1.9           | 8.3     | 39      | 0.38    | 18          | 0.17    |      |
| 900   | 5                 | 1400              | 85                | 2.0                     | 0.33                  | 22.6                  | 2.5     | 13.8   | 61.0 | 13.7      | 0.61   | 2.1           | 9.2     | 43      | 0.42    | 20          | 0.19    |      |
| 1,000   | 6                 | 1400              | 85                | 1.0                     | 0.33                  | 23.8                  | 2.4     | 12.9   | 54.0 | 11.9      | 0.50   | 1.8           | 7.5     | 35      | 0.33    | 16          | 0.15    |      |
| 1,000   | 6                 | 1400              | 85                | 1.5                     | 0.33                  | 24.3                  | 2.4     | 14.1   | 58.0 | 13.7      | 0.56   | 1.9           | 7.9     | 40      | 0.36    | 18          | 0.17    |      |
| 1,000   | 6                 | 1400              | 85                | 2.0                     | 0.33                  | 24.4                  | 2.4     | 15.1   | 62.0 | 15.2      | 0.62   | 2.1           | 8.7     | 44      | 0.40    | 20          | 0.18    |      |
| 1,100   | 7                 | 1400              | 85                | 1.0                     | 0.33                  | 25.7                  | 2.3     | 14.0   | 54.5 | 13.1      | 0.51   | 1.9           | 7.5     | 36      | 0.31    | 17          | 0.15    |      |
| 1,100   | 7                 | 1400              | 85                | 1.5                     | 0.33                  | 26.1                  | 2.4     | 15.3   | 58.5 | 14.9      | 0.57   | 2.0           | 7.5     | 40      | 0.34    | 19          | 0.16    |      |
| 1,100   | 7                 | 1400              | 85                | 2.0                     | 0.33                  | 26.2                  | 2.4     | 16.4   | 62.5 | 16.5      | 0.63   | 2.1           | 8.1     | 44      | 0.37    | 21          | 0.17    |      |

Table 3. Nutrient requirements of pregnant replacement heifers (continued).

Pregnant yearling replacement heifer, last 1/3 of pregnancy

| Current weight (lbs) | Current BCS (1-9) | Mature Wt @ BCS=5 | Calf birth weight | Maternal tissue ADG, lb | Gravid uterus ADG, lb | Diet nutrient density |         |          |      |           |        |               |         |         |         |             |         |
|----------------------|-------------------|-------------------|-------------------|-------------------------|-----------------------|-----------------------|---------|----------|------|-----------|--------|---------------|---------|---------|---------|-------------|---------|
|                      |                   |                   |                   |                         |                       | DM intake             |         | lb/day   | % DM | Nem, Mcal |        | Crude Protein |         | Calcium |         | Phosphorous |         |
|                      |                   |                   |                   |                         |                       | lb/day                | % of BW |          |      | per day   | per lb | lb/day        | % of DM | g/day   | % of DM | g/day       | % of DM |
| 700                  | 5                 | 1000              | 75                | 0.5                     | 0.96                  | 18.4                  | 2.6     | 10.3     | 56.0 | 9.8       | 0.53   | 1.5           | 8.2     | 25      | 0.30    | 15          | 0.18    |
| 700                  | 5                 | 1000              | 75                | 1.0                     | 0.96                  | 18.7                  | 2.7     | 11.4     | 61.0 | 11.4      | 0.61   | 1.7           | 9.2     | 29      | 0.35    | 17          | 0.20    |
| 700                  | 5                 | 1000              | 75                | 1.5                     | 0.96                  | 18.6                  | 2.7     | TDN 12.4 | 67.0 | 12.9      | 0.70   | 1.9           | 10.3    | 34      | 0.40    | 19          | 0.22    |
| 800                  | 6                 | 1000              | 75                | 0.5                     | 0.96                  | 20.4                  | 2.5     | 11.4     | 56.0 | 10.8      | 0.53   | 1.6           | 7.8     | 26      | 0.28    | 16          | 0.17    |
| 800                  | 6                 | 1000              | 75                | 1.0                     | 0.96                  | 20.7                  | 2.6     | 12.6     | 61.0 | 12.6      | 0.61   | 1.8           | 8.6     | 30      | 0.32    | 18          | 0.19    |
| 800                  | 6                 | 1000              | 75                | 1.5                     | 0.96                  | 20.5                  | 2.6     | 13.7     | 67.0 | 14.3      | 0.70   | 2.0           | 9.5     | 34      | 0.36    | 19          | 0.21    |
| 900                  | 7                 | 1000              | 75                | 0.5                     | 0.96                  | 22.3                  | 2.5     | 12.5     | 56.0 | 11.8      | 0.53   | 1.7           | 7.5     | 27      | 0.27    | 16          | 0.16    |
| 900                  | 7                 | 1000              | 75                | 1.0                     | 0.96                  | 22.6                  | 2.5     | 14.0     | 62.0 | 14.1      | 0.62   | 1.8           | 8.2     | 31      | 0.30    | 18          | 0.18    |
| 900                  | 7                 | 1000              | 75                | 1.5                     | 0.96                  | 22.3                  | 2.5     | 15.2     | 68.0 | 15.9      | 0.71   | 2.0           | 9.0     | 35      | 0.34    | 20          | 0.20    |
| 850                  | 5                 | 1200              | 80                | 0.5                     | 1.02                  | 21.2                  | 2.5     | 11.7     | 55.0 | 11.0      | 0.52   | 1.7           | 7.9     | 28      | 0.29    | 17          | 0.17    |
| 850                  | 5                 | 1200              | 80                | 1.0                     | 1.02                  | 21.6                  | 2.5     | 12.7     | 59.0 | 12.5      | 0.58   | 1.9           | 8.7     | 32      | 0.33    | 19          | 0.19    |
| 850                  | 5                 | 1200              | 80                | 1.5                     | 1.02                  | 21.6                  | 2.5     | 13.8     | 64.0 | 14.1      | 0.65   | 2.1           | 9.6     | 36      | 0.37    | 21          | 0.21    |
| 950                  | 6                 | 1200              | 80                | 0.5                     | 1.02                  | 23.1                  | 2.4     | 12.7     | 55.0 | 11.9      | 0.52   | 1.8           | 7.6     | 29      | 0.28    | 18          | 0.17    |
| 950                  | 6                 | 1200              | 80                | 1.0                     | 1.02                  | 23.5                  | 2.5     | 14.1     | 60.0 | 13.9      | 0.59   | 2.0           | 8.3     | 33      | 0.31    | 20          | 0.19    |
| 950                  | 6                 | 1200              | 80                | 1.5                     | 1.02                  | 23.4                  | 2.5     | 15.2     | 65.0 | 15.6      | 0.67   | 2.1           | 9.1     | 37      | 0.35    | 22          | 0.20    |
| 1,050                | 7                 | 1200              | 80                | 0.5                     | 1.02                  | 24.9                  | 2.4     | 13.7     | 55.0 | 12.8      | 0.52   | 1.9           | 7.5     | 30      | 0.26    | 18          | 0.16    |
| 1,050                | 7                 | 1200              | 80                | 1.0                     | 1.02                  | 25.3                  | 2.4     | 15.2     | 60.0 | 15.0      | 0.59   | 2.0           | 7.9     | 34      | 0.30    | 20          | 0.18    |
| 1,050                | 7                 | 1200              | 80                | 1.5                     | 1.02                  | 25.3                  | 2.4     | 16.4     | 65.0 | 16.9      | 0.67   | 2.2           | 8.6     | 37      | 0.33    | 22          | 0.19    |
| 1,020                | 5                 | 1400              | 85                | 0.5                     | 1.09                  | 24.2                  | 2.4     | 13.0     | 54.0 | 12.1      | 0.50   | 1.9           | 7.7     | 31      | 0.28    | 19          | 0.17    |
| 1,020                | 5                 | 1400              | 85                | 1.0                     | 1.09                  | 24.7                  | 2.4     | 14.3     | 58.0 | 13.9      | 0.56   | 2.1           | 8.4     | 35      | 0.32    | 21          | 0.19    |
| 1,020                | 5                 | 1400              | 85                | 1.5                     | 1.09                  | 24.8                  | 2.4     | 15.4     | 62.0 | 15.4      | 0.62   | 2.2           | 9.1     | 39      | 0.35    | 23          | 0.20    |
| 1,120                | 6                 | 1400              | 85                | 0.5                     | 1.09                  | 25.9                  | 2.3     | 14.0     | 54.0 | 13.0      | 0.50   | 1.9           | 7.5     | 32      | 0.27    | 20          | 0.17    |
| 1,120                | 6                 | 1400              | 85                | 1.0                     | 1.09                  | 26.4                  | 2.4     | 15.3     | 58.0 | 14.9      | 0.56   | 2.1           | 8.0     | 36      | 0.30    | 22          | 0.18    |
| 1,120                | 6                 | 1400              | 85                | 1.5                     | 1.09                  | 26.6                  | 2.4     | 16.7     | 63.0 | 16.9      | 0.64   | 2.3           | 8.7     | 40      | 0.33    | 24          | 0.20    |
| 1,220                | 7                 | 1400              | 85                | 0.5                     | 1.09                  | 27.8                  | 2.3     | 15.3     | 55.0 | 14.4      | 0.52   | 2.1           | 7.5     | 34      | 0.27    | 21          | 0.17    |
| 1,220                | 7                 | 1400              | 85                | 1.0                     | 1.09                  | 28.3                  | 2.3     | 16.7     | 59.0 | 16.3      | 0.58   | 2.2           | 7.7     | 37      | 0.29    | 23          | 0.18    |
| 1,220                | 7                 | 1400              | 85                | 1.5                     | 1.09                  | 28.3                  | 2.3     | 18.0     | 63.5 | 18.3      | 0.64   | 2.4           | 8.3     | 41      | 0.32    | 25          | 0.19    |

Table 3. Nutrient requirements of pregnant replacement heifers (continued).

Lactating first-calf heifer, first 90 days after calving

| Current weight (lbs) | Current BCS (1-9) | Mature Wt @ BCS=5 | Peak milk lbs/day | Maternal tissue ADG, lb | Gravid uterus ADG, lb | Diet nutrient density |         |          |      |           |        |               |         |         |         |             |         |
|----------------------|-------------------|-------------------|-------------------|-------------------------|-----------------------|-----------------------|---------|----------|------|-----------|--------|---------------|---------|---------|---------|-------------|---------|
|                      |                   |                   |                   |                         |                       | DM intake             |         | lb/day   | % DM | Nem, Mcal |        | Crude Protein |         | Calcium |         | Phosphorous |         |
|                      |                   |                   |                   |                         |                       | lb/day                | % of BW |          |      | per day   | per lb | lb/day        | % of DM | g/day   | % of DM | g/day       | % of DM |
| 700                  | 5                 | 1000              | 8                 | 0.5                     |                       | 18.4                  | 2.6     | 11.0     | 60.0 | 8.3       | 0.45   | 1.8           | 9.7     | 24      | 0.29    | 16          | 0.19    |
| 700                  | 5                 | 1000              | 12                | 0.5                     |                       | 19.8                  | 2.8     | 12.0     | 61.0 | 8.1       | 0.41   | 2.1           | 10.5    | 28      | 0.31    | 18          | 0.20    |
| 700                  | 5                 | 1000              | 16                | 0.5                     |                       | 21.2                  | 3.0     | TDN 13.3 | 62.5 | 8.2       | 0.38   | 2.4           | 11.3    | 33      | 0.34    | 21          | 0.22    |
| 800                  | 6                 | 1000              | 10                | 0.5                     |                       | 20.9                  | 2.6     | 12.7     | 61.0 | 9.4       | 0.45   | 2.0           | 9.6     | 27      | 0.28    | 18          | 0.19    |
| 800                  | 6                 | 1000              | 15                | 0.5                     |                       | 22.7                  | 2.8     | 14.2     | 62.5 | 9.4       | 0.41   | 2.4           | 10.6    | 32      | 0.32    | 21          | 0.21    |
| 800                  | 6                 | 1000              | 20                | 0.5                     |                       | 24.5                  | 3.1     | 15.7     | 64.0 | 9.4       | 0.39   | 2.8           | 11.4    | 38      | 0.34    | 25          | 0.22    |
| 900                  | 7                 | 1000              | 10                | 0.0                     |                       | 20.9                  | 2.3     | 12.4     | 59.0 | 8.8       | 0.42   | 1.9           | 9.0     | 24      | 0.25    | 17          | 0.18    |
| 900                  | 7                 | 1000              | 15                | 0.0                     |                       | 22.8                  | 2.5     | 13.9     | 61.0 | 9.0       | 0.39   | 2.3           | 10.0    | 29      | 0.28    | 20          | 0.19    |
| 900                  | 7                 | 1000              | 20                | 0.0                     |                       | 24.4                  | 2.7     | 15.2     | 62.0 | 8.7       | 0.36   | 2.7           | 10.9    | 35      | 0.31    | 23          | 0.21    |
| 850                  | 5                 | 1200              | 10                | 0.5                     |                       | 21.5                  | 2.5     | 12.9     | 60.0 | 9.5       | 0.44   | 2.1           | 9.7     | 28      | 0.29    | 19          | 0.19    |
| 850                  | 5                 | 1200              | 15                | 0.5                     |                       | 23.2                  | 2.7     | 14.1     | 61.0 | 9.2       | 0.40   | 2.4           | 10.6    | 33      | 0.32    | 22          | 0.21    |
| 850                  | 5                 | 1200              | 20                | 0.5                     |                       | 25.0                  | 2.9     | 15.6     | 62.5 | 9.2       | 0.37   | 2.8           | 11.4    | 39      | 0.34    | 25          | 0.22    |
| 950                  | 6                 | 1200              | 12                | 0.5                     |                       | 23.9                  | 2.5     | 14.6     | 61.0 | 10.6      | 0.44   | 2.3           | 9.7     | 32      | 0.29    | 21          | 0.19    |
| 950                  | 6                 | 1200              | 17                | 0.5                     |                       | 25.8                  | 2.7     | 16.1     | 62.5 | 10.7      | 0.42   | 2.7           | 10.5    | 37      | 0.32    | 24          | 0.21    |
| 950                  | 6                 | 1200              | 22                | 0.5                     |                       | 27.5                  | 2.9     | 17.5     | 63.5 | 10.6      | 0.38   | 3.1           | 11.3    | 43      | 0.34    | 28          | 0.22    |
| 1,050                | 7                 | 1200              | 12                | 0.0                     |                       | 23.7                  | 2.3     | 14.0     | 59.0 | 9.8       | 0.41   | 2.2           | 9.2     | 28      | 0.26    | 20          | 0.18    |
| 1,050                | 7                 | 1200              | 17                | 0.0                     |                       | 25.4                  | 2.4     | 15.2     | 60.0 | 9.5       | 0.37   | 2.6           | 10.1    | 34      | 0.29    | 23          | 0.20    |
| 1,050                | 7                 | 1200              | 22                | 0.0                     |                       | 27.1                  | 2.6     | 16.5     | 61.0 | 9.3       | 0.34   | 3.0           | 10.9    | 39      | 0.32    | 26          | 0.21    |
| 1,020                | 5                 | 1400              | 12                | 0.5                     |                       | 24.6                  | 2.4     | 14.7     | 59.5 | 10.5      | 0.43   | 2.4           | 9.6     | 33      | 0.29    | 22          | 0.19    |
| 1,020                | 5                 | 1400              | 17                | 0.5                     |                       | 26.5                  | 2.6     | 16.2     | 61.0 | 10.6      | 0.40   | 2.8           | 10.5    | 38      | 0.32    | 25          | 0.21    |
| 1,020                | 5                 | 1400              | 22                | 0.5                     |                       | 28.3                  | 2.8     | 17.5     | 62.0 | 10.4      | 0.37   | 3.2           | 11.2    | 44      | 0.34    | 28          | 0.22    |
| 1,120                | 6                 | 1400              | 15                | 0.5                     |                       | 27.5                  | 2.5     | 16.8     | 61.0 | 11.8      | 0.43   | 2.7           | 9.8     | 37      | 0.30    | 25          | 0.20    |
| 1,120                | 6                 | 1400              | 20                | 0.5                     |                       | 29.2                  | 2.6     | 18.1     | 62.0 | 11.7      | 0.40   | 3.1           | 10.5    | 43      | 0.32    | 28          | 0.21    |
| 1,120                | 6                 | 1400              | 25                | 0.5                     |                       | 31.0                  | 2.8     | 19.5     | 63.0 | 11.6      | 0.37   | 3.5           | 11.2    | 48      | 0.34    | 31          | 0.22    |
| 1,220                | 7                 | 1400              | 15                | 0.0                     |                       | 27.0                  | 2.2     | 15.9     | 59.0 | 10.7      | 0.40   | 2.6           | 9.5     | 34      | 0.28    | 24          | 0.19    |
| 1,220                | 7                 | 1400              | 20                | 0.0                     |                       | 28.7                  | 2.4     | 17.2     | 60.0 | 10.5      | 0.37   | 2.9           | 10.3    | 39      | 0.30    | 27          | 0.21    |
| 1,220                | 7                 | 1400              | 25                | 0.0                     |                       | 30.4                  | 2.5     | 18.5     | 61.0 | 10.3      | 0.34   | 3.3           | 11.0    | 45      | 0.33    | 30          | 0.22    |

Table 4. Nutrient requirements of growing steer and heifer calves.

| Body weight (lbs)         | Diet nutrient density |                     |            |               |               |           |          |          | Daily nutrients per animal |            |            |          |            |           |
|---------------------------|-----------------------|---------------------|------------|---------------|---------------|-----------|----------|----------|----------------------------|------------|------------|----------|------------|-----------|
|                           | ADG (lbs)             | DM intake (lbs/day) | TDN (% DM) | NEm (Mcal/lb) | NEg (Mcal/lb) | CP (% DM) | Ca (%DM) | P (% DM) | TDN (lbs)                  | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (grams) | P (grams) |
| 1,200 pounds at finishing |                       |                     |            |               |               |           |          |          |                            |            |            |          |            |           |
| 300                       | 0.5                   | 7.9                 | 54         | 0.50          | 0.24          | 9.2       | 0.30     | 0.16     | 4.3                        | 3.1        | 0.42       | 0.73     | 9          | 5         |
|                           | 1.0                   | 8.4                 | 59         | 0.57          | 0.31          | 11.4      | 0.46     | 0.23     | 5.0                        | 3.1        | 0.90       | 0.95     | 18         | 9         |
|                           | 1.5                   | 8.6                 | 64         | 0.64          | 0.37          | 13.6      | 0.62     | 0.29     | 5.5                        | 3.1        | 1.40       | 1.17     | 22         | 14        |
|                           | 2.0                   | 8.6                 | 69         | 0.72          | 0.44          | 16.2      | 0.79     | 0.36     | 5.9                        | 3.1        | 1.92       | 1.39     | 32         | 14        |
|                           | 2.5                   | 8.5                 | 75         | 0.81          | 0.52          | 18.9      | 0.96     | 0.40     | 6.4                        | 3.1        | 2.46       | 1.61     | 36         | 18        |
|                           | 3.0                   | 8.2                 | 83         | 0.92          | 0.62          | 22.2      | 1.17     | 0.51     | 6.8                        | 3.1        | 3.00       | 1.83     | 45         | 18        |
| 400                       | 0.5                   | 9.8                 | 54         | 0.50          | 0.24          | 8.7       | 0.27     | 0.15     | 5.3                        | 3.8        | 0.52       | 0.85     | 14         | 9         |
|                           | 1.0                   | 10.4                | 59         | 0.57          | 0.31          | 10.4      | 0.39     | 0.20     | 6.1                        | 3.8        | 1.12       | 1.08     | 18         | 9         |
|                           | 1.5                   | 10.7                | 64         | 0.64          | 0.37          | 12.1      | 0.50     | 0.24     | 6.8                        | 3.8        | 1.74       | 1.30     | 23         | 14        |
|                           | 2.0                   | 10.7                | 69         | 0.72          | 0.44          | 14.1      | 0.62     | 0.29     | 7.4                        | 3.8        | 2.39       | 1.51     | 32         | 14        |
|                           | 2.5                   | 10.6                | 75         | 0.81          | 0.52          | 16.3      | 0.75     | 0.34     | 8.0                        | 3.8        | 3.50       | 1.72     | 36         | 18        |
|                           | 3.0                   | 10.2                | 83         | 0.92          | 0.62          | 19.0      | 0.90     | 0.41     | 8.5                        | 3.8        | 3.72       | 1.94     | 41         | 18        |
| 500                       | 0.5                   | 11.6                | 54         | 0.50          | 0.24          | 8.4       | 0.25     | 0.15     | 6.3                        | 4.5        | 0.62       | 0.97     | 14         | 9         |
|                           | 1.0                   | 12.2                | 59         | 0.57          | 0.31          | 9.8       | 0.34     | 0.18     | 7.2                        | 4.5        | 1.32       | 1.19     | 18         | 9         |
|                           | 1.5                   | 12.6                | 64         | 0.64          | 0.37          | 11.2      | 0.42     | 0.22     | 8.1                        | 4.5        | 2.06       | 1.41     | 23         | 14        |
|                           | 2.0                   | 12.7                | 69         | 0.72          | 0.44          | 12.8      | 0.52     | 0.25     | 8.8                        | 4.5        | 2.82       | 1.63     | 32         | 14        |
|                           | 2.5                   | 12.5                | 75         | 0.81          | 0.52          | 14.7      | 0.62     | 0.30     | 9.4                        | 4.5        | 3.60       | 1.84     | 36         | 18        |
|                           | 3.0                   | 12.1                | 83         | 0.92          | 0.62          | 16.9      | 0.74     | 0.35     | 10.0                       | 4.5        | 4.40       | 2.05     | 41         | 18        |
| 600                       | 0.5                   | 13.2                | 54         | 0.50          | 0.24          | 8.2       | 0.23     | 0.14     | 7.1                        | 5.2        | 0.71       | 1.08     | 14         | 9         |
|                           | 1.0                   | 14.0                | 59         | 0.57          | 0.31          | 9.4       | 0.30     | 0.17     | 8.3                        | 5.2        | 1.51       | 1.31     | 18         | 9         |
|                           | 1.5                   | 14.4                | 64         | 0.64          | 0.37          | 10.6      | 0.38     | 0.20     | 9.2                        | 5.2        | 2.36       | 1.53     | 23         | 14        |
|                           | 2.0                   | 14.6                | 69         | 0.72          | 0.44          | 11.9      | 0.44     | 0.22     | 10.1                       | 5.2        | 3.23       | 1.74     | 32         | 14        |
|                           | 2.5                   | 14.4                | 75         | 0.81          | 0.52          | 13.6      | 0.52     | 0.26     | 10.8                       | 5.2        | 4.13       | 1.95     | 36         | 18        |
|                           | 3.0                   | 13.8                | 83         | 0.92          | 0.62          | 15.7      | 0.62     | 0.30     | 11.5                       | 5.2        | 5.04       | 2.17     | 41         | 18        |
| 700                       | 0.5                   | 14.9                | 54         | 0.50          | 0.24          | 8.0       | 0.22     | 0.14     | 8.0                        | 5.8        | 0.79       | 1.19     | 14         | 9         |
|                           | 1.0                   | 15.8                | 59         | 0.57          | 0.31          | 9.0       | 0.28     | 0.16     | 9.3                        | 5.8        | 1.70       | 1.42     | 18         | 14        |
|                           | 1.5                   | 16.2                | 64         | 0.64          | 0.37          | 10.1      | 0.33     | 0.19     | 10.4                       | 5.8        | 2.65       | 1.64     | 23         | 14        |
|                           | 2.0                   | 16.3                | 69         | 0.72          | 0.44          | 11.4      | 0.39     | 0.21     | 11.2                       | 5.8        | 3.63       | 1.85     | 27         | 14        |
|                           | 2.5                   | 16.1                | 75         | 0.81          | 0.52          | 12.8      | 0.46     | 0.24     | 12.1                       | 5.8        | 4.64       | 2.06     | 32         | 18        |
|                           | 3.0                   | 15.5                | 83         | 0.92          | 0.62          | 14.6      | 0.54     | 0.27     | 12.9                       | 5.8        | 5.66       | 2.27     | 36         | 18        |

Table 4. Nutrient requirements of growing steer and heifer calves (continued).

| Body weight (lbs)         | Diet nutrient density |                     |            |               |               |           |          |          | Daily nutrients per animal |            |            |          |            |           |
|---------------------------|-----------------------|---------------------|------------|---------------|---------------|-----------|----------|----------|----------------------------|------------|------------|----------|------------|-----------|
|                           | ADG (lbs)             | DM intake (lbs/day) | TDN (% DM) | NEm (Mcal/lb) | NEg (Mcal/lb) | CP (% DM) | Ca (%DM) | P (% DM) | TDN (lbs)                  | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (grams) | P (grams) |
| 1,400 pounds at finishing |                       |                     |            |               |               |           |          |          |                            |            |            |          |            |           |
| 300                       | 0.5                   | 7.8                 | 54         | 0.49          | 0.24          | 9.4       | 0.31     | 0.17     | 4.2                        | 3.1        | 0.39       | 0.73     | 14         | 5         |
|                           | 1.0                   | 8.3                 | 58         | 0.56          | 0.30          | 11.5      | 0.48     | 0.23     | 4.8                        | 3.1        | 0.84       | 0.95     | 18         | 9         |
|                           | 1.5                   | 8.6                 | 63         | 0.63          | 0.36          | 13.7      | 0.63     | 0.29     | 5.4                        | 3.1        | 1.31       | 1.17     | 23         | 14        |
|                           | 2.0                   | 8.6                 | 68         | 0.70          | 0.42          | 16.2      | 0.80     | 0.36     | 5.8                        | 3.1        | 1.80       | 1.40     | 32         | 14        |
|                           | 2.5                   | 8.6                 | 73         | 0.78          | 0.50          | 18.7      | 0.96     | 0.43     | 6.3                        | 3.1        | 2.30       | 1.61     | 36         | 18        |
|                           | 3.0                   | 8.3                 | 80         | 0.88          | 0.58          | 22.0      | 1.18     | 0.52     | 6.6                        | 3.1        | 2.81       | 1.83     | 45         | 18        |
| 400                       | 0.5                   | 9.7                 | 54         | 0.49          | 0.24          | 8.8       | 0.28     | 0.16     | 5.2                        | 3.8        | 0.49       | 0.85     | 14         | 9         |
|                           | 1.0                   | 10.3                | 58         | 0.56          | 0.30          | 10.4      | 0.39     | 0.20     | 6.0                        | 3.8        | 1.04       | 1.07     | 18         | 9         |
|                           | 1.5                   | 10.6                | 63         | 0.63          | 0.36          | 12.2      | 0.51     | 0.25     | 6.7                        | 3.8        | 1.63       | 1.30     | 23         | 14        |
|                           | 2.0                   | 10.7                | 68         | 0.70          | 0.42          | 14.1      | 0.63     | 0.30     | 7.3                        | 3.8        | 2.23       | 1.51     | 32         | 14        |
|                           | 2.5                   | 10.7                | 73         | 0.78          | 0.50          | 16.1      | 0.76     | 0.35     | 7.8                        | 3.8        | 2.85       | 1.72     | 36         | 18        |
|                           | 3.0                   | 10.4                | 80         | 0.88          | 0.58          | 18.7      | 0.90     | 0.41     | 8.3                        | 3.8        | 3.49       | 1.94     | 41         | 18        |
| 500                       | 0.5                   | 11.5                | 54         | 0.49          | 0.24          | 8.4       | 0.25     | 0.15     | 6.2                        | 4.5        | 0.58       | 0.97     | 14         | 9         |
|                           | 1.0                   | 12.2                | 58         | 0.56          | 0.30          | 9.8       | 0.34     | 0.18     | 7.1                        | 4.5        | 1.23       | 1.19     | 18         | 9         |
|                           | 1.5                   | 12.6                | 63         | 0.63          | 0.36          | 11.2      | 0.43     | 0.22     | 7.9                        | 4.5        | 1.93       | 1.41     | 27         | 14        |
|                           | 2.0                   | 12.6                | 68         | 0.70          | 0.42          | 12.9      | 0.53     | 0.26     | 8.6                        | 4.5        | 2.64       | 1.63     | 32         | 14        |
|                           | 2.5                   | 12.6                | 73         | 0.78          | 0.50          | 14.6      | 0.63     | 0.30     | 9.2                        | 4.5        | 3.37       | 1.84     | 36         | 18        |
|                           | 3.0                   | 12.2                | 80         | 0.88          | 0.58          | 16.8      | 0.75     | 0.35     | 9.8                        | 4.5        | 4.12       | 2.05     | 41         | 18        |
| 600                       | 0.5                   | 13.2                | 54         | 0.49          | 0.24          | 8.2       | 0.24     | 0.15     | 7.1                        | 5.2        | 0.66       | 1.08     | 14         | 9         |
|                           | 1.0                   | 14.0                | 58         | 0.56          | 0.30          | 9.3       | 0.31     | 0.17     | 8.1                        | 5.2        | 1.42       | 1.31     | 18         | 9         |
|                           | 1.5                   | 14.4                | 63         | 0.63          | 0.36          | 10.6      | 0.38     | 0.20     | 9.1                        | 5.2        | 2.21       | 1.52     | 27         | 14        |
|                           | 2.0                   | 14.4                | 68         | 0.70          | 0.42          | 12.1      | 0.46     | 0.23     | 9.8                        | 5.2        | 3.03       | 1.74     | 32         | 14        |
|                           | 2.5                   | 14.4                | 73         | 0.78          | 0.50          | 13.5      | 0.54     | 0.26     | 10.5                       | 5.2        | 3.87       | 1.95     | 36         | 18        |
|                           | 3.0                   | 14.0                | 80         | 0.88          | 0.58          | 15.4      | 0.64     | 0.31     | 11.2                       | 5.2        | 4.73       | 2.16     | 41         | 18        |
| 700                       | 0.5                   | 14.8                | 54         | 0.49          | 0.24          | 8.0       | 0.23     | 0.14     | 8.0                        | 5.8        | 0.74       | 1.18     | 14         | 9         |
|                           | 1.0                   | 15.7                | 58         | 0.56          | 0.30          | 9.0       | 0.29     | 0.17     | 9.1                        | 5.8        | 1.59       | 1.42     | 23         | 14        |
|                           | 1.5                   | 16.2                | 63         | 0.63          | 0.36          | 10.1      | 0.34     | 0.19     | 10.2                       | 5.8        | 2.48       | 1.64     | 27         | 14        |
|                           | 2.0                   | 16.3                | 68         | 0.70          | 0.42          | 11.3      | 0.41     | 0.21     | 11.1                       | 5.8        | 3.40       | 1.85     | 32         | 18        |
|                           | 2.5                   | 16.2                | 73         | 0.78          | 0.50          | 12.7      | 0.47     | 0.24     | 11.8                       | 5.8        | 4.34       | 2.05     | 36         | 18        |
|                           | 3.0                   | 15.8                | 80         | 0.88          | 0.58          | 14.4      | 0.55     | 0.27     | 12.6                       | 5.8        | 5.30       | 2.27     | 41         | 18        |

Table 5. Nutrient requirements of growing yearlings.

| Body weight (lbs)         | Diet nutrient density |                     |            |               |               |           |           |          | Daily nutrients per animal |            |            |          |            |           |
|---------------------------|-----------------------|---------------------|------------|---------------|---------------|-----------|-----------|----------|----------------------------|------------|------------|----------|------------|-----------|
|                           | ADG (lbs)             | DM intake (lbs/day) | TDN (% DM) | NEm (Mcal/lb) | NEg (Mcal/lb) | CP (% DM) | Ca (% DM) | P (% DM) | TDN (lbs)                  | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (grams) | P (grams) |
| 1,100 pounds at finishing |                       |                     |            |               |               |           |           |          |                            |            |            |          |            |           |
| 605                       | 0.7                   | 16.3                | 50         | 0.45          | 0.20          | 7.5       | 0.22      | 0.13     | 8.2                        | 5.2        | 1.0        | 1.2      | 18         | 9         |
|                           | 1.9                   | 17.3                | 60         | 0.61          | 0.35          | 10.0      | 0.36      | 0.19     | 10.4                       | 5.2        | 3.0        | 1.7      | 27         | 14        |
|                           | 2.9                   | 16.9                | 70         | 0.76          | 0.48          | 12.7      | 0.49      | 0.24     | 11.8                       | 5.2        | 4.8        | 2.2      | 36         | 18        |
|                           | 3.6                   | 15.9                | 80         | 0.90          | 0.61          | 15.3      | 0.61      | 0.29     | 12.7                       | 5.2        | 6.1        | 2.4      | 45         | 23        |
|                           | 4.0                   | 14.7                | 90         | 1.04          | 0.72          | 17.8      | 0.72      | 0.34     | 13.2                       | 5.2        | 7.0        | 2.6      | 50         | 23        |
| 660                       | 0.7                   | 17.5                | 50         | 0.45          | 0.20          | 7.5       | 0.21      | 0.13     | 8.8                        | 5.5        | 1.1        | 1.3      | 18         | 9         |
|                           | 1.9                   | 18.4                | 60         | 0.61          | 0.35          | 9.7       | 0.34      | 0.18     | 11.0                       | 5.5        | 3.2        | 1.8      | 27         | 14        |
|                           | 2.9                   | 18.0                | 70         | 0.76          | 0.48          | 12.3      | 0.45      | 0.23     | 12.6                       | 5.5        | 5.1        | 2.2      | 36         | 18        |
|                           | 3.6                   | 17.0                | 80         | 0.90          | 0.61          | 14.7      | 0.56      | 0.27     | 13.6                       | 5.5        | 6.5        | 2.5      | 45         | 23        |
|                           | 4.0                   | 15.7                | 90         | 1.04          | 0.72          | 17.1      | 0.66      | 0.32     | 14.1                       | 5.5        | 7.4        | 2.7      | 45         | 23        |
| 715                       | 0.7                   | 18.5                | 50         | 0.45          | 0.20          | 7.5       | 0.20      | 0.13     | 9.3                        | 5.9        | 1.1        | 1.4      | 18         | 9         |
|                           | 1.9                   | 19.6                | 60         | 0.61          | 0.35          | 9.2       | 0.32      | 0.17     | 11.8                       | 5.9        | 3.5        | 1.8      | 27         | 14        |
|                           | 2.9                   | 19.1                | 70         | 0.76          | 0.48          | 11.5      | 0.42      | 0.21     | 13.4                       | 5.9        | 5.5        | 2.2      | 36         | 18        |
|                           | 3.6                   | 18.1                | 80         | 0.90          | 0.61          | 13.7      | 0.52      | 0.26     | 14.5                       | 5.9        | 6.9        | 2.5      | 41         | 23        |
|                           | 4.0                   | 16.7                | 90         | 1.04          | 0.72          | 15.9      | 0.61      | 0.30     | 15.0                       | 5.9        | 7.9        | 2.7      | 45         | 23        |
| 770                       | 0.7                   | 19.6                | 50         | 0.45          | 0.20          | 7.5       | 0.20      | 0.12     | 9.8                        | 6.2        | 1.2        | 1.5      | 18         | 9         |
|                           | 1.9                   | 20.7                | 60         | 0.61          | 0.35          | 8.8       | 0.30      | 0.16     | 12.4                       | 6.2        | 3.6        | 1.8      | 27         | 14        |
|                           | 2.9                   | 20.2                | 70         | 0.76          | 0.48          | 10.9      | 0.39      | 0.20     | 14.1                       | 6.2        | 5.8        | 2.2      | 36         | 18        |
|                           | 3.6                   | 19.1                | 80         | 0.90          | 0.61          | 12.9      | 0.48      | 0.24     | 15.3                       | 6.2        | 7.3        | 2.5      | 41         | 23        |
|                           | 4.0                   | 17.6                | 90         | 1.04          | 0.72          | 14.8      | 0.56      | 0.28     | 15.8                       | 6.2        | 8.3        | 2.6      | 45         | 23        |
| 825                       | 0.7                   | 20.6                | 50         | 0.45          | 0.20          | 7.5       | 0.19      | 0.12     | 0.3                        | 6.6        | 1.3        | 1.6      | 18         | 14        |
|                           | 1.9                   | 21.8                | 60         | 0.61          | 0.35          | 8.4       | 0.28      | 0.16     | 13.1                       | 6.6        | 3.8        | 1.8      | 27         | 18        |
|                           | 2.9                   | 21.3                | 70         | 0.76          | 0.48          | 10.3      | 0.37      | 0.19     | 14.9                       | 6.6        | 6.1        | 2.2      | 36         | 18        |
|                           | 3.6                   | 20.1                | 80         | 0.90          | 0.61          | 12.1      | 0.44      | 0.23     | 16.1                       | 6.6        | 7.7        | 2.4      | 41         | 23        |
|                           | 4.0                   | 18.6                | 90         | 1.04          | 0.72          | 13.9      | 0.52      | 0.26     | 16.7                       | 6.6        | 8.8        | 2.6      | 45         | 23        |
| 880                       | 0.7                   | 21.7                | 50         | 0.45          | 0.20          | 7.5       | 0.19      | 0.12     | 10.9                       | 6.9        | 1.3        | 1.6      | 18         | 14        |
|                           | 1.9                   | 22.9                | 60         | 0.61          | 0.35          | 8.1       | 0.27      | 0.15     | 13.7                       | 6.9        | 4.0        | 1.9      | 27         | 14        |
|                           | 2.9                   | 22.4                | 70         | 0.76          | 0.48          | 9.8       | 0.34      | 0.18     | 15.7                       | 6.9        | 6.4        | 2.2      | 36         | 18        |
|                           | 3.6                   | 21.1                | 80         | 0.90          | 0.61          | 11.4      | 0.42      | 0.22     | 16.9                       | 6.9        | 8.1        | 2.4      | 41         | 23        |
|                           | 4.0                   | 19.5                | 90         | 1.04          | 0.72          | 13.1      | 0.48      | 0.25     | 17.6                       | 6.9        | 9.2        | 2.6      | 41         | 23        |

Table 5. Nutrient requirements of growing yearlings (continued).

| Body weight<br>(lbs)      | Diet nutrient density |                        |               |                  |                  |              |              |             | Daily nutrients per animal |               |               |             |               |              |
|---------------------------|-----------------------|------------------------|---------------|------------------|------------------|--------------|--------------|-------------|----------------------------|---------------|---------------|-------------|---------------|--------------|
|                           | ADG<br>(lbs)          | DM intake<br>(lbs/day) | TDN<br>(% DM) | NEm<br>(Mcal/lb) | NEg<br>(Mcal/lb) | CP<br>(% DM) | Ca<br>(% DM) | P<br>(% DM) | TDN<br>(lbs)               | NEm<br>(Mcal) | NEg<br>(Mcal) | CP<br>(lbs) | Ca<br>(grams) | P<br>(grams) |
| 1,200 pounds at finishing |                       |                        |               |                  |                  |              |              |             |                            |               |               |             |               |              |
| 660                       | 0.7                   | 17.5                   | 50            | 0.45             | 0.20             | 7.5          | 0.22         | 0.13        | 8.8                        | 5.5           | 1.1           | 1.3         | 18            | 9            |
|                           | 2.0                   | 18.4                   | 60            | 0.61             | 0.35             | 10.2         | 0.36         | 0.19        | 11.0                       | 5.5           | 3.3           | 1.9         | 32            | 18           |
|                           | 3.0                   | 18.0                   | 70            | 0.76             | 0.48             | 13.0         | 0.49         | 0.24        | 12.6                       | 5.5           | 5.2           | 2.3         | 41            | 18           |
|                           | 3.8                   | 17.0                   | 80            | 0.90             | 0.61             | 15.8         | 0.61         | 0.29        | 13.6                       | 5.5           | 6.5           | 2.7         | 45            | 23           |
|                           | 4.2                   | 15.7                   | 90            | 1.04             | 0.72             | 18.4         | 0.72         | 0.34        | 14.1                       | 5.5           | 7.4           | 2.9         | 50            | 23           |
| 720                       | 0.7                   | 18.6                   | 50            | 0.45             | 0.20             | 7.5          | 0.21         | 0.13        | 9.3                        | 5.9           | 1.1           | 1.4         | 18            | 9            |
|                           | 2.0                   | 19.7                   | 60            | 0.61             | 0.35             | 9.7          | 0.34         | 0.18        | 11.8                       | 5.9           | 3.5           | 1.9         | 32            | 18           |
|                           | 3.0                   | 19.2                   | 70            | 0.76             | 0.48             | 12.2         | 0.45         | 0.23        | 13.4                       | 5.9           | 5.5           | 2.3         | 41            | 18           |
|                           | 3.8                   | 18.2                   | 80            | 0.90             | 0.61             | 14.6         | 0.56         | 0.27        | 14.6                       | 5.9           | 7.0           | 2.7         | 45            | 23           |
|                           | 4.2                   | 16.8                   | 90            | 1.04             | 0.72             | 17.0         | 0.66         | 0.32        | 15.1                       | 5.9           | 7.9           | 2.9         | 50            | 23           |
| 780                       | 0.7                   | 19.8                   | 50            | 0.45             | 0.20             | 7.5          | 0.20         | 0.13        | 9.9                        | 6.3           | 1.2           | 1.5         | 18            | 14           |
|                           | 2.0                   | 20.9                   | 60            | 0.61             | 0.35             | 9.2          | 0.32         | 0.17        | 12.5                       | 6.3           | 3.7           | 1.9         | 32            | 18           |
|                           | 3.0                   | 20.4                   | 70            | 0.76             | 0.48             | 11.4         | 0.42         | 0.21        | 14.3                       | 6.3           | 5.8           | 2.3         | 41            | 18           |
|                           | 3.8                   | 19.3                   | 80            | 0.90             | 0.61             | 13.6         | 0.52         | 0.26        | 15.4                       | 6.3           | 7.4           | 2.6         | 45            | 23           |
|                           | 4.2                   | 17.8                   | 90            | 1.04             | 0.72             | 15.8         | 0.61         | 0.30        | 16.0                       | 6.3           | 8.4           | 2.8         | 50            | 23           |
| 840                       | 0.7                   | 20.9                   | 50            | 0.45             | 0.20             | 7.5          | 0.20         | 0.13        | 10.5                       | 6.6           | 1.3           | 1.6         | 18            | 14           |
|                           | 2.0                   | 22.1                   | 60            | 0.61             | 0.35             | 8.8          | 0.30         | 0.16        | 13.3                       | 6.6           | 3.9           | 1.9         | 32            | 18           |
|                           | 3.0                   | 21.6                   | 70            | 0.76             | 0.48             | 10.8         | 0.39         | 0.20        | 15.1                       | 6.6           | 6.2           | 2.3         | 41            | 18           |
|                           | 3.8                   | 20.4                   | 80            | 0.90             | 0.61             | 12.8         | 0.48         | 0.24        | 16.3                       | 6.6           | 7.8           | 2.6         | 45            | 23           |
|                           | 4.2                   | 18.8                   | 90            | 1.04             | 0.72             | 14.7         | 0.56         | 0.28        | 16.9                       | 6.6           | 8.9           | 2.8         | 54            | 23           |
| 900                       | 0.7                   | 22.0                   | 50            | 0.45             | 0.20             | 7.5          | 0.19         | 0.12        | 11.0                       | 7.0           | 1.3           | 1.7         | 18            | 14           |
|                           | 2.0                   | 23.3                   | 60            | 0.61             | 0.35             | 8.4          | 0.28         | 0.16        | 14.0                       | 7.0           | 4.1           | 2.0         | 27            | 18           |
|                           | 3.0                   | 22.7                   | 70            | 0.76             | 0.48             | 10.2         | 0.37         | 0.19        | 15.9                       | 7.0           | 6.5           | 2.3         | 36            | 18           |
|                           | 3.8                   | 21.5                   | 80            | 0.90             | 0.61             | 12.0         | 0.44         | 0.23        | 17.2                       | 7.0           | 8.3           | 2.6         | 45            | 23           |
|                           | 4.2                   | 19.8                   | 90            | 1.04             | 0.72             | 13.8         | 0.52         | 0.26        | 17.8                       | 7.0           | 9.4           | 2.7         | 45            | 23           |
| 960                       | 0.7                   | 23.1                   | 50            | 0.45             | 0.20             | 7.5          | 0.19         | 0.12        | 11.6                       | 7.3           | 1.4           | 1.7         | 18            | 14           |
|                           | 2.0                   | 24.4                   | 60            | 0.61             | 0.35             | 8.1          | 0.27         | 0.15        | 14.6                       | 7.3           | 4.3           | 2.0         | 32            | 18           |
|                           | 3.0                   | 23.9                   | 70            | 0.76             | 0.48             | 9.7          | 0.34         | 0.19        | 16.7                       | 7.3           | 6.8           | 2.3         | 36            | 23           |
|                           | 3.8                   | 22.5                   | 80            | 0.90             | 0.61             | 11.3         | 0.41         | 0.22        | 18.0                       | 7.3           | 8.7           | 2.5         | 41            | 23           |
|                           | 4.2                   | 20.8                   | 90            | 1.04             | 0.72             | 13.0         | 0.48         | 0.25        | 18.7                       | 7.3           | 9.9           | 2.7         | 45            | 23           |



**Table 5. Nutrient requirements of growing yearlings (continued).**

| Body weight<br>(lbs)      | Diet nutrient density |                        |               |                  |                  |              |              |             | Daily nutrients per animal |               |               |             |               |              |
|---------------------------|-----------------------|------------------------|---------------|------------------|------------------|--------------|--------------|-------------|----------------------------|---------------|---------------|-------------|---------------|--------------|
|                           | ADG<br>(lbs)          | DM intake<br>(lbs/day) | TDN<br>(% DM) | NEm<br>(Mcal/lb) | NEg<br>(Mcal/lb) | CP<br>(% DM) | Ca<br>(% DM) | P<br>(% DM) | TDN<br>(lbs)               | NEm<br>(Mcal) | NEg<br>(Mcal) | CP<br>(lbs) | Ca<br>(grams) | P<br>(grams) |
| 1,300 pounds at finishing |                       |                        |               |                  |                  |              |              |             |                            |               |               |             |               |              |
| 715                       | 0.8                   | 18.5                   | 50            | 0.45             | 0.20             | 7.5          | 0.22         | 0.13        | 9.3                        | 5.9           | 1.1           | 1.4         | 18            | 9            |
|                           | 2.1                   | 19.6                   | 60            | 0.61             | 0.35             | 10.2         | 0.36         | 0.19        | 11.8                       | 5.9           | 3.5           | 2.0         | 33            | 18           |
|                           | 3.2                   | 19.1                   | 70            | 0.76             | 0.48             | 13.0         | 0.49         | 0.24        | 13.4                       | 5.9           | 5.5           | 2.5         | 42            | 23           |
|                           | 4.0                   | 18.1                   | 80            | 0.90             | 0.61             | 15.7         | 0.61         | 0.29        | 14.5                       | 5.9           | 6.9           | 2.8         | 50            | 23           |
|                           | 4.5                   | 16.7                   | 90            | 1.04             | 0.72             | 18.3         | 0.72         | 0.34        | 15.0                       | 5.9           | 7.9           | 3.1         | 54            | 27           |
| 780                       | 0.8                   | 19.8                   | 50            | 0.45             | 0.20             | 7.5          | 0.21         | 0.13        | 9.9                        | 6.3           | 1.2           | 1.5         | 18            | 14           |
|                           | 2.1                   | 20.9                   | 60            | 0.61             | 0.35             | 9.6          | 0.34         | 0.18        | 12.5                       | 6.3           | 3.7           | 2.0         | 32            | 18           |
|                           | 3.2                   | 20.4                   | 70            | 0.76             | 0.48             | 12.1         | 0.45         | 0.23        | 14.3                       | 6.3           | 5.8           | 2.5         | 41            | 23           |
|                           | 4.0                   | 19.3                   | 80            | 0.90             | 0.61             | 14.5         | 0.56         | 0.27        | 15.4                       | 6.3           | 7.4           | 2.8         | 50            | 23           |
|                           | 4.5                   | 17.8                   | 90            | 1.04             | 0.72             | 16.9         | 0.66         | 0.32        | 16.0                       | 6.3           | 8.4           | 3.0         | 54            | 27           |
| 845                       | 0.8                   | 21.0                   | 50            | 0.45             | 0.20             | 7.5          | 0.21         | 0.13        | 10.5                       | 6.7           | 1.3           | 1.6         | 18            | 14           |
|                           | 2.1                   | 22.2                   | 60            | 0.61             | 0.35             | 9.1          | 0.32         | 0.17        | 13.3                       | 6.7           | 3.9           | 2.0         | 32            | 18           |
|                           | 3.2                   | 21.7                   | 70            | 0.76             | 0.48             | 11.4         | 0.42         | 0.22        | 15.2                       | 6.7           | 6.2           | 2.5         | 41            | 23           |
|                           | 4.0                   | 20.5                   | 80            | 0.90             | 0.61             | 13.6         | 0.51         | 0.26        | 16.4                       | 6.7           | 7.9           | 2.8         | 50            | 23           |
|                           | 4.5                   | 18.9                   | 90            | 1.04             | 0.72             | 15.7         | 0.60         | 0.30        | 17.0                       | 6.7           | 8.9           | 3.0         | 50            | 27           |
| 910                       | 0.8                   | 22.2                   | 50            | 0.45             | 0.20             | 7.5          | 0.20         | 0.13        | 11.1                       | 7.1           | 1.4           | 1.7         | 18            | 14           |
|                           | 2.1                   | 23.5                   | 60            | 0.61             | 0.35             | 8.7          | 0.30         | 0.17        | 14.1                       | 7.1           | 4.1           | 2.0         | 32            | 18           |
|                           | 3.2                   | 22.9                   | 70            | 0.76             | 0.48             | 10.7         | 0.39         | 0.20        | 16.0                       | 7.1           | 6.6           | 2.5         | 41            | 23           |
|                           | 4.0                   | 21.6                   | 80            | 0.90             | 0.61             | 12.7         | 0.48         | 0.24        | 17.3                       | 7.1           | 8.3           | 2.7         | 45            | 23           |
|                           | 4.5                   | 20.0                   | 90            | 1.04             | 0.72             | 14.6         | 0.56         | 0.28        | 18.0                       | 7.1           | 9.4           | 3.0         | 50            | 27           |
| 975                       | 0.8                   | 23.4                   | 50            | 0.45             | 0.20             | 7.5          | 0.20         | 0.13        | 11.7                       | 7.4           | 1.4           | 1.7         | 23            | 14           |
|                           | 2.1                   | 24.7                   | 60            | 0.61             | 0.35             | 8.3          | 0.28         | 0.16        | 14.8                       | 7.4           | 4.4           | 2.1         | 32            | 18           |
|                           | 3.2                   | 24.1                   | 70            | 0.76             | 0.48             | 10.2         | 0.37         | 0.19        | 16.9                       | 7.4           | 6.9           | 2.5         | 50            | 23           |
|                           | 4.0                   | 22.8                   | 80            | 0.90             | 0.61             | 11.9         | 0.44         | 0.23        | 18.2                       | 7.4           | 8.8           | 2.7         | 45            | 23           |
|                           | 4.5                   | 21.0                   | 90            | 1.04             | 0.72             | 13.7         | 0.52         | 0.26        | 18.9                       | 7.4           | 9.9           | 2.9         | 50            | 27           |
| 1,040                     | 0.8                   | 24.5                   | 50            | 0.45             | 0.20             | 7.5          | 0.19         | 0.13        | 12.3                       | 7.8           | 1.5           | 1.8         | 23            | 14           |
|                           | 2.1                   | 25.9                   | 60            | 0.61             | 0.35             | 8.0          | 0.27         | 0.15        | 15.5                       | 7.8           | 4.6           | 2.1         | 32            | 18           |
|                           | 3.2                   | 25.3                   | 70            | 0.76             | 0.48             | 9.6          | 0.34         | 0.19        | 17.7                       | 7.8           | 7.2           | 2.4         | 41            | 23           |
|                           | 4.0                   | 23.9                   | 80            | 0.90             | 0.61             | 11.3         | 0.41         | 0.22        | 19.1                       | 7.8           | 9.2           | 2.7         | 45            | 23           |
|                           | 4.5                   | 22.1                   | 90            | 1.04             | 0.72             | 12.9         | 0.48         | 0.25        | 19.9                       | 7.8           | 10.4          | 2.9         | 50            | 27           |

Table 5. Nutrient requirements of growing yearlings (continued).

| Body weight (lbs)         | Diet nutrient density |                     |            |               |               |           |           |          | Daily nutrients per animal |            |            |          |            |           |
|---------------------------|-----------------------|---------------------|------------|---------------|---------------|-----------|-----------|----------|----------------------------|------------|------------|----------|------------|-----------|
|                           | ADG (lbs)             | DM intake (lbs/day) | TDN (% DM) | NEm (Mcal/lb) | NEg (Mcal/lb) | CP (% DM) | Ca (% DM) | P (% DM) | TDN (lbs)                  | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (grams) | P (grams) |
| 1,400 pounds at finishing |                       |                     |            |               |               |           |           |          |                            |            |            |          |            |           |
| 770                       | 0.8                   | 19.6                | 50         | 0.45          | 0.20          | 7.5       | 0.22      | 0.13     | 9.8                        | 6.2        | 1.2        | 1.5      | 18.        | 14        |
|                           | 2.2                   | 20.7                | 60         | 0.61          | 0.35          | 10.1      | 0.36      | 0.19     | 12.4                       | 6.2        | 3.7        | 2.1      | 36         | 18        |
|                           | 3.4                   | 20.2                | 70         | 0.76          | 0.48          | 12.9      | 0.49      | 0.24     | 14.1                       | 6.2        | 5.8        | 2.6      | 41         | 23        |
|                           | 4.2                   | 19.1                | 80         | 0.90          | 0.61          | 15.6      | 0.61      | 0.29     | 15.3                       | 6.2        | 7.3        | 3.0      | 54         | 27        |
|                           | 4.7                   | 17.6                | 90         | 1.04          | 0.72          | 18.1      | 0.72      | 0.34     | 15.8                       | 6.2        | 8.3        | 3.2      | 59         | 27        |
| 840                       | 0.8                   | 20.9                | 50         | 0.45          | 0.20          | 7.5       | 0.21      | 0.13     | 10.5                       | 6.6        | 1.3        | 1.6      | 18         | 14        |
|                           | 2.2                   | 22.1                | 60         | 0.61          | 0.35          | 9.6       | 0.34      | 0.18     | 13.3                       | 6.6        | 3.9        | 2.1      | 36         | 18        |
|                           | 3.4                   | 21.6                | 70         | 0.76          | 0.48          | 12.1      | 0.45      | 0.23     | 15.1                       | 6.6        | 6.2        | 2.6      | 41         | 23        |
|                           | 4.2                   | 20.4                | 80         | 0.90          | 0.61          | 14.5      | 0.56      | 0.27     | 16.3                       | 6.6        | 7.8        | 3.0      | 50         | 27        |
|                           | 4.7                   | 18.8                | 90         | 1.04          | 0.72          | 16.8      | 0.65      | 0.32     | 16.9                       | 6.6        | 8.9        | 3.2      | 54         | 27        |
| 910                       | 0.8                   | 22.2                | 50         | 0.45          | 0.20          | 7.5       | 0.21      | 0.13     | 11.1                       | 7.1        | 1.4        | 1.7      | 23         | 14        |
|                           | 2.2                   | 23.5                | 60         | 0.61          | 0.35          | 9.1       | 0.32      | 0.17     | 14.1                       | 7.1        | 4.1        | 2.1      | 36         | 18        |
|                           | 3.4                   | 22.9                | 70         | 0.76          | 0.48          | 11.3      | 0.42      | 0.22     | 16.0                       | 7.1        | 6.6        | 2.6      | 41         | 23        |
|                           | 4.2                   | 21.6                | 80         | 0.90          | 0.61          | 13.5      | 0.51      | 0.26     | 17.3                       | 7.1        | 8.3        | 2.9      | 50         | 27        |
|                           | 4.7                   | 20.0                | 90         | 1.04          | 0.72          | 15.6      | 0.60      | 0.3      | 18.0                       | 7.1        | 9.5        | 3.1      | 54         | 27        |
| 980                       | 0.8                   | 23.5                | 50         | 0.45          | 0.20          | 7.5       | 0.20      | 0.13     | 11.8                       | 7.5        | 1.4        | 1.8      | 23         | 14        |
|                           | 2.2                   | 24.8                | 60         | 0.61          | 0.35          | 8.7       | 0.30      | 0.17     | 14.9                       | 7.5        | 4.4        | 2.2      | 32         | 18        |
|                           | 3.4                   | 24.2                | 70         | 0.76          | 0.48          | 10.7      | 0.39      | 0.20     | 16.9                       | 7.5        | 6.9        | 2.6      | 41         | 23        |
|                           | 4.2                   | 22.9                | 80         | 0.90          | 0.61          | 12.6      | 0.47      | 0.24     | 18.3                       | 7.5        | 8.8        | 2.9      | 50         | 27        |
|                           | 4.7                   | 21.1                | 90         | 1.04          | 0.72          | 14.5      | 0.56      | 0.28     | 19.0                       | 7.5        | 10.0       | 3.1      | 54         | 27        |
| 1,050                     | 0.8                   | 24.7                | 50         | 0.45          | 0.20          | 7.5       | 0.20      | 0.13     | 12.4                       | 7.9        | 1.5        | 1.9      | 23         | 14        |
|                           | 2.2                   | 26.1                | 60         | 0.61          | 0.35          | 8.3       | 0.28      | 0.16     | 5.7                        | 7.9        | 4.6        | 2.2      | 32         | 18        |
|                           | 3.4                   | 25.5                | 70         | 0.76          | 0.48          | 10.1      | 0.37      | 0.20     | 17.9                       | 7.9        | 7.3        | 2.6      | 41         | 23        |
|                           | 4.2                   | 24.1                | 80         | 0.90          | 0.61          | 11.9      | 0.44      | 0.23     | 19.3                       | 7.9        | 9.3        | 2.9      | 50         | 27        |
|                           | 4.7                   | 22.2                | 90         | 1.04          | 0.72          | 13.6      | 0.51      | 0.26     | 20.0                       | 7.9        | 10.5       | 3.0      | 50         | 27        |
| 1,120                     | 0.8                   | 25.9                | 50         | 0.45          | 0.20          | 7.5       | 0.19      | 0.13     | 13.0                       | 8.2        | 1.6        | 1.9      | 23         | 14        |
|                           | 2.2                   | 27.4                | 60         | 0.61          | 0.35          | 8.0       | 0.27      | 0.16     | 16.4                       | 8.2        | 4.8        | 2.2      | 32         | 18        |
|                           | 3.4                   | 26.8                | 70         | 0.76          | 0.48          | 9.6       | 0.34      | 0.19     | 18.8                       | 8.2        | 7.7        | 2.6      | 41         | 23        |
|                           | 4.2                   | 25.3                | 80         | 0.90          | 0.61          | 11.2      | 0.41      | 0.22     | 20.2                       | 8.2        | 9.7        | 2.8      | 45         | 27        |
|                           | 4.7                   | 23.3                | 90         | 1.04          | 0.72          | 12.8      | 0.48      | 0.25     | 21.0                       | 8.2        | 11.1       | 3.0      | 50         | 27        |

Table 6. Nutrient requirements of growing and mature bulls.

| Body weight<br>(lbs)      | Diet nutrient density |                        |               |                  |                  |              |              |             | Daily nutrients per animal |               |               |             |               |              |
|---------------------------|-----------------------|------------------------|---------------|------------------|------------------|--------------|--------------|-------------|----------------------------|---------------|---------------|-------------|---------------|--------------|
|                           | ADG<br>(lbs)          | DM intake<br>(lbs/day) | TDN<br>(% DM) | NEm<br>(Mcal/lb) | NEg<br>(Mcal/lb) | CP<br>(% DM) | Ca<br>(% DM) | P<br>(% DM) | TDN<br>(lbs)               | NEm<br>(Mcal) | NEg<br>(Mcal) | CP<br>(lbs) | Ca<br>(grams) | P<br>(grams) |
| 1,700-pound mature weight |                       |                        |               |                  |                  |              |              |             |                            |               |               |             |               |              |
| 900                       | 0.4                   | 22                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 11.0                       | 8.0           | 0.9           | 1.7         | 18            | 14           |
|                           | 1.6                   | 23                     | 60            | 0.61             | 0.35             | 7.5          | 0.23         | 0.14        | 14.0                       | 8.0           | 3.5           | 1.7         | 23            | 14           |
|                           | 2.5                   | 23                     | 70            | 0.76             | 0.48             | 8.8          | 0.30         | 0.16        | 15.9                       | 8.0           | 5.8           | 2.0         | 32            | 18           |
|                           | 3.1                   | 22                     | 80            | 0.90             | 0.61             | 10.2         | 0.36         | 0.19        | 17.2                       | 8.0           | 7.6           | 2.2         | 36            | 18           |
| 1,000                     | 0.4                   | 24                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 11.9                       | 8.7           | 1.0           | 1.8         | 18            | 14           |
|                           | 1.6                   | 25                     | 60            | 0.61             | 0.35             | 7.5          | 0.22         | 0.13        | 15.1                       | 8.7           | 3.8           | 1.9         | 27            | 14           |
|                           | 2.5                   | 25                     | 70            | 0.76             | 0.48             | 8.1          | 0.27         | 0.15        | 17.2                       | 8.7           | 6.3           | 2.0         | 32            | 18           |
|                           | 3.1                   | 23                     | 80            | 0.90             | 0.61             | 9.3          | 0.32         | 0.18        | 18.6                       | 8.7           | 8.2           | 2.2         | 32            | 18           |
| 1,100                     | 0.4                   | 26                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 2.8                        | 9.4           | 1.0           | 1.9         | 18            | 14           |
|                           | 1.6                   | 27                     | 60            | 0.61             | 0.35             | 7.5          | 0.20         | 0.13        | 16.2                       | 9.4           | 4.1           | 2.0         | 27            | 14           |
|                           | 2.5                   | 26                     | 70            | 0.76             | 0.48             | 7.5          | 0.25         | 0.14        | 18.5                       | 9.4           | 6.8           | 2.0         | 32            | 18           |
|                           | 3.1                   | 25                     | 80            | 0.90             | 0.61             | 8.6          | 0.29         | 0.16        | 19.9                       | 9.4           | 8.8           | 2.1         | 32            | 18           |
| 1,200                     | 0.4                   | 27                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 13.7                       | 10.0          | 1.1           | 2.0         | 18            | 14           |
|                           | 1.6                   | 29                     | 60            | 0.61             | 0.35             | 7.5          | 0.19         | 0.12        | 17.3                       | 10.0          | 4.4           | 2.2         | 27            | 18           |
|                           | 2.5                   | 28                     | 70            | 0.76             | 0.48             | 7.5          | 0.23         | 0.14        | 19.7                       | 10.0          | 7.2           | 2.1         | 27            | 18           |
|                           | 3.1                   | 27                     | 80            | 0.90             | 0.61             | 7.9          | 0.26         | 0.15        | 21.3                       | 10.0          | 9.4           | 2.1         | 32            | 18           |
| 1,300                     | 0.4                   | 29                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 14.5                       | 10.6          | 1.2           | 2.2         | 23            | 14           |
|                           | 1.6                   | 31                     | 60            | 0.61             | 0.35             | 7.5          | 0.19         | 0.12        | 18.4                       | 10.6          | 4.6           | 2.3         | 27            | 18           |
| 1,400                     | 0.4                   | 31                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 15.4                       | 11.2          | 1.2           | 2.3         | 23            | 18           |
|                           | 1.6                   | 32                     | 60            | 0.61             | 0.35             | 7.5          | 0.18         | 0.12        | 19.4                       | 11.2          | 4.9           | 2.4         | 27            | 18           |
| 1,500                     | 0.4                   | 32                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.11        | 16.2                       | 11.8          | 1.3           | 2.4         | 23            | 18           |
|                           | 1.6                   | 34                     | 60            | 0.61             | 0.35             | 7.5          | 0.17         | 0.12        | 20.5                       | 11.8          | 5.1           | 2.6         | 27            | 18           |
| 1,600                     | 0.4                   | 34                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.12        | 17.0                       | 12.4          | 1.4           | 2.6         | 23            | 18           |
|                           | 1.6                   | 36                     | 60            | 0.61             | 0.35             | 7.5          | 0.16         | 0.11        | 21.5                       | 12.4          | 5.4           | 2.7         | 27            | 18           |
| 1,700                     | 0.0                   | 33                     | 46            | 0.39             | 0.00             | 7.5          | 0.16         | 0.12        | 15.1                       | 13.0          | 0.0           | 2.5         | 23            | 18           |
|                           | 0.4                   | 36                     | 50            | 0.45             | 0.20             | 7.5          | 0.16         | 0.12        | 17.8                       | 13.0          | 1.4           | 2.7         | 27            | 18           |

Table 6. Nutrient requirements of growing and mature bulls (continued).

| Body weight (lbs)         | Diet nutrient density |                     |            |               |               |           |           |          | Daily nutrients per animal |            |            |          |            |           |
|---------------------------|-----------------------|---------------------|------------|---------------|---------------|-----------|-----------|----------|----------------------------|------------|------------|----------|------------|-----------|
|                           | ADG (lbs)             | DM intake (lbs/day) | TDN (% DM) | NEm (Mcal/lb) | NEg (Mcal/lb) | CP (% DM) | Ca (% DM) | P (% DM) | TDN (lbs)                  | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (grams) | P (grams) |
| 2,000-pound mature weight |                       |                     |            |               |               |           |           |          |                            |            |            |          |            |           |
| 1,000                     | 0.5                   | 24                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 11.9                       | 8.7        | 1.0        | 1.8      | 18         | 14        |
|                           | 1.7                   | 25                  | 60         | 0.61          | 0.35          | 7.5       | 0.25      | 0.14     | 15.1                       | 8.7        | 3.8        | 1.9      | 27         | 18        |
|                           | 2.8                   | 25                  | 70         | 0.76          | 0.48          | 9.1       | 0.32      | 0.17     | 17.2                       | 8.7        | 6.3        | 2.2      | 36         | 18        |
|                           | 3.5                   | 23                  | 80         | 0.90          | 0.61          | 10.5      | 0.38      | 0.20     | 18.6                       | 8.7        | 8.2        | 2.4      | 41         | 22.7      |
| 1,100                     | 0.5                   | 26                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 12.8                       | 9.4        | 1.0        | 1.9      | 18         | 14        |
|                           | 1.7                   | 27                  | 60         | 0.61          | 0.35          | 7.5       | 0.23      | 0.14     | 16.2                       | 9.4        | 4.1        | 2.0      | 27         | 18        |
|                           | 2.8                   | 26                  | 70         | 0.76          | 0.48          | 8.4       | 0.29      | 0.16     | 18.5                       | 9.4        | 6.8        | 2.2      | 36         | 18        |
|                           | 3.5                   | 25                  | 80         | 0.90          | 0.61          | 9.8       | 0.35      | 0.19     | 19.9                       | 9.4        | 8.8        | 2.4      | 41         | 23        |
| 1,200                     | 0.5                   | 27                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 13.7                       | 10.0       | 1.1        | 2.0      | 23         | 14        |
|                           | 1.7                   | 29                  | 60         | 0.61          | 0.35          | 7.5       | 0.22      | 0.13     | 17.3                       | 10.0       | 4.3        | 2.2      | 27         | 18        |
|                           | 2.8                   | 28                  | 70         | 0.76          | 0.48          | 7.9       | 0.27      | 0.16     | 19.7                       | 10.0       | 7.2        | 2.2      | 36         | 18        |
|                           | 3.5                   | 27                  | 80         | 0.90          | 0.61          | 9.0       | 0.32      | 0.18     | 21.3                       | 10.0       | 9.4        | 2.4      | 36         | 23        |
| 1,300                     | 0.5                   | 29                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 14.5                       | 10.6       | 1.2        | 2.2      | 23         | 14        |
|                           | 1.7                   | 31                  | 60         | 0.61          | 0.35          | 7.5       | 0.21      | 0.13     | 18.4                       | 10.6       | 4.6        | 2.3      | 27         | 18        |
|                           | 2.8                   | 30                  | 70         | 0.76          | 0.48          | 7.5       | 0.25      | 0.15     | 21.0                       | 10.6       | 7.7        | 2.3      | 32         | 18        |
|                           | 3.5                   | 28                  | 80         | 0.90          | 0.61          | 8.4       | 0.29      | 0.17     | 22.6                       | 10.6       | 10.0       | 2.4      | 36         | 23        |
| 1,400                     | 0.5                   | 31                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 15.4                       | 11.2       | 1.2        | 2.3      | 23         | 18        |
|                           | 1.7                   | 32                  | 60         | 0.61          | 0.35          | 7.5       | 0.20      | 0.13     | 19.4                       | 11.2       | 4.9        | 2.4      | 27         | 18        |
| 1,500                     | 0.5                   | 32                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 16.2                       | 11.8       | 1.3        | 2.4      | 23         | 18        |
|                           | 1.7                   | 34                  | 60         | 0.61          | 0.35          | 7.5       | 0.19      | 0.13     | 20.5                       | 11.8       | 5.1        | 2.6      | 32         | 18        |
| 1,600                     | 0.5                   | 34                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 17.0                       | 12.4       | 1.4        | 2.6      | 27         | 18        |
|                           | 1.7                   | 36                  | 60         | 0.61          | 0.35          | 7.5       | 0.18      | 0.12     | 21.5                       | 12.4       | 5.4        | 2.7      | 32         | 18        |
| 1,700                     | 0.5                   | 36                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 17.8                       | 13.0       | 1.4        | 2.7      | 27         | 18        |
|                           | 1.7                   | 38                  | 60         | 0.61          | 0.35          | 7.5       | 0.18      | 0.12     | 22.5                       | 13.0       | 5.6        | 2.9      | 32         | 23        |
| 1,800                     | 0.5                   | 37                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 18.5                       | 13.5       | 1.5        | 2.9      | 27         | 18        |
|                           | 1.7                   | 39                  | 60         | 0.61          | 0.35          | 7.5       | 0.17      | 0.12     | 23.5                       | 13.5       | 5.9        | 2.8      | 32         | 23        |
| 1,900                     | 0.5                   | 39                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 19.3                       | 14.1       | 1.5        | 2.9      | 27         | 23        |
|                           | 1.7                   | 41                  | 60         | 0.61          | 0.35          | 7.5       | 0.17      | 0.12     | 24.5                       | 14.1       | 6.1        | 3.1      | 32         | 23        |
| 2,000                     | 0.0                   | 37                  | 46         | 0.39          | 0.00          | 7.5       | 0.17      | 0.13     | 17.1                       | 14.6       | 0.0        | 2.8      | 27         | 23        |
|                           | 0.5                   | 40                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 20.1                       | 14.6       | 1.6        | 3.0      | 32         | 23        |

**Table 6. Nutrient requirements of growing and mature bulls (continued).**

| Body weight (lbs)         | Diet nutrient density |                     |            |               |               |           |           |          | Daily nutrients per animal |            |            |          |            |           |
|---------------------------|-----------------------|---------------------|------------|---------------|---------------|-----------|-----------|----------|----------------------------|------------|------------|----------|------------|-----------|
|                           | ADG (lbs)             | DM intake (lbs/day) | TDN (% DM) | NEm (Mcal/lb) | NEg (Mcal/lb) | CP (% DM) | Ca (% DM) | P (% DM) | TDN (lbs)                  | NEm (Mcal) | NEg (Mcal) | CP (lbs) | Ca (grams) | P (grams) |
| 2,300-pound mature weight |                       |                     |            |               |               |           |           |          |                            |            |            |          |            |           |
| 1,200                     | 0.5                   | 27                  | 50         | 0.45          | 0.20          | 7.5       | 0.18      | 0.12     | 13.7                       | 10.0       | 1.1        | 2.0      | 23         | 14        |
|                           | 1.9                   | 29                  | 60         | 0.61          | 0.35          | 7.5       | 0.24      | 0.14     | 17.3                       | 10.0       | 4.4        | 2.2      | 32         | 18        |
|                           | 3.0                   | 28                  | 70         | 0.76          | 0.48          | 8.7       | 0.30      | 0.17     | 19.7                       | 10.0       | 7.2        | 2.5      | 41         | 23        |
|                           | 3.8                   | 27                  | 80         | 0.90          | 0.61          | 10.1      | 0.36      | 0.20     | 21.3                       | 10.0       | 9.4        | 2.7      | 45         | 23        |
| 1,300                     | 0.5                   | 29                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 14.5                       | 10.6       | 1.2        | 2.2      | 23         | 18        |
|                           | 1.9                   | 31                  | 60         | 0.61          | 0.35          | 7.5       | 0.23      | 0.14     | 18.4                       | 10.6       | 4.6        | 2.3      | 32         | 18        |
|                           | 3.0                   | 30                  | 70         | 0.76          | 0.48          | 8.2       | 0.28      | 0.16     | 21.0                       | 10.6       | 7.7        | 2.5      | 41         | 23        |
|                           | 3.8                   | 28                  | 80         | 0.90          | 0.61          | 9.4       | 0.34      | 0.19     | 22.6                       | 10.6       | 10.0       | 2.7      | 45         | 23        |
| 1,400                     | 0.5                   | 31                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 15.4                       | 11.2       | 1.2        | 2.3      | 23         | 18        |
|                           | 1.9                   | 32                  | 60         | 0.61          | 0.35          | 7.5       | 0.22      | 0.14     | 19.4                       | 11.2       | 4.9        | 2.4      | 32         | 18        |
|                           | 3.0                   | 32                  | 70         | 0.76          | 0.48          | 7.7       | 0.26      | 0.15     | 22.2                       | 11.2       | 8.1        | 2.4      | 36         | 23        |
|                           | 3.8                   | 30                  | 80         | 0.90          | 0.61          | 8.8       | 0.31      | 0.18     | 23.9                       | 11.2       | 12.5       | 2.6      | 41         | 23        |
| 1,500                     | 0.5                   | 32                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 16.2                       | 11.8       | 1.3        | 2.4      | 27         | 18        |
|                           | 1.9                   | 34                  | 60         | 0.61          | 0.35          | 7.5       | 0.21      | 0.13     | 20.5                       | 11.8       | 5.2        | 2.6      | 32         | 23        |
| 1,600                     | 0.5                   | 34                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 17.0                       | 12.4       | 1.4        | 2.6      | 27         | 18        |
|                           | 1.9                   | 36                  | 60         | 0.61          | 0.35          | 7.5       | 0.20      | 0.13     | 21.5                       | 12.4       | 5.4        | 2.7      | 32         | 23        |
| 1,700                     | 0.5                   | 36                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 17.8                       | 13.0       | 1.4        | 2.7      | 27         | 18        |
|                           | 1.9                   | 38                  | 60         | 0.61          | 0.35          | 7.5       | 0.19      | 0.13     | 22.5                       | 13.0       | 5.7        | 2.9      | 32         | 23        |
| 1,800                     | 0.5                   | 37                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 18.5                       | 13.5       | 1.5        | 2.8      | 27         | 23        |
|                           | 1.9                   | 39                  | 60         | 0.61          | 0.35          | 7.5       | 0.19      | 0.13     | 23.5                       | 13.5       | 5.9        | 2.9      | 32         | 23        |
| 1,900                     | 0.5                   | 39                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 19.3                       | 14.1       | 1.5        | 2.9      | 32         | 23        |
|                           | 1.9                   | 41                  | 60         | 0.61          | 0.35          | 7.5       | 0.18      | 0.13     | 24.5                       | 14.1       | 6.2        | 3.1      | 36         | 23        |
| 2,000                     | 0.5                   | 40                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.12     | 20.1                       | 14.6       | 1.6        | 3.0      | 32         | 23        |
|                           | 1.9                   | 42                  | 60         | 0.61          | 0.35          | 7.5       | 0.18      | 0.13     | 25.4                       | 14.6       | 6.4        | 3.2      | 36         | 23        |
| 2,100                     | 0.5                   | 42                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.13     | 20.8                       | 15.2       | 1.7        | 3.3      | 32         | 23        |
|                           | 1.9                   | 44                  | 60         | 0.61          | 0.35          | 7.5       | 0.17      | 0.12     | 26.3                       | 15.2       | 6.6        | 3.3      | 36         | 23        |
| 2,200                     | 0.5                   | 43                  | 50         | 0.45          | 0.20          | 7.5       | 0.17      | 0.13     | 21.6                       | 15.7       | 1.7        | 3.2      | 32         | 23        |
|                           | 1.9                   | 46                  | 60         | 0.61          | 0.35          | 7.5       | 0.17      | 0.12     | 27.3                       | 15.7       | 6.9        | 3.5      | 36         | 27        |
| 2,300                     | 0.0                   | 45                  | 46         | 0.39          | 0.00          | 7.5       | 0.16      | 0.12     | 20.5                       | 16.3       | 0.0        | 3.4      | 32         | 23        |
|                           | 0.5                   | 47                  | 50         | 0.45          | 0.20          | 7.5       | 0.16      | 0.12     | 23.5                       | 16.3       | 1.8        | 3.5      | 36         | 27        |