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## G78-389 Nutrient Requirements of Breeding Beef Cattle

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Gosey, James A. and Guyer, Paul Q., "G78-389 Nutrient Requirements of Breeding Beef Cattle" (1978).  
*Historical Materials from University of Nebraska-Lincoln Extension*. 286.  
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G78-389-A

# Nutrient Requirements of Breeding Beef Cattle

Paul Guyer and Jim Gosey, Extension Beef Specialists

The major nutrient requirements as listed in *Tables Ia* and *b* are modifications of similar tables published by the National Research Council, Nutrient Requirements of Beef Cattle, fifth edition. They have been (1) rearranged to emphasize "English" weights rather than metric; (2) modi-

fied so that daily nutrient requirements and the nutrient concentration recommendations are in closer agreement and (3) expanded to include estimated requirements for pregnant yearling heifers of heavier weight and 2 year old heifers nursing calves.

Table I. Daily Nutrients per Animal.

| Weight <sup>a</sup><br>lb                                     | Daily<br>Gain<br>lb | Minimum<br>Consumption <sup>b</sup><br>Dry Matter<br>lb | Roughage <sup>b</sup><br>% | Total<br>Protein<br>lb | ME <sup>b</sup><br>Mcal | TDN <sup>b,c</sup><br>lb | Calcium<br>lb | Phosphorus<br>lb | Vitamin<br>A<br>Thousands<br>(IU) |
|---|---------------------|---|----------------------------|------------------------|-------------------------|--------------------------|---------------|------------------|-----------------------------------|
| <b>Pregnant yearling heifers—Last 3-4 months of pregnancy</b> |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 716   | 0.9                 | 14.8  | 100                        | 1.30                   | 12.6                    | 7.7                      | .033          | .033             | 19                                |
|   | 1.3                 | 19.0  | 100                        | 1.67                   | 16.2                    | 9.9                      | .040          | .040             | 23                                |
|   | 1.8                 | 21.3  | 85-100                     | 1.92                   | 20.1                    | 12.3                     | .049          | .044             | 26                                |
| 772   | 0.9                 | 15.6  | 100                        | 1.37                   | 13.4                    | 8.1                      | .033          | .033             | 19                                |
|   | 1.3                 | 19.8  | 100                        | 1.74                   | 16.9                    | 10.3                     | .042          | .042             | 25                                |
|   | 1.8                 | 22.2  | 85-100                     | 1.95                   | 21.1                    | 12.9                     | .049          | .046             | 28                                |
| 827   | 0.9                 | 16.2  | 100                        | 1.41                   | 13.9                    | 8.4                      | .033          | .033             | 20                                |
|   | 1.3                 | 20.8  | 100                        | 1.81                   | 17.9                    | 10.8                     | .042          | .042             | 26                                |
|   | 1.8                 | 24.5  | 85-100                     | 2.13                   | 22.3                    | 13.5                     | .049          | .049             | 31                                |
| 882   | 0.9                 | 16.7  | 100                        | 1.45                   | 14.4                    | 8.7                      | .035          | .035             | 21                                |
|   | 1.3                 | 21.7  | 100                        | 1.89                   | 18.7                    | 11.3                     | .042          | .042             | 27                                |
|   | 1.8                 | 25.4  | 85-100                     | 2.21                   | 23.0                    | 14.0                     | .049          | .049             | 33                                |
| 937   | 0.9                 | 17.3  | 100                        | 1.50                   | 14.8                    | 9.0                      | .035          | .035             | 22                                |
|   | 1.3                 | 22.7  | 100                        | 1.98                   | 19.5                    | 11.7                     | .042          | .042             | 28                                |
|   | 1.8                 | 26.6  | 85-100                     | 2.31                   | 24.2                    | 14.6                     | .049          | .049             | 34                                |
| 992   | 0.9                 | 17.8  | 100                        | 1.55                   | 15.3                    | 9.3                      | .036          | .036             | 23                                |
|   | 1.3                 | 23.2  | 100                        | 2.01                   | 20.0                    | 12.1                     | .044          | .044             | 30                                |
|   | 1.8                 | 27.9  | 85-100                     | 2.43                   | 24.0                    | 15.3                     | .050          | .050             | 36                                |
| 1,047   | 0.9                 | 18.4  | 100                        | 1.60                   | 15.8                    | 9.6                      | .037          | .037             | 24                                |
|   | 1.3                 | 23.2  | 100                        | 2.10                   | 20.7                    | 12.5                     | .045          | .045             | 31                                |
|   | 1.5                 | 29.0  | 85-100                     | 2.52                   | 26.4                    | 16.0                     | .052          | .052             | 37                                |
| 1,102   | 0.9                 | 20.2  | 100                        | 1.76                   | 17.4                    | 10.5                     | .040          | .040             | 26                                |
|   | 1.3                 | 25.8  | 100                        | 2.24                   | 22.2                    | 13.4                     | .049          | .049             | 33                                |
|   | 1.5                 | 29.7  | 85-100                     | 2.58                   | 27.0                    | 16.3                     | .053          | .053             | 38                                |

Table I. (Continued)

| Weight <sup>a</sup><br>lb   | Daily<br>Gain<br>lb | Minimum<br>Consumption <sup>b</sup><br>Dry Matter<br>lb | Roughage <sup>b</sup><br>% | Total<br>Protein<br>lb | ME <sup>b</sup><br>Mcal | TDN <sup>b,c</sup><br>lb | Calcium<br>lb | Phosphorus<br>lb | Vitamin<br>A<br>Thousands<br>(IU) |
|---|---------------------|---|----------------------------|------------------------|-------------------------|--------------------------|---------------|------------------|-----------------------------------|
| <b>Dry pregnant mature cows—Middle third of pregnancy</b>                                   |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 772   | ....                | 13.2  | 100                        | 0.78                   | 10.8                    | 6.6                      | .022          | .022             | 15                                |
| 882   | ....                | 14.6  | 100                        | 0.86                   | 11.9                    | 7.3                      | .024          | .024             | 17                                |
| 992   | ....                | 15.8  | 100                        | 0.93                   | 13.0                    | 7.9                      | .026          | .026             | 19                                |
| 1,102   | ....                | 17.2  | 100                        | 1.01                   | 14.1                    | 8.6                      | .029          | .029             | 20                                |
| 1,213   | ....                | 18.4  | 100                        | 1.00                   | 15.1                    | 9.2                      | .031          | .031             | 22                                |
| 1,323   | ....                | 19.6  | 100                        | 1.16                   | 16.1                    | 9.8                      | .033          | .033             | 23                                |
| 1,433   | ....                | 20.8  | 100                        | 1.23                   | 17.1                    | 10.4                     | .035          | .035             | 25                                |
| <b>Dry pregnant mature cows—Last third of pregnancy</b>                                     |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 772   | 0.9                 | 13.9  | 100                        | 0.82                   | 12.0                    | 7.2                      | .026          | .026             | 19                                |
| 882   | 0.9                 | 15.4  | 100                        | 0.91                   | 13.2                    | 8.0                      | .028          | .028             | 21                                |
| 992   | 0.9                 | 16.5  | 100                        | 0.97                   | 14.2                    | 8.6                      | .030          | .030             | 23                                |
| 1,102   | 0.9                 | 17.9  | 100                        | 1.06                   | 15.4                    | 9.3                      | .033          | .033             | 24                                |
| 1,213   | 0.9                 | 19.0  | 100                        | 1.12                   | 16.3                    | 9.9                      | .035          | .035             | 26                                |
| 1,323   | 0.9                 | 20.3  | 100                        | 1.20                   | 17.5                    | 10.6                     | .037          | .037             | 27                                |
| 1,433   | 0.9                 | 22.4  | 100                        | 1.32                   | 19.3                    | 11.7                     | .040          | .040             | 29                                |
| <b>2 year old heifers producing 11 lbs milk—first 3-4 months postpartum</b>                 |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 661   | 0.0                 | 17.5  | 100                        | 1.66                   | 15.0                    | 9.1                      | .060          | .052             | 31                                |
|   | 0.5                 | 19.0  | 85-100                     | 2.00                   | 18.0                    | 11.0                     | .063          | .055             | 34                                |
| 772   | 0.0                 | 18.8  | 100                        | 1.79                   | 16.2                    | 9.8                      | .062          | .054             | 33                                |
|   | 0.5                 | 20.6  | 85-100                     | 2.16                   | 19.6                    | 12.0                     | .068          | .058             | 37                                |
| 882   | 0.0                 | 20.6  | 100                        | 1.96                   | 17.7                    | 10.7                     | .064          | .056             | 36                                |
|   | 0.5                 | 22.2  | 85-100                     | 2.33                   | *21.1                   | 12.9                     | .069          | .061             | 39                                |
| 992   | 0.0                 | 21.7  | 100                        | 2.06                   | 18.7                    | 11.3                     | .066          | .058             | 38                                |
|   | 0.5                 | 23.7  | 85-100                     | 2.49                   | 22.5                    | 13.7                     | .070          | .064             | 42                                |
| 1,102   | 0.0                 | 23.1  | 100                        | 2.19                   | 19.9                    | 12.0                     | .068          | .060             | 41                                |
|   | 0.5                 | 25.1  | 85-100                     | 2.64                   | 23.8                    | 14.6                     | .074          | .066             | 45                                |
| <b>2 year old heifers producing 18 lbs milk—first 3-4 months postpartum</b>                 |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 661   | 0.0                 | 19.2  | 75-90                      | 2.21                   | 18.8                    | 11.5                     | .081          | .067             | 34                                |
|   | 0.5                 | 19.8  | 60-80                      | 2.53                   | 20.6                    | 12.7                     | .083          | .070             | 35                                |
| 772   | 0.0                 | 20.3  | 75-90                      | 2.33                   | 19.9                    | 12.2                     | .083          | .089             | 38                                |
|   | 0.5                 | 21.3  | 60-80                      | 2.73                   | 22.2                    | 13.6                     | .085          | .072             | 38                                |
| 882   | 0.0                 | 21.8  | 75-90                      | 2.51                   | 20.1                    | 13.1                     | .085          | .071             | 39                                |
|   | 0.5                 | 22.4  | 60-80                      | 2.87                   | 23.3                    | 14.3                     | .087          | .074             | 40                                |
| 992   | 0.0                 | 22.8  | 75-90                      | 2.62                   | 21.2                    | 13.7                     | .087          | .073             | 40                                |
|   | 0.5                 | 23.9  | 60-80                      | 3.06                   | 24.9                    | 15.3                     | .090          | .077             | 42                                |
| 1,102   | 0.0                 | 24.0  | 75-90                      | 2.76                   | 23.5                    | 14.4                     | .089          | .075             | 43                                |
|   | 0.5                 | 25.0  | 60-80                      | 3.20                   | 26.0                    | 16.0                     | .092          | .079             | 45                                |
| <b>Cows nursing calves—Average milking ability<sup>d</sup>—first 3-4 months postpartum</b>  |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 772   | ...                 | 18.7  | 100                        | 1.65                   | 15.9                    | 9.7                      | .053          | .053             | 33                                |
| 882   | ...                 | 20.0  | 100                        | 1.79                   | 17.0                    | 10.4                     | .055          | .055             | 35                                |
| 992   | ...                 | 21.2  | 100                        | 1.90                   | 18.1                    | 11.0                     | .057          | .057             | 38                                |
| 1,102   | ...                 | 22.5  | 100                        | 1.98                   | 19.2                    | 11.7                     | .060          | .060             | 40                                |
| 1,213   | ...                 | 23.7  | 100                        | 2.14                   | 20.3                    | 12.3                     | .062          | .062             | 42                                |
| 1,323   | ...                 | 25.0  | 100                        | 2.23                   | 21.3                    | 13.0                     | .062          | .062             | 44                                |
| 1,433   | ...                 | 26.3  | 100                        | 2.31                   | 22.3                    | 13.7                     | .064          | .064             | 47                                |
| <b>Cows nursing calves—Superior milking ability<sup>e</sup>—First 3-4 months postpartum</b> |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 772   | ...                 | 22.4  | 100                        | 2.45                   | 21.0                    | 12.8                     | .099          | .088             | 39                                |
| 882   | ...                 | 23.8  | 100                        | 2.58                   | 22.1                    | 13.5                     | .099          | .090             | 42                                |
| 992   | ...                 | 24.9  | 100                        | 2.71                   | 23.2                    | 14.1                     | .099          | .093             | 44                                |
| 1,102   | ...                 | 26.0  | 100                        | 2.84                   | 24.3                    | 14.8                     | .101          | .095             | 46                                |
| 1,213   | ...                 | 27.3  | 100                        | 2.98                   | 25.3                    | 15.4                     | .101          | .097             | 48                                |
| 1,323   | ...                 | 28.4  | 100                        | 3.11                   | 26.4                    | 16.1                     | .101          | .097             | 50                                |
| 1,433   | ...                 | 29.5  | 100                        | 3.22                   | 27.5                    | 16.8                     | .104          | .099             | 52                                |
| <b>Bulls, growth and maintenance (moderate activity)</b>                                    |                     |   |                            |                        |                         |                          |               |                  |                                   |
| 661   | 2.2                 | 19.4  | 70-75                      | 1.98                   | 20.4                    | 12.3                     | .060          | .051             | 34                                |
| 882   | 2.0                 | 24.2  | 70-75                      | 2.27                   | 25.2                    | 15.4                     | .051          | .051             | 43                                |
| 1,102   | 1.5                 | 26.9  | 80-85                      | 2.36                   | 27.0                    | 16.5                     | .049          | .049             | 48                                |
| 1,323   | 1.1                 | 26.4  | 80-85                      | 2.25                   | 26.4                    | 16.1                     | .049          | .049             | 48                                |
| 1,543   | 0.7                 | 28.4  | 90-100                     | 2.41                   | 26.7                    | 16.5                     | .051          | .051             | 50                                |
| 1,764   | 0                   | 23.1  | 100                        | 1.96                   | 21.0                    | 12.8                     | .042          | .042             | 41                                |
| 1,984   | 0                   | 25.1  | 100                        | 2.13                   | 22.8                    | 13.9                     | .046          | .046             | 44                                |
| 2,205   | 0                   | 27.3  | 100                        | 2.31                   | 24.8                    | 15.2                     | .049          | .049             | 48                                |

<sup>a</sup>Average weight for a feeding period.<sup>b</sup>Dry matter consumption, ME and TDN requirements are based on the generic type of diet indicated in the roughage column.<sup>c</sup>Approximately .9 lb of weight gain/day over the last third of pregnancy is accounted for by the products of conception.<sup>d</sup>11 lb of milk/day.<sup>e</sup>22 lb of milk/day.

Table II. Nutrient Concentration (Percent of Dry Matter)<sup>a</sup>

| <i>Weight<sup>b</sup></i><br><i>lb</i>                                      | <i>Daily Gain</i><br><i>lb</i> | <i>Dry Matter<sup>c</sup></i><br><i>Consumption</i><br><i>lb</i> | <i>Roughage<sup>c</sup></i><br><i>%</i> | <i>Total</i><br><i>Protein</i><br><i>%</i> | <i>ME<sup>c</sup></i><br><i>Mcal lb</i> | <i>TDN<sup>c</sup></i><br><i>%</i> | <i>CA</i><br><i>%</i> | <i>P</i><br><i>%</i> |
|---|--------------------------------|--|---|--|---|------------------------------------|-----------------------|----------------------|
| <b>Pregnant yearling heifers—Last third of pregnancy</b>                    |                                |  |   |  |   |                                    |                       |                      |
| 716   | 0.9                            | 14.8   | 100                                     | 8.8  | 0.86                                    | 52                                 | 0.23                  | 0.23                 |
|   | 1.3                            | 19.0   | 100                                     | 8.8  | 0.86                                    | 52                                 | 0.21                  | 0.21                 |
|   | 1.8                            | 21.3   | 85-100                                  | 9.0  | 0.95                                    | 58                                 | 0.23                  | 0.21                 |
| 772   | 0.9                            | 15.6   | 100                                     | 8.8  | 0.86                                    | 52                                 | 0.22                  | 0.22                 |
|   | 1.3                            | 19.8   | 100                                     | 8.8  | 0.86                                    | 52                                 | 0.21                  | 0.21                 |
|   | 1.8                            | 22.2   | 85-100                                  | 8.8  | 0.95                                    | 58                                 | 0.22                  | 0.21                 |
| 827   | 0.9                            | 16.2   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.21                  | 0.21                 |
|   | 1.3                            | 20.8   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.20                  | 0.20                 |
|   | 1.8                            | 24.5   | 85-100                                  | 8.7  | 0.91                                    | 55                                 | 0.20                  | 0.20                 |
| 882   | 0.9                            | 16.7   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.21                  | 0.21                 |
|   | 1.3                            | 21.7   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.20                  | 0.20                 |
|   | 1.8                            | 25.4   | 85-100                                  | 8.7  | 0.91                                    | 55                                 | 0.19                  | 0.19                 |
| 937   | 0.9                            | 17.3   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.20                  | 0.20                 |
|   | 1.3                            | 22.7   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.19                  | 0.19                 |
|   | 1.8                            | 26.6   | 85-100                                  | 8.7  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |
| 992   | 0.9                            | 17.8   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.20                  | 0.20                 |
|   | 1.3                            | 23.2   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.19                  | 0.19                 |
|   | 1.8                            | 27.9   | 85-100                                  | 8.7  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |
| 1,047   | 0.9                            | 18.4   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.20                  | 0.20                 |
|   | 1.3                            | 24.1   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.19                  | 0.19                 |
|   | 1.8                            | 29.0   | 85-100                                  | 8.7  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |
| 1,102   | 0.9                            | 20.2   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.20                  | 0.20                 |
|   | 1.3                            | 25.8   | 100                                     | 8.7  | 0.86                                    | 52                                 | 0.19                  | 0.19                 |
|   | 1.8                            | 29.7   | 85-100                                  | 8.7  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |
| <b>Dry pregnant mature cows—Middle third of pregnancy</b>                   |                                |  |   |  |   |                                    |                       |                      |
| 772   | ....                           | 13.2   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| 882   | ....                           | 14.6   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| 992   | ....                           | 15.8   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| 1,102   | ....                           | 17.2   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| 1,213   | ....                           | 18.4   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| 1,323   | ....                           | 19.6   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| 1,433   | ....                           | 20.8   | 100                                     | 5.9  | 0.82                                    | 50                                 | 0.18                  | 0.18                 |
| <b>Dry pregnant mature cows—Last third of pregnancy</b>                     |                                |  |   |  |   |                                    |                       |                      |
| 772   | 0.9                            | 13.9   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| 882   | 0.9                            | 15.4   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| 992   | 0.9                            | 16.5   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| 1,102   | 0.9                            | 17.9   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| 1,213   | 0.9                            | 19.0   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| 1,323   | 0.9                            | 20.3   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| 1,433   | 0.9                            | 22.4   | 100                                     | 5.9  | 0.86                                    | 52                                 | 0.18                  | 0.18                 |
| <b>2 year old heifers producing 11 lbs milk—first 3-4 months postpartum</b> |                                |  |   |  |   |                                    |                       |                      |
| 661   | 0.0                            | 17.5   | 100                                     | 9.5  | 0.86                                    | 52                                 | 0.34                  | 0.30                 |
|   | 0.5                            | 19.0   | 85-100                                  | 10.5                                       | 0.95                                    | 58                                 | 0.33                  | 0.29                 |
| 772   | 0.0                            | 18.8   | 100                                     | 9.5  | 0.86                                    | 52                                 | 0.33                  | 0.29                 |
|   | 0.5                            | 20.6   | 85-100                                  | 10.5                                       | 0.95                                    | 58                                 | 0.32                  | 0.28                 |
| 882   | 0.0                            | 20.6   | 100                                     | 9.5  | 0.86                                    | 52                                 | 0.31                  | 0.27                 |
|   | 0.5                            | 22.2   | 85-100                                  | 10.5                                       | 0.95                                    | 58                                 | 0.31                  | 0.27                 |
| 992   | 0.0                            | 21.7   | 100                                     | 9.5  | 0.86                                    | 52                                 | 0.30                  | 0.27                 |
|   | 0.5                            | 23.7   | 85-100                                  | 10.5                                       | 0.95                                    | 58                                 | 0.30                  | 0.27                 |
| 1,102   | 0.0                            | 23.1   | 100                                     | 9.5  | 0.86                                    | 52                                 | 0.29                  | 0.26                 |
|   | 0.5                            | 25.1   | 85-100                                  | 10.5                                       | 0.95                                    | 58                                 | 0.30                  | 0.26                 |
| <b>2 year old heifers producing 18 lbs milk—first 3-4 months postpartum</b> |                                |  |   |  |   |                                    |                       |                      |
| 661   | 0.0                            | 19.2   | 75-90                                   | 11.5                                       | 0.98                                    | 60                                 | 0.42                  | 0.35                 |
|   | 0.5                            | 19.8   | 60-80                                   | 12.8                                       | 1.04                                    | 64                                 | 0.42                  | 0.35                 |
| 772   | 0.0                            | 20.3   | 75-90                                   | 11.5                                       | 0.98                                    | 60                                 | 0.41                  | 0.34                 |
|   | 0.5                            | 21.3   | 60-80                                   | 12.8                                       | 1.04                                    | 64                                 | 0.40                  | 0.34                 |
| 882   | 0.0                            | 21.8   | 75-90                                   | 11.5                                       | 0.98                                    | 80                                 | 0.39                  | 0.33                 |
|   | 0.5                            | 22.4   | 60-80                                   | 12.8                                       | 1.04                                    | 84                                 | 0.39                  | 0.33                 |
| 992   | 0.0                            | 22.8   | 75-90                                   | 11.5                                       | 0.98                                    | 80                                 | 0.38                  | 0.32                 |
|   | 0.5                            | 23.9   | 60-80                                   | 12.8                                       | 1.04                                    | 64                                 | 0.38                  | 0.32                 |
| 1,102   | 0.0                            | 24.0   | 75-90                                   | 11.5                                       | 0.98                                    | 60                                 | 0.37                  | 0.31                 |
|   | 0.5                            | 25.0   | 60-80                                   | 12.8                                       | 1.04                                    | 64                                 | 0.37                  | 0.32                 |

Table II. (Continued)

| <i>Weight<sup>b</sup></i><br><i>lb</i>  | <i>Daily Gain</i><br><i>lb</i> | <i>Dry Matter<sup>c</sup></i><br><i>Consumption</i><br><i>lb</i> | <i>Roughage<sup>c</sup></i><br><i>%</i> | <i>Total</i><br><i>Protein</i><br><i>%</i> | <i>ME<sup>c</sup></i><br><i>Mcal lb</i> | <i>TDN<sup>c</sup></i><br><i>%</i> | <i>CA</i><br><i>%</i> | <i>P</i><br><i>%</i> |
|---|--------------------------------|--|---|--|---|------------------------------------|-----------------------|----------------------|
| <b>Cows nursing calves—Average milking ability<sup>e</sup>—First 3-4 months postpartum</b>  |                                |  |   |  |   |                                    |                       |                      |
| 772   | ....                           | 18.7   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.29                  | 0.29                 |
| 882   | ....                           | 20.0   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.28                  | 8.28                 |
| 992   | ....                           | 21.2   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.28                  | 0.28                 |
| 1,102   | ....                           | 22.5   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.28                  | 0.28                 |
| 1,213   | ....                           | 23.7   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.27                  | 0.27                 |
| 1,323   | ....                           | 25.0   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.25                  | 0.25                 |
| 1,433   | ....                           | 26.3   | 100                                     | 9.0  | 0.86                                    | 52                                 | 0.25                  | 0.25                 |
| <b>Cows nursing calves—Superior milking ability<sup>f</sup>—First 3-4 months postpartum</b> |                                |  |   |  |   |                                    |                       |                      |
| 772   | ....                           | 22.4   | 100                                     | 10.9                                       | 0.93                                    | 57                                 | 0.44                  | 0.39                 |
| 882   | ....                           | 23.8   | 100                                     | 10.9                                       | 0.93                                    | 57                                 | 0.42                  | 0.38                 |
| 992   | ....                           | 24.9   | 100                                     | 10.9                                       | 0.93                                    | 57                                 | 0.40                  | 0.37                 |
| 1,102   | ....                           | 26.0   | 109                                     | 10.9                                       | 0.93                                    | 57                                 | 0.39                  | 0.36                 |
| 1,213   | ....                           | 27.3   | 100                                     | 10.9                                       | 0.93                                    | 57                                 | 0.37                  | 0.35                 |
| 1,323   | ....                           | 28.4   | 100                                     | 10.9                                       | 0.93                                    | 57                                 | 0.36                  | 0.34                 |
| 1,433   | ....                           | 29.5   | 1,00                                    | 10.9                                       | 0.93                                    | 57                                 | 0.35                  | 0.33                 |
| <b>Bulls, growth and maintenance (moderate activity)</b>                                    |                                |  |   |  |   |                                    |                       |                      |
| 661   | 2.2                            | 19.4   | 70-75                                   | 10.2                                       | 1.04                                    | 64                                 | 0.31                  | 0.26                 |
| 882   | 2.0                            | 24.2   | 70-75                                   | 9.4  | 1.04                                    | 64                                 | 0.21                  | 0.21                 |
| 1,102   | 1.5                            | 26.9   | 80-85                                   | 8.8  | 1.00                                    | 61                                 | 0.18                  | 0.18                 |
| 1,323   | 1.1                            | 26.4   | 80-85                                   | 8.8  | 1.00                                    | 61                                 | 0.18                  | 0.18                 |
| 1,543   | 0.7                            | 28.4   | 90-100                                  | 8.5  | 0.94                                    | 58                                 | 0.18                  | 0.18                 |
| 1,764   | 0.0                            | 23.1   | 100                                     | 8.5  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |
| 1,984   | 0.0                            | 25.1   | 100                                     | 8.5  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |
| 2,205   | 0.0                            | 27.3   | 100                                     | 8.5  | 0.91                                    | 55                                 | 0.18                  | 0.18                 |

<sup>a</sup>The concentration of vitamin A in all diets for pregnant heifers and cows is 1272 IU/lb dry diet; for lactating cows and breeding bulls it is 1,773 IU/lb.

<sup>b</sup>Average weight for a feeding period.

<sup>c</sup>Dry matter consumption, ME and TDN requirements are based on the type of diet indicated in the roughage column.

<sup>d</sup>Approximately .9 of gain/day over the last third of pregnancy is accounted for by the products of conception.

<sup>e</sup>11 lb of milk/day.

<sup>f</sup>22 lb of milk/day.

**File under: BEEF**  
**A-24, Feeding & Nutrition**  
 Issued January 1978, 15,000

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture.  
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