



# Cattle Producer's Library

## Composition of Some Common Beef Cattle Feeds

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The following tables include the best estimate of nutrient composition of common feeds and mineral supplements fed to beef cattle. It should be noted that growing conditions (e.g., soil and climate factors) affect the composition of feeds. (Also see CL311 and CL316 for more information.)

These values can be used as general guidelines, however, they do not replace standard analytical proce-

dures used to determine nutrient composition of feeds frequently used in individual feeding programs.

The values are listed on a DRY MATTER BASIS and can be converted to an as-fed basis by multiplying the nutrient value by the percent dry matter. Bypass protein (UIP), undegradable intake protein, is listed as a percent of crude protein percent (UIP, % + DIP, % = 100% of crude protein).

**Table 1. Composition of some common beef cattle feeds.**

| Feed name                       | Dry matter | Crude protein | Bypass protein (UIP) | Metabolizable energy | Acid detergent fiber | Ca   | P    | Vit. A activity |
|---------------------------------|------------|---------------|----------------------|----------------------|----------------------|------|------|-----------------|
|                                 | (%)        | (%)           | (%)                  | (Mcal/lb)            | (%)                  | (%)  | (%)  | (1,000 IU/lb)   |
| <b>Low Protein Concentrates</b> |            |               |                      |                      |                      |      |      |                 |
| Barley, grain (heavy)           | 89.0       | 12.9          | 33                   | 1.38                 | 7                    | .09  | .47  | 1.7             |
| Beet, pulp, dried               | 90.8       | 8.8           | 44                   | 1.22                 | 33                   | .66  | .11  | .1              |
| Beet, pulp w/molasses           | 92.0       | 10.1          | 34                   | 1.25                 | 25                   | .61  | .10  | .1              |
| Beet, molasses                  | 78.0       | 9.7           | 10                   | 1.30                 | —                    | .13  | .03  | —               |
| Brewers dried grains            | 93.0       | 30.0          | 66                   | 1.09                 | 24                   | .32  | .71  | .4              |
| Corn, distillers grain          | 93.8       | 28.8          | 62                   | 1.44                 | 17                   | .10  | .44  | .6              |
| Corn, grain, #2 (rolled)        | 88.0       | 10.1          | 52                   | 1.48                 | 3                    | .01  | .28  | .4              |
| Corn, ground w/ears             | 87.7       | 8.6           | 52                   | 1.36                 | 11                   | .05  | .23  | .7              |
| Oat, grain                      | 90.0       | 12.2          | 19                   | 1.26                 | 16                   | .11  | .39  | .1              |
| Rye, grain                      | 88.6       | 14.2          | 21                   | 1.23                 | —                    | .09  | .34  | .1              |
| Sorghum, milo, grain            | 88.8       | 12.4          | 49                   | 1.36                 | 9                    | .05  | .33  | .1              |
| Sugarcane, molasses             | 73.5       | 3.9           | 10                   | 1.18                 | 0                    | 1.12 | .11  | —               |
| Triticale, grain                | 89.0       | 14.0          | 25                   | 1.39                 | 5                    | .07  | .39  | —               |
| Turnip roots                    | 9.0        | 11.8          | 0                    | 1.40                 | 34                   | .59  | .26  | —               |
| Wheat                           | 88.0       | 15.3          | 23                   | 1.45                 | 8                    | .06  | .47  | —               |
| Wheat bran                      | 89.0       | 16.6          | 27                   | 1.15                 | 15                   | .16  | 1.31 | .5              |

*Table values are summarized with permission from National Research Council's "Nutrient Requirements of Beef Cattle," seventh revised edition, 1996; "Nutrient Requirements of Dairy Cattle," sixth revised edition, 1989; and Feedstuffs, "1996 Reference Issue."*

**Table 1. (cont'd)**

| <b>Feed name</b>                        | <b>Dry matter</b> | <b>Crude protein</b> | <b>Bypass protein (UIP)</b> | <b>Metabolizable energy</b> | <b>Acid detergent fiber</b> | <b>Ca</b> | <b>P</b> | <b>Vit. A activity</b> |
|---|-------------------|----------------------|-----------------------------|-----------------------------|-----------------------------|-----------|----------|------------------------|
|   | (%)               | (%)                  | (%)                         | (Mcal/lb)                   | (%)                         | (%)       | (%)      | (1,000 IU/lb)          |
| <b>High Protein Concentrates</b>        |                   |                      |                             |                             |                             |           |          |                        |
| Cottonseed meal                         |                   |                      |                             |                             |                             |           |          |                        |
| Mechanical                              | 91.4              | 44.9                 | 50                          | 1.28                        | 20                          | —         | 1.06     | .1                     |
| Solvent                                 | 90.4              | 45.3                 | 40                          | 1.25                        | 17                          | .18       | 1.11     | —                      |
| Feather meal (hydrolyzed)               | 93.2              | 91.2                 | 75                          | 1.12                        | —                           | .21       | .75      |                        |
| Linseed meal (flax)                     |                   |                      |                             |                             |                             |           |          |                        |
| Mechanical                              | 90.0              | 35.6                 | —                           | 1.28                        | 20                          | .44       | .89      | .1                     |
| Solvent                                 | 83.3              | 37.4                 | 38                          | 1.25                        | 19                          | .40       | .85      | —                      |
| Rapeseed meal                           |                   |                      |                             |                             |                             |           |          |                        |
| Mechanical                              | 92.0              | 38.7                 | —                           | 1.25                        | —                           | .72       | .90      | —                      |
| Prepress solvent (Canola meal)          | 91.2              | 38.7                 | 30                          | 1.14                        | —                           | .75       | 1.28     | —                      |
| Safflower                               |                   |                      |                             |                             |                             |           |          |                        |
| Mechanical                              | 91.0              | 22.0                 | —                           | .99                         | 41                          | .25       | .67      | —                      |
| Solvent                                 | 90.0              | 22.2                 | —                           | .94                         | 41                          | .38       | .93      | —                      |
| Soybean meal                            |                   |                      |                             |                             |                             |           |          |                        |
| Mechanical                              | 89.0              | 47.2                 | 35                          | 1.40                        | 10                          | .22       | .67      | .1                     |
| Solvent                                 | 89.6              | 49.1                 | 32                          | 1.38                        | 10                          | .28       | .67      | —                      |
| <b>Non-Protein Nitrogen Supplements</b> |                   |                      |                             |                             |                             |           |          |                        |
| Biuret                                  | 99.0              | 218.0                | —                           | —                           | —                           | —         | —        | —                      |
| Urea                                    | 99.0              | 287.0                | —                           | —                           | —                           | —         | —        | —                      |
| <b>Roughages</b>                        |                   |                      |                             |                             |                             |           |          |                        |
| Alfalfa, hay                            |                   |                      |                             |                             |                             |           |          |                        |
| Early bloom                             | 90.9              | 18.0                 | 14                          | .99                         | 31                          | 1.41      | .22      | 25.5                   |
| Mid-bloom                               | 90.0              | 17.0                 | 20                          | .95                         | 35                          | 1.41      | .24      | 6.0                    |
| Mature                                  | 91.0              | 12.9                 | 30                          | .82                         | 44                          | 1.13      | .18      | 2.1                    |
| Alfalfa, dehydrated                     |                   |                      |                             |                             |                             |           |          |                        |
| 20% crude protein                       | 93.1              | 21.5                 | —                           | 1.05                        | 31                          | 1.61      | .29      | 26.7                   |
| 17% crude protein                       | 93.0              | 18.3                 | 56                          | 1.00                        | 35                          | 1.44      | .26      | 23.8                   |
| 15% crude protein                       | 93.1              | 16.1                 | 46                          | .99                         | 41                          | 1.29      | .24      | 19.3                   |
| Barley, hay                             | 87.0              | 8.7                  | —                           | .92                         | —                           | .23       | .26      | 9.5                    |
| Barley, straw                           | 91.0              | 4.3                  | 70                          | .66                         | 49                          | .30       | .07      | .4                     |
| Brome, hay (late bloom)                 | 89.0              | 10.0                 | 30                          | .90                         | 43                          | .30       | .35      | —                      |
| Cactus                                  | 26.0              | 5.0                  | —                           | 1.10                        | 23                          | 3.50      | .10      | —                      |
| Cheatgrass, fresh                       |                   |                      |                             |                             |                             |           |          |                        |
| Immature                                | 21.0              | 16.0                 | —                           | 1.13                        | —                           | .60       | .28      | —                      |
| Clover, hay                             |                   |                      |                             |                             |                             |           |          |                        |
| Alsike                                  | 88.0              | 14.9                 | —                           | .95                         | —                           | 1.29      | .26      | 34.0                   |
| Ladino                                  | 90.0              | 22.0                 | 25                          | .99                         | 32                          | 1.35      | .31      | 15.2                   |
| Red                                     | 89.0              | 16.0                 | 26                          | 1.10                        | 36                          | 1.53      | .25      | 3.6                    |
| Corn cobs, ground                       | 90.0              | 3.2                  | 50                          | .82                         | 35                          | .12       | .04      | .1                     |
| Cottonseed, hulls                       | 90.4              | 4.4                  | 45                          | .69                         | 64                          | .15       | .04      | —                      |
| Fescue, hay (early bloom)               | 92.0              | 9.5                  | 22                          | .79                         | 39                          | .30       | .26      | —                      |
| Meadow, hay                             | 40.0              | 7.0                  | 23                          | .76                         | 44                          | .61       | .18      | —                      |
| Oats, hay                               | 91.0              | 9.3                  | 25                          | .90                         | 36                          | .24       | .22      | 5.0                    |
| Oats, straw                             | 92.0              | 4.4                  | 40                          | .74                         | 54                          | .24       | .06      | .7                     |
| Orchardgrass, hay (early bloom)         | 89.0              | 15.0                 | 27                          | 1.07                        | 34                          | .27       | .34      | 6.8                    |

**Table 1. (cont'd)**

| <b>Feed name</b>            | <b>Dry matter</b> | <b>Crude protein</b> | <b>Bypass protein (UIP)</b> | <b>Metabolizable energy</b> | <b>Acid detergent fiber</b> | <b>Ca</b> | <b>P</b> | <b>Vit. A activity</b> |
|-----------------------------|-------------------|----------------------|-----------------------------|-----------------------------|-----------------------------|-----------|----------|------------------------|
|                             | (%)               | (%)                  | (%)                         | (Mcal/lb)                   | (%)                         | (%)       | (%)      | (1,000 IU/lb)          |
| <b>Roughages (cont'd)</b>   |                   |                      |                             |                             |                             |           |          |                        |
| Prairie hay                 | 91.0              | 7.0                  | 30                          | .76                         | 47                          | .40       | .15      | —                      |
| Rye, straw                  | 90.0              | 3.0                  | —                           | .51                         | 55                          | .24       | .09      | —                      |
| Ryegrass, hay               | 90.0              | 10.0                 | 40                          | .95                         | 38                          | .45       | .30      | —                      |
| Sagebrush, big (stem cured) | 65.0              | 9.3                  | —                           | .82                         | 30                          | .71       | .18      | 2.9                    |
| Sagebrush, fringed          |                   |                      |                             |                             |                             |           |          |                        |
| Mid-bloom                   | 43.0              | 9.4                  | —                           | .95                         | 28                          | 1.00      | .25      | —                      |
| Mature                      | 60.0              | 7.1                  | —                           | .84                         | 35                          | —         | —        | —                      |
| Saltgrass (post ripe)       | 74.0              | 4.2                  | —                           | .87                         | —                           | .23       | .07      | —                      |
| Sedge, hay                  | 89.0              | 9.4                  | —                           | .85                         | —                           | —         | —        | —                      |
| Sorghum sudangrass, hay     | 91.0              | 8.0                  | 30                          | .92                         | 42                          | .55       | .30      | 10.7                   |
| Sweetclover, hay            | 87.0              | 15.7                 | 30                          | 1.95                        | —                           | 1.27      | .25      | 18.0                   |
| Timothy, hay                |                   |                      |                             |                             |                             |           |          |                        |
| Early bloom                 | 90.0              | 15.0                 | 22                          | .97                         | 32                          | .53       | .25      | 9.5                    |
| Full bloom                  | 89.0              | 8.1                  | 30                          | .92                         | 38                          | .43       | .20      | —                      |
| Wheat, hay                  | 88.0              | 8.5                  | 25                          | .95                         | 41                          | .15       | .20      | —                      |
| Wheat, straw                |                   |                      |                             |                             |                             |           |          |                        |
| Ammoniated                  | 85.0              | 9.0                  | 25                          | .78                         | 55                          | .15       | .05      | —                      |
| Wheat, straw                | 89.0              | 3.6                  | 60                          | .67                         | 58                          | .16       | .05      | .4                     |
| Wheatgrass, crested         |                   |                      |                             |                             |                             |           |          |                        |
| Fresh early bloom           | 37.0              | 11.0                 | 25                          | —                           | 28                          | .46       | .32      | —                      |
| Wheatgrass, crested Hay     | 93.0              | 12.4                 | 33                          | 1.06                        | 36                          | .33       | .21      | 4.0                    |
| <b>Silages</b>              |                   |                      |                             |                             |                             |           |          |                        |
| Alfalfa                     |                   |                      |                             |                             |                             |           |          |                        |
| Early bloom                 | 35.0              | 19.5                 | 8                           | .99                         | 33                          | 1.41      | .22      | 25.5                   |
| Mid-bloom                   | 38.0              | 17.0                 | 9                           | .95                         | 35                          | 1.41      | .24      | 6.0                    |
| Full bloom                  | 40.0              | 16.0                 | 9                           | .90                         | 38                          | 1.43      | .25      | —                      |
| Beet, sugar (tops)          | 22.0              | 13.4                 | —                           | .84                         | —                           | 1.56      | .29      | —                      |
| Corn, milk stage            | 34.0              | 8.0                  | 18                          | 1.10                        | 32                          | .40       | .27      | —                      |
| Corn, well-eared            |                   |                      |                             |                             |                             |           |          |                        |
| Mature                      | 33.0              | 8.1                  | 26                          | 1.15                        | 28                          | .23       | .22      | 8.2                    |
| Mint slug                   | 27.0              | 14.0                 | —                           | .76                         | —                           | 1.10      | .57      | —                      |
| Oat, dough stage            | 35.0              | 10.0                 | 21                          | .94                         | —                           | .47       | .33      | 10.9                   |
| Sorghum                     | 30.0              | 7.5                  | 30                          | .99                         | 38                          | .35       | .21      | 2.8                    |
| Sorghum sudangrass          | 28.0              | 10.8                 | 28                          | .45                         | 42                          | .46       | .21      | 19.1                   |

**Table 2. Composition of some common mineral supplements for beef cattle.**

| <b>Supplement</b>         | <b>DM</b> | <b>Ca</b> | <b>P</b> | <b>Mg</b> | <b>K</b> | <b>S</b> |
|---------------------------|-----------|-----------|----------|-----------|----------|----------|
|                           | (%)       | (%)       | (%)      | (%)       | (%)      | (%)      |
| Bone meal, steamed        | 95        | 24.00     | 12.00    | .64       | .19      | .21      |
| Limestone                 | 98        | 34.00     | .02      | 2.06      | .12      | .04      |
| Calcium carbonate         | 99        | 38.00     | .04      | .05       | .06      | —        |
| Oyster shell              | 99        | 38.00     | .07      | .30       | .10      | —        |
| Magnesium carbonate       | 98        | .02       | —        | 30.81     | —        | —        |
| Magnesium oxide           | 97        | 3.07      | —        | 56.20     | —        | —        |
| Magnesium sulfate         | 98        | 20.00     | —        | —         | —        | 26.60    |
| Phosphate, deflourinated  | 100       | 32.00     | 18.00    | .08       | .42      | —        |
| Phosphate, diammonium     | 97        | .52       | 20.60    | .46       | .01      | 2.16     |
| Phosphate, dicalcium      | 97        | 22.00     | 19.30    | .59       | .07      | 1.14     |
| Phosphate, monocalcium    | 97        | 16.40     | 21.60    | .61       | .08      | 1.22     |
| Phosphate, monosodium     | 97        | —         | 21.80    | —         | —        | —        |
| Phosphate, sodium tripoly | 96        | 25.00     | —        | —         | —        | —        |
| Phosphoric acid, 75%      | 75        | —         | 23.80    | —         | —        | —        |
| Potassium sulfate         | 98        | —         | —        | —         | 44.80    | 18.30    |
| Potassium chloride        | 100       | .05       | —        | —         | 50.54    | .19      |
| Sodium sulfate            | 97        | —         | —        | —         | —        | 14.27    |



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