

1980

Use of Feed-Evaluation Factors

Feed-evaluation factors (Tables VI-16, VI-17) determine the relative value of various ingredients or feedstuffs when used for feeding dairy cows.

With these factors, the relative value of each available ingredient can be compared with No. 2 shelled corn and 44% soybean oil meal. To determine the comparative value of any ingredient, use the factors listed opposite that ingredient. Multiply the "shelled corn factor" by the cwt price of shelled corn, multiply the "soybean oil meal factor" by the current cwt price of 44% soybean oil meal, and then add the two answers. (NOTE: Subtract if one of the factors is preceded by a minus sign.) Compare the computed value with the actual price of the ingredient. If the computed value for the ingredient is greater than its actual cost, the ingredient being considered is a better buy (by the amount of the difference) than the same nutrients from a combination of corn and soybean oil meal. If the computed value is less than the price of the ingredient, it is not a good buy. For greater precision, include preparation costs for whole grains.

As an example, assume that ground shelled corn is worth \$2.80 per cwt and the price of soybean oil meal 44% is \$4.85. You can buy dried beet pulp for \$2.90 per cwt. Should you use beet pulp in a grain mix?

- i) Beet pulp corn factor (1.014) x corn price (\$2.80) = \$2.839
- ii) Beet pulp oil meal factor (-0.064) x soybean meal price (\$4.85) = (-)0.829
- iii) Beet pulp computed value = sum (or difference) = \$2.529
- iv) Since the computed value of beet pulp (\$2.53) is less than its cost price (\$2.90), beet pulp would not be a good buy under these conditions.

CAUTION: If an ingredient is shown to be a good buy, it should be used only within the limits suggested in Table VI-21.

- Note:
1. Factor for converting price of 48% soybean oil meal to 44% basis for use of evaluation factors: Multiply price of 50% meal by 0.94.
 2. Factors in Table VI-17 should be used only to determine which manufactured feeds and supplements are to be considered in providing net energy at lowest unit cost in finished feeds.
 3. Use ingredients and feeds with greatest margin of value over cost to the fullest extent possible, in accordance with Table VI-21.

Table VI-16. Feed-Evaluation Factors for Various Feedstuffs Used in Dairy Cow Rations.^a

| Ingredient | Shelled corn factor | Soybean oil meal factor |
|--|---------------------|-------------------------|
| Shelled corn, No. 2 | 1.000 | 0.000 |
| Ear corn (corn and cob meal, no husks) | 0.914 | -0.015 |
| Oats, spelt (25% of mix or less) | 0.933 | 0.079 |
| (over 25% of mix) | 0.813 | 0.098 |
| Barley | 0.938 | 0.073 |
| Wheat | 0.954 | 0.056 |
| Rye | 0.786 | 0.104 |
| Milo or sorghum | 0.967 | 0.015 |
| Buckwheat | 0.789 | 0.053 |
| Hominy feed | 1.053 | 0.013 |
| Beet pulp, dried | 1.021 | -0.062 |
| Citrus pulp, dried | 1.048 | -0.102 |
| Molasses (not over 10% of mix) | 1.069 | -0.171 |
| Wheat bran | 0.655 | 0.191 |
| Wheat mids (standard) | 0.777 | 0.198 |
| Corn gluten feed | 0.526 | 0.374 |
| Brewers' grains, dried | 0.455 | 0.393 |
| Malt sprouts | 0.385 | 0.423 |
| Distillers' dried corn grains | 0.737 | 0.306 |
| Soybeans (whole) | 0.399 | 0.711 |
| Soybean oil meal, 44% | 0.000 | 1.000 |
| Soybean oil meal, 48% | -0.125 | 1.144 |
| Cottonseed meal, 41% solvent | 0.029 | 0.776 |
| Linseed meal, 36% solvent | 0.212 | 0.698 |
| Corn gluten meal, 41% | 0.182 | 0.836 |
| Corn gluten meal, 60% | -0.322 | 1.287 |
| Alfalfa meal, 20% | 0.286 | 0.310 |
| Alfalfa meal, 17% | 0.326 | 0.246 |
| Alfalfa meal, 15% | 0.345 | 0.206 |
| Legume hay, average analysis | 0.278 | 0.223 |
| Grass hay, average analysis | 0.471 | 0.045 |
| Mixed hay, mainly legume | 0.369 | 0.152 |
| Mixed hay, mainly grass | 0.411 | 0.100 |
| Corn silage, 70% moisture | 0.232 | -0.002 |
| Corn factory waste, 78% | 0.189 | -0.004 |
| Brewers' grains, wet (Brewers' malt) | 0.121 | 0.082 |
| Potatoes, tubers | 0.224 | -2.004 |

^aThese factors are for feeds fed to dairy cows; they may not be valid for other classes of livestock.

1995

Use of Feed-Evaluation Factors

Feed-evaluation factors (see tables 1.6 and 1.7) are used to determine the economic nutritional value of forages or various ingredients and feedstuffs used for feeding dairy cows. With these factors, the economic value of each available ingredient can be compared with number 2 shelled corn, 44% soybean oil meal, and alfalfa hay. To determine the

comparative value of any ingredient, use the factors listed opposite that ingredient. Multiply the "shelled corn factor" by the current hundredweight price of shelled corn, multiply the "soybean oil meal factor" by the current hundredweight price of 44% soybean oil meal, and, when working with forages, multiply the "alfalfa hay factor" by the current hundredweight price of alfalfa hay; then add the two (or three) answers. (Note: Subtract if one of the factors is preceded by a minus sign.) Compare the

computed value with the actual price of the ingredient. If the computed value of the ingredient is greater than the actual price, the ingredient being considered is a better buy (by the amount of the difference) than the same nutrients from a combination of shelled corn, soybean oil meal, and (with forages) alfalfa hay. If the computed value is less than the price of the ingredient, it is not a good buy. For greater precision, include preparation costs (such as for grinding and mixing) for whole grains.

Example 1:

Assume that dry, shelled corn is worth \$4.60 per hundredweight and the price of 44% soybean oil meal is \$10.15. You can buy corn distiller's grain (dark) for \$8.11 per hundredweight. Should you use distiller's in a grain mix?

$$\text{distiller's grain (dark) corn factor (0.599) x corn price (\$4.60) = \$2.76}$$

$$\text{distiller's grain (dark) soybean meal factor (0.469) x soybean meal price (\$10.15) = \$4.76}$$

$$\text{distiller's grain (dark) computed value = sum (or difference) = \$2.76 + \$4.76 = \$7.52}$$

Since the computed distiller's grain value (\$7.52) is less than its price (\$8.11), distiller's grain would not be a good buy under these conditions.

Example 2:

Assume the same prices for shelled corn and 44% soybean meal given in example 1 and a price of \$5.65 per hundredweight for alfalfa hay. You can purchase first-cut, early-head MMG hay at \$5.05 per hundredweight. Should you buy this hay?

$$\text{MMG hay (first-cut, early-head) corn factor (-0.088) x corn price (\$4.60) = -\$0.40}$$

$$\text{MMG hay (first-cut, early-head) soybean oil meal factor (-0.229) x soybean oil meal price (\$10.15) = -\$2.32}$$

$$\text{MMG hay (first-cut, early-head) alfalfa hay factor (1.492) x alfalfa hay price (\$5.65) = \$8.43}$$

$$\text{MMG hay (first-cut, early-head) computed value = sum (or difference) = \$8.43 - \$2.32 - \$0.40 = \$5.71}$$

Since the computed value of the MMG hay (\$5.71) is greater than its price (\$5.05), the MMG hay would be a good buy under these conditions.

Caution: If an ingredient is shown to be a good buy, it should be used only within the limits suggested in table 5.33 on page 130.

Notes: (1.) To convert the price of 48% soybean oil meal to a 44% basis to use the feed-evaluation factors, multiply the price of 48% soybean meal by 0.94. (2.) Use ingredients and feeds with the greatest margin of value over cost to the fullest extent possible, in accordance with table 5.33 on page 130. (3.) Preferably use least-cost computer formulations to determine which ingredients and what levels should be used in rations balanced for all nutrients, including soluble protein, undegradable protein, fiber, nonstructural or nonfibrous carbohydrates, and fat, among others.

Table 1.6
Feed-evaluation factors for feedstuffs used in dairy cow rations

| Ingredient name | Crude protein (% DM) | Net energy, NEL (Mcal/lb) | Dry matter (%) | Feed factors | |
|-----------------------------|-------------------------|---------------------------------|-------------------|--------------|---------|
| | | | | Corn | Soybean |
| Corn, shelled (15.5%) | 10.0 | 0.90 | 88.0 | 1.000 | 0.000 |
| Soybean meal, 44% | 50.0 | 0.88 | 90.0 | 0.000 | 1.000 |
| Apple pomace, no hulls | 4.9 | 0.71 | 89.0 | 0.871 | -0.073 |
| Bakery product | 11.0 | 0.94 | 92.0 | 1.078 | 0.014 |
| Barley | 12.8 | 0.87 | 89.0 | 0.901 | 0.077 |
| Barley, high-moisture | 13.1 | 0.87 | 72.0 | 0.723 | 0.068 |
| Beet pulp | 9.7 | 0.81 | 91.0 | 0.913 | 0.018 |
| Blood meal | 93.0 | 0.68 | 91.0 | -1.010 | 2.078 |
| Brewer's grain, dried | 27.1 | 0.68 | 92.0 | 0.293 | 0.497 |
| Brewer's grain, wet | 28.0 | 0.68 | 22.0 | 0.065 | 0.124 |
| Brewer's yeast | 46.9 | 0.83 | 93.0 | 0.007 | 0.968 |
| Candy | 5.2 | 1.10 | 94.0 | 1.488 | -0.182 |
| Candy product | 10.8 | 1.05 | 90.0 | 1.215 | -0.022 |
| Canola | 40.8 | 0.77 | 92.5 | 0.075 | 0.824 |
| Chocolate | 12.9 | 1.30 | 95.0 | 1.600 | -0.041 |
| Citrus pulp, dry | 6.7 | 0.80 | 91.0 | 0.974 | -0.055 |
| Corn, ear—dry | 9.0 | 0.81 | 87.0 | 0.890 | 0.000 |
| Corn, ear—high-moisture | 8.8 | 0.81 | 69.0 | 0.709 | -0.004 |
| Corn, shelled—high-moisture | 9.5 | 0.90 | 74.4 | 0.856 | -0.010 |
| Corn distiller's, light | 29.0 | 0.90 | 92.0 | 0.563 | 0.483 |
| Corn distiller's, dark | 29.0 | 0.93 | 91.0 | 0.599 | 0.469 |
| Corn distiller's, wet | 28.1 | 0.92 | 7.0 | 0.047 | 0.035 |
| Corn distiller's, sol. only | 29.8 | 0.93 | 93.0 | 0.592 | 0.500 |
| Corn gluten feed | 23.0 | 0.87 | 90.0 | 0.657 | 0.331 |
| Corn gluten meal, 60% | 67.2 | 0.94 | 90.0 | -0.343 | 1.411 |
| Cottonseed, whole | 23.7 | 0.98 | 88.4 | 0.781 | 0.313 |
| Cottonseed, de-linted | 23.0 | 1.01 | 90.0 | 0.855 | 0.293 |
| Cottonseed meal, 41% | 45.6 | 0.79 | 91.0 | -0.018 | 0.926 |
| Donuts | 8.0 | 1.10 | 82.0 | 1.235 | -0.096 |
| Feather meal | 88.0 | 0.70 | 92.0 | -0.966 | 1.988 |
| Fish meal, Menhaden | 66.7 | 0.76 | 92.0 | -0.598 | 1.481 |
| Hominy feed | 11.5 | 0.91 | 90.0 | 1.000 | 0.035 |

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Table 1.6
Feed-evaluation factors for feedstuffs used in dairy cow rations (continued)

| Ingredient name | Crude protein, (% DM) | Net energy, NEL (Mcal/lb) | Dry matter (%) | Feed factors | |
|--------------------------------|-----------------------|---------------------------|----------------|--------------|---------|
| | | | | Corn | Soybean |
| Linseed meal | 37.4 | 0.79 | 91.0 | 0.188 | 0.720 |
| Lupins | 41.9 | 0.81 | 85.0 | 0.097 | 0.773 |
| Malt sprouts | 28.1 | 0.74 | 94.0 | 0.362 | 0.516 |
| Meat and bone meal | 54.1 | 0.74 | 93.0 | -0.310 | 1.179 |
| Oats | 13.0 | 0.80 | 89.0 | 0.798 | 0.101 |
| Oats, high-moisture | 12.5 | 0.79 | 79.0 | 0.707 | 0.081 |
| Oat mill by-product | 3.9 | 0.34 | 92.0 | 0.392 | 0.003 |
| Peanut meal | 52.3 | 0.80 | 93.0 | -0.176 | 1.115 |
| Peanut skins | 17.4 | 0.68 | 94.0 | 0.551 | 0.256 |
| Potatoes, raw | 8.9 | 0.85 | 91.0 | 0.990 | -0.014 |
| Ren Pro | 58.0 | 0.70 | 93.0 | -0.468 | 1.290 |
| Ren Plus | 71.1 | 0.70 | 93.0 | -0.789 | 1.624 |
| Rye | 13.8 | 0.88 | 88.0 | 0.880 | 0.098 |
| Sorghum or milo | 10.4 | 0.84 | 89.0 | 0.918 | 0.026 |
| Soybean meal, treated/high-UIP | 48.7 | 0.89 | 92.0 | 0.047 | 0.986 |
| Soybeans, heated | 41.8 | 0.99 | 90.0 | 0.359 | 0.766 |
| Soybeans, whole | 41.8 | 0.96 | 90.0 | 0.317 | 0.774 |
| Soybean meal, 48% | 54.5 | 0.91 | 90.0 | -0.070 | 1.104 |
| Soyhulls | 12.1 | 0.80 | 90.0 | 0.829 | 0.080 |
| Triticale | 17.6 | 0.88 | 90.0 | 0.806 | 0.194 |
| Wheat | 11.3 | 0.89 | 89.0 | 0.965 | 0.035 |
| Wheat bran | 17.1 | 0.73 | 89.0 | 0.599 | 0.221 |
| Wheat midds | 18.0 | 0.71 | 89.0 | 0.549 | 0.249 |
| Whey, dried | 13.0 | 0.85 | 93.0 | 0.907 | 0.091 |
| Whey, liquid—acid | 13.0 | 0.85 | 7.0 | 0.068 | 0.007 |
| Whey, liquid—sweet | 9.1 | 0.81 | 7.0 | 0.071 | 0.000 |
| Whey, liquid—Leprino | 29.3 | 0.88 | 9.2 | 0.053 | 0.050 |

Table 1.7

Feed-evaluation factors for forages fed to dairy cows

| Feed ingredient | Feed factors | | | Crude protein (% DM) | Net energy, NEL (Mcal/lb) | NDF (% DM) | Dry matter (%) |
|----------------------------------|--------------|--------------|---------|----------------------|---------------------------|------------|----------------|
| | Corn | Soybean meal | Alfalfa | | | | |
| Corn, shelled (15.5%) | 1.000 | 0.000 | -0.000 | 10.0 | 0.90 | 9.0 | 88.0 |
| Soybean meal, 44% | 0.000 | 1.000 | 0.000 | 50.0 | 0.88 | 14.0 | 90.0 |
| Legume hay, avg analysis | -0.000 | 0.000 | 1.000 | 18.6 | 0.60 | 47.7 | 90.0 |
| Grass hay, avg analysis | -0.106 | -0.424 | 1.761 | 10.5 | 0.59 | 66.0 | 90.0 |
| Grass haylg, avg analysis | -0.053 | -0.131 | 0.674 | 12.6 | 0.56 | 62.5 | 39.0 |
| MMG hay, avg analysis | -0.104 | -0.308 | 1.554 | 12.5 | 0.57 | 62.0 | 90.0 |
| MMG haylg, avg analysis | -0.064 | -0.103 | 0.646 | 14.0 | 0.54 | 61.0 | 40.0 |
| Legume hay, avg analysis | -0.000 | 0.000 | 1.000 | 18.6 | 0.60 | 47.7 | 90.0 |
| Legume haylg, avg analysis | -0.045 | 0.001 | 0.539 | 19.3 | 0.57 | 51.0 | 45.0 |
| MML hay, avg analysis | -0.064 | -0.115 | 1.246 | 16.8 | 0.59 | 54.0 | 90.0 |
| MML haylg, avg analysis | -0.044 | -0.040 | 0.577 | 17.4 | 0.57 | 54.0 | 43.0 |
| Corn sil, avg analysis | 0.100 | -0.126 | 0.460 | 8.8 | 0.69 | 49.0 | 33.0 |
| Small-grain sil, avg analysis | -0.17 | -0.101 | 0.550 | 14.0 | 0.63 | 59.0 | 32.3 |
| Sorghum-sudan sil, avg analysis | -0.034 | -0.124 | 0.548 | 11.0 | 0.57 | 64.1 | 30.0 |
| Alfalfa meal, 22% | -0.260 | -0.086 | 1.695 | 23.9 | 0.69 | 60.0 | 93.0 |
| Alfalfa meal, 20% | -0.248 | -0.094 | 1.593 | 22.0 | 0.64 | 60.0 | 92.0 |
| Alfalfa meal, 17% | -0.182 | -0.169 | 1.588 | 18.9 | 0.63 | 60.0 | 92.0 |
| Alfalfa meal, 15% | -0.163 | -0.182 | 1.506 | 17.3 | 0.60 | 60.0 | 90.0 |
| Grass hay, first cut, prehead | -0.060 | -0.176 | 1.484 | 18.4 | 0.69 | 56.0 | 89.0 |
| Grass hay, first cut, early head | -0.153 | -0.336 | 1.755 | 14.5 | 0.63 | 65.0 | 89.0 |
| Grass hay, first cut, full head | -0.289 | -0.486 | 2.042 | 11.0 | 0.55 | 75.3 | 89.0 |
| Grass hay, first cut, mature | -0.363 | -0.619 | 2.265 | 7.7 | 0.50 | 82.7 | 89.0 |
| Grass hay, aftermath avg | -0.196 | -0.343 | 1.796 | 14.5 | 0.61 | 66.9 | 89.0 |
| Grass hay, late fall | -0.097 | -0.247 | 1.591 | 16.5 | 0.66 | 59.8 | 89.0 |
| Legume hay, first cut, pre-bud | 0.046 | 0.155 | 0.801 | 23.9 | 0.68 | 40.5 | 87.0 |
| Legume hay, first cut, bud | 0.094 | 0.058 | 0.808 | 19.5 | 0.64 | 42.0 | 87.0 |
| Legume hay, first cut, bloom | 0.061 | -0.106 | 1.016 | 14.7 | 0.59 | 49.0 | 87.0 |
| Legume hay, first cut, mature | -0.064 | -0.258 | 1.278 | 10.6 | 0.50 | 59.2 | 87.0 |
| Legume hay, aftermath avg | 0.098 | 0.053 | 0.809 | 19.3 | 0.64 | 42.0 | 87.0 |
| Legume hay, late fall | 0.078 | 0.096 | 0.808 | 21.3 | 0.66 | 41.3 | 87.0 |
| MMG hay, first cut, prehead | -0.031 | -0.093 | 1.306 | 19.8 | 0.69 | 52.1 | 88.0 |
| MMG hay, first cut, early head | -0.088 | -0.229 | 1.492 | 15.8 | 0.63 | 59.0 | 88.0 |
| MMG hay, first cut, full head | -0.198 | -0.387 | 1.771 | 11.9 | 0.56 | 68.7 | 88.0 |
| MMG hay, first cut, mature | -0.292 | -0.517 | 1.984 | 8.4 | 0.49 | 76.8 | 88.0 |
| MMG hay, aftermath avg | -0.119 | -0.243 | 1.542 | 15.7 | 0.62 | 60.7 | 88.0 |
| MMG hay, late fall | -0.045 | -0.167 | 1.403 | 17.7 | 0.67 | 55.2 | 88.0 |

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Table 1.7Feed-evaluation factors for forages fed to dairy cows (*continued*)

| Feed ingredient | Feed factors | | | Crude protein (% DM) | Net energy, NEL (Mcal/lb) | NDF (% DM) | Dry matter (%) |
|------------------------------------|--------------|--------------|---------|----------------------|---------------------------|------------|----------------|
| | Corn | Soybean meal | Alfalfa | | | | |
| MML hay, first cut, prebud | 0.032 | 0.059 | 1.006 | 22.5 | 0.70 | 44.4 | 88.0 |
| MML hay, first cut, bud | 0.033 | -0.040 | 1.053 | 18.3 | 0.64 | 47.8 | 88.0 |
| MML hay, first cut, bloom | -0.024 | -0.203 | 1.293 | 14.0 | 0.59 | 55.6 | 88.0 |
| MML hay, first cut, mature | -0.138 | -0.347 | 1.526 | 9.9 | 0.50 | 65.0 | 88.0 |
| MML hay, aftermath avg | 0.035 | -0.048 | 1.062 | 18.1 | 0.64 | 48.0 | 88.0 |
| MML hay, late fall | 0.024 | 0.025 | 0.971 | 20.0 | 0.64 | 45.9 | 88.0 |
| Grass haylg, first cut, prehead | -0.015 | -0.007 | 0.528 | 21.0 | 0.67 | 49.5 | 40.0 |
| Grass haylg, first cut, early head | -0.048 | -0.076 | 0.625 | 16.6 | 0.60 | 57.5 | 40.0 |
| Grass haylg, first cut, full head | -0.095 | -0.142 | 0.734 | 12.6 | 0.52 | 66.6 | 40.0 |
| Grass haylg, first cut, mature | -0.123 | -0.196 | 0.801 | 8.8 | 0.45 | 73.0 | 40.0 |
| Grass haylg, aftermath avg | -0.054 | -0.091 | 0.620 | 14.5 | 0.55 | 59.2 | 40.0 |
| Grass haylg, late fall | -0.081 | -0.045 | 0.614 | 18.9 | 0.58 | 58.0 | 40.0 |
| Legume haylg, first cut, prebud | -0.008 | 0.077 | 0.499 | 25.0 | 0.69 | 43.3 | 47.0 |
| Legume haylg, first cut, bud | 0.001 | 0.042 | 0.476 | 21.0 | 0.62 | 44.9 | 47.0 |
| Legume haylg, first cut, bloom | -0.037 | -0.030 | 0.577 | 17.0 | 0.55 | 52.3 | 47.0 |
| Legume haylg, first cut, mature | -0.096 | -0.133 | 0.744 | 12.0 | 0.47 | 63.2 | 47.0 |
| Legume haylg, aftermath avg | -0.006 | 0.049 | 0.434 | 20.0 | 0.57 | 45.0 | 47.0 |
| Legume haylg, late fall | -0.016 | 0.075 | 0.427 | 22.1 | 0.59 | 44.0 | 47.0 |
| MMG haylg, first cut, prehead | -0.012 | 0.010 | 0.533 | 22.0 | 0.68 | 48.0 | 42.0 |
| MMG haylg, first cut, early head | -0.039 | -0.049 | 0.596 | 17.7 | 0.60 | 54.4 | 42.0 |
| MMG haylg, first cut, full head | -0.080 | -0.123 | 0.717 | 13.7 | 0.54 | 63.0 | 42.0 |
| MMG haylg, first cut, mature | -0.117 | -0.186 | 0.802 | 9.6 | 0.46 | 70.6 | 42.0 |
| MMG haylg, aftermath avg | -0.062 | -0.041 | 0.579 | 17.4 | 0.55 | 55.7 | 42.0 |
| MMG haylg, late fall | -0.062 | -0.025 | 0.594 | 19.7 | 0.60 | 54.5 | 42.0 |
| MML haylg, first cut, prebud | -0.012 | 0.055 | 0.504 | 24.0 | 0.68 | 44.9 | 45.0 |
| MML haylg, first cut, bud | -0.015 | 0.011 | 0.514 | 19.9 | 0.61 | 48.1 | 45.0 |
| MML haylg, first cut, bloom | -0.054 | -0.060 | 0.619 | 15.9 | 0.54 | 55.9 | 45.0 |
| MML haylg, first cut, mature | -0.105 | -0.149 | 0.756 | 11.2 | 0.46 | 65.7 | 45.0 |
| MML haylg, aftermath avg | -0.028 | 0.019 | 0.481 | 19.2 | 0.56 | 48.6 | 45.0 |
| MML haylg, late fall | -0.030 | 0.036 | 0.490 | 21.3 | 0.60 | 47.5 | 45.0 |
| Corn sil, urea | 0.064 | -0.087 | 0.467 | 13.2 | 0.69 | 49.0 | 34.0 |
| Corn sil, NH3 | 0.075 | -0.099 | 0.469 | 12.0 | 0.69 | 49.0 | 34.0 |

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Table 1.7
Feed-evaluation factors for forages fed to dairy cows (continued)

| Feed ingredient | Feed factors | | | Crude protein (% DM) | Net energy, NEL (Mcal/lb) | NDF (% DM) | Dry matter (%) |
|----------------------------------|--------------|--------------|---------|----------------------|---------------------------|------------|----------------|
| | Corn | Soybean meal | Alfalfa | | | | |
| Small-grain sil, boot | 0.016 | -0.080 | 0.494 | 16.0 | 0.72 | 54.0 | 30.0 |
| Small-grain sil, early head | -0.051 | -0.143 | 0.662 | 14.0 | 0.68 | 68.0 | 30.0 |
| Small-grain sil, milk | -0.073 | -0.159 | 0.662 | 11.0 | 0.58 | 72.0 | 30.0 |
| Small-grain sil, dough | -0.100 | -0.220 | 0.848 | 10.0 | 0.60 | 77.4 | 34.0 |
| Grass pasture, spring, pre-head | 0.019 | -0.024 | 0.282 | 19.0 | 0.74 | 48.2 | 20.0 |
| Grass pasture, summer, prehead | 0.010 | -0.025 | 0.288 | 19.0 | 0.72 | 49.7 | 20.0 |
| Grass pasture, fall, prehead | 0.031 | -0.004 | 0.246 | 21.0 | 0.77 | 43.1 | 20.0 |
| Grass pasture, early head | -0.022 | -0.063 | 0.358 | 14.9 | 0.63 | 61.0 | 20.0 |
| Grass pasture, head | -0.036 | -0.093 | 0.401 | 11.0 | 0.57 | 68.0 | 20.0 |
| Legume pasture, spring, prebloom | 0.011 | 0.032 | 0.208 | 25.0 | 0.73 | 41.0 | 20.0 |
| Legume pasture, summer, prebloom | 0.003 | 0.041 | 0.188 | 25.0 | 0.68 | 41.0 | 20.0 |
| Legume pasture, fall, prebloom | 0.010 | 0.053 | 0.175 | 27.0 | 0.72 | 38.0 | 20.0 |
| Legume pasture, bloom | 0.014 | 0.022 | 0.173 | 20.0 | 0.61 | 42.0 | 20.0 |
| MMG pasture, spring | 0.011 | -0.008 | 0.266 | 21.0 | 0.73 | 47.0 | 20.0 |
| MMG pasture, summer | -0.006 | -0.008 | 0.277 | 21.0 | 0.69 | 50.0 | 20.0 |
| MMG pasture, fall | 0.026 | 0.008 | 0.238 | 23.0 | 0.78 | 42.0 | 20.0 |
| MMG pasture, early bloom | -0.033 | -0.050 | 0.356 | 17.0 | 0.63 | 61.0 | 20.0 |
| MML pasture, spring | 0.004 | 0.007 | 0.255 | 23.0 | 0.73 | 46.0 | 20.0 |
| MML pasture, summer | -0.004 | 0.016 | 0.235 | 23.0 | 0.68 | 46.0 | 20.0 |
| MML pasture, fall | 0.006 | 0.025 | 0.230 | 25.0 | 0.74 | 43.0 | 20.0 |
| MML pasture, early bloom | -0.042 | -0.041 | 0.347 | 18.0 | 0.61 | 61.0 | 20.0 |
| Sorghum-sudan pasture, 30-inch | -0.013 | -0.055 | 0.337 | 15.3 | 0.64 | 58.3 | 20.0 |
| Sorghum-sudan pasture, 40-inch | -0.015 | -0.086 | 0.413 | 13.3 | 0.65 | 61.9 | 22.0 |
| Pea vine sil | -0.020 | -0.071 | 0.397 | 13.1 | 0.57 | 59.0 | 25.0 |
| Corn cannery sil | 0.034 | -0.150 | 0.542 | 8.8 | 0.67 | 59.0 | 30.0 |
| Soybean sil | -0.040 | -0.022 | 0.377 | 17.7 | 0.55 | 55.0 | 28.0 |
| Kale tops | 0.044 | -0.017 | 0.144 | 16.7 | 0.82 | 39.7 | 12.0 |
| Rape tops | 0.065 | -0.041 | 0.201 | 14.0 | 0.85 | 41.2 | 15.0 |
| Swede tops | 0.054 | -0.029 | 0.199 | 16.7 | 0.85 | 41.2 | 15.0 |
| Turnip roots | 0.049 | -0.044 | 0.141 | 9.0 | 0.89 | 44.0 | 9.0 |
| Turnip tops | 0.061 | -0.022 | 0.181 | 17.3 | 0.86 | 38.2 | 15.0 |

Note: DM = dry matter; NDF = neutral detergent fiber; haylg = haylage; sil = silage; MMG = mixed mainly grass; MML = mixed mainly legume