Balancing Horse Diets

1. Horses should be fed a minimum of 1% of their body weight per day as forage or roughage to maintain proper digestive function, prevent “bolting” or overeating, and prevent digestive upsets such as colic and laminitis.

2. Horses at maintenance may get all of their required Lysine, CP, and energy solely from forage.

3. Lactating mares, growing foals and horses, and horses with high exercise demands will probably need to be fed some additional cereal grain and may need additional quantity and quality (essential amino acids) of protein.

4. Horses at maintenance will eat approximately 2% of their body weight per day.

5. Be sure to use energy values specifically given for horses. Energy values given on forage analysis reports are usually calculated for ruminants. Horses digest forages less effectively than ruminants, so energy values for forages need to be converted from a “ruminant” basis to a “horse” basis. Usually “horse” forage energy values are about 88% of the “ruminant” forage energy values.

Example analysis from a lab report:
Grass hay TDN, % (ruminant) x 0.88 = TDN, % (horse)
50% TDN (ruminant) x 0.88 = 44% TDN (horse)

Mature horse requirements

<table>
<thead>
<tr>
<th></th>
<th>DE, Mcal</th>
<th>CP, g</th>
<th>Lysine, g</th>
<th>Ca, g</th>
<th>P, g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance – 500 kg</td>
<td>16.4</td>
<td>656</td>
<td>23.0</td>
<td>20.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Maintenance – 600 kg</td>
<td>19.4</td>
<td>776</td>
<td>27.2</td>
<td>24.0</td>
<td>16.8</td>
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<tr>
<td>Light work – 500 kg</td>
<td>20.5</td>
<td>820</td>
<td>28.7</td>
<td>25.0</td>
<td>17.8</td>
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<tr>
<td>Light work – 600 kg</td>
<td>24.2</td>
<td>970</td>
<td>33.9</td>
<td>29.6</td>
<td>21.1</td>
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<tr>
<td>Moderate work – 500 kg</td>
<td>24.6</td>
<td>984</td>
<td>34.4</td>
<td>30.0</td>
<td>21.4</td>
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<tr>
<td>Moderate work – 600 kg</td>
<td>29.1</td>
<td>1,164</td>
<td>40.7</td>
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<td>25.3</td>
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<tr>
<td>Intense work – 500 kg</td>
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<td>1,312</td>
<td>45.9</td>
<td>40.0</td>
<td>28.5</td>
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<tr>
<td>Intense work – 600 kg</td>
<td>38.8</td>
<td>1,552</td>
<td>54.3</td>
<td>47.3</td>
<td>33.8</td>
</tr>
</tbody>
</table>

Example 1: A mature 500 kg gelding fed grass hay (1.95 Mcal/kg DE, 8.46% CP).
500 kg x 0.02 = 10 kg intake
10 kg x 1.95 Mcal/kg = 19.5 Mcal DE
10 kg x 0.0846 x 1000 g/kg = 846 g CP
This amount (10 kg) of grass hay would meet all the requirements of a mature 500 kg horse at maintenance.

Example 2: A mature 500 kg gelding at moderate work.
Feedstuffs – grass hay (as above), grain (2.45 Mcal/kg, 8.9% CP), alfalfa hay (1.75 Mcal/kg, 18% CP)
500 kg x 0.01 = 5 kg intake of hay
5 kg x 1.95 Mcal/kg = 9.75 Mcal
5 kg x 0.0846 x 1000 g/kg = 423 g CP

Need 24.6 Mcal – 9.75 Mcal = 14.85 Mcal
Need 984 g – 423 g = 561 g CP

A = kg grain, B = kg alfalfa hay

Energy equation 14.85 Mcal = 2.45 Mcal/kg A + 1.75 Mcal/kg B
Protein equation 0.561 kg = 0.089 A + 0.18 B

Multiply second equation by 9.7222
5.45 = 0.865 A + 1.75 B
Subtract from 1st equation
9.4 = 1.585 A + 0 B
A = 5.93 kg grain
B = 0.18 kg alfalfa hay

Check:
5 kg grass hay x 0.0846 x 1000 g/kg = 423 g CP x 1.95 Mcal/kg = 9.75 Mcal
5.93 kg grain x 0.089 x 1000 g/kg = 528 g CP x 2.45 Mcal/kg = 14.53 Mcal
0.18 kg alfalfa hay x 0.18 x 1000 g/kg = 32 g CP x 1.75 Mcal/kg = 0.32 Mcal
Total = 983 g CP = 24.6 Mcal DE