Table 5. Example of Nitrate Intake Worksheet for Ruminants

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Intake As Fed</td>
<td>% Moisture</td>
<td>% Dry Matter</td>
<td>Lb DM Intake Daily</td>
<td>Lb Feed Water</td>
<td>Feed NO3-N Content</td>
<td>Content Factor</td>
<td>mg of NO3-N Intake</td>
</tr>
<tr>
<td>Daily</td>
<td>Lb DM</td>
<td>Lb Feed</td>
<td>mg of NO3-N</td>
<td>Lb Feed</td>
<td>G</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>As Fed</td>
<td>Water</td>
<td>Content</td>
<td>Intake</td>
<td>Water</td>
<td>Factor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculation: Lb Test 100 - B AxC/100 AxB/100 PPM Given DxFxG

A. Feed Itema

<table>
<thead>
<tr>
<th>Item</th>
<th>Daily Intake</th>
<th>% Moisture</th>
<th>% Dry Matter</th>
<th>Lb DM Intake Daily</th>
<th>Lb Feed Water</th>
<th>Feed NO3-N Content</th>
<th>Content Factor</th>
<th>mg of NO3-N Intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn silage</td>
<td>28.6</td>
<td>65</td>
<td>35</td>
<td>10.0</td>
<td>18.5</td>
<td>1700b</td>
<td>.454</td>
<td>7718</td>
</tr>
<tr>
<td>MML haylage</td>
<td>26.8</td>
<td>50</td>
<td>50</td>
<td>13.4</td>
<td>13.4</td>
<td>460</td>
<td>.454</td>
<td>2798</td>
</tr>
<tr>
<td>Grain mix</td>
<td>20.0</td>
<td>12</td>
<td>88</td>
<td>17.6</td>
<td>2.4</td>
<td>48</td>
<td>.454</td>
<td>384</td>
</tr>
<tr>
<td>Feed Total</td>
<td>41.0</td>
<td>34.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10900</td>
</tr>
</tbody>
</table>

aInclude expected pasture intake in all diets using such

bAmount in a single meal must be limited due to a content of 1100 ppm or higher. See Table 4 for details.

B. Drinking water contribution (for average cow at 1300 lb BW and producing 60 lb of 3.7% milk)

| Expected total water intakea | 270 | (I) [60 x 4.5] |
| Feed water (Total E)        | 34  | (J)           |
| Drinking water (I-J)        | 236 | (K)           |

Mg NO3-N from drinking water:

K x Water NO3-N as ppm or mg/l

Example: 236 x .8 x .454 = 857 (L)

C. Total mg NO3-N intake daily

Example: 10900 + 857 = 11757 (M)

D. NO3-N content of total diet as % DMb

[(M/454,000) ÷ Total D] x 100

Example: .0259 ÷ 41 x 100 = .063 (N)

aSee Table 7 for expected water intakes.
bSee Table 8 and the text for interpretation

(continued on next page)
Table 5. Example of Nitrate Intake Worksheet for Ruminants (continued)

E. Adjustment of ration to control NO₃-N content of diet\(^b\)

Desired level in TRDM, including water: _____% (P) — see Table 8 for guide
Assumed desired level in this example .05% (P)
Current content (N) .063% (Q)
Content to be reduced (R)
\[ Q - P = R \]
Example: .063 - .050 = .013% (R)

Amount to be reduced (S)
\[ D \times \frac{R}{100} = S \]
Example: .00013 \times .00533 = .00533 (S)

Difference in content of NO₃-N of high and low forage (T)
\[ \frac{\text{High forage} (F) - \text{Low forage} (F)}{10,000} \]
Example: (1700 - 460) / 10,000 = .1240 (T)

Lb forage dry matter to be exchanged (U)
\[ \frac{S}{T/100} = U \]
Example: .00533 / .00124 = 4.3

New high NO₃-N forage DMI (V)
\[ (\text{Old}) D - U = V \]
Example: 10 - 4.3 = 5.7

New as fed amount of high forage
\[ V / \frac{C}{100} \]
Example: 5.7 / .35 = 16.3 for corn silage

New low NO₃-N forage DMI (W)
\[ (\text{Old}) D + U = W \]
Example: 13.4 + 4.3 = 17.7 (W)

New as fed amount of low forage
\[ W / \frac{C}{100} \]
Example: 17.7 / .50 = 35.4

Restriction on single meal dry matter intake for high NO₃-N forage\(^c\):
Corn silage @ 1700 ppm content
Maximum intake = \[ .67 \times \text{cwt BW} \] (X) — from Table 4
Single meal max in lb FDMI (Y)
\[ \text{Max} \times \text{cwt BW} = Y \]
Example: .67 \times 13 = 8.7 (Y)

Comparison
\[ Y < V \]
8.7 max is larger than V (5.7) — Thus, corn silage could be fed in one meal.
If daily amount V is greater than Y, then corn silage should be fed in more than one meal.

Choose a desired risk level of NO₃-N in total ration dry matter that enables removal of silages or haylages at a rate that prevents molding and heating in the silo. When this is not feasible, it may not be possible to feed the high nitrate forage.

\(^a\)See Table 7 for expected water intakes
\(^b\)See Table 8 and the text for interpretation
\(^c\)See Table 4 for possible need for maximum single meal intakes for forages containing 1100 ppm NO₃-N or higher