**GRASSLAND CONDITION**

**APPRAISAL OF EXISTING CONDITIONS**  
(5 points each)

1. **What is the pasture type?**
   - A. Fescue (>90% fescue)
   - B. Mixed cool-season grasses (<10% legume or other grasses)
   - C. Cool-season dominant (10-25% legume)
   - D. Cool-season Grass/Legume mixture (26-60% legume)
   - E. Legume dominant (>75% legume)
   - F. Warm-season grasses (<25% other species)

2. **What is the average growth stage of the dominant forage species?**
   - A. Vegetative
   - B. Boot or bud
   - C. Heading or bloom
   - D. Mature
   - E. Dormant

3. **What best describes the grazing pressure and condition of the pasture sward?**
   - A. Overgrazed
   - B. Spot grazed
   - C. Evenly grazed
   - D. Undergrazed

4. **Is weed or brush control needed other than by grazing or soil fertility management?**
   - A. Yes
   - B. No

5. **What soil pH range is recommended for this sward?**
   - A. 4.5 - 5.0
   - B. 5.1 - 5.5
   - C. 5.6 - 6.0
   - D. 6.1 - 6.5
   - E. 6.6 - 7.0
   - F. 7.1 - 7.5

6. **What fertilizer rate is recommended for this pasture?**

7. **What limestone rate is recommended for this pasture in tons per acre?**

**MATCHING LIVESTOCK AND FORAGE**  
(5 points for each answer space)

1. **When does this livestock herd have the highest forage quality requirement?**
   - A. Spring
   - B. Summer
   - C. Fall
   - D. Winter
   - E. Requirement high year round

2. **Does this pasture's growth cycle match the seasonal peak nutritional needs of this livestock herd under present management?**
   - A. Yes
   - B. No

3. **How many pounds of forage dry matter does this herd need to consume per day in:**
   - 1392 lbs. in spring (5 pts.)
   - 2070 lbs. in summer (5 pts.)
   - 2052 lbs. in fall (5 pts.)

4. **Is forage availability adequate for this herd in:**
   - Spring - 100 days (5 pts.)  
     - Adequate
     - Not adequate
   - Summer - 100 days (5 pts.)  
     - Adequate
     - Not adequate
   - Fall - 100 days (5 pts.)  
     - Adequate
     - Not adequate

**SEE REVERSE SIDE**

Revised May, 1997
PASTURE IMPROVEMENT
(Answers to questions 3, 4, and 5 for this section are based on the choice for question Number 2) (5 points each)

C 1. What changes should be made in livestock management?
   A. Continue present management
   B. Reduce livestock numbers
   C. Change calving season to a different time of year
   D. Shorten calving season a period of <90 days
   E. Provide higher quality pasture for heifers and steers
   F. Switch to a management-intensive rotational grazing system

E 2. What type of additional forage is needed to improve this forage program?
   A. Cool season grass
   B. Warm season grass
   C. Legumes
   D. Grass/legume mixture
   E. No additional forages needed - use existing pasture

D 3. How should this forage be planted?
   A. Plant on clean, firm seedbed
   B. No-till plant in a killed sod
   C. Overseed or interseed in a closely grazed sod
   D. No additional forages needed - use existing pasture

017 4. What fertilizer rate is recommended for this forage?

/15 5. What limestone rate is recommended for this forage in tons per acre?
Practical Exercise and Scenario — Grassland Condition Score Card

Appraisal of Existing Conditions

1. What is the pasture type? The answer is “D - Cool-season grass/Legume mixture”. Grass/legume mixtures are high quality, help offset fescue endophyte problems, and reduce the need for nitrogen fertilizer.

2. What is the average growth stage of the dominant forage species? The answer is “A - vegetative”. Vegetative plants are high quality nutritionally for livestock.

3. What best describes the grazing pressure and condition of the pasture sward? The answer is “C - Evenly grazed” Evenly grazed pastures tend to remain in the vegetative stage, are vigorous, and have little weed invasion.

4. Is weed or brush control needed other than by grazing or fertility management? The answer is “B - No”.

5. What soil pH range is recommended for this sward? The answer is “D - 6.1-6.5”. Legumes need a higher pH level than grasses (Ozark and Border).

<table>
<thead>
<tr>
<th>Crop</th>
<th>Soil region</th>
<th>Ozark and borders</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfalfa and alfalfa−grass establishment</td>
<td>6.6–7.0</td>
<td>6.1–6.5</td>
<td></td>
</tr>
<tr>
<td>Birdsfoot trefoil and birdsfoot trefoil−grass establishment</td>
<td>6.1–6.5</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>Clover and clover−grass establishment</td>
<td>6.1–6.5</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>Cool-season grass establishment and production</td>
<td>5.6–6.0</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>Lespedeza and lespedeza−grass establishment</td>
<td>6.1–6.5</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>Overseeding legumes</td>
<td>6.1–6.5</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>Warm-season grass establishment and production</td>
<td>5.6–6.0</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>Sudan grass and sudan/sorghum crosses</td>
<td>5.6–6.0</td>
<td>5.6–6.0</td>
<td></td>
</tr>
<tr>
<td>All row crops</td>
<td>6.1–6.5</td>
<td>6.1–6.5</td>
<td></td>
</tr>
</tbody>
</table>

6. What fertilizer rate is recommended for this pasture? The answer from the soil test is “017” which corresponds to a fertilizer rate of 0-35-20 per acre.

7. What limestone rate is recommended for this pasture in tons per acre? The answer is “1 tons” This is calculated by dividing the ENM recommendation by the limestone dealer’s guaranteed analysis of 400 lbs. of ENM per ton of limestone. 440/400=1.1.
Soil Test Recommendations
For MO Grassland Contest Example

Field ID: Hilltop

Sample No. 1

Acres 20

Not irrigated

<table>
<thead>
<tr>
<th>SOIL TEST INFORMATION</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Lab Portageville</td>
<td>Verylow</td>
</tr>
<tr>
<td>pHs</td>
<td>5.5</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>18 Lbs/a P</td>
</tr>
<tr>
<td>Potassium</td>
<td>210 Lbs/a K</td>
</tr>
<tr>
<td>Calcium</td>
<td>1035 Lbs/a Ca</td>
</tr>
<tr>
<td>Magnesium</td>
<td>350 Lbs/a Mg</td>
</tr>
</tbody>
</table>

O. matter 2.2 %
Acidity 1.5 meq/100g
C.E.C 5.8 meq/100g

NUTRIENT REQUIREMENTS (Lbs/a)

<table>
<thead>
<tr>
<th>Cropping options</th>
<th>Yield</th>
<th>N</th>
<th>P2O5</th>
<th>K2O</th>
<th>Zn</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERSEEDING LEGUMES</td>
<td></td>
<td>0</td>
<td>55</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLOVER, CLOV-GRASS EST</td>
<td>20</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLOVER, CL-GRASS PAST</td>
<td>150 CD/A</td>
<td>0</td>
<td>35</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LIMESTONE suggestions

<table>
<thead>
<tr>
<th>Cropping options</th>
<th>Yield</th>
<th>ENM</th>
<th>EMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVERSEEDING LEGUMES</td>
<td></td>
<td>440</td>
<td></td>
</tr>
<tr>
<td>CLOVER, CLOV-GRASS EST</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLOVER, CL-GRASS PAST</td>
<td>150 CD/A</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Some herbicide labels list restrictions based on soil pH in water. Your sample has an estimated pH in water of 6.0. Use this value as a guide to the label. If you wish to have soil pH in water analyzed, contact your dealer or local Extension specialist listed below.

To determine limestone needed in tons/acre, divide your ENM requirement by the guarantee of your limestone dealer.

For OVERSEEDING LEGUMES apply 440 lbs ENM
For CLOVER/CLOVER-GRASS EST apply 440 lbs ENM
Soils testing high in P or K should be retested annually to determine when maintenance fertilizer should be applied.
Do not use nitrogen on spring seedings of legumes after May 1st, because of potential weed competition.

Note: Quarry guaranteed analysis = 500

Area Specialist:
FARMER COPY
Matching Livestock and Forage

1. When does this livestock herd have the highest forage quality requirement? The answer is “B. Summer”. This is a summer calving herd. The highest forage quality requirement occurs between calving and rebreeding.

2. Does this pasture’s growth cycle match the seasonal peak nutritional needs of this livestock herd under present management? The answer is “B - No”. The pasture is cool-season-grass/legume which grows mainly in spring and fall so it’s main growth period does not match with livestock needs.

3. How many pounds of forage dry matter does this herd need to consume per day in:
   Spring
   60 cows x 1100 lbs. x 0.02 = 1320 lbs. per day
   2 bulls x 1800 lbs. x 0.02 = 72 lbs. per day
   1392 lbs. per day

   Summer
   60 cows x 1100 lbs. x 0.03 = 1980 lbs. per day
   2 bulls x 1800 lbs. x 0.025 = 90 lbs. per day
   2070 lbs. per day

   Fall
   60 cows x 1100 lbs. x 0.03 = 1980 lbs. per day
   2 bulls x 1800 lbs. x 0.02 = 72 lbs. per day
   2052 lbs. per day

4. Is forage availability adequate for this herd in: Forage availability is adequate in spring, summer and fall.

Pasture improvement

1. What changes should be made in livestock management? The answer is “C - change calving season to a different time of year”. This is a summer calving herd which is not recommended in Missouri due to problems with getting cows rebred. The scenario stated that the farmer had low conception rates in this herd.

2. What type of additional forage is needed to improve this forage program? The answer is “E - No additional forages needed - use existing pasture”. Forage availability or quality were adequate and were not the causes of the poor conception rates.

3. How should this forage be planted? The answer is “D - No additional forages needed - use existing pasture” since no additional forages are needed.

4. What fertilizer rate is recommended for this forage? The answer is “017” which corresponds to the clover/grass pasture option.
5. What limestone rate is recommended for this forage in tons per acre? The answer is “1.1 tons” and is the same as the answer for question 7 in the Appraisal of Existing Conditions section because no new forages were needed in this scenario.

Grassland Evaluation Scenario

The farmer has a cow/calf operation. His calving and breeding season is concentrated in summer. He has a problem with low cow conception rates which results in a poor calf crop.

* 60 cows with an average weight of 1100 lbs. each.
* Superior milking ability
* 65% calf crop
* 2 bulls with an average weight of 1800 lbs. each.
* He uses continuous grazing management.
* The limestone dealer guarantees 500 lbs. of ENM per ton of agricultural limestone.
* Round all decimals to the nearest pound in all calculations.

**Forage Production**

<table>
<thead>
<tr>
<th>Pasture</th>
<th>Acres</th>
<th>Production</th>
<th>Distribution</th>
<th>Spring</th>
<th>Summer</th>
<th>Fall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fescue/clover</td>
<td>40</td>
<td>3.5T</td>
<td>.6,.2,.2</td>
<td>168,000</td>
<td>56,000</td>
<td>56,000</td>
</tr>
<tr>
<td>Orch. grass/lespedeza</td>
<td>50</td>
<td>3T</td>
<td>.5,.3,.2</td>
<td>150,000</td>
<td>90,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Caucasian bluestem</td>
<td>60</td>
<td>4T</td>
<td>.0,.7,.3</td>
<td>0</td>
<td>336,000</td>
<td>144,000</td>
</tr>
<tr>
<td>Alfalfa/orch. grass</td>
<td>40</td>
<td>4T</td>
<td>.5,.3,.2</td>
<td>160,000</td>
<td>96,000</td>
<td>64,000</td>
</tr>
<tr>
<td>Stockpiled fescue</td>
<td>60</td>
<td>3T</td>
<td>.5,.1,.4</td>
<td>180,000</td>
<td>36,000</td>
<td>144,000</td>
</tr>
<tr>
<td>Wheat</td>
<td>50</td>
<td>4T</td>
<td>.6,.4</td>
<td>240,000</td>
<td>0</td>
<td>160,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>300</td>
<td><strong>898,000</strong></td>
<td><strong>614,000</strong></td>
<td></td>
<td></td>
<td><strong>628,000</strong></td>
</tr>
</tbody>
</table>
Forage Consumption:

Spring
60 cows x 1100 lbs. x 0.02 = 1320 lbs. per day
2 bulls x 1800 lbs. x 0.02 = 72 lbs. per day

Total forage requirement for spring
1392 lbs. per day/0.35 = 3977  3977 x 100 = 397,700 lbs. of DM

Summer
60 cows x 1100 lbs. x 0.03 = 1980 lbs. per day
2 bulls x 1800 lbs. x 0.025 = 90 lbs. per day

Total forage requirement for summer
2070 lbs. per day/0.35 = 5914  5914 x 100 = 591,400 lbs. of DM

Fall
60 cows x 1100 lbs. x 0.03 = 1980 lbs. per day
2 bulls x 1800 lbs. x 0.02 = 72 lbs. per day

Total forage requirement for fall
2052 lbs. per day/0.35 = 5863  5863 x 100 = 586,300 lbs. of DM