Improving Pasture for Reduced Feed Costs

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A pasture is an area of land, usually 0.5 acres or more, where grasses and legumes are grown for the purpose of supplying nutrients to grazing animals.

Pasture plants contain carbohydrate, fat, protein, minerals, vitamins, and some water.
## Average Nutrient Content of Grass Pasture

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Average %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>15.3</td>
</tr>
<tr>
<td>ADF</td>
<td>35.6</td>
</tr>
<tr>
<td>NDF</td>
<td>58.7</td>
</tr>
<tr>
<td>Crude fiber</td>
<td>33.1</td>
</tr>
<tr>
<td>Sugar</td>
<td>10.2</td>
</tr>
<tr>
<td>Starch</td>
<td>3.5</td>
</tr>
<tr>
<td>Non-structural carbs</td>
<td>12.7</td>
</tr>
<tr>
<td>Crude fat</td>
<td>3.6</td>
</tr>
<tr>
<td>Calcium</td>
<td>0.6</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>0.3</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.2</td>
</tr>
<tr>
<td>Potassium</td>
<td>2.0</td>
</tr>
</tbody>
</table>

(Dairy One Feed Composition Library)
• Horses evolved as grazing animals consuming forage in small frequent meals throughout the day
  – Horses should consume at least 1% of their body weight in pasture or hay each day

• A 1000 lb horse requires approx. 2 - 3 acres of pasture to meet its nutrient requirements for maintenance during the grazing season
  – Horses in late pregnancy, lactation, growth, or medium to intense exercise require forage and concentrate to meet nutritional requirements
Advantages of Pasture

- Reduces likelihood of colic
- Lowers incidence of gastric ulcers
- Decreased incidence of chronic obstructive pulmonary disease (Heaves)
- Increases bone mineral content in young horses
Advantages of Pasture

- Provide aesthetically pleasing environment for landowners

- Productive pastures maintain good vegetative cover
  - Provides competition to weed growth
  - Reduces erosion
  - Decreases dust production
Advantages of Pasture

- Reduces hay costs by ~ $60-100 / mo
- Reduce the cost of fertilizer by recycling nutrients
- Reduce the need to deal with manure & bedding materials from stalls and drylots
  - This would save in:
    - Labor costs and time
    - Bedding materials
    - Spreading and/or removing it from the farm
What Are Your Goals for Your Pasture?

• Each farm must decide its own goals
• Will turnout be exercise lot or pasture?
• Do you have room for both?

OR
Information needed to make decision:

- Finances
- Size of usable area
- Time – yours!
- # of horses (stocking rate)
- Existing facilities (Water, Fencing, Barns, etc.)
To maintain at least 70% vegetative cover on pastures, 1 horse can be maintained on:

- ½ acre of pasture, if turnout time = < than 3 hr/d
- 1 acre of pasture, if turnout time = 3 to 8 hr/d
- 1 ½ acre of pasture, if turnout time = 8 to 12 hr/d
- > 2 acres of pasture with unlimited turnout time
• In the end the farm needs to:
  – Be flexible
  – Plan ahead
  – Monitor: adjust to grass condition
  – Adjust original plan
  – Keep records
• Pastures are made up of individual plants

• Understanding how plants grow can help us understand how to manage the pasture
How the Grass Plant Grows
<table>
<thead>
<tr>
<th>Percent leaf volume removed</th>
<th>Percent root growth stopped</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>30%</td>
<td>0%</td>
</tr>
<tr>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>50%</td>
<td>2-4%</td>
</tr>
<tr>
<td>60%</td>
<td>50%</td>
</tr>
<tr>
<td>70%</td>
<td>78%</td>
</tr>
<tr>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>90%</td>
<td>100%</td>
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</tbody>
</table>
Keep Plants Growing Fast

Slow growth zone!!!!!

Individual pasture-plant growth

Plant height (inches)
Horses bite the pasture off with their front teeth which means they can graze the pasture at ground level.

Plants must have a chance to recover!
# Seasonal Growth Patterns

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</thead>
<tbody>
<tr>
<td>Kentucky bluegrass</td>
<td><img src="chart_bluegrass" alt="Graph" /></td>
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<tr>
<td>Orchardgrass</td>
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<tr>
<td>Reed Conarygrass</td>
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<tr>
<td>Alfalfa</td>
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<td><img src="chart_alfalfa" alt="Graph" /></td>
<td><img src="chart_alfalfa" alt="Graph" /></td>
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<tr>
<td>Red clover</td>
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<tr>
<td>White clover</td>
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• **Must have “pasture mix”**
  - NOT seeds designed for lawns

• **NOT preferred:**
  - *Tall Fescue* = warm weather, not as palatable, endophyte is toxic
  - *Timothy* = very palatable, but low grazing and weather tolerance, can have a cereal rust mite problem
  - *Alsike Clover* = produces toxin
• Preferable:
  – *Bluegrass* = good with cool weather & heavy grazing, very palatable, but low yield
  – *Orchardgrass* = responds well to N fertilization, ideal in high grazing areas
  – *Reed Canarygrass* = good in wet conditions, matures quickly
  – *Perennial Ryegrass* = tolerates heavy grazing, easy to establish, not drought resistant
  – *Clover* = best in small quantities, can cause slobbers, persists with heavy grazing
• Periodic fertilizing based on soil tests
• Control weeds
• Create exercise areas and paddocks
• Manage grazing
• Consider need for reseeding or renovation
In order to properly lime and fertilize pastures you first need to test the soil

- Nitrogen (N)
- Phosphorous (P)
- Potassium (K)
- pH

- **N** deficient = ↓ growth and yellow color
- **K** deficient = ↓ winter hardiness, disease resistance, and stalk length
• 1 ton of horse manure:
  – 11 lb N  2 lb P  8 lb K
  – Not all nutrients are available

• Spring is best time to apply manure

• Apply thin layer to speed drying and discourage fly breeding

• Manure should not be spread if there is a risk for water pollution

• Composted manure is best!
• Horses will rarely eat weeds
• Determine type of weed
  – Perennial, Summer or Winter Annual
• Preventing weeds before they grow is the best management!
  • Plant clean, weed-free seed
  • Avoid spreading weed seeds with manure
  • Sanitize equipment prior to using them in a different field
  • Plant and maintain desirable plant species (don’t overgraze!)
  • Feeding weedy hay can introduce a different type of weed
• Helps remove weeds
• Prevents seed heads
• Allows for uniform maturity
• Minimizes need for herbicides
• Creates higher quality pastures
  – Mow rye and bluegrass @ 2-3”
  – Mow timothy, brome and orchard grass @ 4-5”
Dry Lots

- Areas of bare soil or sand/soil mix with little grass or other vegetation
- Should be fenced and a minimum of 400 ft² per adult horse
- Locate on relatively stone free, well drained soils
- Avoid slopes & divert runoff away from paddocks

- Several long, narrow runs are best
- Spread sand ~ 2” deep to improve footing
- Remove accumulated manure frequently
- Consider grassed filter strips around the edges of the area
• **Continuous grazing**
  - Easy
  - Reduced yields

• **Rotational grazing**
  - More management
  - Higher yields
  - More infrastructure required
Steps to Effective Grazing

• Graze to the desired stubble height
  – (take half, leave half)

• Allow adequate rest periods for regrowth

• Don’t re-graze a pasture until your ‘key species’ has reached the desired height
Rotational Grazed Pastures
Intensive Rotational Grazing

Corral

S

W
Radial Pastures

Legend:
- Permanent Fence
- Gate
- Water
- Lane

Homesite Area
Barn
Confinement
Pasture
Pasture
Pasture
Pasture
• Forage growth is determined by:
  – Soil type
  – Forage species
  – Harvest or grazing management
  – Weather conditions
  – Plant disease, weed and pest management
  – Stocking rate (AD and AU)
  – Nutrient management (fertilization and pH)
  – Farm owners goals and management capacities
• Control weeds and undesirable plants

• Prevent or reduce selective grazing

• Mow pastures
  – Especially those dominated by bunchgrasses, if selective grazing has occurred

• Improve waste management so that forage is not lost or damaged
• Set reasonable goals for your farm
• Plan, monitor and modify plans to meet your objectives
• Be observant – walk your property and make footprints
• Keep records – written and photographic
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