Managing Pasture by Developing the Grazier’s Eye

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Does your management allow for too much overgrazing?

2010 VT Grazing Survey (n=229)

<table>
<thead>
<tr>
<th>Normal Range*</th>
<th>(inches)</th>
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</thead>
<tbody>
<tr>
<td>Pre-grazing height</td>
<td>4.9 - 10.9</td>
</tr>
<tr>
<td>Post-grazing height</td>
<td>1.2 - 4.2</td>
</tr>
</tbody>
</table>

* Within 1 standard deviation of mean

"Many farmers are grazing lower than is ideal."

How do you gauge pasture height?

What causes overgrazing?

Is overgrazing all bad?

1 of 6
What are the consequences of overgrazing?

Animal Performance
There is a negative relationship between animal output (milk, gain, wool, etc.) and pasture utilization.

This graph shows the rate at which grass grows depending on the residual height. The rate increases as residual increases – until the grass is long enough to start shading the underside of the plant and slowing down the growth.

An adequate residual height, which promotes quicker regrowth, also shortens the length of time before cattle can graze in the same pasture again.

A quick lesson in plant physiology...

How does grazing affect the plant?
In order to regrow and make the necessary leaves, the plant uses two sources of energy:
- existing leaves, which make new carbohydrates via photosynthesis;
- stored carbohydrates.
When an adequate residual is left after grazing...

- Greater proportion of new leaves are being produced from carbohydrates in existing leaves...
- ...photosynthesis in the leaves remaining produces most of the carbohydrates for new leaves.
- ...fewer from stored carbohydrates.

When there is an inadequate residual left after grazing...

- Smaller proportion of new leaves are being produced from carbohydrates in existing leaves...
- ...the plant must move stored carbohydrates up from the stem base to produce new leaves.
- ...more from stored carbohydrates.

Plants would prefer to grow new leaves by producing carbohydrates with old leaves than by moving stored carbohydrates. It’s easier and more efficient.

Shorter residual height:
- will increase the length of rest periods;
- may change pasture composition;
- may encourage weeds.

Grasses differ...

- ...in their response to defoliation, their ability to grow back after being grazed.

Comparing these two grasses, the orchardgrass stem bases (where carbohydrates are stored) are higher in the canopy - so they are more likely to be eaten.

Stored carbohydrates
Less likely to be eaten with meadow fescue.

Bosworth
Grazing During Drought

During dry weather, be on the lookout for early signs of moisture stress.

During moisture stress, plants are more dependent on stored carbohydrates for growth.

Increase residual height of the grazed plants and lengthen the rest periods between rotations. This way there are more leaves present to help supply the plant with carbohydrates.

Grazing During Drought

If the drought persists, consider a sacrifice pasture.

Remove the animals from all paddocks except this sacrifice pasture and feed them hay.

You know that the plants in the sacrifice paddock may die from overgrazing, but you’ll be saving the rest in the process.

The importance of the late-season grazing period

In late summer and early fall, temperate grasses produce new tillers that will be the basis for growth in the following spring.

Because growing conditions may be less than optimum during this time, control grazing pressure to insure productive pastures next year; severe defoliation near the end of the growing season will reduce future forage production.

The importance of the late-season grazing period

Let grasses grow (uninterrupted) 3 to 4 leaves before a killing frost to store sufficient carbohydrates, and leave a 3 - 4” residual.
Plant Height Classification

Tall/Big Species
- Alfalfa
- Red clover
- Upright varieties of birdsfoot trefoil
- Alsike clover
- Timothy
- Smooth bromegrass
- Orchardgrass
- Tall and meadow fescue
- Reed canarygrass
- Festulolium
- Italian ryegrass

Intermediate Species
- Intermediate varieties of birdsfoot trefoil
- 'Ladino type' of white clover
- 'Tetraploid' Perennial ryegrass

Short/Small Species
- 'Empire' type varieties of birdsfoot trefoil
- 'Common and Dutch type' of white clover
- Kentucky bluegrass
- 'Diploid' perennial ryegrass

Grass Tillers
Tillers are the new shoots (leaves, stems, crown, roots) produced at the crown.

Grasses with basal tillers but no lateral stems are considered bunch grasses.

Bunch Grasses
- Timothy
- Orchardgrass
- Tall and meadow fescue
- Ryegrasses
- Festulolium
- Perennial ryegrass
- Tall fescue

Lateral Stems
Lateral stems that grow above the soil surfaced are stolons and those growing below the surface are rhizomes.

Grasses with lateral stems are considered sod-forming grasses.

Sod-Forming Grasses
- Kentucky bluegrass
- Smooth bromegrass
- Reed canarygrass
- Quackgrass
- Bentgrasses

The “Perennial” Nature of Grasses

Lateral stem growth rate is increased by cool temperatures, short days, nitrogen fertility and frequent close mowing (within recommended range).
**Legume Growth Habits**

- White clover has a creeping growth habit using stolons.
- Most forage legumes grow from a crown and don’t creep.

**Growth Stages**

**Determinant Growth**

- Bud
- Bloom

**Indeterminate Growth**

- Vegetative
- Bud

- Birdsfoot trefoil
- White clover

**References**

The Vermont Crops and Soils Homepage (Pasture Management):
[http://pss.uvm.edu/vtcrops/?Page=pasturegrazing.html](http://pss.uvm.edu/vtcrops/?Page=pasturegrazing.html)

Geoff Brink, Basic Plant Physiology for Grazing, USDA Dairy-Forage Research Center, Madison, Wisconsin