Tall Fescue Grass Growth Rates and a Connection to Pasture Grazing

12 Grade

Windsor High School
1100 Main Street
Windsor, CO 80550
Table of Contents

Abstract ........................................................................................................... 2

Introduction ................................................................................................... 3

Review of Literature .................................................................................... 3

Materials ....................................................................................................... 4

Methods ....................................................................................................... 4

Results ......................................................................................................... 5

Discussion and Conclusion ......................................................................... 6

References ................................................................................................... 7

Acknowledgements ..................................................................................... 8
Abstract

Summers are hard on Colorado pastures and grazing, tall fescue grass is in the mix as well. This project was done to find out when rotation is necessary and what the growth rates are if a pasture is grazed once a week and every week. The hypothesis was that if grass is grazed once a week then the total growth and dry matter will be greater than grass grazed every two weeks or grass left undisturbed. This project had three tested pots of tall fescue grass. The grass was planted in damp soil and placed in a germination chamber for two days until; the seeds began to sprout. The pots were then moved in to a greenhouse and watered every day. As soon as there was over 13.5 cm of grass, the pots were labeled. One was control, one was clip once a week and one was clip twice a week. Then every week the grass was measured and the once a week pot was clipped, and the clip twice a week pot was clipped every other week, the control was not clipped. The hypothesis was rejected because the control had more dry matter and growth than the once a week grass clipping.
Introduction

Throughout the summer many pastures in Colorado have dried up due to the drought but does frequency grazing have an effect too? How does tall fescue grass grow in heavy grazing conditions? Heavy grazing in general is never beneficial to dry weak grass. This is a closely studied area because “grasses are the dominant plants in most forage-based enterprises throughout the world” (Trlica, 2013).

Hypothesis: If grass is grazed once a week then the total growth and dry matter will be greater than grass grazed every two weeks or grass left undisturbed.

Review of Literature

Tall fescue grass is a common grass in pastures throughout Colorado. This grass is a long-lived perennial, cool-season, deep-rooted, bunchgrass and it also is well adapted to humid or temperate areas (Hannaway, 2004). Tall fescue grass can produce large amount of nutritious leaf growth in the spring months, but livestock can affect the growth during the growing season due to heavy grazing. Tall fescue is a common grass and all livestock can forage on it except it can be toxic to pregnant mares.

Pasture management is the best way to keep having healthy constant growing pastures throughout the summer, however it is best to have flexible grazing management for drought or wet time periods. When looking at your pasture and debating on moving pastures look at the grass and its condition and never on a predetermined date. Grasses are better producers of nutritious leaf growth during the
Spring months but letting “livestock graze during the growing season can affect the regrowth” (Trlica, 2013).

This hearty grass is a bunch grass that is known for growing in clumps with deep root systems that keep it anchored down in the soil. The roots are strong and long and do not do a lot of intertwining so that there is more access to water when in a drought. The “root growth usually is affected by heavy defoliation, which makes the plant less competitive and more vulnerable to drought, because the roots may not penetrate to depths where adequate moisture exists” (Trlica, 2013).

Materials

- Three planting pot with a 6 inch circumference
- Damp potting soil
- Tall fescue seed
- Germination chamber
- Scissors
- Pencil
- Paper
- Ruler
- Well light area
- Chicken wire

Methods

- Fill all three pot with damp potting soil until there is two inches left from the top.
- Sprinkle 1/8th of a cup of tall fescue grass evenly on top of the damp soil, in all three pots.
- Label the pots control, cut every week and cut every two weeks.
- Set all three pot in the germination chamber for two days just so the grass starts to sprout.
- After they have all sprouted place in a well light area and water every day.
- Once grass starts to become thicker and taller place chicken wire around the pots to help the grass grow upward.
- Begin to measure all pots every other day.
- Cut the every week pot on a specific chosen day and clip on that day every week and do the same with the every two week pot as well.
- DO NOT EVER CLIP THE CONTROL ONLY MEASURE.
- Record the growth height as well as how much was taken off, and record the condition of the grass every time.
- After the final measurement, clip all grass growth and dry.
- Weigh all dried grass clippings in grams. Record the data.
- Save clippings and dispose of pots and soil properly.

**Results**

![Graph showing regrowth of Tall Fescue Grass with various frequency of clippings.]

<table>
<thead>
<tr>
<th>Date</th>
<th>Growth (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/1/2013</td>
<td>1</td>
</tr>
<tr>
<td>5/7/2013</td>
<td>1.5</td>
</tr>
<tr>
<td>5/9/2013</td>
<td>1.5</td>
</tr>
<tr>
<td>5/13/2013</td>
<td>1</td>
</tr>
<tr>
<td>5/15/2013</td>
<td>1.5</td>
</tr>
<tr>
<td>5/21/2013</td>
<td>2</td>
</tr>
</tbody>
</table>

**Regrowth of Tall Fescue Grass with Various Frequency of Clippings**

<table>
<thead>
<tr>
<th></th>
<th>Weekly Clipping</th>
<th>Every 2 Weeks</th>
<th>Control (no clipping)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Growth</td>
<td>8</td>
<td>8.5</td>
<td>10</td>
</tr>
</tbody>
</table>

**Dry Matter Regrowth of Tall Fescue Grass with Various Frequency of Clippings**

<table>
<thead>
<tr>
<th></th>
<th>Weekly Clipping</th>
<th>Every 2 Weeks</th>
<th>Control (no clipping)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Dry Matter</td>
<td>29.7</td>
<td>30.7</td>
<td>31.9</td>
</tr>
</tbody>
</table>
Discussion and Conclusion

In growing tall fescue grass to find the effect of grazing frequency on growth rates it was interesting to see how pastures can be affected. It shows the need to keep a well maintained pasture management schedule. The hypothesis was rejected because the control had more dry matter and growth than the once a week grass clipping. One problem that may have accrued was that the watering may not have been as consistent as it should have been, due to the fact that the grass was put in to the Ag departments green house that in ran by many Ag students. This did not skew the results too badly though it could have had an overall major effect. Throughout growing and experimenting with tall fescue grass, it was surprising to see the growth rates change based on how often the grass was clipped. This project was helpful to learn about pasture management and to find out how pastures could be affected by grazing too much. This experiment can help ranchers and farmers understand growth rate of grass when grazed frequently.
Reference List


Acknowledgements

I would like to acknowledge the Windsor Agriculture Department which gave me the space and ideas to produce this project along with the help from the Ag teachers for getting materials.
Season are lost.

The grass roots are in growth. Passer, I have blamed that after turning leaves out on grass.

and numerous men of peasants (fell) ear luten and fight the growth.

Question:

The proper growth of grass?
your animals towards faster to allow. How often should you rate growing better.

What grasses sustain hearty.

ASK Questions:
different growing environments. Re-growth in plowers will differ with non-directional hypotheses.

factors for exceptional growth rates.
How often should you rotate primary succession afterwards?
Background Research Questions

Form at least one question for each area below.

**Entity**: How will tall fescue grass grow and reclaim the pasture after being overgrazed and in a drought season?

**Independent Variable**: How will clipping tall fescue grass once a week to twice a week affect the growth rate/reclaim rate?

**Dependent Variable**: How will clipping tall fescue grass at different lengths affect the regrowth/reclaim rate?

**Relationship between Entity and Variables**: How will tall fescue grass grow after being clipped to a specific length?

- How does pasture rotation/frequency affect regrowth?
Materials:"

- Pots to use
- Scissors
- Germination chamber
- Towel to use seed
- Soil, soil
- Three potting pots

It then hypothesise:
- Water pot
- Water can cut the grass in the garden

- Leave the center plot alone just mower
- Remove 3 ft. of the grass from the ground surface
- Grasses will 3 ft. of the grass from the ground surface
- Dig all plots near garden place in the ground

- Large pot container; every week, receive two
- Seeds begin to sprout
- Chamber for two days or at least until
- Set all the plots in germination
- All these parts
- Grass seed on top of the soil
- Sprinkle 1/4" of a cup of soil
- From the top
- Fill all three pots with water

Proceedings:
Notes on Experiment 8.638:

- All work well, trouble free operation.

- Made the grater and I found:

  - works fine, only a bit slow.

- Revised the spreadsheet and made:

  - great improvement.
CUT 1.5 cm off of pot 2
CUT 2.5 cm off of pot 2
Pot 1 + Pot 2 were cut to 13.5 cm
Pot 3 (control) 16 cm

Pot 3 (cut every week) 14.5 cm
Pot 2 (cut every week) 17 cm
Pot 1 (control) 17 cm

Test NG
To day was the first day of
Daily Journal 5.1.13
To day I just measure the grass.

- pot 1 (control), 17 cm
- pot 2 (clip every two weeks), 14 cm
- pot 3 (clip every week), 15.5 cm

Pot 2 +3 cut down to 13.5 cm
- clip 1.5 cm off of pot 2
- clip 3.5 cm off of pot 3

On pot 3 the grass was really uneven.

Daily Journal 5/13/13
Comma had an over at the offices at 3:19

Three a.m. 30.9.49

Chopped wood 8:49

Over all boxes mass for every week

Every two weeks mass 7.09

Every week mass 7.10.49

Daily Journal 5.8.31.13