

A Photo Gallery of Legume Content in Pastures.

Ed Rayburn
Extension Forage Agronomist
West Virginia University
Morgantown, WV 26506
erayburn@wvu.edu

Jim Green
Prof. Emeritus Crop Science
North Carolina State University
Raleigh, NC 27695
jim_green@ncsu.edu



Introduction

There are advantages to growing legumes in pastures and hay fields. These include providing nitrogen for plant growth and increasing forage quality and animal performance.



Introduction

Botanical composition is a dynamic characteristic in pastures dependent on plant species, management, and weather. When soil nitrogen supply is low legumes will be competitive since they provide nitrogen first for themselves and then to the non-leguminous plants as root nodules slough off, dead leaves decompose, and livestock return manure and urine to the soil. When soil nitrogen supply is high grasses will be competitive.



Introduction

The grazing manager can use livestock grazing pressure to shift the balance of grasses and legumes. In general, leaving a higher residual height encourages grasses while grazing to a shorter height encourages legumes. Under rotational grazing, rest interval is a critical management need for legumes.



Objective

This series of photos is provided as a visual guide to help managers train their eye to estimate the relative amount of legumes in vegetative pastures. The predominant legumes in these photos are white and red clover.

When visually evaluating botanical composition in pastures consider plant species present, canopy forage mass and age, and associated visible dead material.



Two Sets of Photos Provided

- The first is a series of vertical aerial photos.
- The second is a series of photos taken from different perspectives, vertical and oblique.
- Vertical photos are necessary when collecting point count data of botanical composition.
- Oblique photos are of value in evaluating forage mass.



Vertical Areal Photos.

- Photos were taken about 5 feet above the ground.
- The metal quadrat is 1-ft. square.
- The forage within the quadrat was cut at ground level.
- Forage was hand separated into grass, legume, broadleaf weed, and dead fractions.
- Botanical fractions are based on live plant material.
- Photos are sorted by legume content from low to high.





3580 lbs DM/acre
87% Grass
4% Legume
9% Weeds



2950 lbs DM/acre
82% Grass
5% Legume
13% Weeds



3170 lbs DM/acre
74% Grass
5% Legume
21% Weeds



2960 lbs DM/acre
93% Grass
6% Legume
1% Weeds



1180 lbs DM/acre
52% Grass
6% Legume
43% Weeds



3120 lbs DM/acre
84% Grass
7% Legume
9% Weeds



2830 lbs DM/acre
77% Grass
7% Legume
16% Weeds



2650 lbs DM/acre
78% Grass
13% Legume
9% Weeds



3270 lbs DM/acre
74% Grass
16% Legume
10% Weeds



3630 lbs DM/acre
64% Grass
17% Legume
19% Weeds



2680 lbs DM/acre
53% Grass
19% Legume
28% Weeds



3230 lbs DM/acre
73% Grass
25% Legume
2% Weeds



1200 lbs DM/acre
46% Grass
30% Legume
24% Weeds



1480 lbs DM/acre
44% Grass
37% Legume
19% Weeds



1880 lbs DM/acre
27% Grass
40% Legume
33% Weeds



1700 lbs DM/acre
19% Grass
40% Legume
42% Weeds

2970 lbs DM/acre
36% Grass
41% Legume
24% Weeds





2150 lbs DM/acre
41% Grass
46% Legume
13% Weeds



2200 lbs DM/acre
38% Grass
46% Legume
16% Weeds



815 lbs DM/acre

0% Grass

46% Legume

54% Weeds



1677 lbs DM/acre
23% Grass
55% Legume
22% Weeds



1960 lbs DM/acre
25% Grass
60% Legume
16% Weeds



1780 lbs DM/acre
24% Grass
61% Legume
15% Weeds



1980 lb DM/acre
20% Grass
76% Legume
4% Weeds

Oblique and Vertical Areal Photos.

- Photos were taken about 5 feet above the ground.
- The metal quadrat is 1.5-ft. square.
- The forage within quadrat was cut at 1.0 to 2.5 inches above ground level.
- Forage was hand separated into grass, legume, broadleaf weed, and dead fractions.
- Botanical fractions are based on live plant material.
- Photos are sorted by percent legume from low to high.





2400 lb DM/acre
96% Grass
4% Legume
0% Weeds
Canopy ht. 8.5"



3950 lb DM/acre
87% Grass
5% Legume
8% Weed
Canopy ht. 10.5"



**3600 lb DM/acre
89% Grass
11% Legume
0% Weeds
Canopy ht. 12.0''**



1750 lb DM/acre
84% Grass
16% Legume
0% Weeds
Canopy ht. 6.5"



3475 lb DM/acre
84% Grass
16% Legume
0% Weeds
Canopy ht. 11.5"



3600 lb DM/acre
73% Grass
17% Legume
10% Weed
Canopy ht. 12.0"



1775 lb DM/acre
80% Grass
18% Legume
2% Weeds
Canopy ht. 7.5"



2150 lb DM/acre
81% Grass
19% Legume
0% Weeds
Canopy ht. 9.0''



2175 lb DM/acre
81% Grass
19% Legumes
0% Weeds
Canopy ht. 10.5''



1925 lb DM/acre
71% Grass
22% Legume
7% Weeds
Canopy ht. 9.25''



1400 lb DM/acre
75% Grass
25% Legume
0% Weeds
Canopy ht. 6.0''



2000 lb DM/acre
68% Grass
30% Legumes
2% Weeds
Canopy ht. 9.5"



3075 lb DM/acre
64% Grass
32% Legume
4% Weeds
Canopy ht. 9.5"



3550 lb DM/acre
66% Grass
34% Legume
0% Weeds
Canopy ht. 10.25''



2875 lb DM/acre
65% Grass
35% Legume
0% Weeds
Canopy ht. 9.25''

Conclusion

Forage quantity and quality are two important pasture characteristics that determine grazing days available per acre and animal performance per head. Forage quantity or mass can be estimated using ruler or plate meter canopy height and appropriate calibrations for the pasture type being used. This series of photos can help managers train their eye for determining the botanical composition in pastures. A producers skill at estimating forage quantity and quality will enable them to improve the management of their livestock on pasture.



Other References

Rayburn, Ed. 2003. [Point Count System for Measuring Ground Cover from Digital Photos.](#) WVU Extension Service e-factsheet as Power Point Presentation.

Rayburn, Ed and John Lozier. 2003. [Estimating Pasture Forage Mass from Pasture Height.](#) WVU Extension Service e-factsheet.

Rayburn, Ed and John Lozier. 2003. [A Falling Plate Meter for Estimating Pasture Forage Mass.](#) WVU Extension Service e-factsheet.

