

Pasture

Management

Mark Landefeld
OSU ANR Educator
Monroe County, Buckeye Hills EERA



What is your Pasture Management/Grazing Plan?

- Is it open the gate into the pasture and let the girls go?
 - See you in the Fall!
 - Changing pastures a few times during the Summer
 - Moving livestock to a new field once a month
 - Rotational Grazing
 - Moving livestock to a new paddock every 3-5 days and monitoring grass growth before moving them in
 - Intensively Managed Rotational Grazing
 - Moving to new paddocks daily, monitoring grass growth measuring forage growth regularly
-
- **Good pasture management is a year around process**

What Are Things We Need to Address in Pasture Management?

- Wet paddocks, soil types and pugging soil
 - Spring flush of grass growth
 - Pasture utilization and rotation(s)
 - Fertilization
 - Spring, Summer, Fall
 - Forage specie selection
 - Weeds and their control
 - Other
-

Wet Paddocks and Pugging Soil

- What does tracking or pugging do?
 - Opens the soil surface
 - Can damage soil structure
 - Can cause forage plant and root damage
 - May take plants a long time to recover
 - May allow weeds to begin to grow
 - May cause loss of livestock's productivity
 - Pounds gained
 - Milk production
-

Wet Paddocks and Pugging Soil cont'd

- Is opening the soil surface always bad?
 - Severe damage (changing soil structure) is not good
 - This can cause the top 1-3 inches of the soil to seal and not allow rain to penetrate-(especially clay soils)
 - Reduces number of plants growing
 - Can cause 20-80% less growth per plant in these areas
 - May take several months to two years to recover
 - What will fill in the open areas?
 - Grass, legume or weeds
-

Wet Paddocks and Pugging Soil cont'd

- Loss of livestock production
 - How much do we lose?
 - Difficult to measure!
 - Smith (1971) reported that cattle in frequent deep mud could require 30 percent more net energy for maintenance requirements than normally needed. A University of Nebraska study (1991) found nearly identical results.
 - The National Research Council (1981) reported that small amounts of mud (4-8 inches deep) can reduce feed intake 5-15 percent, while larger amounts of mud (12-24 inches deep) could reduce feed intake 15 to 30 percent.
-

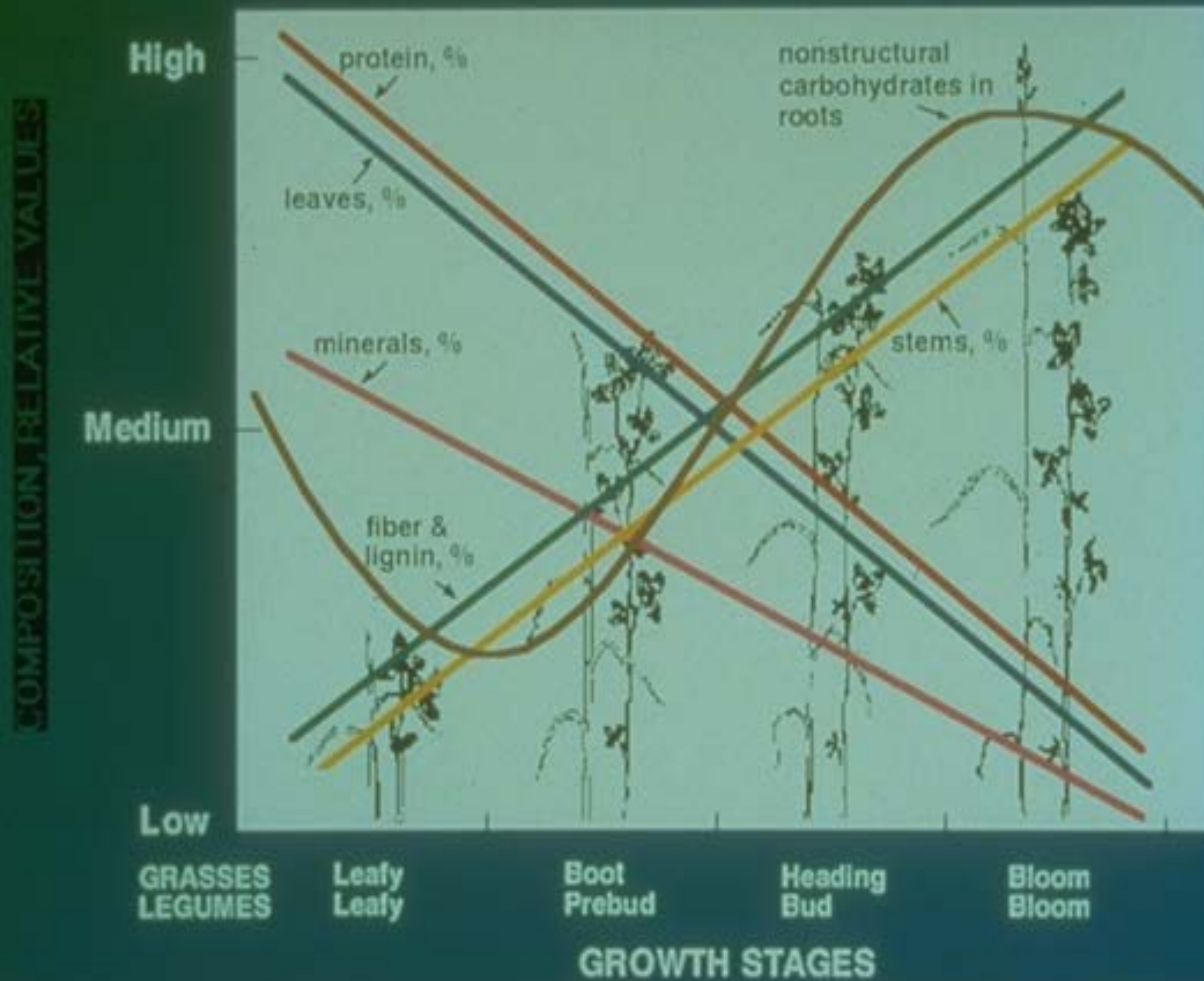
How Can We Reduce Mud

- Feed on well drained flat ground
 - Use a dedicated feeding area
 - Control erosion if on a hilly area
 - Multiple Groups
 - Heavy Use Pads
 - Concrete, Geotextile cloth, stone & screenings
 - 60-70 ft²/cow or ± 100 ft²/cow/calf pair
 - Need a way to scrape and spread manure
-

Spring Flush of Grass

- Should rapid grass growth in Spring concern us?
 - Grass tetany
 - Metabolic disorder involving magnesium deficiency
 - Do we understand grass growth?
 - 60% of cool season grasses total dry matter produced by early July
 - Vegetative vs: seed heads
 - Quality
-

Growth Stages



Pasture Utilization & Rotation

- Continuous grazing = 20-50%
 - Monthly moves = 40-60%
 - Weekly moves = 50-70%
 - Will the livestock eat it the second/third time around?
 - How much residual should we leave?
 - Time of year
 - Species of forage
-

Pasture Utilization & Rotation cont'd

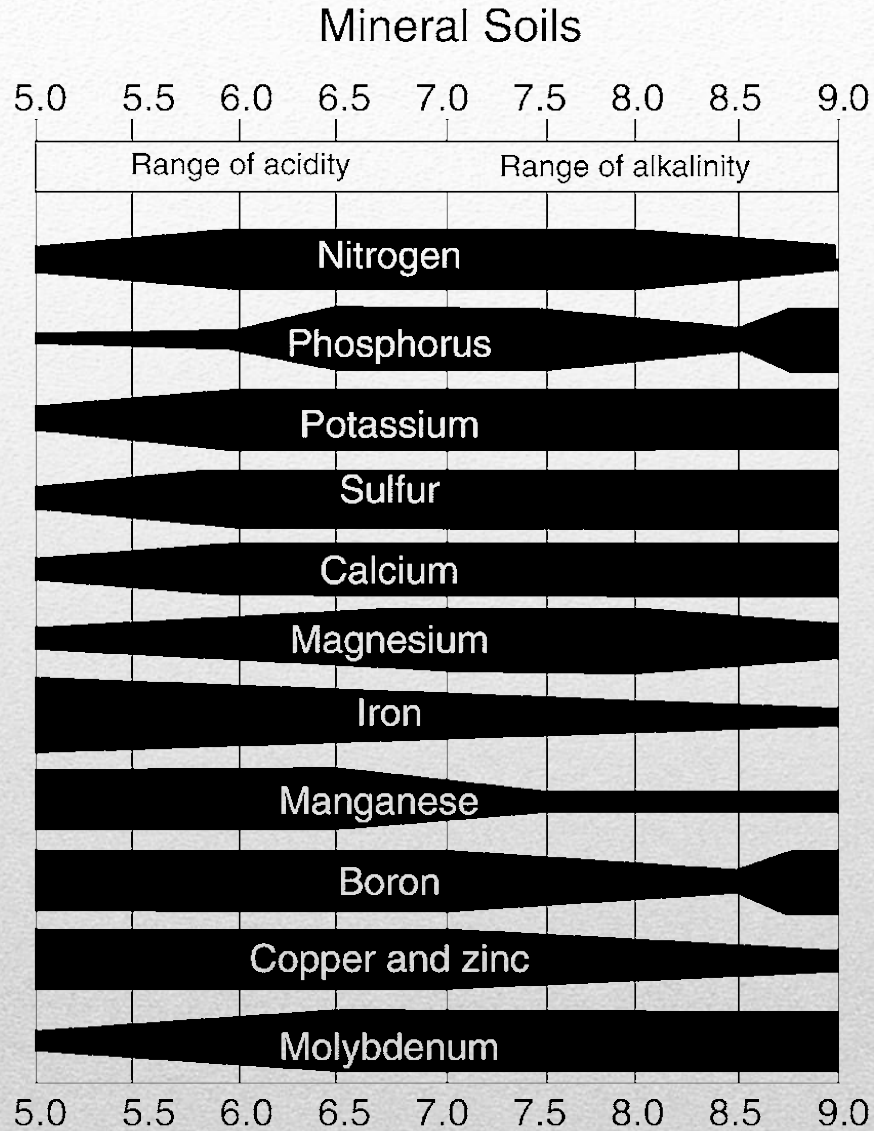


Picture from:
Pasture Utilization - The Critical Factor

05/11/2008

Fertility

- Effect of pH on mineral availability to plants



Fertility_{cont'd}

- Minimum soil test levels

	<u>Grasses</u>	<u>Grass & Legume mix</u>
Available P	30-60 lbs./A	50-80 lbs./A
Exchangeable K	Critical level lbs./A for K= $2(75 + (2.5 \times \text{CEC}))$ for all crops	
Exchangeable Ca	400-16000 lbs./A	400-16000 lbs./A
Exchangeable Mg	100-2000 lbs./A	100-2000lbs./A
Available Zn	3.0 lbs./A	3.0 lbs./A

Fertility cont'd

- Should we fertilize pastures?
 - When should we fertilize?
 - How much area should we fertilize?
 - Don't promote Grass Tetany with K applications (spring)
 - 95% of N going thru cows comes out as urine or manure
 - Research has shown effective N application rate from urine of continuously grazed cattle is <1lb./A/day, while cattle moved to a new paddock each day is nearly 50lbs./A/day
-

Forage Specie Selection

- Grasses
 - Orchardgrass- yield, regrowth, easy establish
 - Kentucky Bluegrass- sod forming, persistent, grazing tolerant
 - Smooth Bromegrass- winter hardy, high spring yield, sod forming
 - Perennial Ryegrass- easy establish, palatable, quality, graze often
 - Timothy- easy establish, later maturing, not competitive w/legumes
 - Reed Canayrgrass- high yield, flood & drought tolerant, N scavenger
 - Tall Fescue- easy establish, heavy traffic, stockpile
-

Forage Specie Selection cont'd

- Legumes
 - Alfalfa- quality, productive, summer growth
 - White Clovers- palatable, spreads by stolens, poor drainage tolerant
 - Red Clovers- easy establishment, high yields, tolerates lower pH
 - Birdsfoot Trefoil- palatable, bloat free, frequent grazing
 - Mixtures of Legumes and Grasses
-

Add legumes to your paddocks

- Why do we want legumes in pastures?
 - Diversity of species usually adds tonnage
 - Decreases need for adding nitrogen
 - Dilutes fescue and endophyte associated problems
 - Increases quality of the forage
 - Better forage increases livestock performance
-

Include Legumes

Species	Length of trials (yrs.)	Gain/head (lbs./day)	Animal class	State
Tall fescue*	3	0.12	Cows	IN
Tall fescue* & red and ladino clover		0.74		
Tall fescue*	3	1.30	Calves	IN
Tall fescue* & red and ladino clover		1.80		
Orchardgrass	10	1.07	Steers	VA
Orchardgrass & ladino clover		1.28		

Animal performance on grass vs. legume-grass mixtures.

*Tall fescue used in each of these studies was endophyte infected. *Data from Lacefield & Smith University of Kentucky AGR-26*

Include Legumes in Pastures

Species	Conception rate (%)	State
Tall fescue*	75	IL
Tall fescue* & legume	89	
Tall fescue*	72	IN
Tall fescue* & clover	92	

Cow conception rates on grass vs. grass-legume pastures.

*Tall fescue in each of these studies was endophyte infected. *Data from Lacefield & Smith University of Kentucky AGR-26*

Include Legumes in Pastures

Av. Daily Gain and Gains/Acre of Steers Grazing Tall Fescue & Tall Fescue-Clover Pastures

Pastures	Daily Gain (lbs./steer)	Total lbs./steer	Total lbs./A
Fescue & Ladino Clover	1.53	307	582
Fescue & 150 lbs. N/A	1.06	203	374

Hoveland, C.S., et al. 1981. Bulletin 530. Auburn, AL

Weeds/Invasives

- Multiflora rose
 - Autumn Olive
 - Spotted Knapweed
 - Canada Thistle
 - Nightshade family
 - Ironweed
 - Cocklebur
-



Chemical Controls

Cimarron Plus

Banvel

Crossbow

Glyphosate

Spike

Multiflora rose



Chemical Controls

Crossbow
Remedy Ultra
Glyphosate
Arsenal

Autumn Olive



Chemical Controls

Forefront
Milestone
Curtail
Stinger

Spotted Knapweed



Chemical Controls

Forefront
Milestone
Curtail
Stinger
Glyphosate

Canada Thistle



Horse Nettle (Perennial)

Niteshade family

Chemical Controls

Milestone
Cimarron Max
Accurate
Valuron
Patriot
Glyphosate



Eastern Black Nightshade (S/A)

Chemical Controls

Forefront
Milestone
Crossbow
Glyphosate



Chemical Controls

Crossbow

Forefront

Glyphosate

Ironweed



Chemical Controls

Cimarron Max

Crossbow

Dicamba

Forefront

Milestone

Stinger

Glyphosate

Cocklebur

Amount of Residual & Rest for the Plants

- When should we take livestock out?
 - Depends on the plant species
 - Leaf blades intercept sunlight
 - Keeps soil cooler and reduces N volatilization from urine
 - Sufficient time for regrowth must be allowed
 - This is the most important factor
-

Re-growth Response Varies

University of Kentucky Study

Dr. Ray Smith, Laura Schwer & Tom Keene

Two similar orchardgrass plants were chosen from a greenhouse.
Both were managed the same for 6 months:

Clipped ~once per month

Supplied with good fertility (N,P, K) and water

Re-growth Response Varies_{cont'd}

Left plant simulates continuous grazing.

Initially clipped to a 1 inch height

Then clipped weekly for the next 4 weeks at a 1 inch height

Right plant simulates rotational grazing.

Initially clipped to a 3.5 inch height

Then clipped again at 3.5 inches four weeks later

Time lapse photography started at the beginning of the fifth week (day 29) for both plants.

Day #1 (24 hours after clipping)
1" Continuous 3.5" Rotational



Day# 2

1" Continuous 3.5" Rotational



Day# 3

1" Continuous 3.5" Rotational



Day# 4

1" Continuous 3.5" Rotational



Day# 5

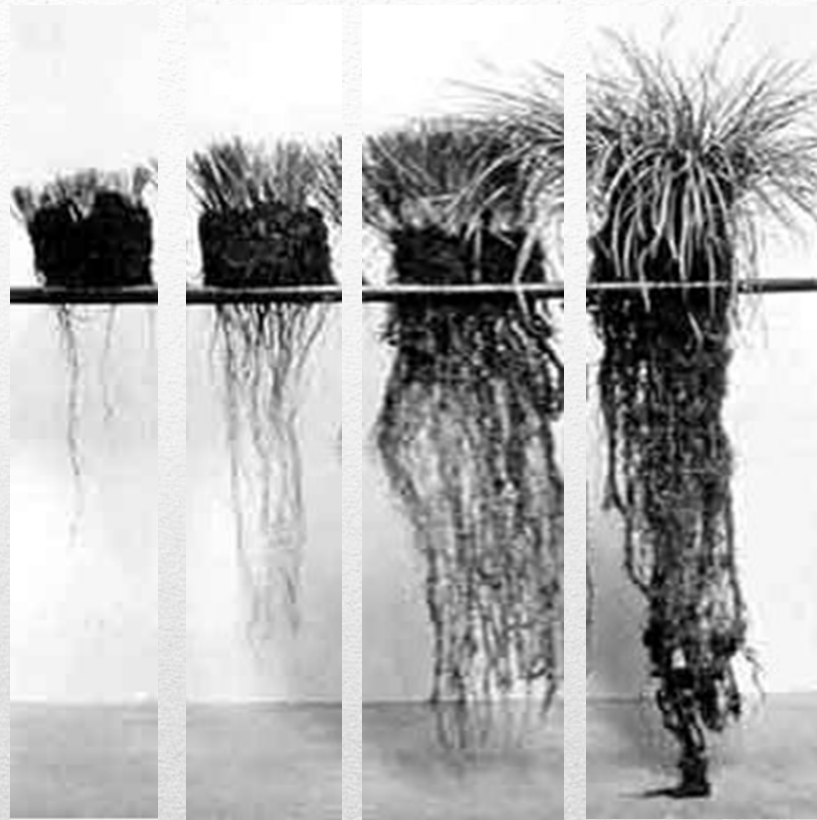
1" Continuous 3.5" Rotational



Day# 6

1" Continuous 3.5" Rotational





Root response

Minerals in Forage

- Do pasture forages provide all minerals needed?

Forage mineral values for winter grazing demonstration project in Ohio.										
Specie	Ca	P	K	Mg	S	Mn	Fe	Cu	Zn	Na
	(%)					(ppm)				
Gestating Cow	0.20	0.20	0.6	.12	.15	40	50	10	30	600
Early Lactation	0.36*	0.27*	0.7	.20	.15	40	50	10	30	1000
Fescue	0.47	0.24	1.6	0.22	0.2	66	117	3	22	38
Fes-RC-Alfalfa	0.62	0.18	1.4	0.29	0.2	57	106	4	20	58
Fes-RC-OG	0.54	0.18	1.6	0.24	0.2	83	74	3	22	24
Fes-OG	0.29	0.26	2.4	0.19	0.2	147	73	5	29	15
Red clover-Fes	0.44	0.28	2.2	0.33	0.2	86	55	4	23	21
Red clover-OG	0.77	0.30	2.3	0.28	0.2	102	170	8	42	230
OG-Bluegrass	0.54	0.19	1.4	0.21	0.2	122	385	6	32	87
Bluegrasss	0.48	0.24	1.7	0.22	0.2	184	101	6	29	9
Orchardgrass	0.60	0.22	1.4	0.18	0.2	104	198	5	33	4

- Additional Forage Production Resources
 - <http://forages.osu.edu/>
 - Additional Weed Control Resources
 - <http://www.youtube.com/watch?v=tVLUILIxUpk>
 - Bulletin 789 – 2013 Ohio Weed Control Guide
 - <http://www.ca.uky.edu/agc/pubs/agr/agr172/agr172.pdf>
 - Additional Fertility Resources
 - Bulletin 472 – Ohio Agronomy Guide – 14th Edition
-



Questions?
