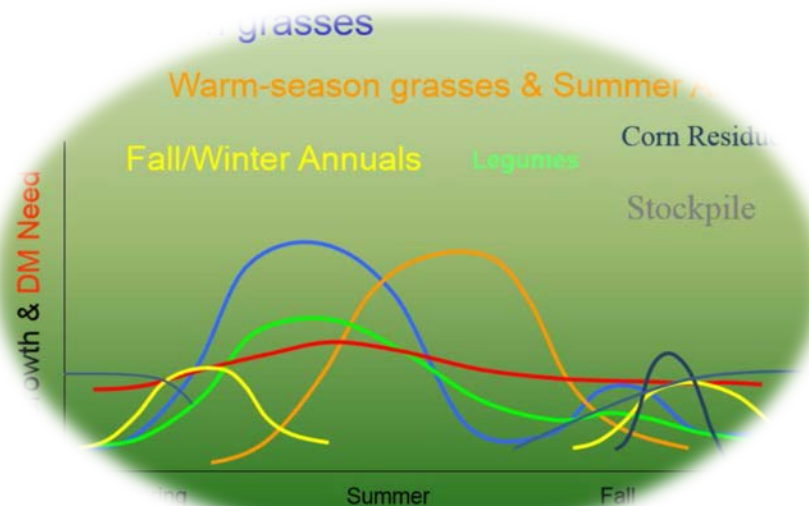


Pasture and Mud Management



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Grazing



VS

Confinement



Overgrazing is the number one threat to the pastures, environment, and animals health



The same pasture after being well managed



Managing pastures requires some basic knowledge about soil and plants



Plants in Pasture



Grasses

Legumes

Why Grasses?

- Provide roughage
- High yielding
- High adaptability
- Cold tolerance

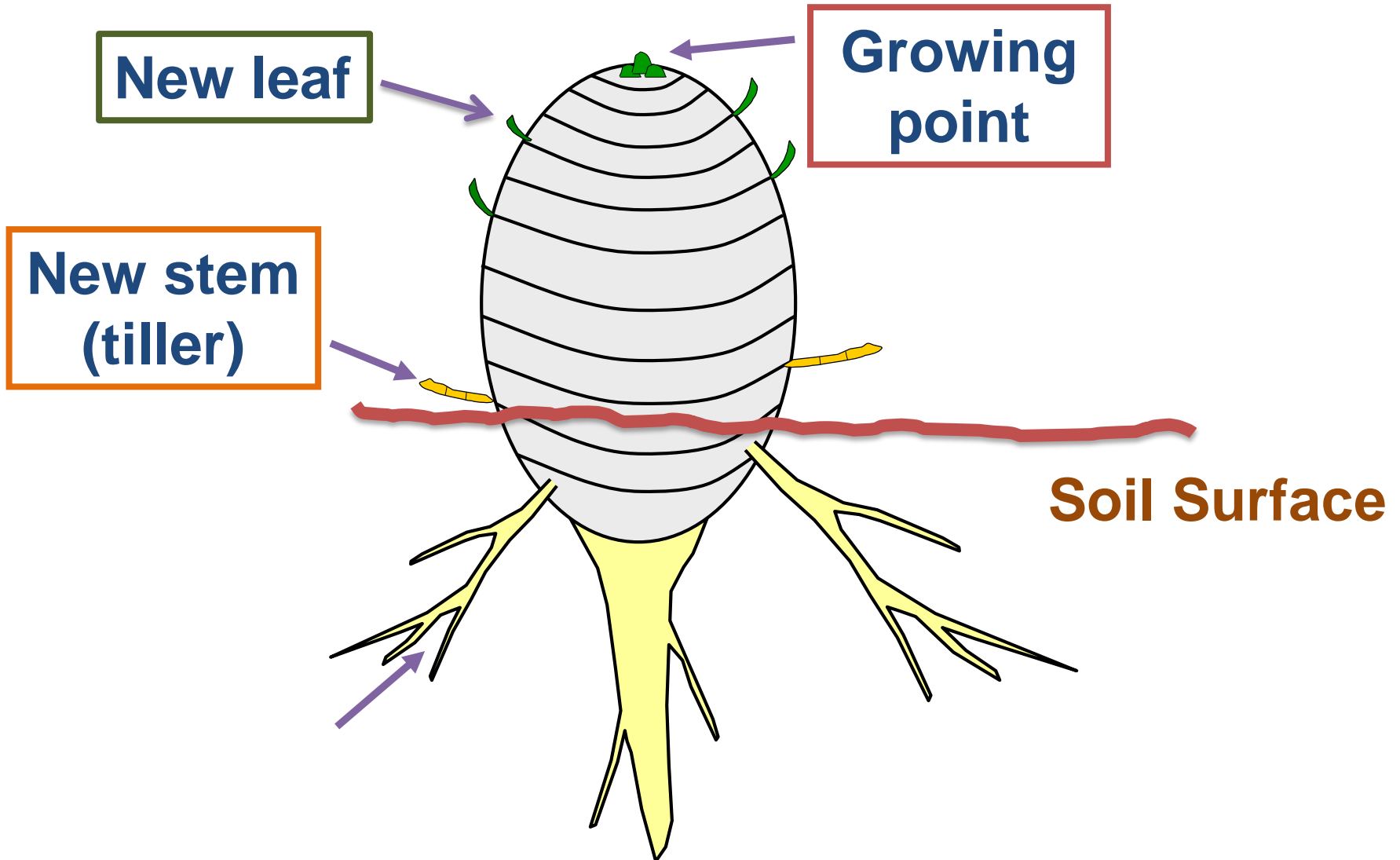


Why Legumes?

- High palatability and digestibility
- More protein than grasses
- Fix atmospheric nitrogen
- 30-35% or more legume in pasture, means no N need

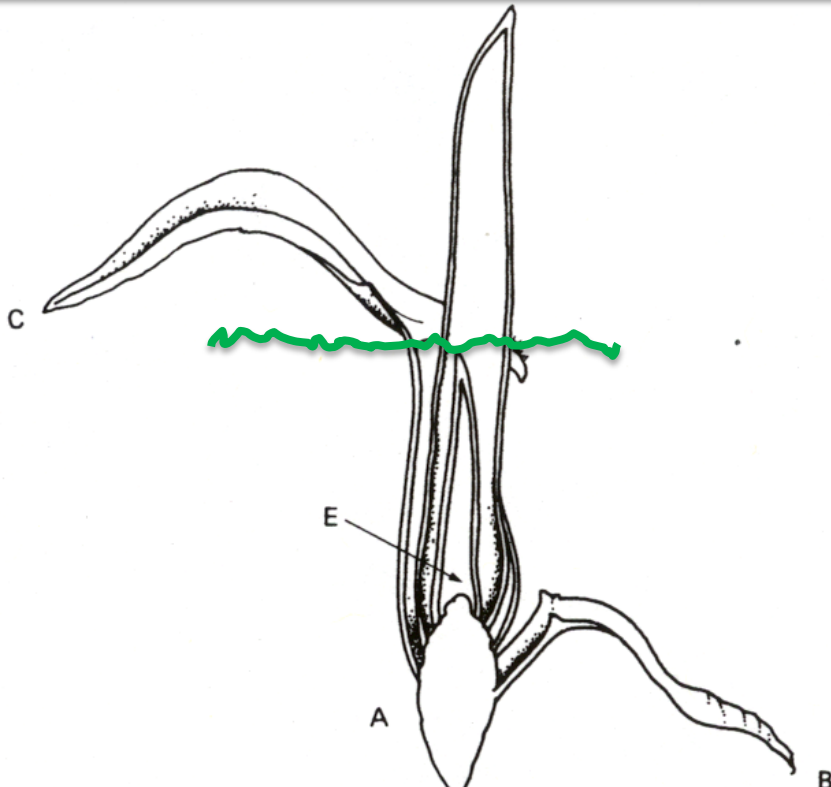


Grass Crown



Does grazing/cutting is harmful to the grasses?

- Absolutely not if done right
- Shading from old and dead leaves are removed
- Newer leaves are more efficient in photosynthesis
- Stimulates new leaves and tillers production
- Releases dead roots into soil (food for microbes)

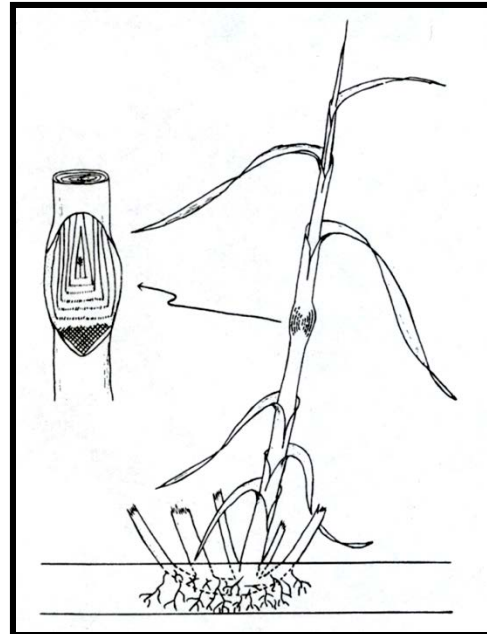


Regrowth after Grazing

Jointing grasses:

Growing point elevates during regrowth. These are good for hay **not for grazing**

- Timothy
- Smooth bromegrass

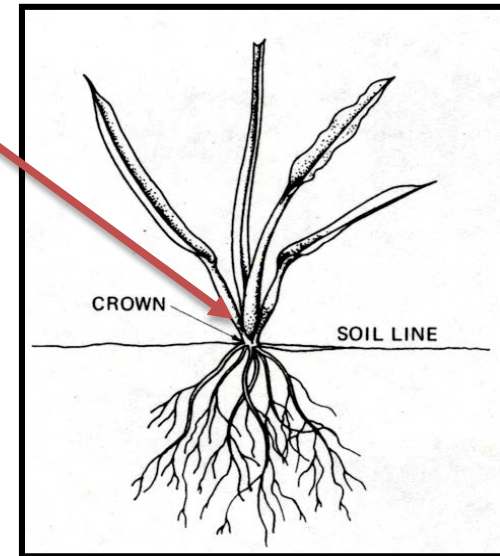


Non-jointing grasses:

Growing point remains at the crown.

These species are **good for grazing**

- Orchardgrass
- Fescue (tall, meadow, fine)
- Perennial ryegrass
- Kentucky bluegrass



Grazing height matters:

When an adequate residual is left after grazing . . .

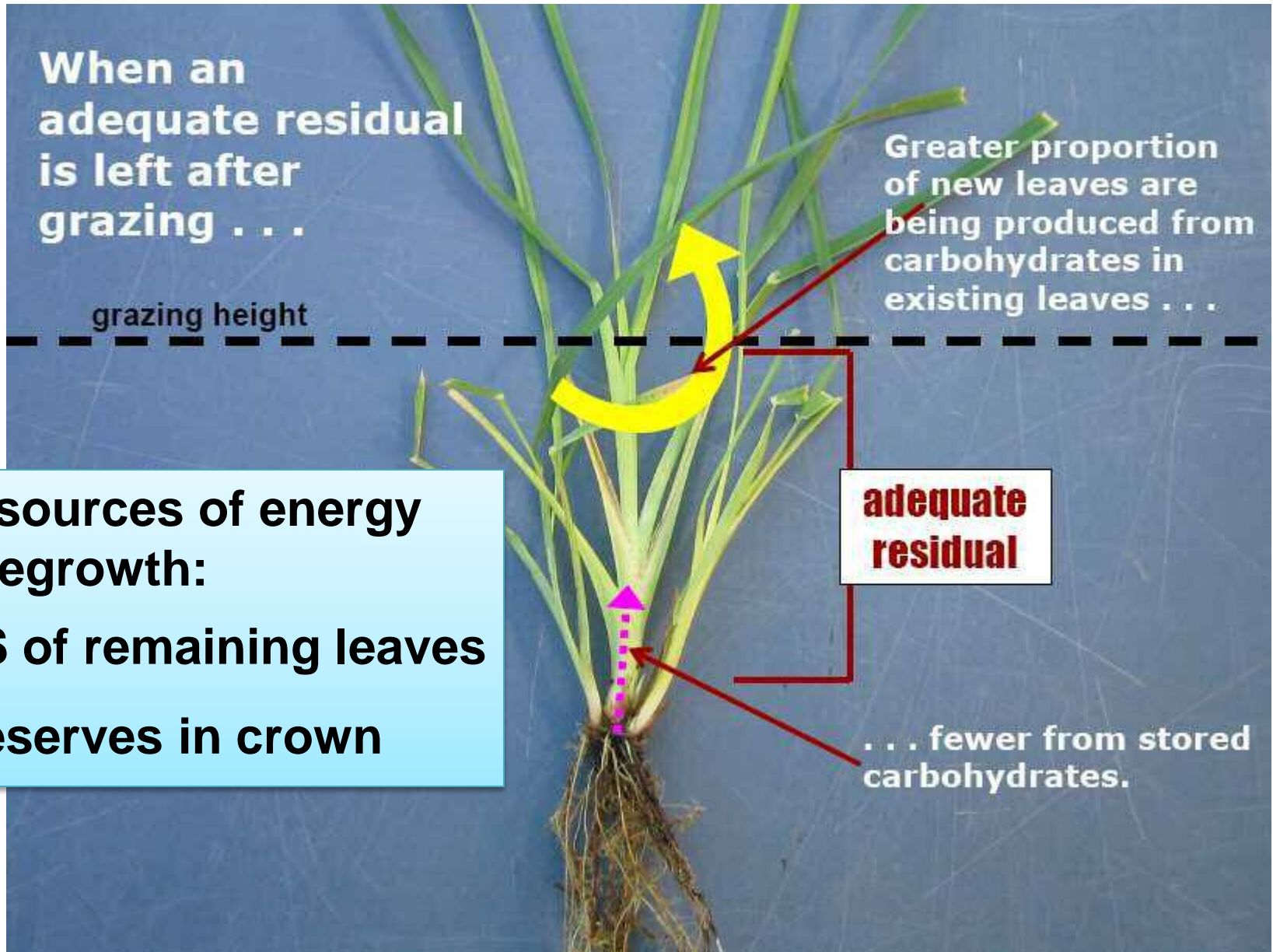
Greater proportion of new leaves are being produced from carbohydrates in existing leaves . . .

grazing height

adequate residual

. . . fewer from stored carbohydrates.

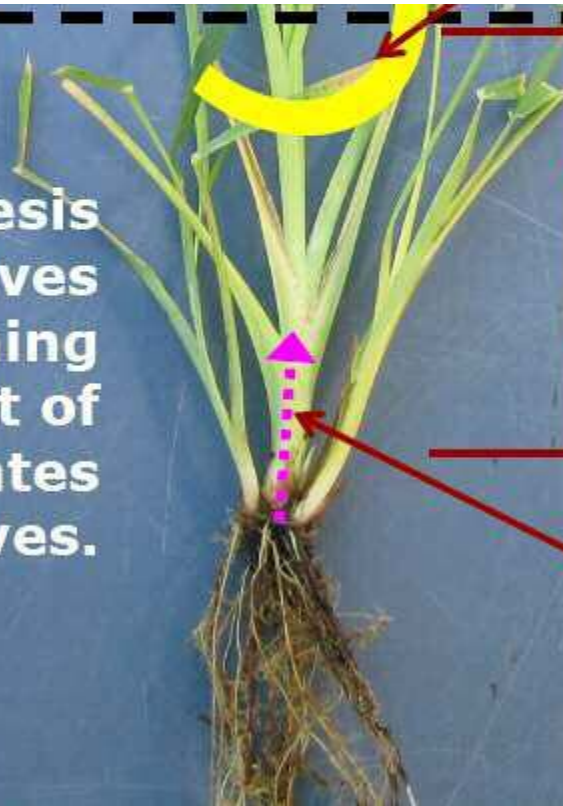
Two sources of energy for regrowth:
1- PS of remaining leaves
2- Reserves in crown



... photosynthesis
in the leaves
remaining
produces most of
the carbohydrates
for new leaves.

**adequate
residual**

... fewer from stored
carbohydrates.



... the plant must
move stored
carbohydrates up
from the stem
base to produce
new leaves.



inadequate residual

... more from stored
carbohydrates.

When to Graze?

- Best time for grazing is when grasses are about 10" high
- Yield increases with maturity
- But quality declines with maturity (more fiber)
- So, we need to compromise between high quality & yield



Forage Legumes



Clovers



Clovers to avoid: Red and alsike clover



- Alsike clover contains a toxin that causes:
 - photosensitization
 - liver damage (especially light colored)



Photosensitivity
results in sunburn of
exposed skin

Red Clover:

- May host a fungus that causes drooling (slobbering)
- The fungus releases slaframine which stimulates excessive saliva



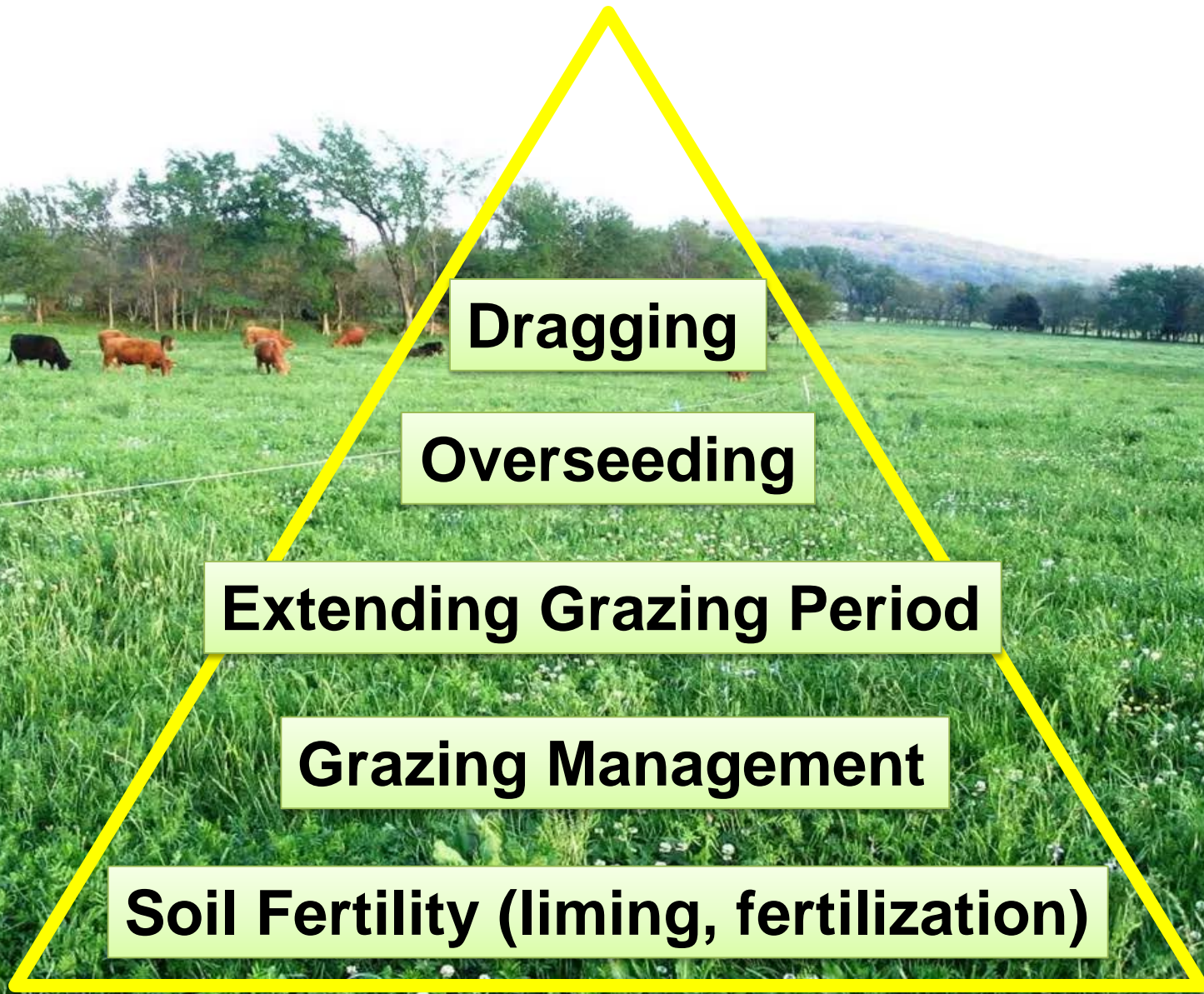
Birdsfoot Trefoil

- Good for pasture
- Seeded with grasses and grazed as non-bloating legume
- Once established, grows on marginal lands
- Excellent choice for steep/rocky lands



Managing Existing Pastures





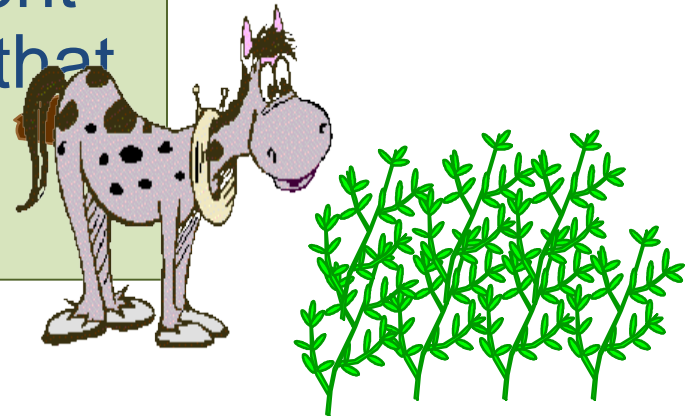
Major steps in pasture management



**Have you
ever
tested
your soil?**

Pasture Management Begins With Managing Soil Fertility

- The first step in pasture management is testing the soil (every 2-3 years)
- Soil pH should be adjusted by lime (recommended rate by lab)
- Fertilizer may be needed
- Plants grown in a soil deficient in a nutrient are deficient in that nutrient



Testing Frequency

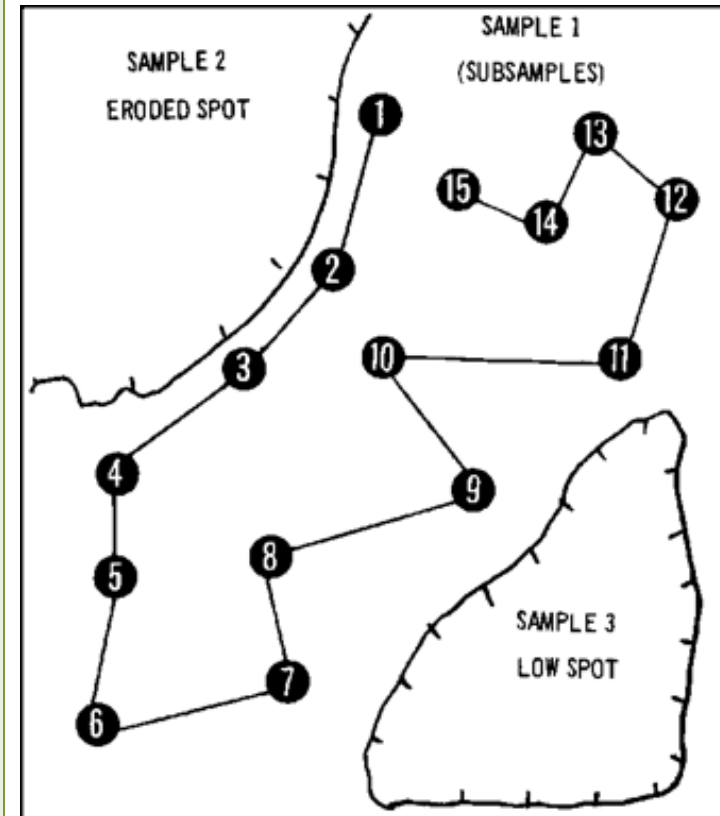
- Every year for the first 3 years
- Then after every 3 years
- Fall is preferred; (enough time for liming)



Soil probe with foot rest

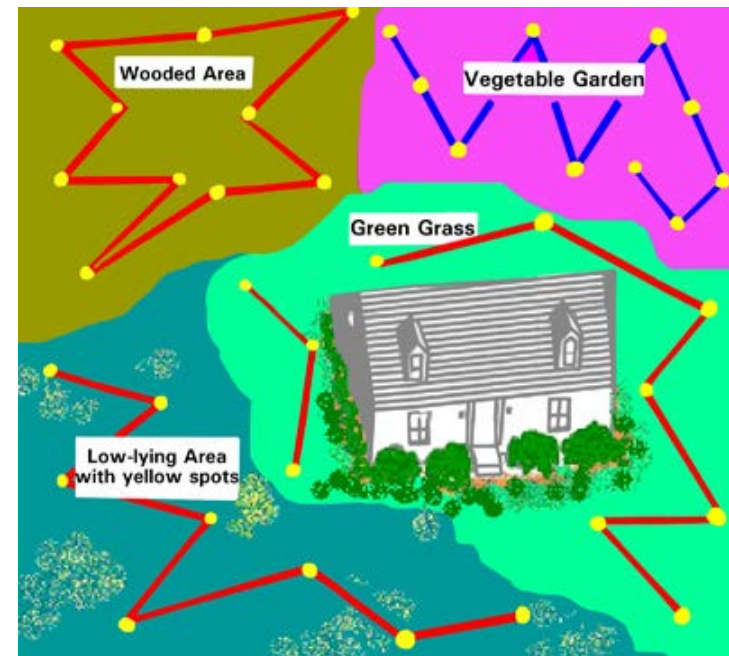
Sampling Number

- If pasture is small, one composite sample (20-25 subsamples)
- Larger or ununiformed fields divided into smaller areas
- Maximum area for one sample is 25 acre



Sampling Depth and Method

- Sampling depth for pasture/hay field is 4"
- Avoid the edges of the fields
- Follow a zig-zag pattern around the field to collect random samples
- Remove residues and rocks



Handling the Sample

Dry soil samples over night



Joni's Farm
Field ID: East of Boon
Crop: Corn Silage
Date: September 30th, 2009

Mix subsamples in a clean bucket and remove rocks and plant residues



Joni's Farm
Field ID: East of Boon
Crop: Corn Silage
Date: September 30th, 2009

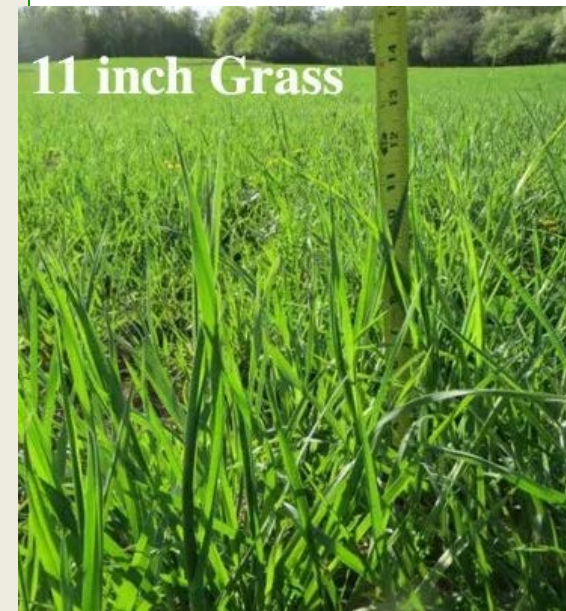
Send only 1/2 lb soil in a ziplock bag with required information

Liming

- Rainy areas often have acidic soils ($\text{pH} < 6$)
- Most nutrients are less available in acidic soils
- Aluminum toxicity also is major issue in acidic soils
- Lime traditionally used to adjust the soil pH
- Dolomite lime when soil Mg is low (also grass tetany)
- If recommended lime is > 2 ton/ac, split application
- Fall application of lime is preferred
- Apply lime when expecting rain within 24-48 hrs.

Grazing: Few Important Tips

- Begin grazing when pasture is 10-12" tall and move the animals when pasture is grazed down to 4-5"
- The key to pasture health is **rest period** after grazing
- Pastures contain ~ 20% DM (rest is water). A 1000-lb horse needs 150 lb fresh (30 lb DM) to gain 3% of its body weight
- Use **sacrifice lots** during plants' resting period and when soil is wet



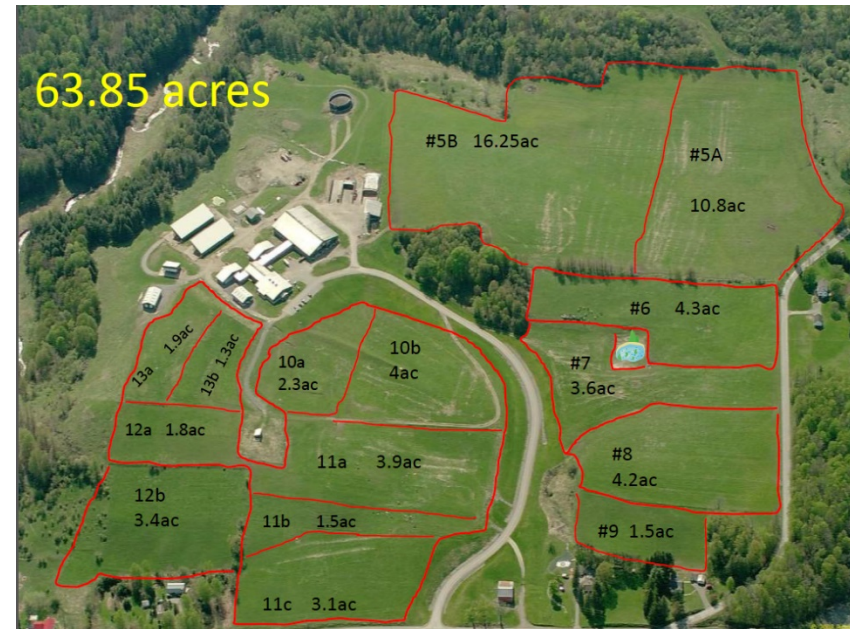
Average rest period for cool-season forage species

Month	Rest (days)
April	15
May	18
June	24
July	30
August	36
September	42

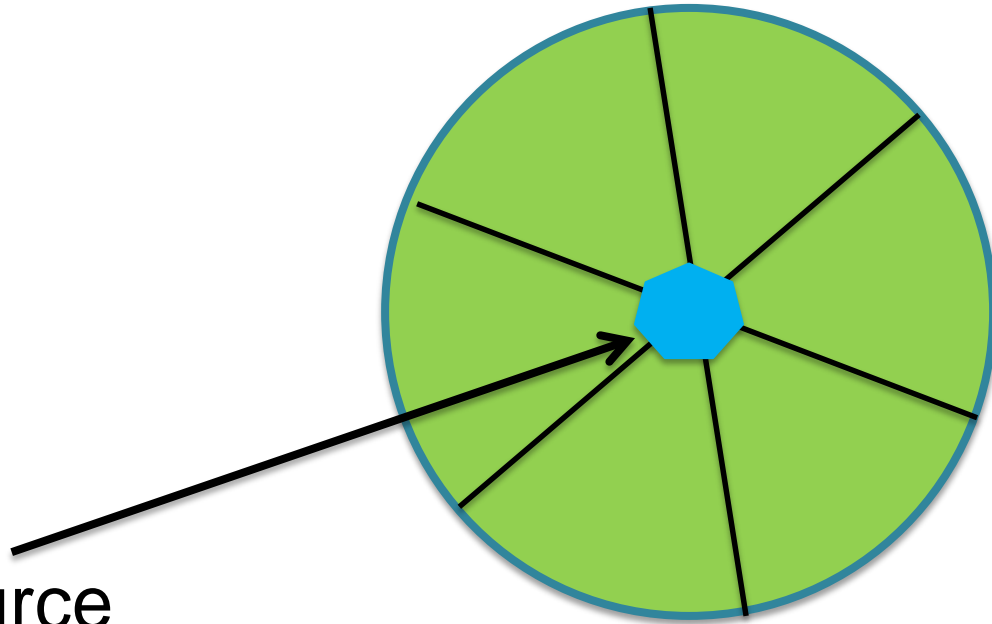


Rotational Grazing

- Pastures subdivided into paddocks
- Only one paddock is grazed at a time, others will rest
- Resting allows plants to renew their food reserves
- Pasture with enough rest produce more in long term



Simple Rotational Grazing



Water Source

6-day grazing then followed by
30-day recovery period/paddock

30 days recovery might be just right, or short, or long.
That is why it is called simple!

Break up Manure in Pasture





- Areas, avoided by animals
- Flies lay eggs
- Ununiformed soil fertility
- Respiratory issues when dried



Improving Pasture Quality

Frost seeding: spreading white clover seeds over the existing pastures in early March.



Sacrifice Areas



Why is it called sacrifice lot?

- You sacrifice a small area for the benefit of other paddocks
- Is fundamental to pasture management
- Just because it's a sacrifice lot, it doesn't mean it can be neglected!



Why do we need it?

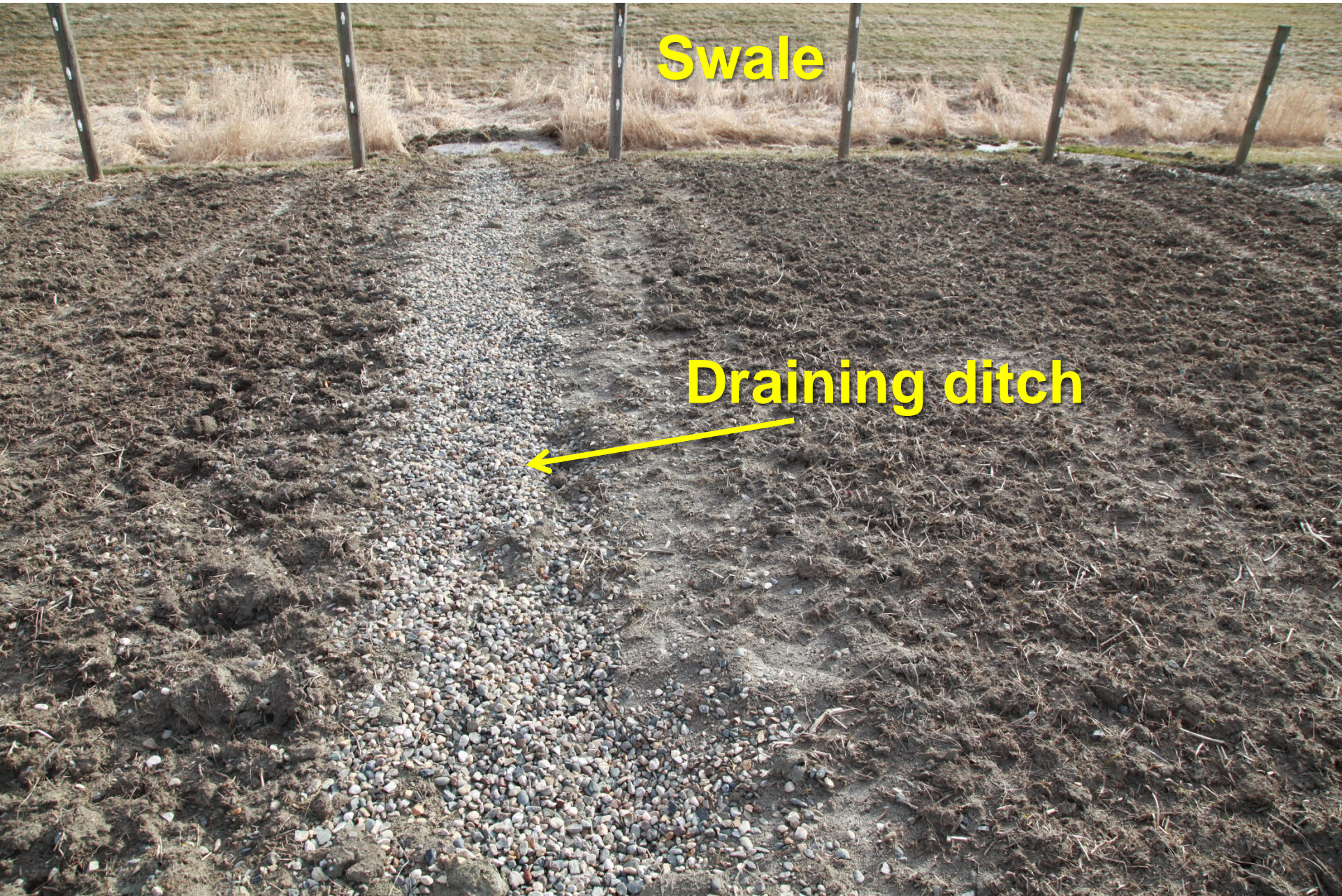
- To avoid overgrazing when acreage is not sufficient for the existing animals
- Pasture is in resting period
- The soil is wet
- Controlling forage consumption
- Chemicals (fertilizer, lime, herbicide etc.) are used

Sacrifice lots: A few tips

- Should be on high ground, away from wetlands/surface water flows
- Surrounded by grass filter
- Best to have one sacrifice area per horse
- A minimum of 200 SQ FT per horse
- Cleaned frequently
- **Footing** is important in sacrifice areas
- Footing materials have their own pros & cons

Swale

Draining ditch





Gravel on top of geotextile fabric

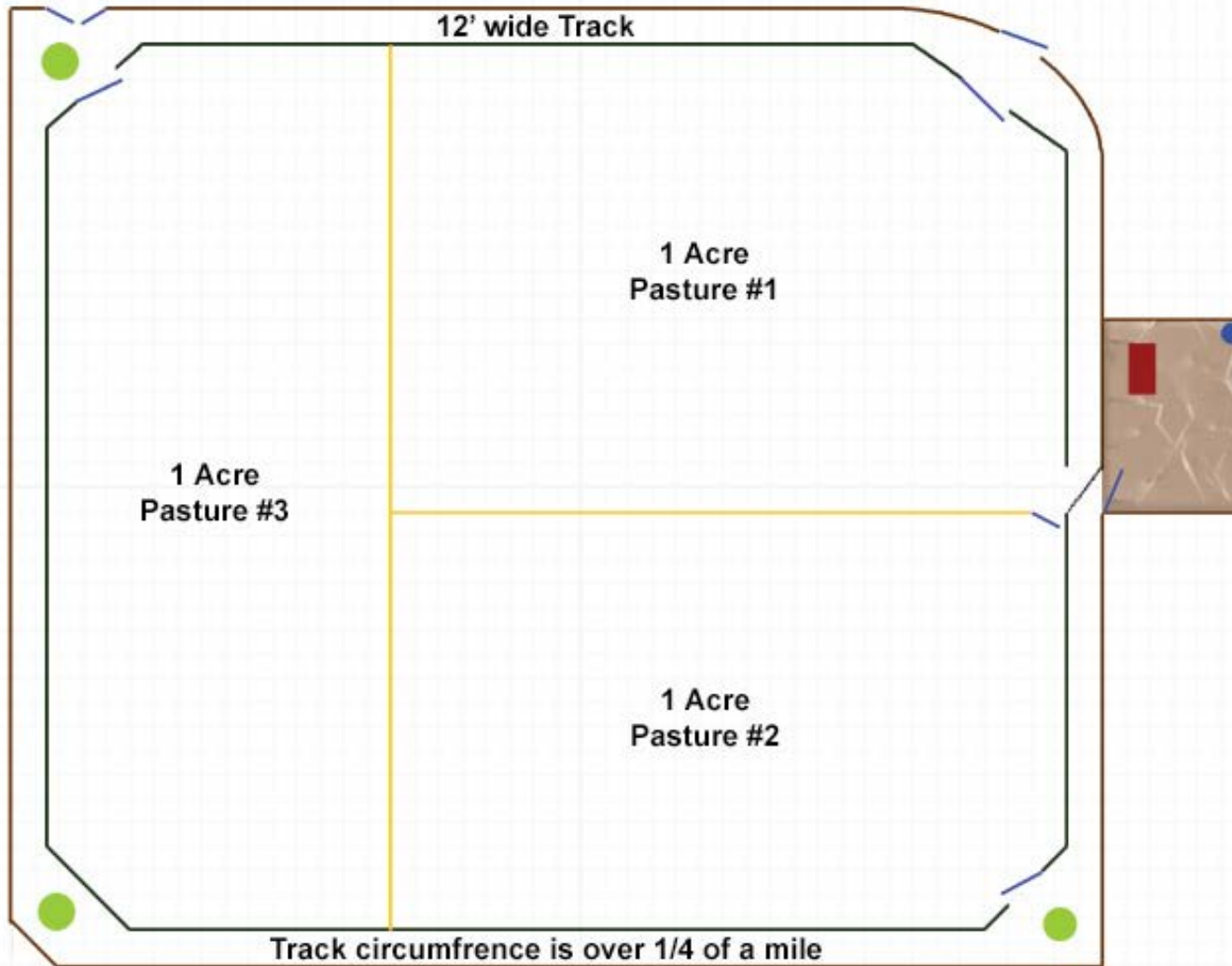


For more information on sacrifice area and footing materials, including costs, use the following link:

http://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/horse_footing_materials_15_05.pdf

Paddock Paradise





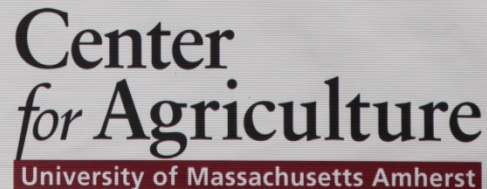
- Perimeter Fence
- Track Fence
- Rotational Fence
- Gates
- Shelter in Mud Paddock
- Hay Feeding Stations

Bungee Gate at Mud Paddock Directs horses to go all the way around field before entering Pasture #1

PADDOCK PARADISE

a best practices approach to horse pasture management

In partnership with the UMass/Amherst Center for Agriculture
and the Massachusetts Department of Environmental Protection,
and in furtherance of Blue Star Equiculture's mission
to help Horses, Humans and Mother Earth,
we present an introduction to "Paddock Paradise".







My pasture looks like one of these. Should I reseed it?



“If you do not make changes in your current management practices, you’ll see yourself in similar situation in just a few months.”



Selecting pasture species

- Type of animal
- Mixed grasses and legumes
- Adaptability to climate and soil condition
- Drought resistance if precipitation is an issue
- Custom mix vs pre-mix
- New improved varieties
- Reliability of the seed source
- Management level



Time of Seeding

- Cool-season grasses/legumes can be sown in:
 - early-mid September
 - early spring
- Fall planting is preferred (less weed issue)



Fertilizer Application

- N application at the sowing time is a no no!
- Apply only P and K, based on soil test results/recommendation



Seeding Rates

<u>Species</u>	<u>lb/acre (alone)</u>	<u>lb/acre (in mixture)</u>
Orchardgrass	10-12	5
Timothy	6-8	4
Bluegrass	30	20
Fescue	15-20	10
bromegrass	12-15	6-8
White clover	-	1-2
Red clover	12	6-10
Alfalfa	15-20	15

Higher sowing rates pays off since it reduces the competition from annual weeds



Selecting Forage Species:

<http://ag.umass.edu/fact-sheets/selecting-forage-species>

Guidelines for Reseeding Pasture:

<http://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/GuidelinesforReseedingPastures09-49.pdf>

Forage Management; Perennial Forage Species for Pasture and Hay:

http://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/Perennial%20Legumes%20and%20Grasses_0.pdf

Mud Management

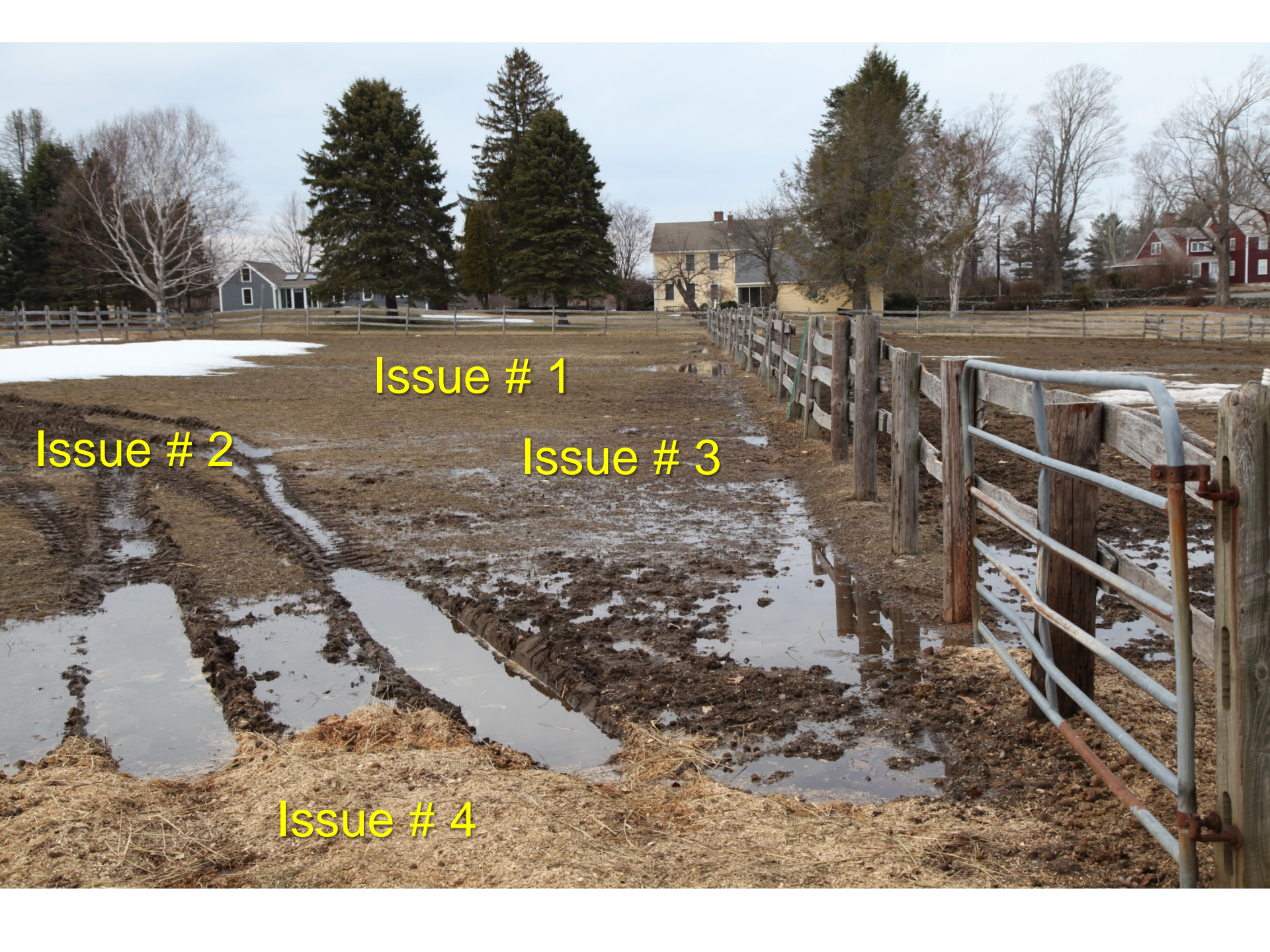


Major Causes of Muddy Condition

Recipe for mud:

Mud = Bare soil + Compaction + Rain water + OM

1. Overgrazing = Bare soil
2. Compaction = Animals on wet soil, hi traffic area
3. Rainwater = rain, snow melt, roof runoff
4. OM = manure, hay, saw dust



Issue # 1

Issue # 2

Issue # 3

Issue # 4

**Compacted soil
doesn't drain!**



- Best protection against mud is prevention.
- 1" rain on 20' X 50' roof = 620 gal water
So: 42" annual precipitation
> 26,000 gal. additional water!
- Rain gutters, downspouts, French drain direct rain water away from barns and other confinement areas



Best Mud Management Practices

- Avoid overgrazing and use rotational grazing
- Use sacrifice area when soil is wet and/or during plants resting period
- Installing gutters and French drain
- Collecting manure from sacrifice area, high traffic areas, riding arenas, every 1-3 days
- Rotating watering/feeding containers



Available Resources

- Sign up for CDLE Newsletter (free)
- Sign up for UMass Pasture Management-online course (presented only in spring)
- Contact me: masoud@umass.edu
(413-545-1843)