

RUTGERS

New Jersey Agricultural
Experiment Station

Improving Pasture for Reduced Feed Costs

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- **A pasture is an area of land, usually 0.5 acres or more, where grasses and legumes are grown for the purpose of supplying nutrients to grazing animals**
- **Pasture plants contain carbohydrate, fat, protein, minerals, vitamins, and some water**



Average Nutrient Content of Grass Pasture

Nutrient	Average %
Protein	15.3
ADF	35.6
NDF	58.7
Crude fiber	33.1
Sugar	10.2
Starch	3.5
Non-structural carbs	12.7
Crude fat	3.6
Calcium	0.6
Phosphorous	0.3
Magnesium	0.2
Potassium	2.0

(Dairy One Feed Composition Library)

- **Horses evolved as grazing animals consuming forage in small frequent meals throughout the day**
 - Horses should consume at least 1% of their body weight in pasture or hay each day
- **A 1000 lb horse requires approx. 2 - 3 acres of pasture to meet its nutrient requirements for maintenance during the grazing season**
 - Horses in late pregnancy, lactation, growth, or medium to intense exercise require forage and concentrate to meet nutritional requirements

- **Reduces likelihood of colic**
- **Lowers incidence of gastric ulcers**
- **Decreased incidence of chronic obstructive pulmonary disease (Heaves)**
- **Increases bone mineral content in young horses**



- **Provide aesthetically pleasing environment for landowners**
- **Productive pastures maintain good vegetative cover**
 - Provides competition to weed growth
 - Reduces erosion
 - Decreases dust production



- **Reduces hay costs by ~ \$60-100 / mo**
- **Reduce the cost of fertilizer by recycling nutrients**
- **Reduce the need to deal with manure & bedding materials from stalls and drylots**
 - This would save in:
 - Labor costs and time
 - Bedding materials
 - Spreading and/or removing it from the farm



- **Each farm must decide its own goals**
- **Will turnout be exercise lot or pasture?**
- **Do you have room for both?**



OR



- **Information needed to make decision:**
 - Finances
 - Size of usable area
 - Time – yours!
 - # of horses (stocking rate)
 - Existing facilities (Water, Fencing, Barns, etc.)



- **To maintain at least 70% vegetative cover on pastures, 1 horse can be maintained on:**
 - ½ acre of pasture, if turnout time = < than 3 hr/d
 - 1 acre of pasture, if turnout time = 3 to 8 hr/d
 - 1 ½ acre of pasture, if turnout time = 8 to 12 hr/d
 - > 2 acres of pasture with unlimited turnout time



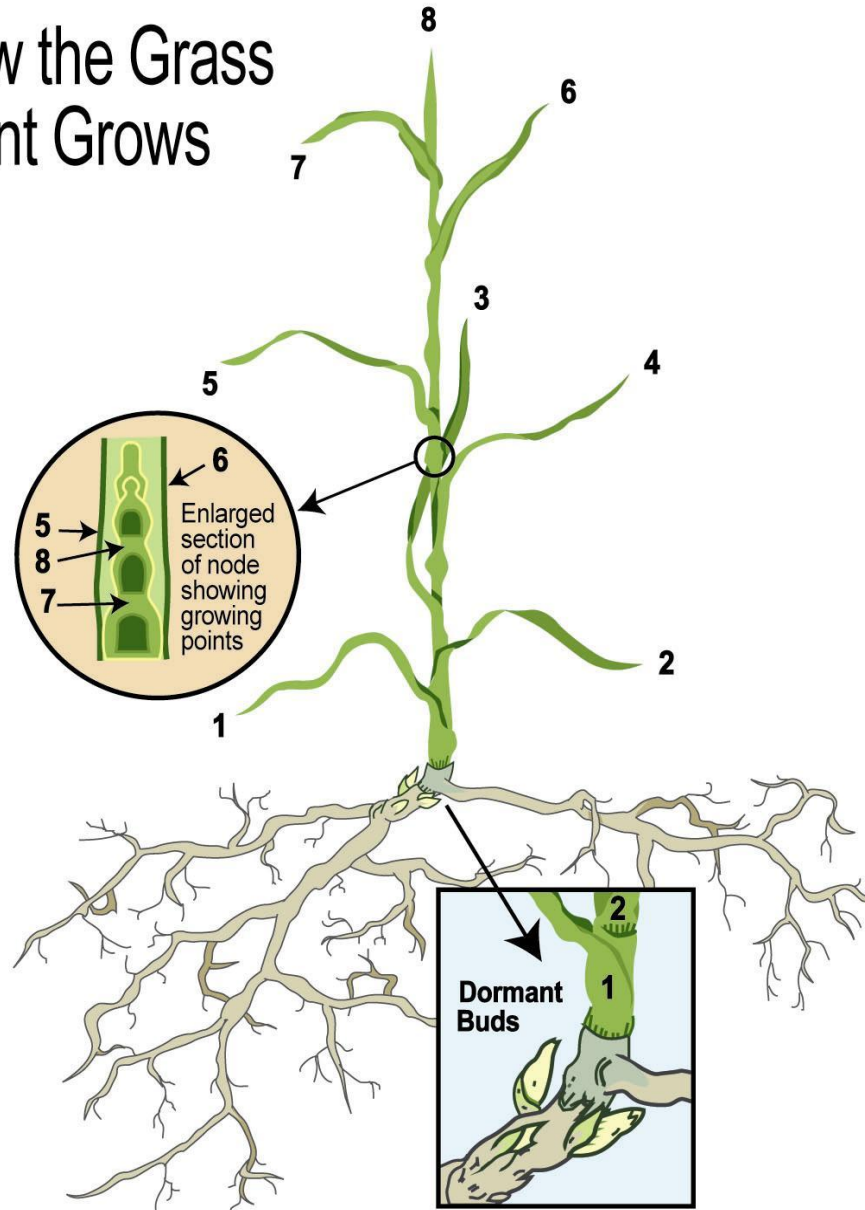
- **In the end the farm needs to:**
 - Be flexible
 - Plan ahead
 - Monitor: adjust to grass condition
 - Adjust original plan
 - Keep records



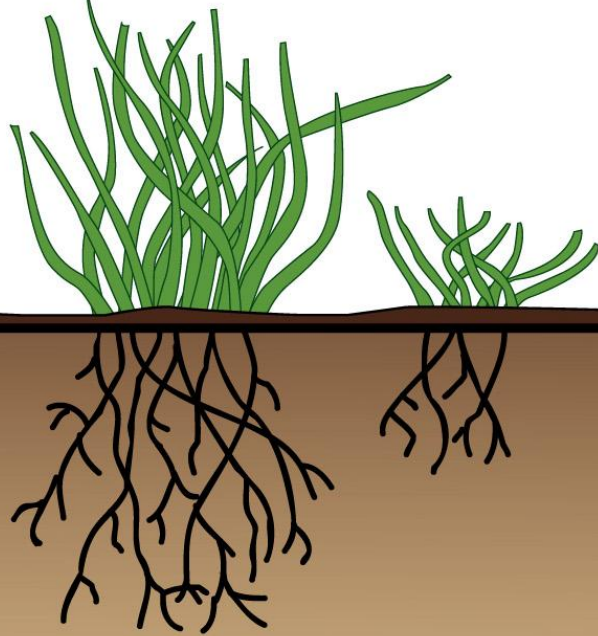
- **Pastures are made up of individual plants**
- **Understanding how plants grow can help us understand how to manage the pasture**



How the Grass Plant Grows

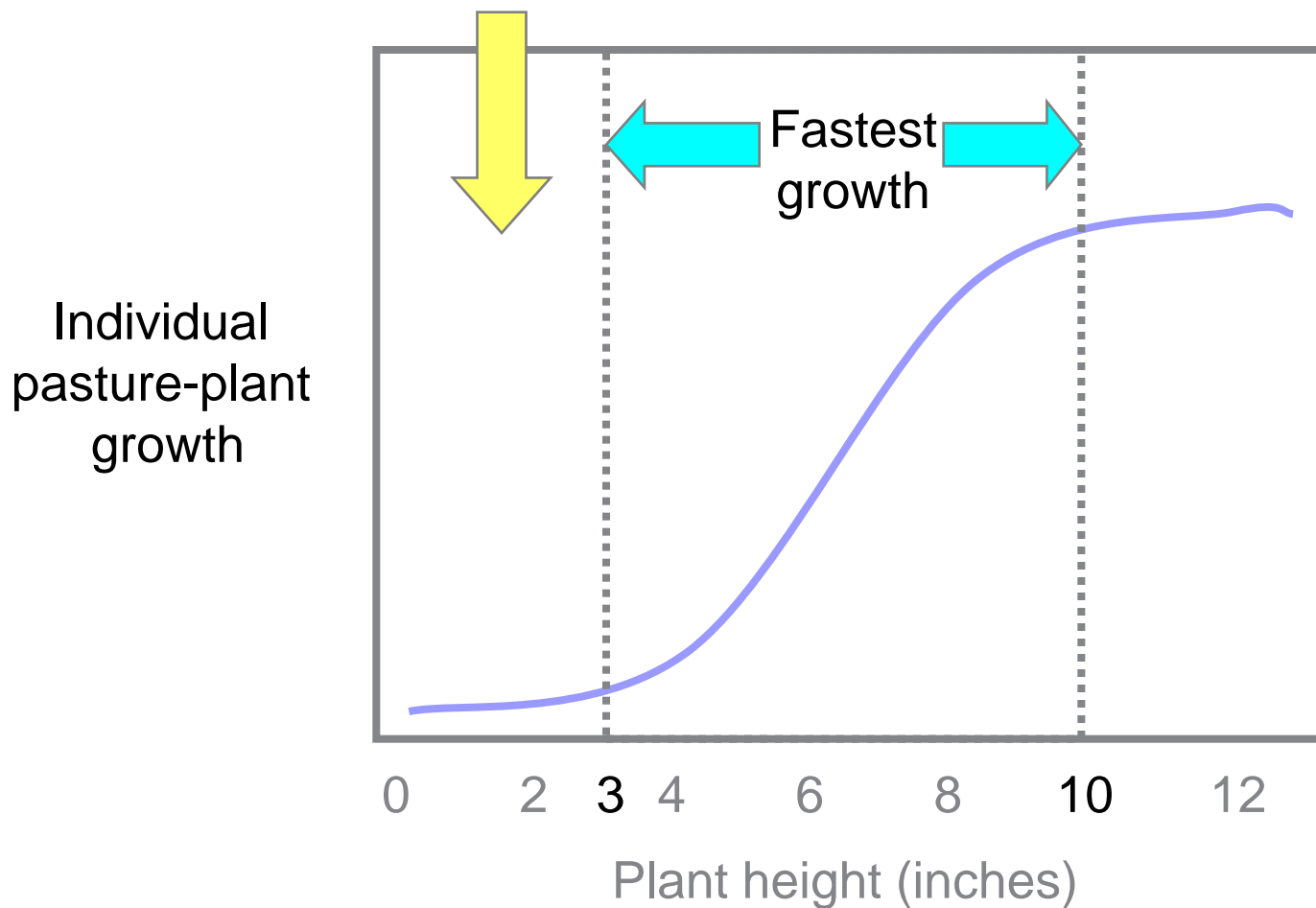


Take half / leave half



Percent leaf volume removed	Percent root growth stopped
10%	0%
20%	0%
30%	0%
40%	0%
50%	2-4%
60%	50%
70%	78%
80%	100%
90%	100%

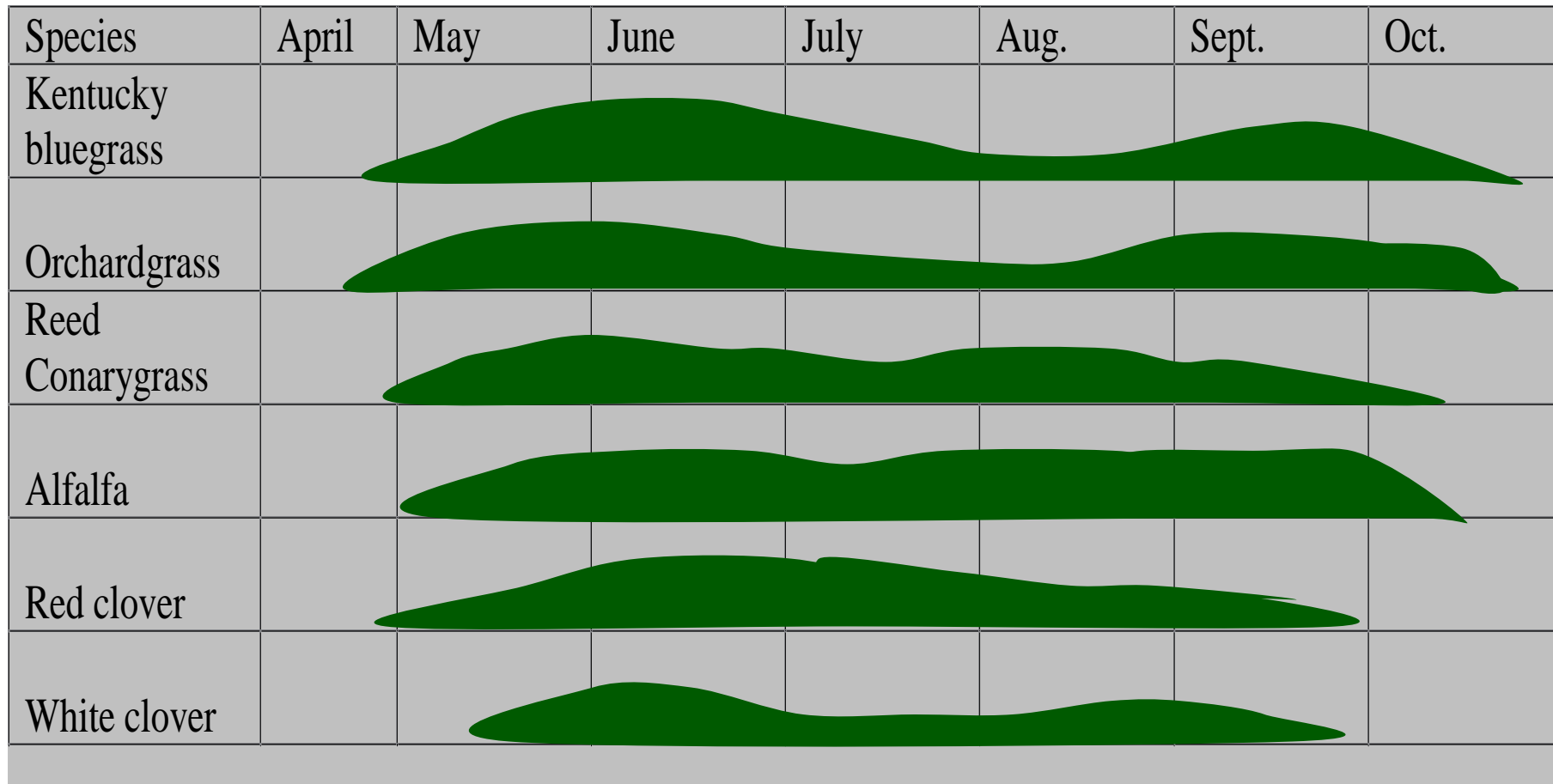
Slow growth zone!!!!



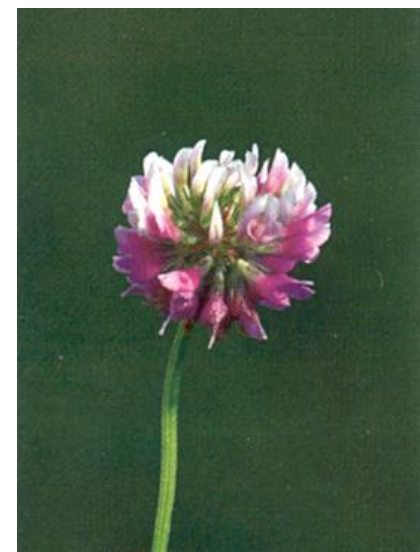
Horses bite the pasture off with their front teeth which means they can graze the pasture at ground level.



Plants must have a chance to recover!



- **Must have “pasture mix”**
 - NOT seeds designed for lawns
- **NOT preferred:**
 - Tall Fescue = warm weather, not as palatable, endophyte is toxic
 - Timothy = very palatable, but low grazing and weather tolerance, can have a cereal rust mite problem
 - Alsike Clover = produces toxin



- **Preferable:**

- Bluegrass = good with cool weather & heavy grazing, very palatable, but low yield
- Orchardgrass = responds well to N fertilization, ideal in high grazing areas
- Reed Canarygrass = good in wet conditions, matures quickly
- Perennial Ryegrass = tolerates heavy grazing, easy to establish, not drought resistant
- Clover = best in small quantities, can cause slobbers, persists with heavy grazing

- **Periodic fertilizing based on soil tests**
- **Control weeds**
- **Create exercise areas and paddocks**
- **Manage grazing**
- **Consider need for reseeding or renovation**



- **In order to properly lime and fertilize pastures you first need to test the soil**

- Nitrogen (N)
- Phosphorous (P)
- Potassium (K)
- pH



- **N deficient = ↓↓ growth and yellow color**
- **K deficient = ↓↓ winter hardiness, disease resistance, and stalk length**

- **1 ton of horse manure:**
 - 11 lb N 2 lb P 8 lb K
 - Not all nutrients are available
- **Spring is best time to apply manure**
- **Apply thin layer to speed drying and discourage fly breeding**
- **Manure should not be spread if there is a risk for water pollution**
- **Composted manure is best!**

- **Horses will rarely eat weeds**
- **Determine type of weed**
 - Perennial, Summer or Winter Annual
- ***Preventing weeds before they grow is the best management!***
 - Plant clean, weed-free seed
 - Avoid spreading weed seeds with manure
 - Sanitize equipment prior to using them in a different field
 - Plant and maintain desirable plant species (*don't overgraze!*)
 - Feeding weedy hay can introduce a different type of weed



- **Helps remove weeds**
- **Prevents seed heads**
- **Allows for uniform maturity**
- **Minimizes need for herbicides**
- **Creates higher quality pastures**
 - Mow rye and bluegrass @ 2-3"
 - Mow timothy, brome and orchard grass @ 4-5"



- **Areas of bare soil or sand/soil mix with little grass or other vegetation**
- **Should be fenced and a minimum of 400 ft² per adult horse**
- **Locate on relatively stone free, well drained soils**
- **Avoid slopes & divert runoff away from paddocks**
- **Several long, narrow runs are best**
- **Spread sand ~ 2" deep to improve footing**
- **Remove accumulated manure frequently**
- **Consider grassed filter strips around the edges of the area**



- **Continuous grazing**

- Easy
- Reduced yields



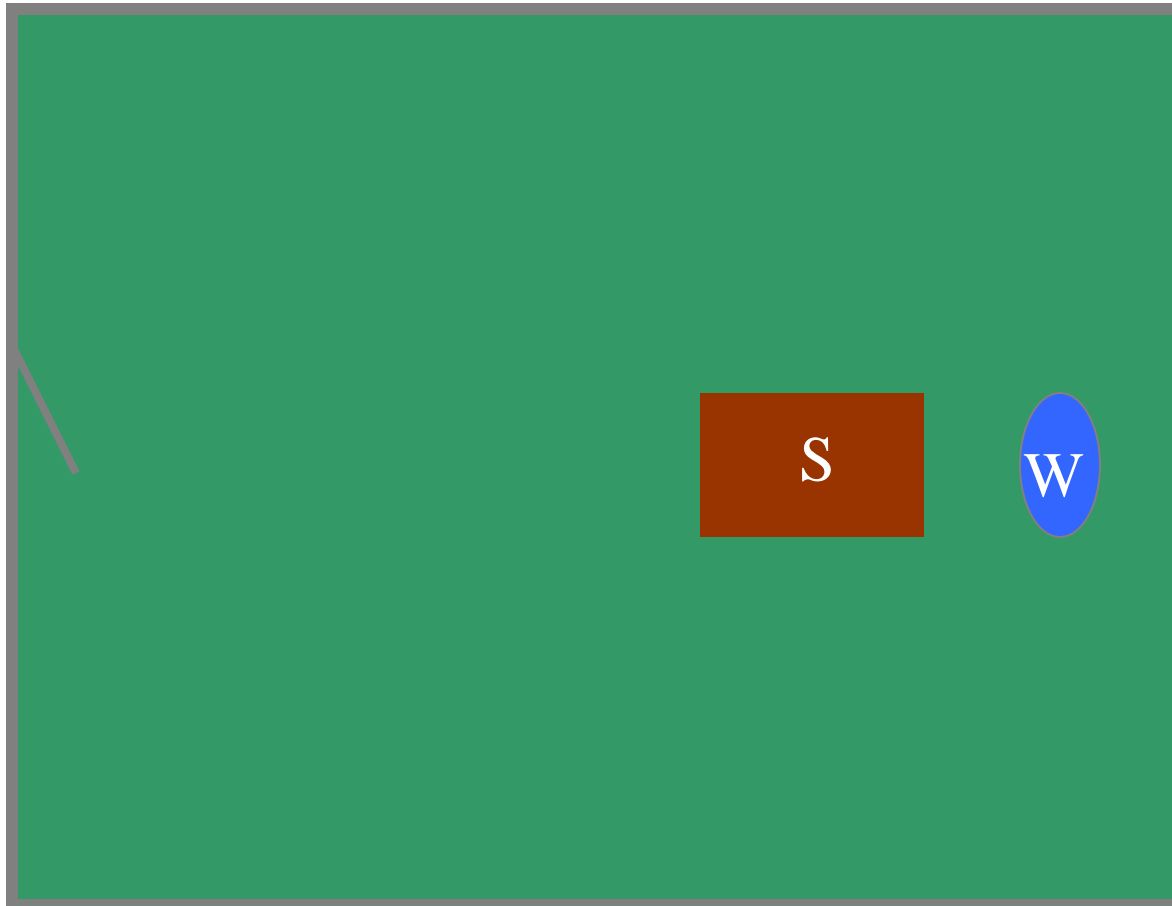
- **Rotational grazing**

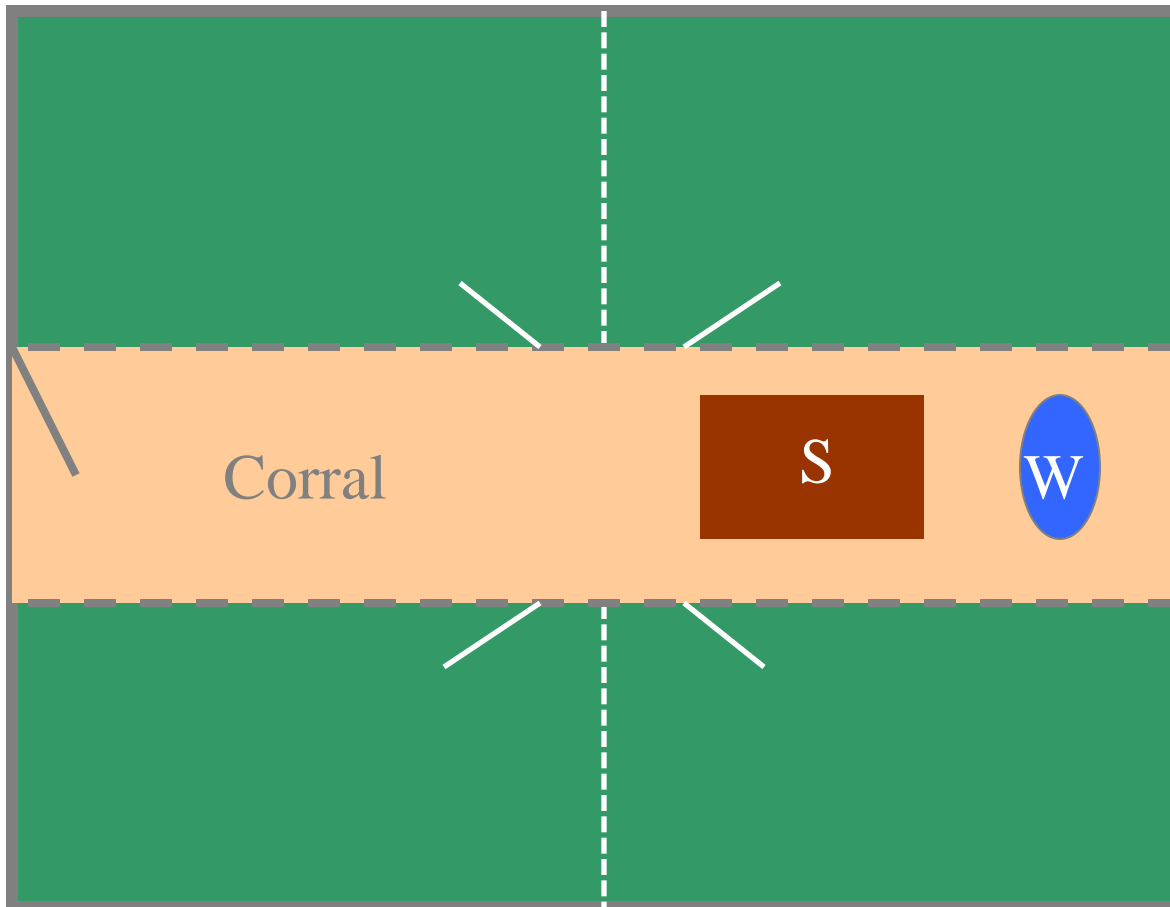
- More management
- Higher yields
- More infrastructure required

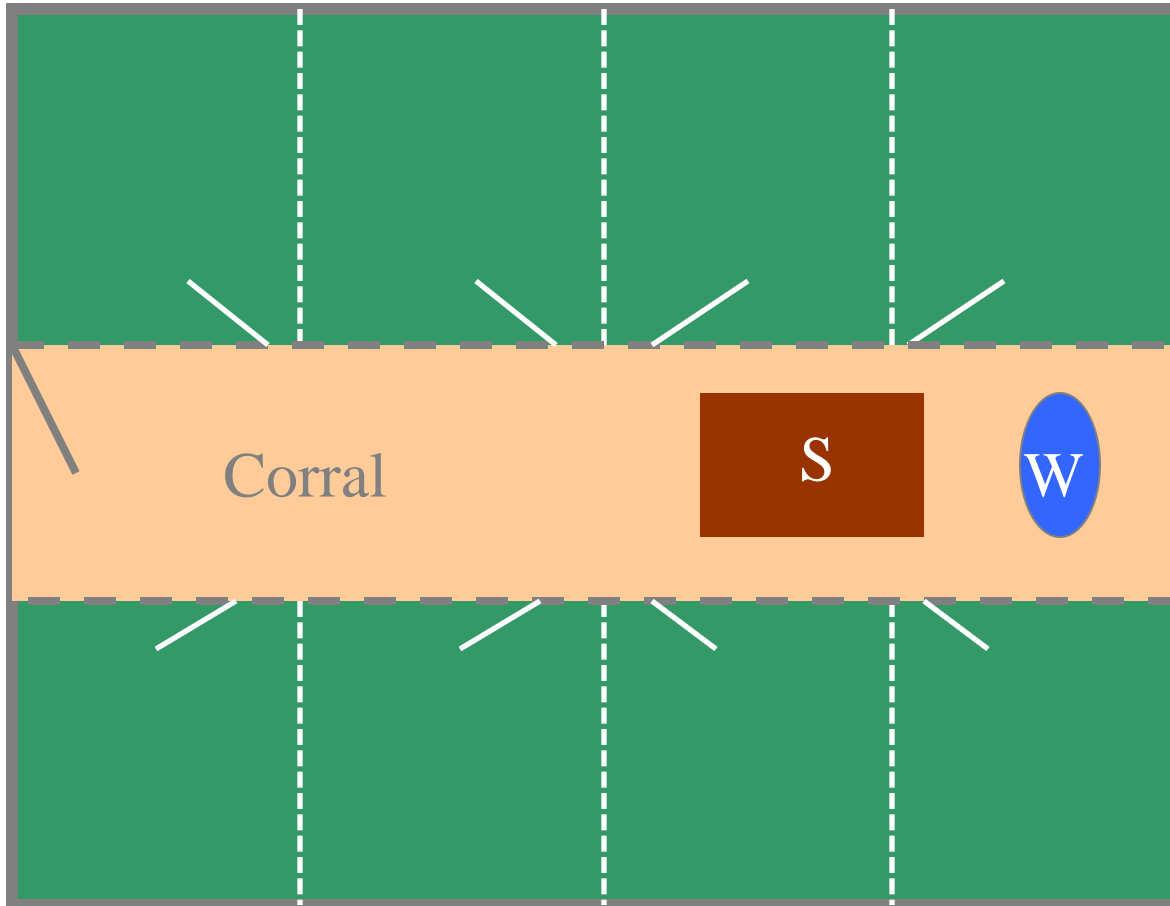


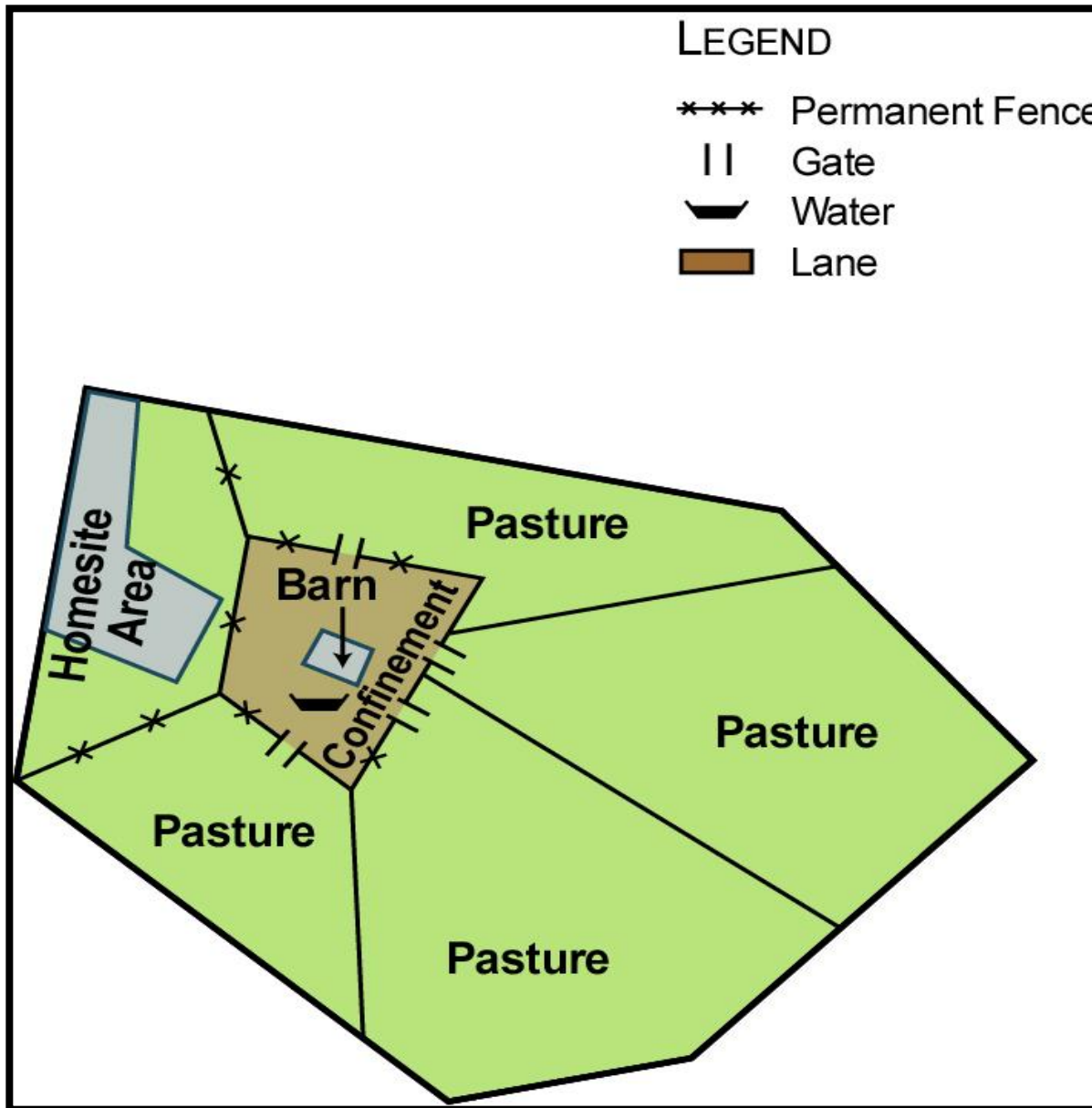
- **Graze to the desired stubble height**
 - (take half, leave half)
- **Allow adequate rest periods for regrowth**
- **Don't re-graze a pasture until your 'key species' has reached the desired height**



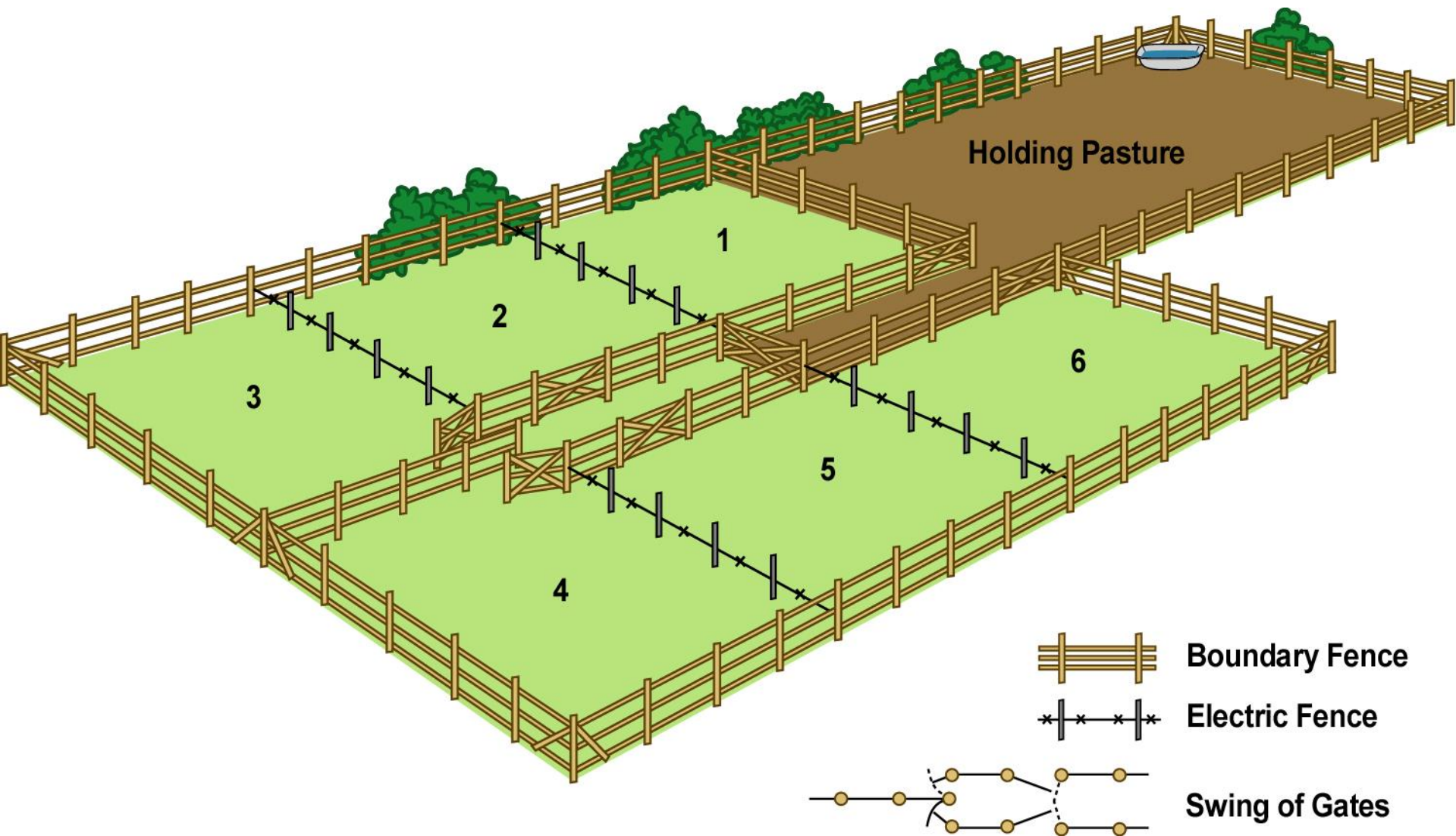








Rapid Rotation System







- **Forage growth is determined by:**
 - Soil type
 - Forage species
 - Harvest or grazing management
 - Weather conditions
 - Plant disease, weed and pest management
 - Stocking rate (AD and AU)
 - Nutrient management (fertilization and pH)
 - Farm owners goals and management capacities

- **Control weeds and undesirable plants**
- **Prevent or reduce selective grazing**
- **Mow pastures**
 - Especially those dominated by bunchgrasses, if selective grazing has occurred
- **Improve waste management so that forage is not lost or damaged**

- **Set reasonable goals for your farm**
- **Plan, monitor and modify plans to meet your objectives**
- **Be observant – walk your property and make footprints**
- **Keep records – written and photographic**



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Northeast Sustainable Agriculture Research and Education



Key collaborators include:

