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New Jersey Agricultural Experiment Station

Improving Pasture for Reduced Feed Costs

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What is Pasture?

- 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

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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)

Horse Feeding Basics

- **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

Advantages of Pasture

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

Advantages of Pasture

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

Advantages of Pasture

- **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

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What Are Your Goals for Your Pasture?

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

OR

Horse Farm Pasture Goals

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

Stocking Rates

- **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

Grazing Schedules

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

Pasture Basics

- **Pastures are made up of individual plants**

- **Understanding how plants grow can help us understand how to manage the pasture**

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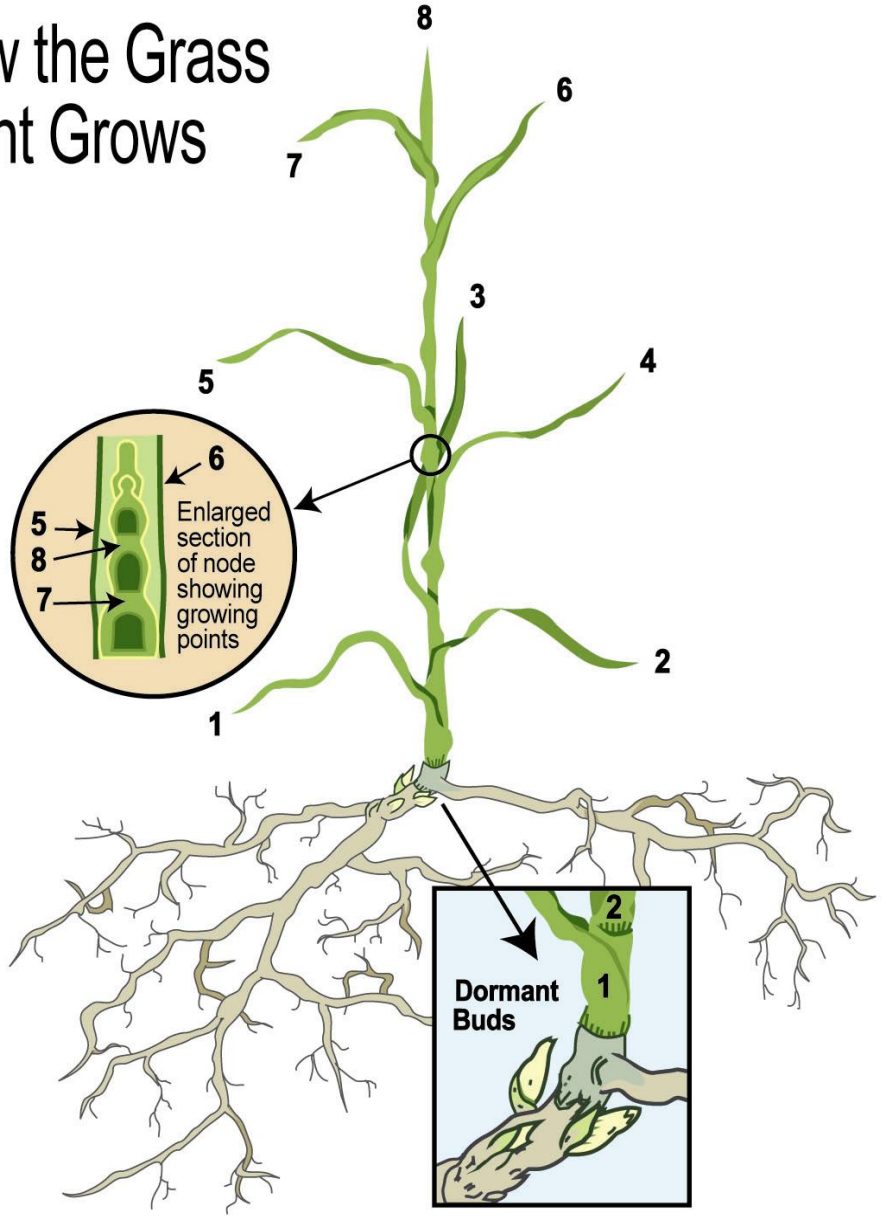
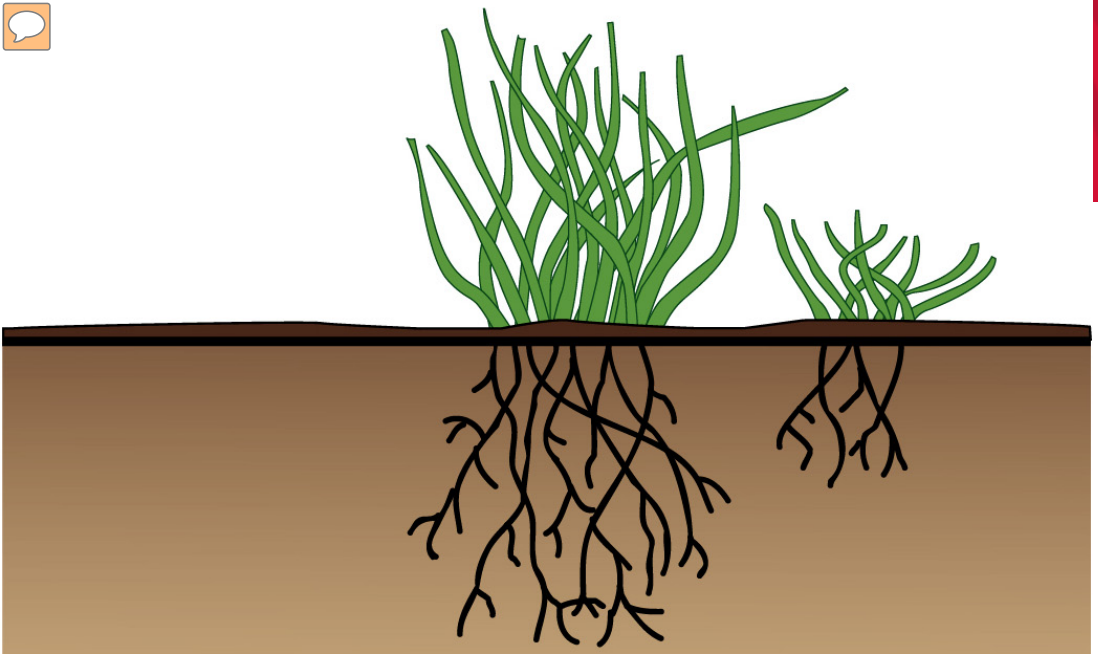
How the Grass Plant Grows



Take half / leave half

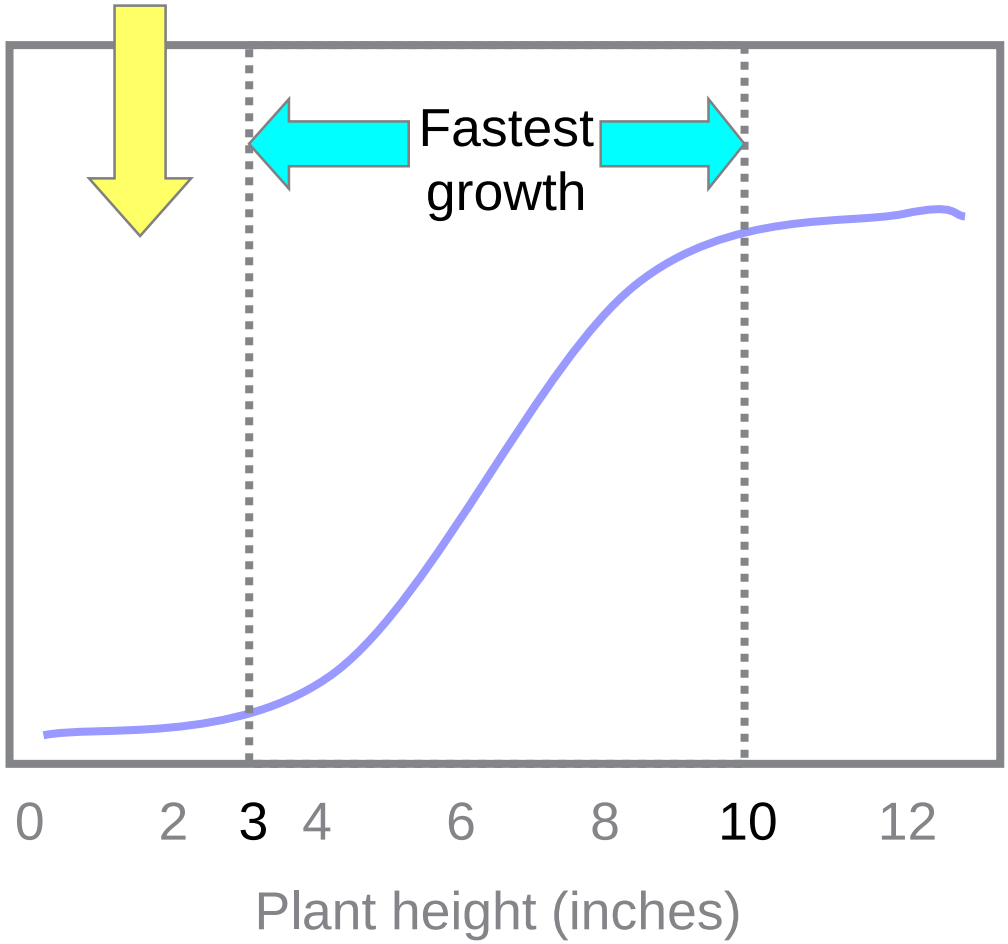


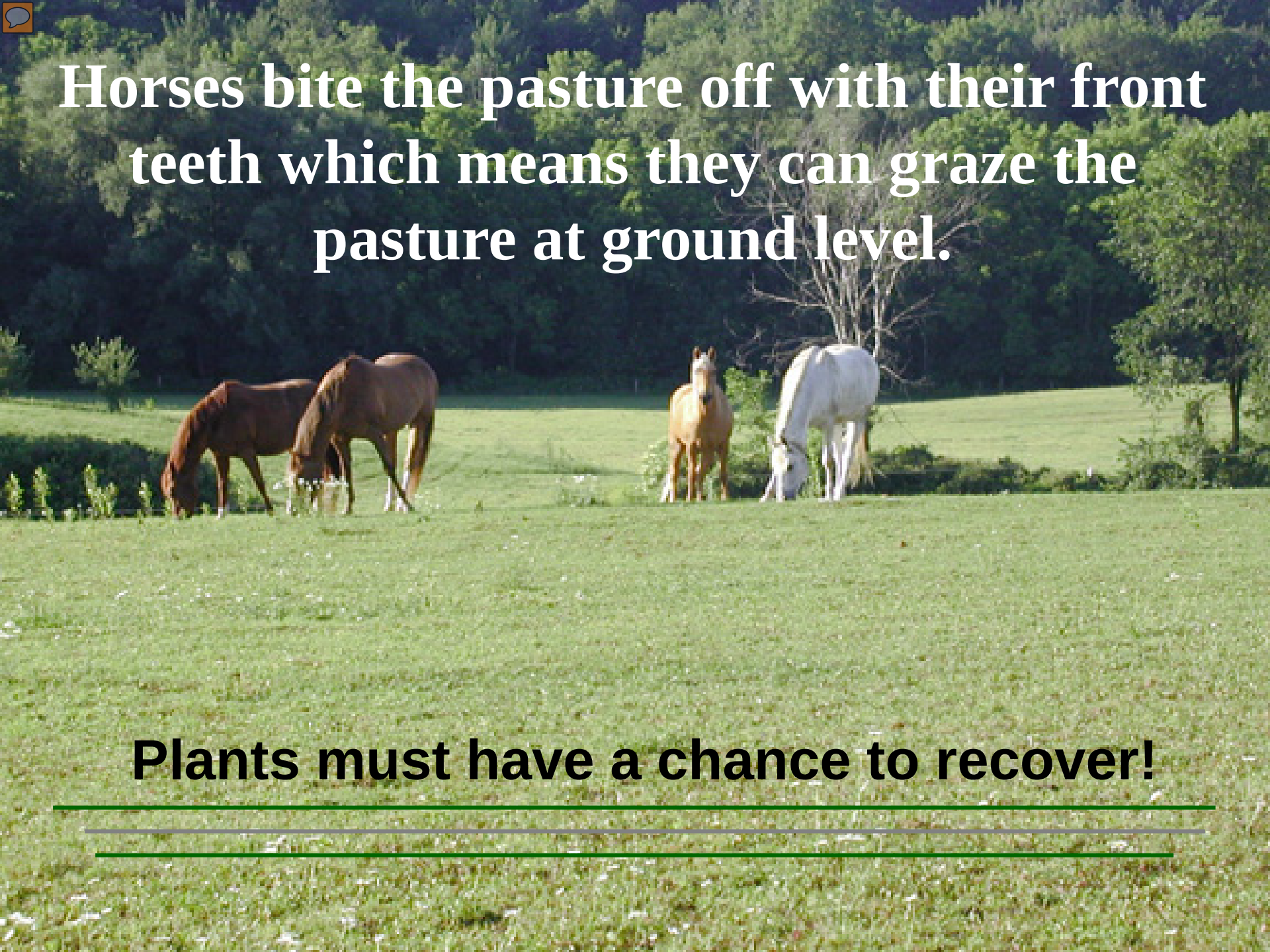
Percent leaf volume removed	Percent root growth stopped
10%	0%
20%	0%
30%	0%
40%	0%
50%	2-4%
60%	50%
70%	78%
80%	100%
90%	100%

Adapted fromNRCS, Bozeman, MT

Keep Plants Growing Fast

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!

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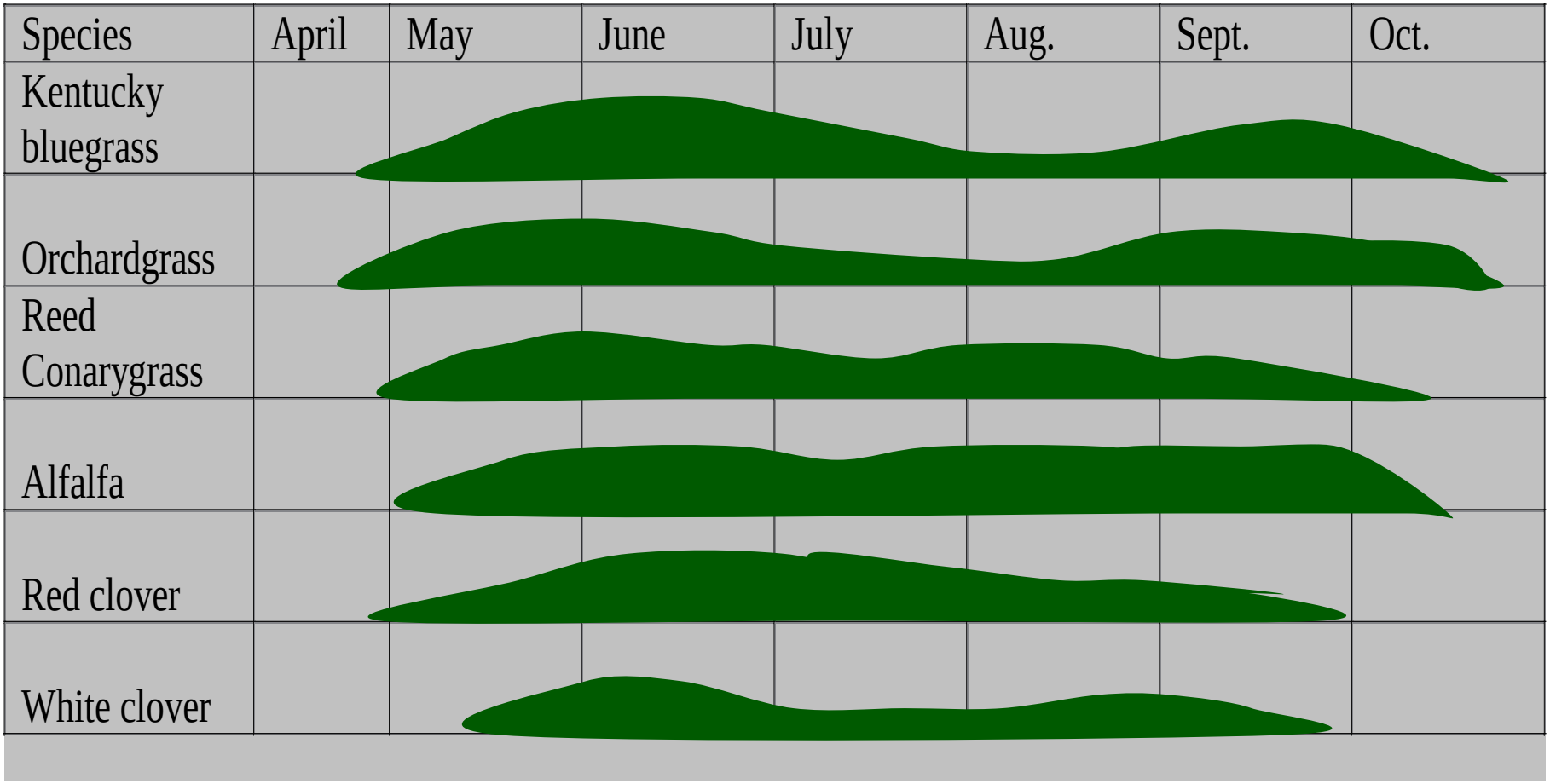
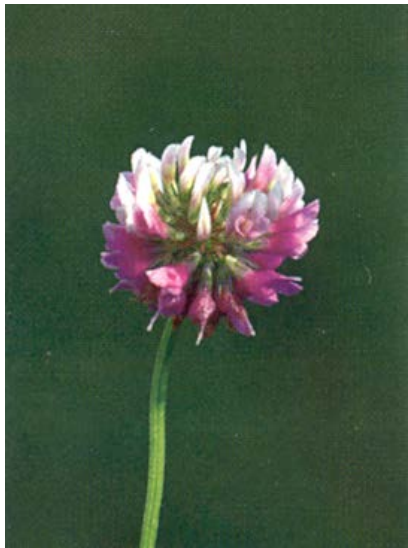
Seasonal Growth Patterns



Pasture Species

- **Must have "pasture mix"**
  - NOT seeds designed for lawns
- **NOT preferred:**
  - *Timothy* = very palatable, but low grazing and weather tolerance, can have a cereal rust mite problem
  - *Alsike Clover* = produces toxin
  - *Tall Fescue* = Only if housing Broodmares, endophyte is toxic



Pasture Species

- **Preferable:**
  - *Tall Fescue* = warm weather tolerant, not as palatable, use endophyte 'free' or 'friendly'
  - *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

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Improving Pasture Quality

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

Soil Testing

- **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**

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Spreading Manure as Fertilizer

- **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!**

Weed Management

- **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

Mowing

- **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”

Dry Lots

- Areas of bare soil or sand/soil mix with little grass or other vegetation
- Should be fenced and a minimum of 400 ft^2 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

Summary

- **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**

Summary

- 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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Heavy Use Areas Sacrifice Lots (ACA) Why are they so Important?

Suzette Truax
USDA/NRCS
Pennsylvania Grazing/Equine Specialist

What is it?

- land used by livestock where neither vegetation or post harvest residue are sustained through out the growing season
  - these areas include areas utilized for feed, watering, exercise, rest, breeding, rearing, handling facilities or other production purposes.

Why do horses need heavy use/sacrifice area

- Movement is critically important to equine health and well-being.
- Can't change food rapidly – must gradually introduce to pastures.
- Strong herd hierarchy – alpha animal dominates food and shelters.
- Can't combine horses of all age groups and sexes.
- Some horses just don't get along.

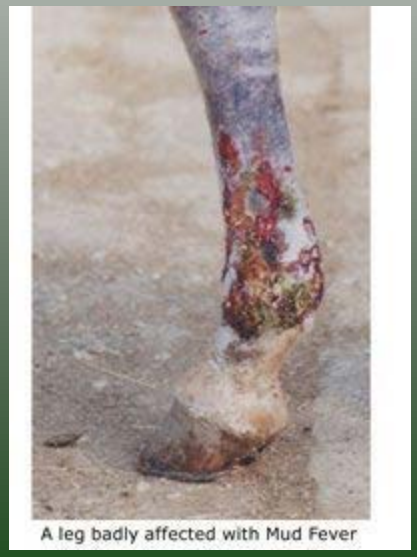
When should horses be confined to a heavy use area/sacrifice area?

Protect the Pasture

- Manage horses on high density farms
- Utilize rotational grazing
- Manage turnout time
- Prevent trampling when soils are to wet
- Recovering from injuries and need limited space

Healthier Horses

- Mud is slippery
- Cause numerous health problems
  - Mud rot, rain scald, thrush,
  - Parasite problems
  - Abscess


A leg badly affected with Mud Fever

How can we keep horses from overgrazing pastures? What practices can we employ?

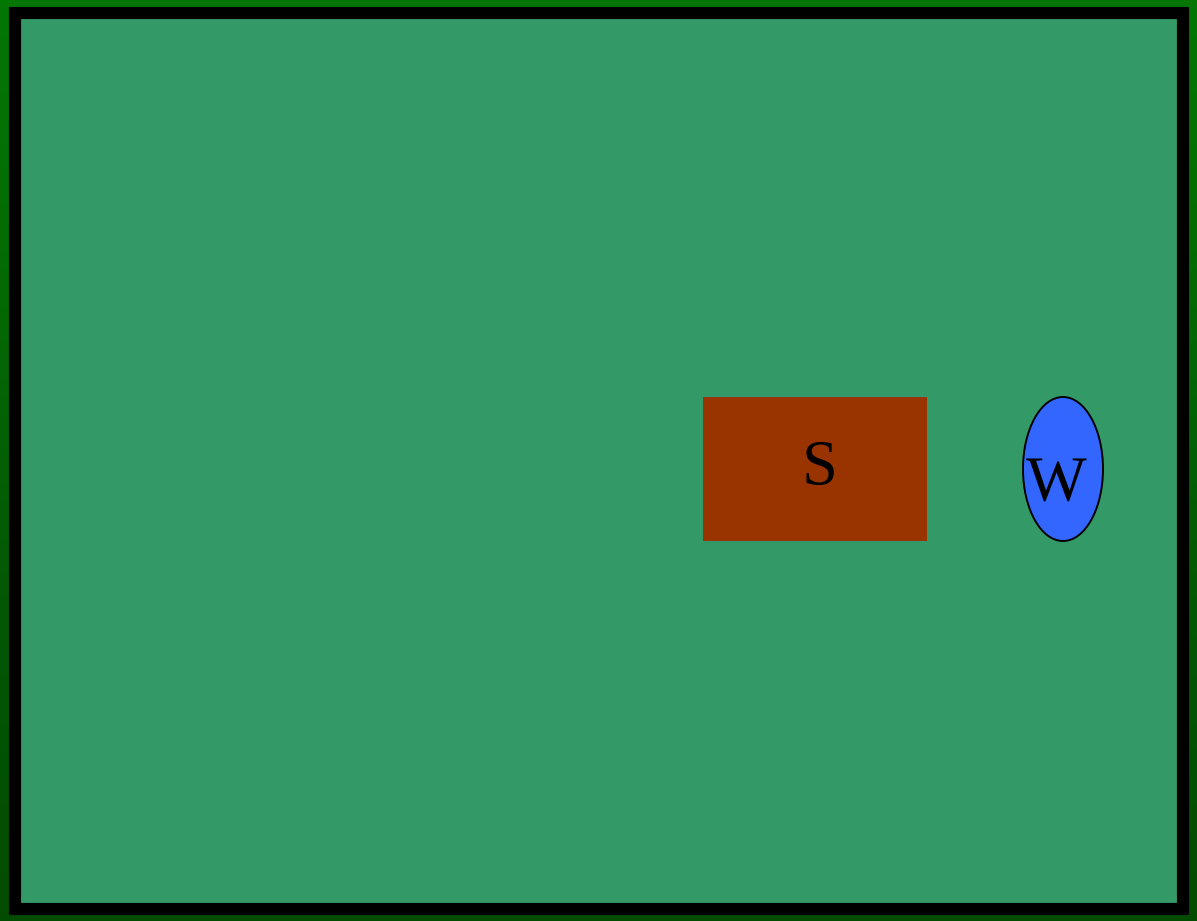
Keep them in the barn

Keep them in a barnyard

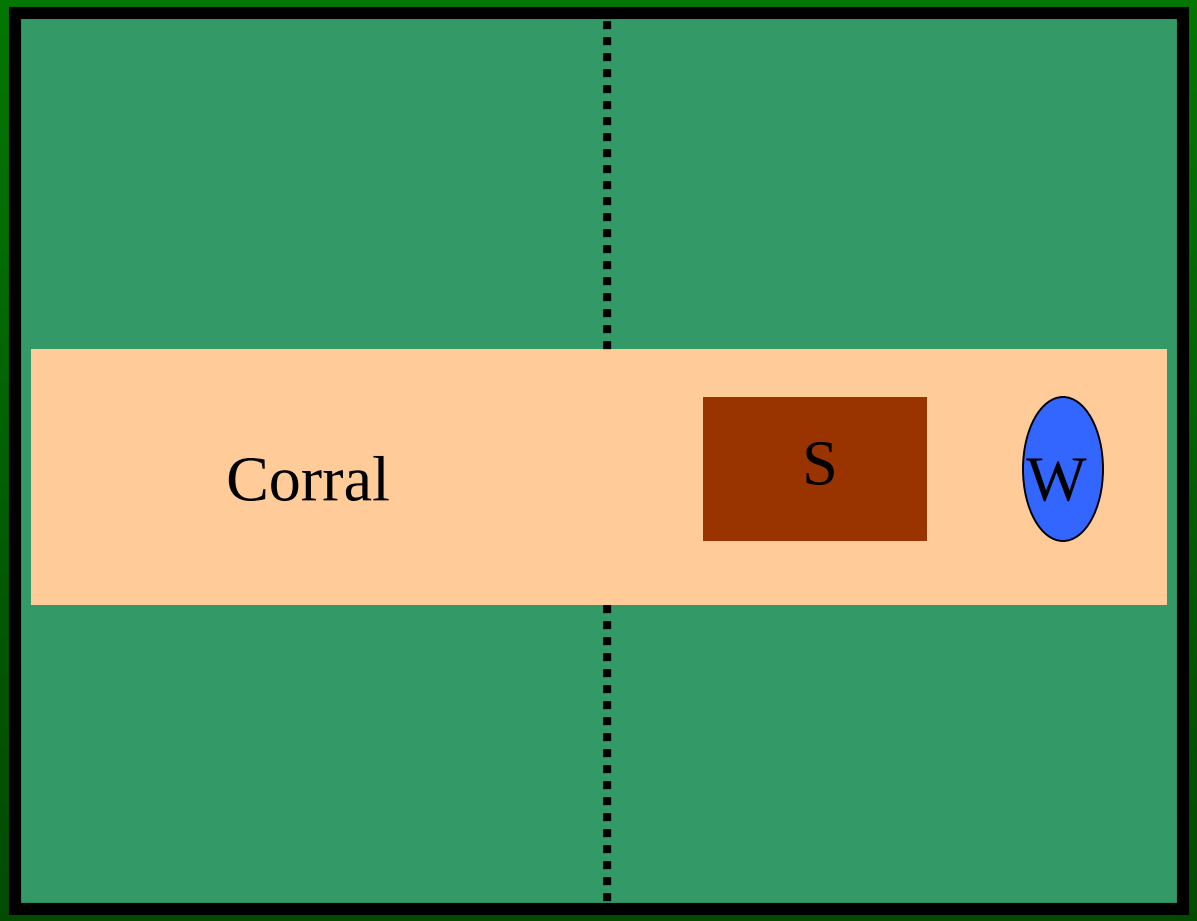
Promote Healthier Pastures

- Increase grass production and overall pasture health
  - Remove from pasture when grass avg. 3 inch of stubble height and allow back onto pasture when grass is around 6 to 8 inches (depends on type of horse and metabolic issue)
  - Heavy use area can be used to confine animals until the pasture are ready for grazing again

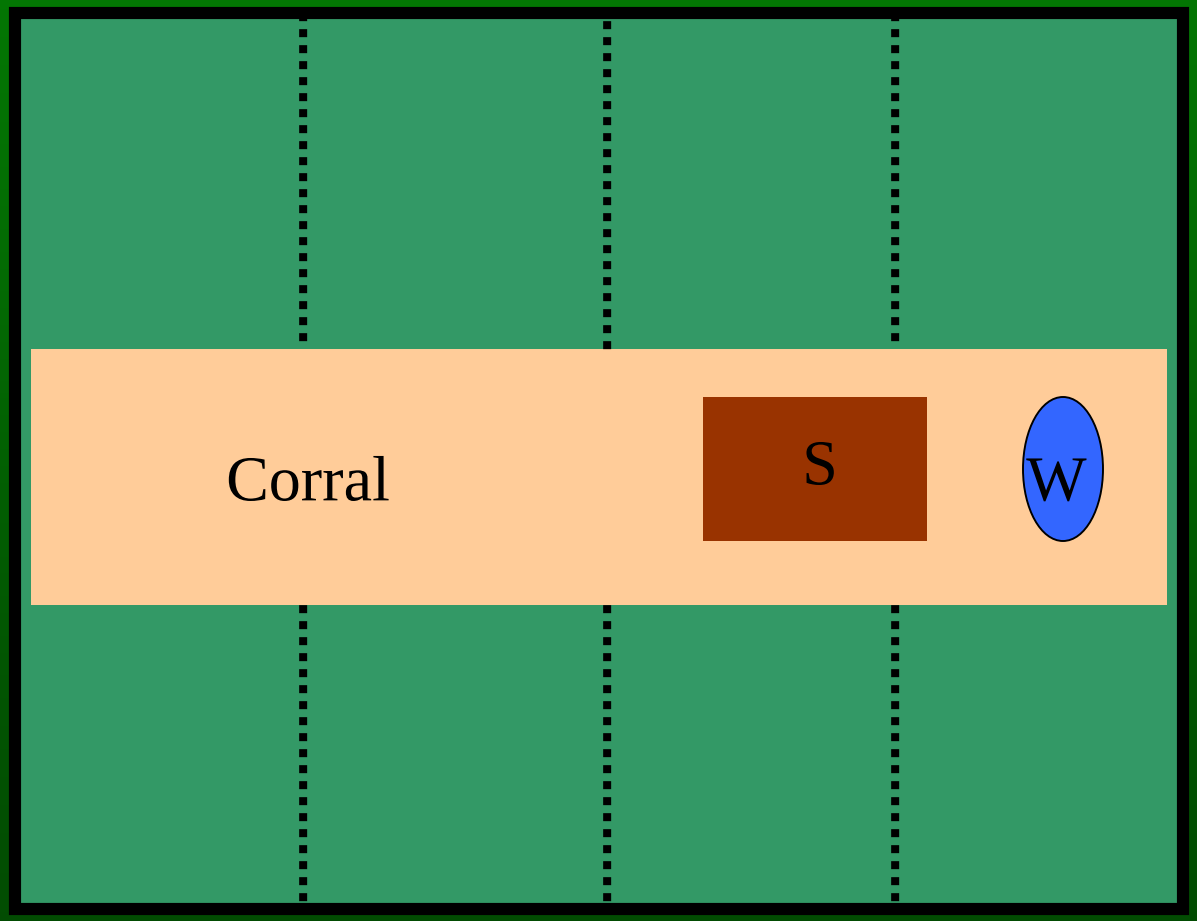
Traditional Pasture



Rotational Grazed Paddocks



Intensive Rotational Grazing



How many Heavy Use /Sacrifice area do I Need?

- Depends on number of horses
- Can range from small areas (20X20) to long narrow paddocks
  - Better if square with rounded corners
- Multiple animals can be kept in one area as long as there is space for them to avoid one another
  - Size according to largest amount at a given time, not the entire herd

Location

- Build on the highest driest ground away from streams and wetlands.
- Slight slope will help with drainage (avoid steep slopes can cause erosion issues)
- Divert clean water flow from upslope fields, driveways, barn roofs, etc. away from the heavy use area.
- Direct polluted runoff or allow it to flow from the heavy use area into a storage facility or best management practice
- Convenient for cleaning and feeding
- Access to fresh water
- Easy access to pastures

Construction

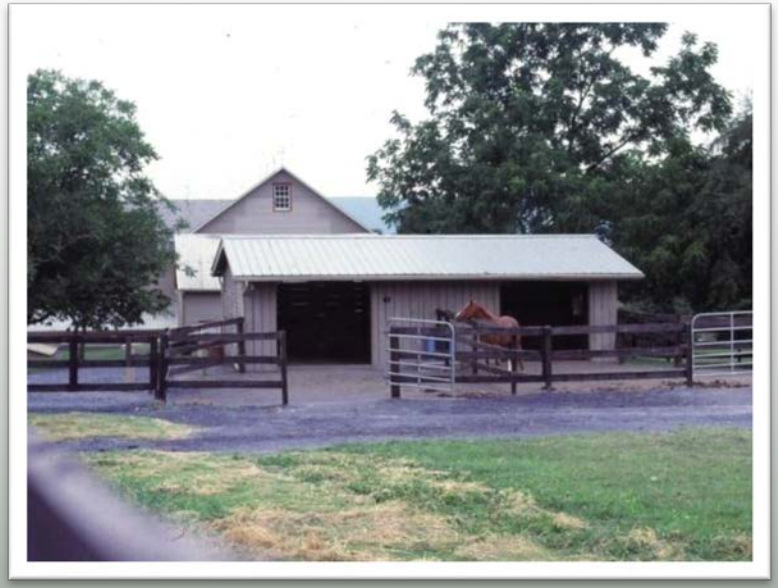
- Eliminate water flowing into the area
- Grade the area to have a 1 to 3 % grade
  - Be sure water flows into some type of grass filter and not towards the barn or house
- Cover prepared bare ground with geo-textile fabric (if area tends to lay wet)
- Build a perimeter around your area to retain the footing
- Spread base footing
- Apply top footing

Geo-textile

- Fabric made of heavy duty material that is commonly used on roads
- Allows water to pass through but does not allow sand or silt to migrate up
- Tuck ends into trenches along perimeter(prevent horses from pulling)
- Pound fence post through geotextile to help hold in place.

Types of Footing

- Gravel
- Sand
- Wood Products
- Rubber



Gravel

- Install 6 inches of ¾ to 3 inch crushed rock

  Enhances drainage and protects from erosion
- 4 to 6 inches of sand, crusher run, Limestone dust
  - Limestone can help control urine odor

Sand

- Should contain clean and screened medium to coarse, hard, sharp sand.
  - *Fine* sand - will break down to fast
  - *Cleaned* -been washed from silt and clay (making it less compatible)
  - *Screened* -large undesirable particles have been removed
  - *Hard* -quartz sand which will last up to 10 years
  - *Sharp* -sub angular sand that has weathered from natural forces of water into particles that are still angular for stability
- No deeper than 6 inches
  - Can be stressful on tendons
- Dries quickly (May need frequent watering)

Wood Products

- Inexpensive
- Reduces urine smell
- Less abrasive to hooves
- Quite variable from load to load (make sure hardwood and not softwood)
- Careful of nails, staples, large chunks of wood
- Decompose over time this material will need to be removed as decomposes
- DO NOT USE WALNUT

Rubber

- Recycled shoes or tires (make sure contains no metal)
- Usually mixed with sand to minimize compaction (rubber is mixed at a rate of 1 to 2 lbs per square inch)
- Don’t decompose but do break down into smaller pieces due to grinding against sand and horses hooves
- Reduces glare and helps thaw surface faster in winter

Fence

- Should be visible and sturdy
- Cost
- Type of horse
- Height - general rule top of fence should be eye level with the horses' head at a natural position
- Possibly double fenced – depends on type of horse's

Maintenance

- Remove manure regularly depending on # of horses
- Check fences are strong and free of sharp objects
- Control dust (may have to water down)
- Will need minor amendment every couple years
- Every 5 to 10 years plan complete footing replacement

Conclusion

- Most horse owners deeply care about the well-being of their horse and protecting the environment.
- Many are looking for assistance.
- Healthy environments generate healthy people and healthy horses

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