Healthy Land for Healthy Horses
A Short Course on Pasture and Manure Management

"Managing Horse Pastures for Optimal Health"

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Credits: *Healthy Land for Healthy Horses* short course sponsored by Virginia Department of Conservation, Virginia Cooperative Extension and area Soil and Water Conservation Districts, notably Dr. Bridgett McIntosh, Mars Equestrian Sponsorship, and Shayan Ghajar, graduate student, Virginia Tech

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For the purposes of this presentation:

"Health" includes the horse's as well as the resiliency of the natural environment in which the property exists – primarily soil health, water quality and plant diversity.

Focus on: Improving vegetative cover on horse pastures through planting and maintaining forage, as well as the possible installation of heavy use area "treatments."

Associated Benefits: Increased likelihood of success of feeding programs and grazing plans, and voluntary compliance/participation in watershed improvement plans

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Pasture & land management: key to protecting both horse and ecological health

- Forage is foundation of equine diet
- Horses need 1.5% to 3% of their body weight in forage each day:
  - 17 to 33 lb/day for the average horse
- Graze 14-18 hrs/day
- Move 10 miles/day

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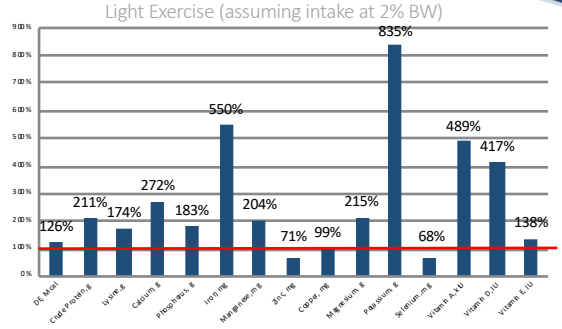
Pasture Grass Alone Exceeds Most Nutrient Requirements

Light Exercise (assuming intake at 2% BW)



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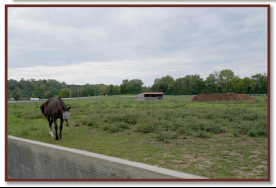
Unfortunately many equine operations do not provide healthy grazing or turnout.



Poorly managed pastures are a source of sedimentation caused by erosion, nutrient loss, and pathogen exposure to both the horse and the environment.

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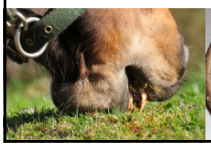
Management Challenges:

- Overstocking
- Overgrazing
- Manure management
- Mud management
- Erosion- NPS Pollution

Equine Grazing Challenges:

- Selective grazers = uneven grazing
- Biting top grazers = leaf removal
- Large & heavy = soil compaction & trampling
- Manure distribution = uneven grazing & parasites



Conservation practices to improve pastures

- Establish/Renovate and Maintain Forage Cover Best Suited to the Equine Operation*
- Rotational Grazing
- Manage Stormwater to Protect Clean Water and "Treat" Wastewater*
- Install Heavy Use Areas and Dry Lots*
  - Mud Management
  - Obesity associated diseases
- Manure Management & Composting

Common types of pasture forage

- Several species make good horse pastures
- Cool Season
  - Tall Fescue*
  - Orchardgrass
  - Kentucky Bluegrass
- Warm Season
  - Bermudagrass
  - Crabgrass
- Legumes
  - Clover
  - Alfalfa

* Ky 31 Tall fescue is toxic to broodmares but perfectly safe for all other classes of horses

Horses spot graze favorite areas and selectively graze favorite species, and are capable of eliminating plants if pastures are not managed.

Maintain, Renovate or Start Over?

- Continue current management if:
  - 75% or more desirable plants
- Improve management or overseed:
  - 40-75% desirable plants left
- Start over if:
  - Less than 40% desirable plants


Assess Existing Plant Composition – Desirables vs. Undesirables

Watts, C. (2016). Photo]. Retrieved from https://www.flickr.com/photos/watts_photos/26539484756/

Getting Started with Plant ID:

- Break out your magnifying glass
- Use pressing paper to preserve samples or put in water for future examination
- Head out into a pasture and start collecting a few of the most abundant species - May need protective gear

For the most accurate results:

- Use standard protocol i.e. square meter (or hula hoop) counts and sample cross-section of paddock, similar to soil sample collection
- Best way to learn plant ID: ask an expert
  - Bring complete, fresh samples or quality photos to your Extension office
  Note collection date, location, orientation (sun vs. shade)
- DIY Resources:
  - Southern Forages book
  - Virginia Tech Weed ID guide (online)
  - Regional books and guides
  - USDA/NRCS plant database
  https://plants.sc.egov.usda.gov/java/

If planting, consider each potential species':

- Season of growth
- Grazing tolerance vs expected grazing pressure
- Ease of establishment
- Nutritional profile
  - High in carbohydrates and energy? Good for active or hard-keeping horses.
  - Low in carbs and energy? Good for easy keepers.
  - Species selection should fit an overall grazing plan that addresses year round forage needs.

Consult local Extension Agents, NRCS/SWCD or agri-business staff, attend educational programs sponsored by organizations that share research i.e. Extension, Virginia Forage and Grassland Council, and conservation organizations such as Virginia Working Landscapes that share research results.

Tried and True Pasture Species

- Tall fescue
  - Pros:
    - Tolerant of overgrazing
    - Drought resistant
    - High productivity
    - High in energy (also a con)
  - Cons:
    - High in energy—not suitable for horses prone to obesity
    - Toxic to broodmares (except novel endophyte varieties)

Tried and True Pasture Species

- Bluegrass
  - Pros:
    - Tolerant of some overgrazing
    - Fills in gaps in the sward quickly
    - High in energy (also a con)
  - Cons:
    - High in energy—not suitable for horses prone to obesity
    - Low productivity
    - Not drought tolerant

Tried and True Pasture Species

- White clover
  - Pros:
    - Free fertilizer (= 50lbs nitrogen fertilizer per acre annually)
    - Fills in gaps in the sward very quickly
  - Cons:
    - Slobbers
    - Not drought tolerant

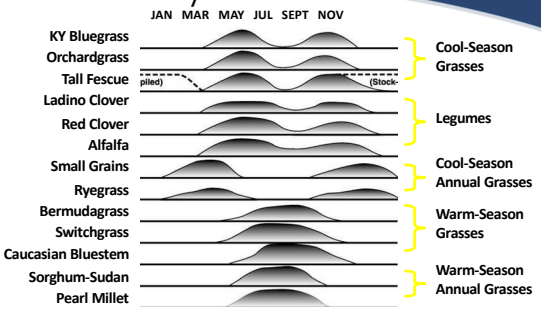
Tried and True Pasture Species

- Bermudagrass

  ~warm season~

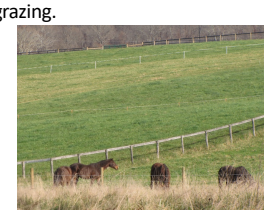
  - Pros:
    - Tolerant of extreme overgrazing
    - Fills in gaps in the sward quickly
    - Very drought tolerant
  - Cons:
    - Constant battle with winter and spring weeds
    - Yellow appearance most of the year

Seasonality



Diversity Pays Dividends

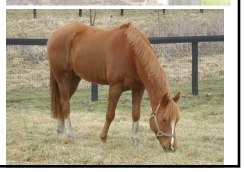
- Diverse pastures are more productive, more resistant to weeds, more resilient in the face of drought or grazing.
- Diversity of grazing season as well
- For example:
  - Fescue
  - Bluegrass
  - Ladino clover
  - Bermudagrass (in separate paddock)



Current recommendation for cattle operations is a 80% cool season 20% warm season annual and/or perennial. More research is needed for equine operations.

To Maintain Adequate Cover (and Protect New Plantings) Do not exceed stocking rates

- Maintain at least 70% vegetative cover
- 2 acres per horse minimum
- Limiting turnout doesn't always limit grazing time



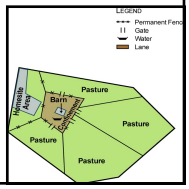
Grazing Height by Species

Species	Plant height (inches) Start grazing	Stop grazing
Tall-growing cool-season grasses orchardgrass, quackgrass, reed canarygrass, smooth bromegrass, tall fescue, and timothy	8–10	4
Tall-growing legumes alfalfa, alsike clover, birdsfoot trefoil, kura clover, ladino clover, and red clover	8–10	4
Ryegrasses Italian and perennial	6–8	2
Short-growing cool-season grasses and legumes Kentucky bluegrass and white clover	4–6	2
Warm-season grasses big bluestem, indiangrass, sorghum/sudangrass, and switchgrass	12–14	4–6

Source: USDA "Pastures for Profit," Publication A3529
http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1097378.pdf

Rotational grazing for optimal pasture production

- Key point: REST the pastures
- Graze for a short time then allow forage to regrow
- Need to rotate between several fields
- Ideally, first field is ready to be grazed when horses are done on last field
- How many fields? How long between rotation? Depends!
  - Size of fields
  - Stocking density
  - Available forage



Rest & Recover

Horse Farm Best Management Practices

address erosion and protect water quality

Managing “small” spaces can have a big impact!

High use areas such as gateways and watering/feeding/loafing areas are prone to soil loss and waste accumulation. Mucky spots can create health risks for horses. Begin the process of addressing this issue, with a thorough visual assessment. Include a “Rainy Day Hike” if possible.

Examine how water flows through and around buildings and paddocks. Main goal is to keep clean water clean and treat contaminated water.

First Level Treatment Points to Consider:

- Are roof gutters present and adequate?
- Would installing or repairing a drain pipe that outlets in a vegetated area solve the problem?
- Could the issue be addressed by re-locating a facility such as a gate or water trough?
- Would making changes in the horses turn-out location or schedule lessen the impact?
- Could (tractor blade) grading, seeding and mulching trouble spots solve the problem?

Higher Level Treatments

require more extensive excavation and may include the installation of diversion ditches and Heavy Use Areas that are comprised of filter fabric and stone layers.

"Engineered" Heavy Use Design Notes:

- NRCS standard drawing for Horse HUAs is located in numerous publications and on-line.
- Average 600 - 800 square feet per horse
- Designed to both infiltrate and drain uniformly (Not flat!)
- Excaved to desired grade (sub-grade, finished grade and side slope) Class 1 Non-Woven geotextile fabric is laid down and keyed in. Base (larger) stone of 4 in. of VDOT # 3s, 2 in. of # 21A, top dress with blue stone
- Base boards are used to help contain stone
- Not suited for sites with natural slope greater than 5%
- $6-$9 per square foot
- Gateways and water trough pads treated similarly

Gateway Before and After

Provided by ACF Environmental

Resources

- Northern Virginia Soil and Water Conservation District publication *Earth Friendly Suburban Horse Farming*
- Contact your Soil and Water Conservation District to set up an on-site appointment for technical assistance.
- Currently an equine work group is in the process of formulating recommendations to the VA Soil and Water Conservation Board to expand cost share and other programs to horse operations. Your local SWCD can accept public comment or please Email kris.jarvis@fauquiercounty.gov

Sound Pasture Management is Key to Horse and Ecological Health

- Set realistic goals for acreage available
- Three to five grazing seasons required for measurable change
- Higher level of management (and input) may be needed to meet goals
- Develop management protocols to be efficient & practical – Public agencies, agri-businesses and non-profit organizations available to assist