

# Pasture Development

-Paddocks, Water, Economics

Dan Ludwig  
Southeast PA Grazing Specialist  
USDA-Natural Resources Conservation Service  
Lebanon, PA



## MOST IMPORTANT STEP



## Most Important Step

- Walk your pastures
- Schedule pasture visit with NRCS and/or Extension Agent
- Learn to identify pasture grass
- Learn to identify pasture weeds
- Soil test pastures

## Keeping the Pastures Productive

- Improve grazing management
  - Certain species do not tolerate close and frequent grazing
- Consider rotationally grazing pastures

## Grazing Pasture

- Most pastures are continuously grazed
  - Typical approach to grazing
- Continuous grazing
  - Unrestricted access with no recovery period
  - Thin sward (tall grass leaves)
  - Weed population increases

## The Culprit of Overgrazing



## Rotational Grazing

- The act of grouping animals together and moving them through different pastures during the grazing season
  - Use several pastures for rotating
  - Divide larger pastures into smaller paddocks

## Why Should I Consider Rotational Grazing?

- Utilizes pasture more efficiently
- Strengthens stand of pasture forages
  - desirable species of forages persist
- Offers complete pasture management
  - weed control, fertility, overseeding
- Extends the grazing season

## How Does Rotational Grazing Affect My Pastures?

- Allows forage regrowth
  - similar to mowing your lawn
- Increases forage quality
  - promotes growth of tall growing grasses
- Controls undesirable vegetation

## Special Considerations

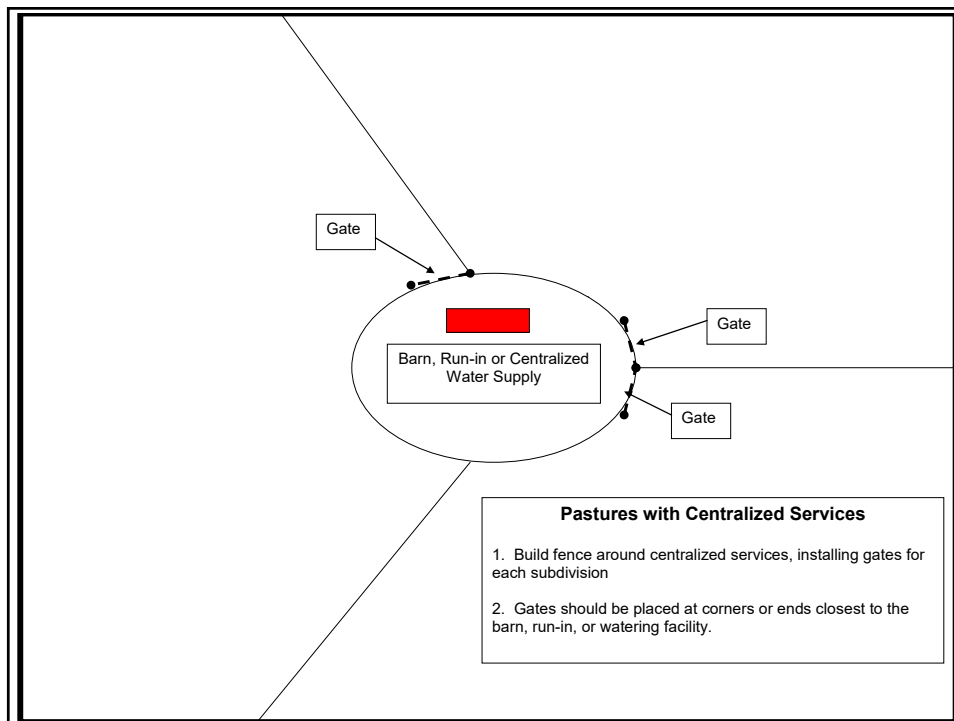
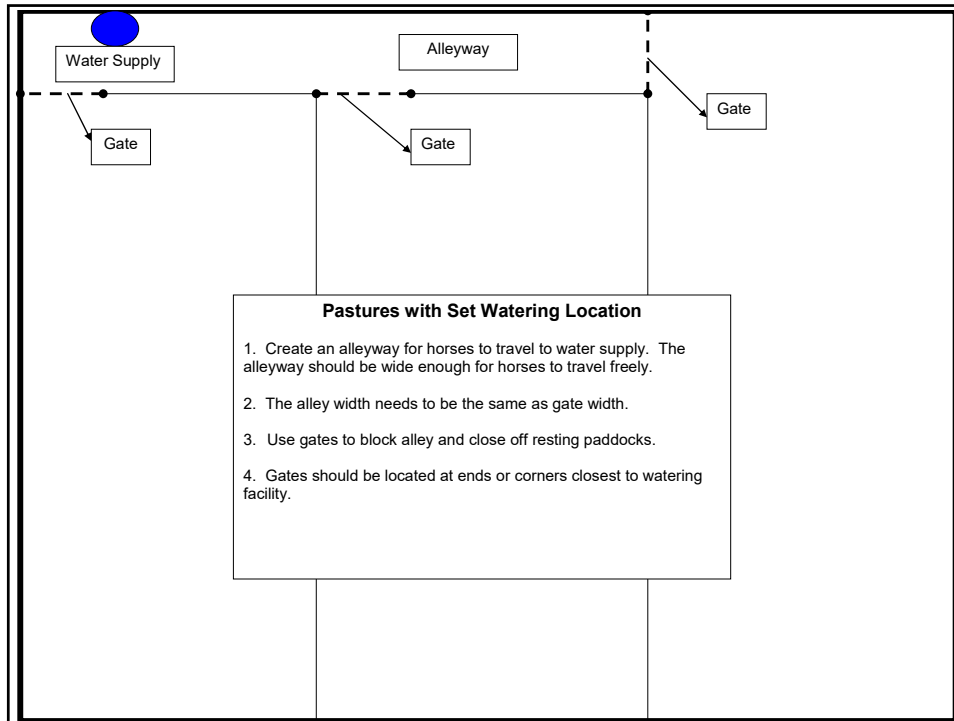
- Requires:
  - continuous moving of horses
  - checking fences regularly
  - opening and closing of gates
- Increases:
  - personal involvement with horses
  - detection of injuries

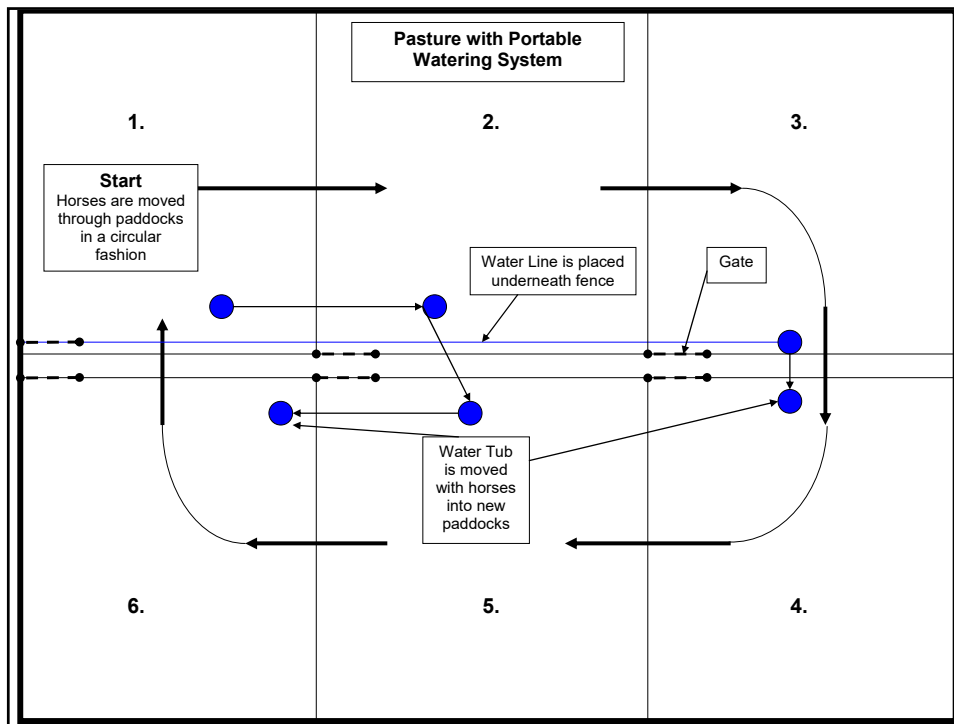
## Where do I begin?

- Divide large pastures into smaller paddocks
  - Ideal size to start is  $\frac{1}{2}$  acre per horse
  - Creating multiple paddocks allows paddocks to rest

## Paddock Layout

- Alleyway
  - Leading to barn or stationary watering source
- Centralized Services (wagon wheel)
  - Barn, run-in, water supply
- Temporary/Portable
  - Water moves with the horses





USDA NRCS  
 United States Department of Agriculture  
 Natural Resources Conservation Service

## Rotational Grazing Components

- Fencing
  - Interior fencing (temporary or permanent)
- Watering System
  - Permanent facility or portable
- Forages
  - Proper species for desired goal



## Fence Components

- Fencing
  - ½” wide electric tape (minimum)
  - Permanent fencing can be built
- Posts and Insulators
  - Metal T-posts and Plastic Step-in posts
  - Plastic t-post and nail-on insulators
- Electric Fence Charger
  - Solar or 110v AC

## Paddock Fencing

- Consider temporary fencing system
  - Flexibility to adjust paddock size
- Strong posts at end of interior fence runs
  - 5 inch wooden, metal T-post, 5/8” fiberglass
  - Gates placed at end closest to barn
- Line posts spaced 25 feet apart
- Tape with 6 or more filaments
  - Aluminum or stainless steel to carry charge

## Fence Chargers

- Avoid “weed chopper” fence chargers
  - grounding from weeds damages tape
  - fire potential during dry times
- Properly install fence chargers
  - manufacturer recommendation
  - strength of charge related to grounding
  - position solar panel to the south

## Fencing Costs

- Fence Charger- \$60-275
- Ground Rods- \$36 (\$12 x 3)
- Electric Fence Tape- \$26-40 per roll
- Metal T-posts- \$3-4 each
- Gate Handles- \$3-4
- Temporary Posts- \$2-3 each
- Insulators- \$.25 each

## Water System Components

- Trough or Tank
  - permanent waterer
  - portable plastic trough
- Pipeline
  - properly sized waterline
- Float Valve
  - flow rate and pressure rating

## Watering System Costs

- Watering System- \$0 - \$500 or more
  - Depends on pasture layout
    - fixed Water Supply
    - portable Water Supply
  - Complexity of System
    - garden Hose and portable trough
    - plastic Pipe and portable trough
    - heated/Frost-free watering facility

## The Grazing Process

- Start with grass 6-8 inches tall
  - Need to acclimate horses to lush grass
- Graze grass down to 2-3 inches
- DO NOT OVERGRAZE PADDOCKS
  
- Length of stay
  - grass height, not length of time

## The Grazing Process

- After grazing, clip remaining forage to 4 inches
- Drag paddocks

## Cost of Feeding Horses

- Purchased Grain or Feed Mix
  - Supplements
- Baled Hay
  - Baled on farm
  - Purchased locally
  - Shipped from neighboring states

## Nutritional Requirements

- Average Horse weighs 1000 pounds
- Consume average 2% Body Weight
  - mature, idle horse
  - daily intake determined by physiological status

## Daily Intake

- 1000 pound horse X 2% BW
  - 20 pounds feed per day
  - Minimum .75-1% BW roughage\*
- Maximum concentrate intake
  - Should not exceed .75% BW\*
- Total Daily Intake = 2%
  - 1.25% BW Roughage + .75% Concentrate

\*Horse Industry Handbook-HIH 710-4

## Today's Example

- 1000 pound horse (mature, idle)
- Feeding 75% Forage & 25% Grain
  - 1.5% BW Forage
  - .5% BW Grain

1000 lbs x 1.5% = 15 lbs of hay

1000 lbs x 0.5% = 5 lbs of grain

## Cost of Feeding

- Average Cost of Hay- Lebanon Co.
  - \$5.00/bale from local producer
- Assume 15 pounds hay/head/day
  - 1 bale every 3 days
- Average Cost of Grain
  - \$16.00 bag
  - \$0.32 per pound

## Cost of Feeding Hay & Grain

- Average 150 days on Pasture
  - $150 \div 3 \text{ days/bale} = 50 \text{ bales}$
- $50 \text{ bales} \times \$5.00 = \$250/\text{horse}$
- $5 \text{ pounds grain} \times \$0.32 = \$1.60$ 
  - $\$1.60 \text{ per day} \times 150 \text{ days} = \$240/\text{year}$
- Total- \$490 per horse/year

## Economics of Grazing

- Overall Costs for Pasture Maintenance
  - Prices based on Do-It-Yourself
- Lime (pelletized)- \$400/acre
- Fertilizer (Urea)- \$43/acre
- Herbicide- \$40/acre
- Seed- \$80/acre

## Cost of Liming

- Applied at 4000 pounds per acre
  - 50 pounds per bag

$$4000 \text{ lbs} \div 50 \text{ lbs/bag} = 80 \text{ bags}$$

- Average Cost- \$400 per acre
  - 80 bags x \$5 per bag = \$400



## Cost of Fertilizer

- Urea (46-0-0)- 46% Nitrogen
- Applied at 50 pounds per acre
  - 50 pounds per bag

$50 \text{ lbs Urea} \times 46\% = 23 \text{ pounds Nitrogen/bag}$

$50 \text{ lbs N} = 109 \text{ lbs Urea (approx. 2 bags/ac)}$

- Average Cost- \$20/bag
  - \$43/acre

## Cost of Herbicide

- Herbicide -\$80 per gallon
- Applied- 2 quart/acre
- Average Cost- \$40 per acre

## Cost of Seed

- Pasture seeded at 20 pounds per acre
- \$200 per 50 pound bag
  - \$4 per pound
- Average Seed Cost- \$80 per acre

## Economics of Grazing

### 10 acre pasture- 5 horses

- Lime\*- \$400/ac = \$1333 per year
- Fertilizer- \$430/ac = \$430 per year
- Herbicide\*- \$40/ac = \$133 per year
- Seed\*\*- \$80/ac = \$160 per year  
\$2056 per year

Total- \$410 per horse per year (D-I-Y rates)

\*figures based on 1 treatment per 3 year cycle

\*\*figures based on 1 treatment per 5 year cycle

## Economics of Grazing

- Additional costs for Custom Services
- 2008 Custom Farm Rates- PA\*
  - Seeding- \$16.40/acre
  - Spraying- \$9.20/acre
  - Fertilizing- \$8.90/acre
  - Liming- \$11.30/acre

\*2008 Custom Machinery Rates- USDA-NASS

## To Group or Not to Group?

- Grouping horses opens more area for grazing
  - Need to base on social group
- Increased pasture management
  - Fertilizing, weed control, overseeding
- 5 horses on 10 acres moving every three days
  - 1 acre paddocks
  - 27 days rest available

## Pasture Stocking Rates

- Stocking Rates for 1000 pound Horses
  - Limited management- 1 horse/3 acres
  - Good management- 1 horse/1-2 acres
  - Outstanding management- 1 horse/ 1 acre or less

## Hay or Graze?

- Feeding Horses 100% Hay & Grain
  - \$490 per horse during grazing season\*
- Grazing Horses
  - \$410 per horse during grazing season
    - No hay fed or grain fed
    - Net Savings-  $\$490 - \$410 = \$80$  per horse

\*Based on \$5/bale hay

## Supplementing 25% Hay

- 75% Forage from Pasture
  - \$410 Pasture program
- 25% Hay Supplemented
  - 50 bales x 25% = 13 bales
  - 13 bales x \$5 = \$65

## Supplementing 25% Hay

- Feeding Costs
  - \$410 Pasture + \$65 Hay = \$475
- Net Savings
  - \$490 - \$475 = \$15 per horse

## 50/50 Mix

- Grazing 50% and Feeding 50%
  - 50 bales x 50% = 25 bales
  - 25 bales x \$5 = \$125
- Feeding Costs
  - \$410 pasture + \$125 hay = \$535
  - Net Savings- \$490-\$535 = **-\$45** per horse

## Improving Pasture Condition

- Greatest Savings
  - 100% Grazing
- Pasture Management Program
  - Important for longevity of pasture
  - Protects natural resources on farm

## Questions?

## USDA- Natural Resources Conservation Service

- The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).
- To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

