

2013 Georgia Grazing School:

Selecting the right watering system and sizing the water supply for your grazing system

Watering Options for Your Grazing System

2013 Georgia Grazing School

John W. Worley



Watering Systems

- Provide water in all locations
- Provide adequate watering space
- Provide adequate flow and pressure
- Remember safety and sanitation

Picture Courtesy of NRCS



“The Creek”

- Fencing across a creek is always a challenge
- Damage to creek banks impair water quality
- “Not enough creeks to go around” for rotational grazing systems



Mechanical Watering Systems

- Advantages
 - Put the water where you want it
 - Improve water quality (for the cows and the neighbors)

Picture Courtesy of NRCS



Mechanical Watering Systems

- Disadvantages
 - Cost (especially for multiple units)
 - Availability of power for pumping
 - Mud around waterers

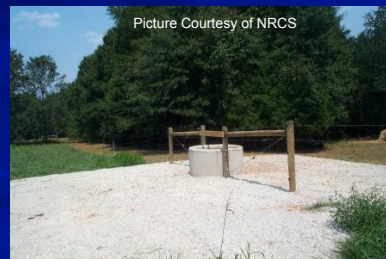
Picture Courtesy of NRCS



Reduce # of Required Waterers

- Place Waterer across fence to provide access from both sides

Picture Courtesy of NRCS



Dr. John Worley
Extension Engineer

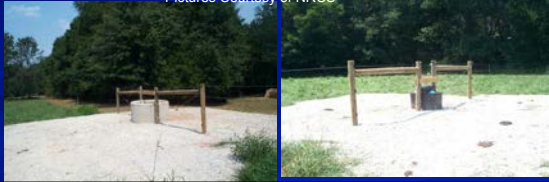
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Reduce # of Required Waterers

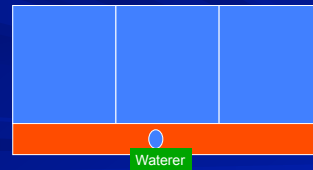
- Make sure adequate space is available from either side
 - One bowl for each 15 cows
 - One ft of space for each 10 cows

Pictures Courtesy of NRCS



Reduce # of Required Waterers

- Place waterer in an area accessible to more than one paddock
- Could be a lane or a working pen



Power in Remote Areas

- Solar Power
 - Best for surface or shallow well
 - Provide extra storage for nights and cloudy days



Pictures Courtesy of NRCS

Power in Remote Areas

- Solar Power
 - Provide extra storage for nights and cloudy days
 - 12 gal/day x 2 to 3 days x # of cows
 - Can be in storage tank or watering trough



Pictures Courtesy of NRCS

Power in Remote Areas

- Ram Pumps
 - Another alternative where flowing water is present nearby
 - Works on the momentum of flowing water
 - See Publications in notebook



Mud Around Waterers



Picture Courtesy of NRCS


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Mud Around Waterers

- Siting
 - High well-drained area
- Maintenance
 - Check Valves regularly
- Heavy Use Areas
- NRCS FOTG
 - HUA Code 561
 - Watering Fac. Code 614
- (See Univ. of KY pub in notebook)



Picture Courtesy of NRCS

Mud Around Waterers

- Heavy Use Areas
 - Originally used to stabilize dirt roads
 - Roughly half the cost of concrete
 - Concrete “moves mud to edge of concrete”



Picture Courtesy of NRCS

Heavy Use Area

- Geotech Fabric – stabilizes foundation
- Coarse aggregate 4-6” No. 3 or 4 gravel
- Fine aggregate 2-3”
 - “crusher run”
 - “dense grade”
 - Sand
 - crushed limestone
 - fly ash? Other materials?
- Make sure edges of fabric are buried
- Pack Mechanically

Heavy Use Area

- Watering area
 - At least 15 ft from watering trough for cattle
 - 8 ft for sheep and goats
- Travel Lanes
 - 8 to 15 ft wide
 - Fence to force use
 - Crown the center of lanes for drainage
 - Avoid use by vehicles except for scraping and maintenance

Drinker Types

- Troughs (Concrete, Galvanized Steel, others)
 - More access space
 - Usually lower cost
 - More storage in the drinker



Pictures Courtesy of NRCS

Drinker Types

- Individual Drinker
 - Fresher, cleaner water
 - Some are “freeze proof”
 - Less storage in the drinker



Pictures Courtesy of NRCS

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Control Valve

- Can be under water for freeze protection
- Must be siphon proof
- Must have min. pressure to operate properly



Pictures Courtesy of NRCS

Sizing the supply system

- Need to pump daily need in 4 hours
- 18 gal/day/cow x 100 cows = 1800 gpd
- $1800/4 \text{ hrs} = 450\text{gph} = 7.5 \text{ gpm @ operating head (resistance)}$
- Can reduce pumping rate by increasing storage (especially useful in solar systems)



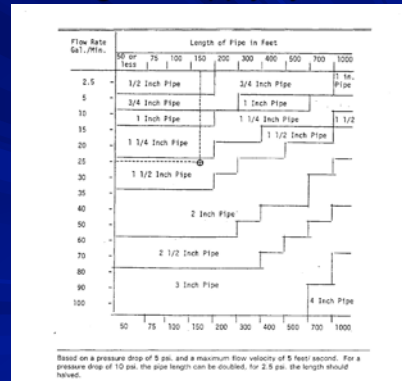
Picture Courtesy of NRCS

Sizing the supply system

- Pump – operate efficiently at flow rate and pressure expected
- Pressure Head
 - Elevation Change
 - Water level in well or pond
 - Elevation of drinker or top of storage tank
 - (10 ft = approx. 4.3 psi)
 - Speed of water in pipe
 - Length of pipe
- Limit friction drop to 5 psi
 - Most home systems operate at approx. 40 psi
 - Drinkers need at least 5-10 psi



Sizing the supply system



Sanitation

- Anti-siphoning valves should always be used on livestock waterers to prevent contaminated water from returning to well when pressure is lost.
- Drinkers should be easy to drain and clean

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