Watering System For Grazing Livestock

Kevin S. Gould MSUE Beef Educator
2017 Beginning Farmer Webinar Series
Livestock Water

- Focus will be on pasture water systems
- Often the most overlooked of the nutrients
- A clean, fresh supply is vital
- Surface water will work (consider GAAMPS)
- Rules of thumb:
  - 1 gallon/100 pounds body weight in cold weather
  - 2 gallons/100 pounds body weight in the hottest weather
  - Lactating cows will consume about twice as much water as dry cows
Michigan Surface Water Regulations

• Rule #1
  - Cannot pollute the waters of the state
  - Essentially this means contaminated water cannot leave your property.

• Rule #2
  - Refer to rule #1
Consideration for Watering Systems

- Temporary, season or full year water needs
- Type and location of available water sources
- Site locations and conditions (remote location, topography, riparian features)
- Type of grazing system (intensive or continuous)
- Number and type of livestock
- Tank and water line sizing
- Access to power source (mainline power, solar, wind, animals, etc.)
- Pumping system (amount of lift, automated versus manual)
- Flexibility and portability
- Reliability and maintenance
- Cost/benefit and cost/animal
- Personal preference
Full Season Water Supply

Closed top systems

Open top, heated systems
Paddock Water Delivery Advantages

• More uniform pasture utilization
• Livestock performance increases
• Health benefits (lower disease risk)
• Manure distribution improves in pastures
• Tank size can be smaller
• Better water quality
• Environmental benefit by limiting access to surface water
Forage Utilization / Distance to Water Source

Figure 1. Impact of Distance from Water on Temporal Utilization Rate in Ten Acre Pastures with 4:1 Length to Width Ratio.
Equipment List

• Water Line (High Density UV Resistant)
  – Bury under gateways or high traffic areas
• Quick-couple valves
• Tank hose with connector
• Full Flow Tank Valves
• Tank(s)
Water Delivery in Pastures
Tank Area Maintenance
Mined Soils Around Water Source
Pre-winter Maintenance

• Disconnect water from the summer source
• Place male-end in the coupler at the ends of the water system
• Disconnect water line at a joint in a low area
• This will allow gravity to drain the pressure off the line and prevent freezer damage to the system
• Blowing out the line is extra insurance
# Water Delivery Systems

## Pump Systems
- Nose
- Ram
- Sling
- Solar
- Generator
- Windmill
- Electric

## Surface Water
- Riparian Rights
  - surface water
- Hauling Water
Dimensions And Performance

Length 28 ¼”  Width 10”
Height 15 ¼”  Weight 22 lbs
Pipe Size 1”  Water per stroke = 1 pint
Maximum Vertical Lift 26 ft
Maximum Horizontal Distance 126 ft

http://www.riferam.com/pasture/index.htm
Nose Pumps

**Pros**
- No electric power required
- Portable
- Utilizes surface water without livestock contact

**Cons**
- Expensive
- Multiple required for larger herds
- Must be anchored
- Slow water delivery
- Difficult for young stock

[Michigan State University Extension]
Ram Pumps
# Ram Pumps

<table>
<thead>
<tr>
<th><strong>Pros</strong></th>
<th><strong>Cons</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• No power required</td>
<td>• Maintenance can be higher</td>
</tr>
<tr>
<td>• Minimal investment</td>
<td>• Slow delivery</td>
</tr>
<tr>
<td>• Accesses surface water without livestock contact</td>
<td>• Distance restrictions</td>
</tr>
<tr>
<td></td>
<td>• Not applicable in winter</td>
</tr>
<tr>
<td></td>
<td>• 10% efficiency</td>
</tr>
<tr>
<td></td>
<td>• Seasonal due to water flow</td>
</tr>
</tbody>
</table>
Sling Pump

Direction on pump rotation

Water Intake

Water

Water Flow

Feeder hose to stock tank
Sling Pumps

Pros

• Utilize surface water without contact
• Can move water up hill a limited distance
• Cheaper than building seasonal water access ramps

Cons

• Requires moving water
• Seasonal challenges with river levers
• Requires regular inspection
• Limited pumping distance
• Expensive
Solar Pump Systems

- Pump
- Solar Panel
# Solar Pumps

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Remote locations</td>
<td>• Cost ($2000+)</td>
</tr>
<tr>
<td>• No line power required</td>
<td>• Sunshine required</td>
</tr>
<tr>
<td>• No damage from dry-running pumps</td>
<td>• Large tank required</td>
</tr>
<tr>
<td>• Require large tanks</td>
<td>• Not very mobile</td>
</tr>
<tr>
<td></td>
<td>• Slower delivery</td>
</tr>
<tr>
<td></td>
<td>• May require battery back-up</td>
</tr>
<tr>
<td></td>
<td>• Well may be required</td>
</tr>
</tbody>
</table>
Temporary Water Sources

- Hauling Water
- Truck or wagon
- Must have large water tank

- Portable Pumps
- Need larger water tank
Other Power Systems

Wind Generator

Gas or Diesel Generator
Surface Water Sources

**Pros**

- Low cost
- Often readily available

**Cons**

- Environmental Risk
- Limited Access Required
- Seasonal – drought/winter
- Health concerns
Back-up Water Sources
Electric Pumps

**Pros**

- Most reliable
- System often already in place at home/farm location
- High volume source
- Lower cost
- Clean & fresh water source
- Easily converted to full season water source

**Cons**

- Limited distance (1 mile)
- Power Outages
- Electricity is required
Simple Watering System
H-style Water / Fencing System

One way, tree branch

Water supply line

Paddocks

Water tanks

Cows
Livestock H₂O Overview

• After forage and fence, watering systems are the next best investment in your operation

• Choose the system or systems most reliable, durable and most cost effective

• ALWAYS have a back-up plan!
Help is available

Questions


gouldk@msu.edu
(616) 527-5357