Livestock Watering Systems

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FLEXIBILITY !!!
Water is generally the MOST Limiting Factor in Grazing Distribution and Maintaining Flexibility of a Grazing System.

Water deficiency will reduce animal performance more quickly and more severely than will any other nutrient (feed or mineral).
Livestock Watering Systems

- You must be able to deliver adequate amounts of quality drinking water, at the right location, to have a successful grazing system.

Watering Behavior

- Cattle will come to water 2 to 5 times daily
Watering Behavior

- Cattle will come to water 2 to 5 times daily
- Cattle will drink for 1 to 4 minutes at a time
- Cattle can drink at a rate of about 2 gallons per minute
## Consumption Rates

Water Consumption Per Adult Animal
(gallons per head per day)

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<td>Milking Cow</td>
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<td>Sheep/Goats</td>
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<td>Horse</td>
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</table>
Water Requirements

- Age
  - Mature cows 3-5 lb water / lb DMI
  - Calves 5-7 lb water / lb DMI
  - Calves are much more selective regarding water quality

Water Requirements

- Stage of production: Lactation
  - Water intake will increase about 3 gal./gal. of milk produced
Water Requirements

- Breed
  - *Bos taurus* > *Bos indicus*
  - High milk breeds > low milk breeds

- Age
- Stage of production
- Breed
- Ambient temperature
Water Requirements

- Age
- Stage of production
- Breed
- Ambient temperature
- Moisture content of feed

Water Requirements

- Moisture content of feed
  - Pasture at 80% moisture contains 4 lbs of water / lb of forage dry matter
  - Therefore, a cow consuming 25 lb DM is also consuming 100 lbs (16 gallons) of water
Water Requirements

• Age
• Stage of production
• Breed
• Ambient temperature
• Moisture content of feed
• Travel distance to water

Water Requirements

• Travel distance to water
  • Cattle with water within 600 to 800 feet drank 15% more than cattle walking > 1000 feet to water
  • Grazing Utilization
Figure 1. Impact of distance from water on temporal utilization rate in rectangular 10 acre paddocks.

Livestock Watering Patterns

• Tend to drink “individually” when:
  • 10 acres - 1/8 mile or less to travel
  • can usually get by with smaller tank and less flow rate

• Tend to drink “socially” when:
  • traveling farther or in larger paddock
  • should have tank space for 10% of herd and have flow rate sufficient enough to water herd in 20 minutes
GOAL

• Livestock not travel more than 800 feet to water
  • Water in EVERY Paddock

Permanent vs Portable Water

• When is freeze-proof water really needed?
• What is the most expensive part of installing a grazing system?
• Why do we install so much buried pipe and permanent tanks?
- Use as few as possible permanent "winter" water sites.
- Use portable systems to serve paddocks during the growing season.
Solutions

Alternative watering systems in ponds
Well and pipeline

Buried Pipeline

- Pressure test line prior to backfilling trench.
- Bedding to protect pipe may be needed.
- Pipe needs to be buried below frost line.
Shut-off Valves

- You can never install too many shut-off valves.

- Need one at each tank to be able to shut off water supply for repairs.

Hydrants add flexibility

- Inexpensive
- Easy to install.
- Can provide water to multiple paddocks with hose and portable tank.
Concrete freeze-proof tanks

Be sure to install gravel or concrete pad around tanks
AND
Leave tank at least 18” out of ground at watering point.
Keep the tank out of ground

Tank Height

- Cattle -- minimum 18”
- Sheep/goats -- 16-19”
- Lambs/Kids -- 12-14”

Open trough needs an escape ramp or concrete blocks for kids/lambs, if they fall (or jump) in.
Overflow Pipe Pit

Overflow Pit to be filled with rock/gravel

Pit – 20-40” away from tank
Concrete tanks and pads

**PIT OUTLET**

1. Extend the overflow pipe such that the outlet is beyond main cow traffic areas. Outlet should not be in the vicinity of the barn apron.

2. A free draining outlet is recommended for most tank overflows. However, if the ground slope will not allow for this option, then a pit outlet will need to be installed.

3. A pit outlet will require a excavating a pit with approximate dimensions of 4' x 5' x 4'. Fill the pit with 3 Cy of clean 3/8" or larger crushed limestone or river rock. River rock is recommended.

4. Caution: Pit drains will not function properly in soils that are not well drained, and pit drains are prone to clog if made of brick or allowed to seep the concrete. It is important to keep the drains clear of debris in order to drain the tank for servicing, and no cleanout has been installed.

5. Caution: Free draining outlets can result in standing water which tends to attract animal attention and result in mishaps or injury forming at the outlet. Free draining outlets can also become plugged with intrusive rodents or amphibians.

- DRAWINGS NOT TO SCALE -
- Uses heat from the sub-soil to stay ice free.
- Proper installation is critical.
- Animals must be using the waterer to stay ice free.
- Shut-off and drain when not in use.

Heat Well installed under tank
Minimum 3-4’ deep
Other Permanent Water Facility Alternatives

Permanent??

Tire Tanks
Gravel Pads – 2-3” gravel
“Make it uncomfortable”

Gravel Pads
GeoTextile

Eroded edges of concrete pads
Springs and seeps can be developed for livestock water, if they are wet year around, and have fall in elevation to the tank site.
Springs are excavated to locate the vein and backfilled with gravel to grade. The collector is placed and covered with gravel, then covered with soil.
Algae Control
Portable Water

Above Ground Pipe
Quick Connect Couplers

Floats with Full Flow Valve
Portable Tanks are **PORTABLE TANKS!**

- Has this tank ever been moved?
- 5 days of grazing

Portable Tanks
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