WATER, HEAT STRESS, AND DROUGHT

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Livestock Water Use Criteria

- **Animal characteristics**
  - Animal species and breed
  - Animal size
  - Animal age and condition

- **Pasture conditions**
  - Forage type and condition
  - Distance to water

- **Environmental conditions**
  - Average daily temperature
  - Water quality
Livestock Daily Water Needs

- 1000 lb dairy cow - 30 gallons
- Dry beef cow - 22 gallons
- Beef cow-calf pair - 20 gallons
- 600 lb beef heifer – 12 gallons
- 2000 lb beef bull - 19 gallons
- Sheep or goat - 2 gallons
Goats, Sheep, and Water

- Sheep and goats can survive longer in drought than cattle
  - Smaller size
  - Able to subsist on desert and semi-arid plants
  - Many breeds are drought tolerant

- Multi-species grazing with cattle allows you to better balance pasture resources with herd size
Water Use by Young Animals

- Young animals need more water than adults
- A greater percentage of young animals’ body weight is water
- Young animals need to drink more often
  - They take in less water at a time
  - They have a more rapid metabolism
Forages and Water Needs

- Lush forages decrease livestock water needs
  - They contain 75-80% moisture
  - Livestock can get some of their water from this lush forage

- Dry forages increase livestock water needs
  - Hay and dry feed contains only 10-12% moisture
  - Animals need water to digest and move dry, fibrous feed through their gut
Ensure Animals Have Water

- Conserve water in tanks
  - Fill tanks using animal-activated valves
  - Decrease evaporation by having tanks partially covered
- Save or bring in water
  - Collect water in advance of drought
  - Use trucks or solar pumps to bring in additional water
- Lease additional land with access to water
- Reduce herd size to reduce water need
Distance to Water

- Sheep and cattle can forage up to 3 miles from water points
- Animals that need to drink more than once a day cannot forage as far
  - Pregnant and lactating females
  - Young animals
  - Animals eating dry feed or forages
- Greater distance to water increases trail formation
Water Trapping / Collection

• Trap water in fields with swaths of crop stubble
  - Swaths should be cut perpendicular to prevailing winds
  - Swaths collects snow in winter, adding meltwater to soil as temperatures warm

• Water collection structures
  - Contour ridges
  - Check dams
  - Percolation ponds
  - Holding tanks
Livestock Need Clean Water

- Improves animal’s metabolism
- Lowers risk of parasites and diseases
- Promotes healthy growth
Drinking Water Contamination

- **Salinization**
  - Water evaporation in troughs and shallow tanks
  - Water evaporation from ponds in saline soil

- **Toxic blue-green algae grow in nutrient-rich ponds**

- **Parasites**
  - Animals deposit manure in streams and on streambanks
  - High temperatures and stagnant water favor microbial growth
Salt Increases Water Use

- Salt intake increases animal need and desire for water
- Sources of salt in diet
  - Plants with high salt content, such as saltbrush
  - Saline water
  - Salt and mineral licks
Salt Tolerance

- Animals with low salt water tolerance
  - Young animals
  - Pregnant or lactating females
  - Aged or weakened stock

- Symptoms of high salt intake
  - Depressed appetite
  - Depressed growth rate
  - Scours
Toxic Blue-Green Algae

- **Risk conditions**
  - Stagnant ponds
  - Low water flow in streams
  - High nutrient levels in water
  - Hot, sunny days

- **Prevention**
  - Fence off stagnant ponds
  - Provide animals with access to clean water
Drought and Riparian Areas

- Why animal congregate in riparian areas
  - Drinking water
  - Seeking shade and breezes
  - Grazing on riparian vegetation

- Riparian degradation by livestock
  - Overgrazing riparian vegetation when upland vegetation is sparse
  - Trampling and compacting streambank soil
  - Depositing manure in and near streams
Riparian Degradation

- Impacts of trampling and overgrazing
  - Bare soil
  - Increased soil erosion and nutrient loading
  - Increased evaporation and lower water table
  - Establishment of noxious plant species

- Degradation of fish and wildlife habitat
  - Loss of food
  - Loss of shade and hiding areas
Healthy Riparian Areas

- **Water table level**
  - Height changes little throughout the year
  - Moist soil extends about two channel widths beyond either bank

- **Dense vegetation coverage**
  - Predominantly native plants
  - Diversity of young and mature grasses, forbs, and woody plants
  - Includes plants with deep, strong root systems
Keep Riparian Areas Healthy

- Keep livestock away from streams and ponds
  - Pump water from streams into drinking tanks
  - Fence riparian areas
  - Place feed supplements and insect control away from water bodies

- Manage riparian grazing
  - Graze only when soils are dry
  - Prevent overgrazing
  - Do not graze when riparian plants are reproducing
Causes of Heat Stress

- **Environmental conditions**
  - High temperature — above 80°F day, 70°F night
  - High humidity
  - Limited air movement

- **Management factors**
  - Limited access to water
  - Poor water quality
  - Lack of shade, especially for animals with light-colored hair
  - Handling or hauling animals in hot weather
Heat Stress Concerns

- Low feed consumption
  - Depressed appetite
  - Difficulty digesting dry feed
- Poor weight gain
- Susceptibility to disease
- Excessive salt intake
- Death
Keep Animals Cool

- Provide access to shade
- Prevent congregation in windbreaks that prevent air movement
- Provide animals in barns or sheds with good ventilation
- Provide sprinklers to cool animals
Heat Stress Management

- Water and feed management
  - Provide animals with plenty of clean, fresh, and preferably cool drinking water
  - Provide animals access to salt and minerals
  - Provide additional water to allow effective use of supplements

- Avoid handling animals during hot weather, such as between 10 a.m. and sundown
Summary

• Ensure that animals have access to sufficient clean water
  – Breed and species determines water consumption
  – Age and health affects grazing distance from water

• Protect water quality by
  – Protecting riparian areas
  – Preventing salinity buildup

• Prevent heat stress by
  – Providing shade and water
  – Not working animals during hot weather
Stream Protection Benefits

- Decreased buildup of nutrients, salt, and other contaminants in water
- Decreased trampling in streams and ponds
- Less manure concentration near water
- Streambank vegetation protected
- Increased water infiltration and storage in riparian zone
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