

Fencing

Perimeter pasture fence options include woven wire, barbed wire (goats only), high-tensile (5-7 strands, electric or non-electric), and electric strands. Perimeter fences must conform with Wisconsin Statutes Chapter 90. Interior fences do not need to conform with this statute and may be permanent or temporary (electric netting and movable electric strands).

Performance of electric fences may be limited by:

- Proper grounding (minimum 3' of ground rod per joule of energy from energizer)
- Sufficient electric charge in wires (4,000 volt pulse for sheep, 7,000 volt pulse for goats)
- Grounding out from tall weeds/grass touching wires
- Note that resistance to electric flow increases with wire size: 12 gauge wire (larger) carries more charge than a 14 gauge wire (smaller).
- Electric fences are a psychological barrier and an animal's first experience must teach them to respect the fence.

Forage Management

Ideally, pastures are provided regular rest intervals to regrow after a grazing event. Subdivision of pasture areas into paddocks allows grazing of one portion of pasture while allowing rest on the remainder of the pasture, and is known as rotational grazing. Use of a rotational grazing system creates more stable forage production, increases forage quality, decreases weed and erosion problems, and increases livestock production per acre. Development of a grazing plan includes budgeting for rest periods.

Forages	Days Rest in Cool Weather	Days Rest in Warm Weather
Cool season grasses	14-21	35-50
Legumes	21-28	

Forage Species

Adding legumes into pasture mixtures increases forage quality, availability, animal performance and pasture resilience. Pastures that include 30-50% legume will usually not need additional nitrogen fertilizer.

Forage	Seeding rate in Mix (lb/acre)	Start Grazing Height (in)	End Grazing Height (in)
Orchardgrass	2-4	10	4
Reed Canarygrass	5	10	4
Smooth Bromegrass	3-6	10	4
Tall Fescue*	4	10	4
Timothy	2-4	10	4
Kentucky Bluegrass	8	6	2
Perennial Ryegrass	2	6	2
Alfalfa	8		
Birdsfoot Trefoil	6		
Kura Clover	8		
Red Clover	6-8		
White Clover	1-2		

* Utilize endophyte-free tall fescue varieties

Dry Matter Intake

Sheep and goats spend 6-12 hours grazing per day. Yield, density, and quality must be adequate for animals to meet dry matter intake requirements from pasture.

Species	Stage of Production	Daily dry matter intake (% of body weight)
Sheep	Lactating ewe	4
	Dry ewe	2
	Growing lamb	3-4
	Ram, mature	2
Goat	Lactating dairy doe	5
	Lactating nondairy doe	4
	Dry doe	3
	Growing kid	3-4
	Buck, mature	2

Nutrient Requirements of Small Ruminants (2007)

Pasture forage dry matter yields often range from 150 to 500 lbs/inch of forage height. To calculate pasture needs based on estimated forage yields in Wisconsin, download *Determining Pasture Needs*, available at the UW Extension Forages website:

<http://www.uwex.edu/ces/crops/uwforage/uwforage.htm>

Note that forage utilization in pastures may only be 40-80% of forage yield due to trampling and defecation.

Water

Adult sheep and goats require 2-3 gallons of water per day. Water requirements increase in hot, humid weather and may decrease when grazing lush, spring pasture or snow-covered fields. Water can be supplied through water lines, water hauling tanks, or pumped from water reservoirs (creek, pond).

Grazing Animal Health

Grazing represents the least expensive way to harvest forage to feed livestock, and may increase farm profitability. However, grazing sheep and goats have different management considerations compared to confinement-raised animals. The following health issues must be considered:

Internal Parasites. Internal parasites are a primary concern for grazing operations and producers should develop a management plan for their herd. Internal parasites cause anemia in sheep and goats, leading to poor performance and possibly death. The animals most susceptible include, in order of risk:

- lambs/kids, pregnant ewes/does
- lactating ewes/does
- dry ewes/does, mature rams/bucks

High-risk groups may be monitored for parasites using fecal egg counts and FAMACHA scoring (only valid for barber pole worm). Treatment options include strategic deworming early in season, annually rotating classes of de-wormers, rotational grazing management, integrating haying and grazing of pastures, and grazing high-tannin forages.

Hoof Health. The bacteria that cause foot scald is found naturally in soil and manure. Once the hoof integrity is compromised by this organism, introduction of a second anaerobic bacterium may cause foot rot. This organism can only survive in the

soil for 10-14 days, but can survive in anaerobic environments in hooves for extended periods of time. For both organisms, infection is exacerbated by wet conditions, where manure and mud accumulate in hooves. Foot rot is prevalent and highly contagious when soil moisture is high and temperatures are 50° to 70° F. Treatment with foot baths or antibiotics may be required.

Bloat. Frothy bloat occurs when stable foam from forage proteins forms in the rumen, blocking the esophagus and collecting naturally occurring rumen gases. Limit grazing of lush, legume-only pastures by mixed grass-legume pastures. Feed dry forage before turning animals out onto legume-rich pastures and/or strategically graze by moving animals to new paddocks after dew has dried in the afternoon. Treat by tubing vegetable oil or antifoaming agent into the rumen and remove from feed source.

Nitrate poisoning. Nitrate concentration is higher in certain plant species (lambsquarters, pigweed) or during periods of slow plant growth due to drought, frost, shade, or herbicide application.

Poisonous Plants. Certain weeds and cultivated plants are toxic to sheep and goats. Animals often eat poisonous plants when insufficient forage is available as a result of poor grazing management. Identify plants that sheep/goats readily avoid grazing in your pasture. Common toxic plants include bracken fern, cocklebur, jimsonweed, lambsquarters, nightshades, and pigweed. Toxic plant database links can be found at the UW Extension Grazing Research Website: <http://fyi.uwex.edu/grazres/pasture-resources/>

Sources and Additional Resources

- *Pasture Species Selection for Sheep*: Dan Undersander, http://www.ansci.wisc.edu/Extension-New%20copy/sheep/wisline_10/wisline10.html
- *Pastures for Profit: A guide to rotational grazing*: UW Cooperative Extension Publishing
- *The Dirty Dozen and Beyond: Identifying and Managing 25 Pasture Weeds of Wisconsin*: UW Cooperative Extension Publishing
- *Watering Systems for Grazing Livestock*: Ben Barlett, Michigan State University Extension.