Natural Resources Conservation Service

Tennessee Job Sheet
Forage Harvest Management
Conservation Practice No. 511

(Photos Courtesy of NRCS)

Proper "Forage Harvest Management" will increase forage production, persistence, and hay quality. This practice has the potential to improve utilization and plant composition.

When all fields are used as pasture, maintain heights as recommended in Prescribed Grazing Job Sheet. When forage height exceeds recommended grazing height, change land use to hay for best utilization. Livestock feed is the most expensive input concerning livestock production. Grazing management should be the first and primary focus to reduce the need for stored forage. Harvesting hay from one area and feeding it in another area transfers nutrients from one field to another area. Pastures have the potential to return up to 90 percent of nutrients removed in hay. See Nutrient Management Job Sheet for details.

PREPARATION FOR HARVEST

In general for optimal quality hay, the following points should be addressed:

- Before forage harvest, clear fields of debris that could damage machinery or if ingested by livestock, lead to sickness (for example, hardware disease) or death.
- To control forage plant diseases, insects, and movement of weeds, clean harvesting equipment after harvest and before storing.
- To reduce safety hazards, use caution when operating harvesting and hauling equipment on field slopes over 25 percent, particularly on cross-slope traffic patterns.
- Hay cut in the afternoon is slightly higher quality than forage cut in the morning.
- Operate all forage harvesting equipment at the optimum settings and speeds to minimize loss of leaves.
- Set shear-plate on forage chopper to the proper cut for the crop being harvested. Keep knives well sharpened.
- A haybine works well for harvesting forages that need a higher minimum cutting height.

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TARGET MOISTURE LEVELS

- For optimal dry hay quality, rake hay at 30 to 40 percent moisture and ted or invert swaths when moisture is above 40 percent.
- Bale field cured hay at 15-20 percent moisture and bale force air-dried hay at 20-25 percent moisture.
- To check moisture with a moisture meter prior to rolling, stuff forage in a five-gallon bucket and insert probe in bucket for approximate reading. Test several locations for average reading. May want to base operation on highest reading.
- Do not allow sericea lespedeza to over-cure. Rake prior to excessive drying to prevent excessive loss of leaves.

MANAGEMENT

- Sericea or native grasses should generally not be cut between September 1 and the first killing frost (usually 28^{o}) or November 1, whichever occurs first.
- Allow alfalfa ample time between the last cutting and first killing frost. Do not cut between September 15 and first killing frost or November 1, whichever occurs first.
- To improve reseeding of annuals, leave strips 0.5' wide standing between mowed strips.

(Photos Courtesy of NRCS)

HAY STORAGE

- Hay typically heats with variable temperature over a six-week period after baling.
  - 120^{o}-140^{o} Safe
  - 140^{o}-160^{o} Caution
  - 160^{o} or Higher-Call Fire Department!
- Hay storage pays for itself in as little as seven (7) years considering prevented losses. Hay losses from the bottom are often as great as they are from the top. To reduce losses from the bottom of stored hay, large 2"–3" diameter is best because it reduces wicking of moisture from the ground. If the surface is concrete, a plastic barrier should be placed under the concrete. Other methods of reducing soil moisture and

hay contact that require more labor include pallets, poles, tires, or others.

- If hay is stored outside, place rolls in a North-South direction with rolls running up and down hill with 3' or more between lines of rolls. Storing hay under the drip line of trees initially protects the hay, but once rolls are wet they do not dry out as quick so hay losses are greater.

Recommended Timing of Harvest and Cutting Height *(Highlight Applicable Forages)*

Species	Harvest Period	Stage of Growth or Height to Harvest for Maximum Yield and Quality	Minimum Cutting Height (Inches)
LEGUMES (Cool Season Perennial):			
Alfalfa	First Cutting Second Cutting Third Cutting	When in Full Bud 1/10 Bloom 1/10 Bloom (Allow 4-5 weeks of growth prior to the historic first freeze.)	3-4
Clovers, Red and Alsike Birdsfoot Trefoil	First Cutting Second Cutting	¼ to ½ Bloom Early Bloom	3-4 3-4
Grass-Legume Mixtures		When Legume is at Stage of Growth Stated Above or at Height Favorable to Other Desired Species	3
LEGUMES (Cool Season Annual):			
Crimson	Only Cutting	Early Bloom	
LEGUMES (Warm Season Perennial):			
Sericea Lespedeza	First Cutting Second Cutting	When 18" High Same as First (Allow 6-7 weeks of growth prior to the historic first freeze.)	3-4 3-4
LEGUMES (Warm Season Annual):			
Annual Lespedeza	Only Cutting	Early Bloom or Before Leaves Begin to Shatter	2-3
GRASSES (Cool Season Perennials):			
Species	**Period**	**When to Harvest for Maximum Yield and Quality**	**Minimum Cutting Height (Inches)**
Fescue, Tall and Orchardgrass	First Cutting Second Cutting	Boot Stage After 8-10" Recovery Growth	3-4
Matua	First Cutting Subsequent Cuttings	Boot Stage Allow Matua to Produce Mature Seed One Time during Grazing Season (Usually 45 Days)	3-4 3-4
Timothy	First Cutting Second Cutting	Boot to Early When Basal Shoots Appear at Soil Surface	3-4 3-4
Reed Canarygrass	First Cutting Subsequent Cuttings	Boot Stage After 8-10" Recovery Growth	6-8 6-8

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Species	Period	When to Harvest for Maximum Yield and Quality	Minimum Cutting Height (Inches)
Grasses (Warm Season Perennials):			
Bermudagrass	All Cuttings	When Plants are 10-15” Tall or Before Lower Leaves Turn Brown	2-3
Johnsongrass	First Cutting Second Cutting	Boot Stage When Grass is 36” Tall [Leave a higher stubble height (12”) when last harvest is made. Allow 6-7 weeks of regrowth prior to the historic first freeze.]	6-8 6-8
Native Grasses	First Cutting Subsequent Cuttings	Early Boot Stage (Before Seed Head Appears) When Grass is 36” Tall [Leave a higher stubble height (12”) when last harvest is made. Allow 6-7 weeks of growth prior to the historic first freeze.]	6-8 6-8
Grasses (Warm Season Annuals):			
Pearl Millet	All Cuttings	When Grass is 36” Tall	6-8
Sorghum Sudangrass	All Cuttings	When Grass is 36” Tall	6-8
Grasses (Cool Season Annuals):			
Small Grains	First Cutting	Late Boot Stage	3-4
Ryegrass	First Cutting	Late Boot Stage	3-4

Reference: USDA/Forage Harvest Management Standard, Tennessee Grazing Coalition, 2007 “Tennessee Pasture Planner”