



Date	
Prepared For	
Prepared By	
Farm Number	
Tract Number	
County	

This job sheet is a planning tool. Guidelines for managing forage systems can vary considerably with environmental extremes. Producers should monitor their forage fields for minimum stubble height and stage of maturity at harvest in order to maintain healthy stands and to produce quality stored forage. Sample forage quality regularly to fully understand nutritive value. Hay should be dried to 15-16% moisture for large bales and 17-18% moisture for small square bales. Link to guidelines for checking moisture content here: [“Measuring the Moisture Content of Forage Using a Microwave Oven”](#).

Management Purpose/Objectives

This practice may be applied as part of a conservation management system to accomplish one or more of the following objectives (check all that apply):

- Optimize yield and quality of forage
- Promote vigorous plant regrowth
- Manage for the desired species composition
- Use forage as a soil nutrient uptake tool
- Control insects, diseases and weeds
- Maintain and/or improve wildlife habitat

Reference Tables and Additional Information

The information presented below was compiled from Southern Forages, Forages: The Science of Grassland Agriculture, and University of Georgia and NRCS publications. Information based on reference material is intended as a guide only. Successful management requires expertise to be applied by the producer on a site-specific basis.

General Specifications

1. Harvest at a frequency, and maintain a stubble height that assures a sustainable, healthy stand.
2. Harvest forage at the maturity that provides the desired quality and quantity, while maintaining conditions for regrowth.
3. Maintain enough plant cover between harvests to protect soil from erosion.
4. When used for nutrient uptake, manage to remove the highest quantity of forage while considering nutritive value based on intended use.
5. Wildlife requirements of food, water, cover, nesting and breeding habitats, and escape routes during mechanical harvest should be considered during the application of this practice. Consult NRCS or Georgia Department of Natural Resources, Wildlife Resources Division for additional guidance.

Site Specific Information

The fields planned for Forage Harvest Management are indicated below. (See Table 5 for Minimum Stubble Heights).

Field No.	Field Acres	Forage Species ¹	Minimum Stubble Height (inches)

¹ Refers to the dominant species in the stand

Stage of Growth

The single most important producer controlled factor influencing hay or silage quality is stage of maturity at harvest.

Stage of maturity at harvest influences palatability, crude protein and digestibility.

Forage plants tend to produce higher quality forage when harvested before full maturity. Plants that are early in their growth cycle usually contain higher levels of crude protein and greater digestible energy.

While quantity of harvested material may increase with delayed harvest, nutritive value and resulting animal performance will decrease.

For additional information on forage quality link to the University of Georgia Extension publication "[Understanding and Improving Forage Quality](#)".

Growth Stage Descriptions for Grasses and Legumes

Grasses

- **vegetative** - leafy growth, few stems, no reproductive (seedheads) growth
- **late vegetative** - seed bearing stem elongates
- **boot** - seed bearing stem elongated, top of stem swollen
- **early bloom** - seed heads (flower heads) begin to emerge
- **mid bloom** - at least 25% of seed emerged, pollen beginning to shed
- **full bloom** - most seedheads emerge, peak pollen shed
- **milk** - all seedheads emerge; seed forming, seed soft and immature
- **dough** - seed becoming harder and have a dough-like consistency
- **mature** - seed fully developed

Legumes

- **vegetative** - leaf and stem growth; no buds, flowers or seed pods
- **bud** - buds begin to swell and become apparent at a few nodes
- **late bud** - several nodes with buds; buds more swollen
- **early flower** - a few buds open, flower color apparent
- **late flower** - many flowers apparent
- **early seed** - green seed pods apparent on a few flowers
- **late seed** - many green seed pods apparent, some seed pods turning brown
- **mature** - seed pods brown to black and dry; ready to harvest seed as moisture content permits

Table 1.
Recommended Stages to Harvest Various Hay Crops

Species	Stage at Harvest
Alfalfa	Bud stage for first cutting, one-tenth bloom for second and later cuttings. For spring seedings, allow the first cutting to reach mid- to full bloom.
Tall Fescue, orchardgrass	Boot to early head stage for first cutting, afterward at 4 to 6 week intervals.
Red, arrowleaf, or crimson clovers	Early bloom.
Small grains	Boot to early head stage.
Soybeans	Mid- to full bloom and before bottom leaves begin to fall off.
Sericea lespedeza	Height of 15 to 18 inches.
Annual lespedeza	Early bloom and before bottom leaves begin to fall.
Ladino or white clover	Cut at correct stage for companion grass.
Bermudagrass	15 to 18 inch height for first cutting, harvest every 4 weeks or when 15 inches high.
Sudangrass, sorghum-sudan hybrids, pearl millet	Height of 30 to 40 inches.
Bahiagrass	Height of 6 to 12 inches
Johnsongrass	Harvest at heading.
Dallisgrass	Thresh or combine seed before baling vegetative material to avoid ergot poisoning.
Native grasses (eastern gamagrass, indiagrass, big bluestem, switchgrass)	Harvest in early boot stage at 45 day intervals.
Annual Ryegrass	Early to full bloom

Table 2.
Recommended stages to Harvest Various Silage Crops

Species	Stage at Harvest
Corn	Kernels dented, black layer visible.
Grain sorghum	Late milk to late dough.
Forage sorghum	40 inches or late boot stage.
Sudangrass, johnsongrass, pearl millet	40 inches or boot stage, whichever comes first.
Small grains, ryegrass	Boot to early heading.
Soybeans	Late bloom - seed forming in pods and before lower leaves fall off.
Alfalfa, red clover	Late bud to early bloom.
Tall fescue, orchardgrass, timothy	Boot to early heading; afterward at 4 to 6 week intervals
Hybrid bermudagrass	15 inches at first harvest; afterward at 4 to 5 week intervals
Legume-grass mixtures	Boot to early heading for grass component

Minimum Stubble Height and Regrowth Period

After harvest, it is important to have enough leaves left to promote rapid regrowth. When forage plants are cut below the recommended minimum height, regrowth is slowed, soil erosion potential is greater, opportunities for weed establishment increase, subsequent productivity declines, and over time, the stand may be lost.

Another important aspect of Forage Harvest Management is the amount of time between harvests. Forage plants need adequate time to restore the energy used during regrowth. Time between harvests can be highly variable, and is affected by soil moisture, temperature, soil fertility, pest pressure, and other environmental conditions.

Table 3.
Estimated Hay Yields for Various Species

Key Forage Species	Annual Yield (tons/acre)
Annual lespedeza	1 - 2
Arrowleaf clover	2 - 3
Bahiagrass	3 - 5
Hybrid bermudagrass	5 - 8
Common bermudagrass	2 - 6
Dallisgrass	2 - 4
Johnsongrass	2 - 5
Native warm season grasses	3 - 5
Orchardgrass	2 - 5
Pearl millet	2 - 6
Red clover	2 - 4
Ryegrass	1 - 4
Sericea lespedeza	1 - 3
Sudangrass	2 - 6
Small grains	1 - 4
Soybean	2 - 3
Tall fescue	2 - 4

¹ These values should only be used as guides. They represent averages taken from many sources. Plant adaptation, environment, and management interact to affect yield.

Table 4.
Estimating Hay Needs

Type of Livestock	Approximate lbs. hay/animal/day ¹
Dry, pregnant cows	15 - 20
Cows with calves	25 - 28
Replacement heifers	10 - 12
Bred yearling heifers	18 - 23
Herd bull	28 - 30
Stocker steers	10 - 14
Horses	24 - 30
lb./day x days of feeding = total lbs. hay needed per animal	
total lbs. hay needed ÷ 2000 = tons needed per animal	

¹ These values should only be used as guides. Considerable variation can exist within and among categories.

**Table 5.
Recommended Stubble Height and Approximate Recovery Period
After Hay Harvest**

Species	Recommended Minimum Stubble Height after Harvest (inches)	Approximate Recovery Period¹ (days)
Grasses		
Warm Season Grasses		
Bahiagrass	1-2	20-28
Bermudagrass, common	2-3	18-28
Bermudagrass, hybrid	3-4	18-28
Big Bluestem	6	25-40
Dallisgrass	2-4	21-30
Eastern Gamagrass	6-8	28-45
Indiangrass	6	28-40
Johnsongrass	6	21-30
Sorghum-sudan hybrids	6-8	21-30
Switchgrass	6-8	30-45
Cool Season Grasses		
Orchardgrass	3-4	20-30
Ryegrass	2-3	14-25
Small Grains	3-4	14-25
Tall Fescue	3-4	21-30
Legumes		
Cool Season Legumes		
Alfalfa	3	20-25
Clover, arrowleaf or crimson	2-4	14-25
Clover, red	2-3	18-25
Clover, subterranean or white	2-3	18-30
Warm Season Legumes		
Lespedeza, annual	2-3	20-30
Sericea Lespedeza	3-4	18-25

¹ Based on favorable growing conditions. Longer cycles may be needed during stress periods, such as extreme heat, cold, wetness or drought. Shorter cycles may result during favorable growing conditions.

PRACTICE CERTIFICATION

This practice was applied according to Georgia NRCS standards and specifications.

Certified by: _____

Date(s): _____

Addendum Sheet – Additional Notes and/or Instructions

Harvesting hay in a manner that allows wildlife to flush and escape

Many wildlife species use pastures and hay fields as cover, feeding, and nesting areas. Managing haying techniques can be beneficial to the survival of ground nesting birds and other wildlife species. The following Flush Bar design (**Figure 1**) and wildlife escape mowing pattern (**Figure 2**) are provided for reference.

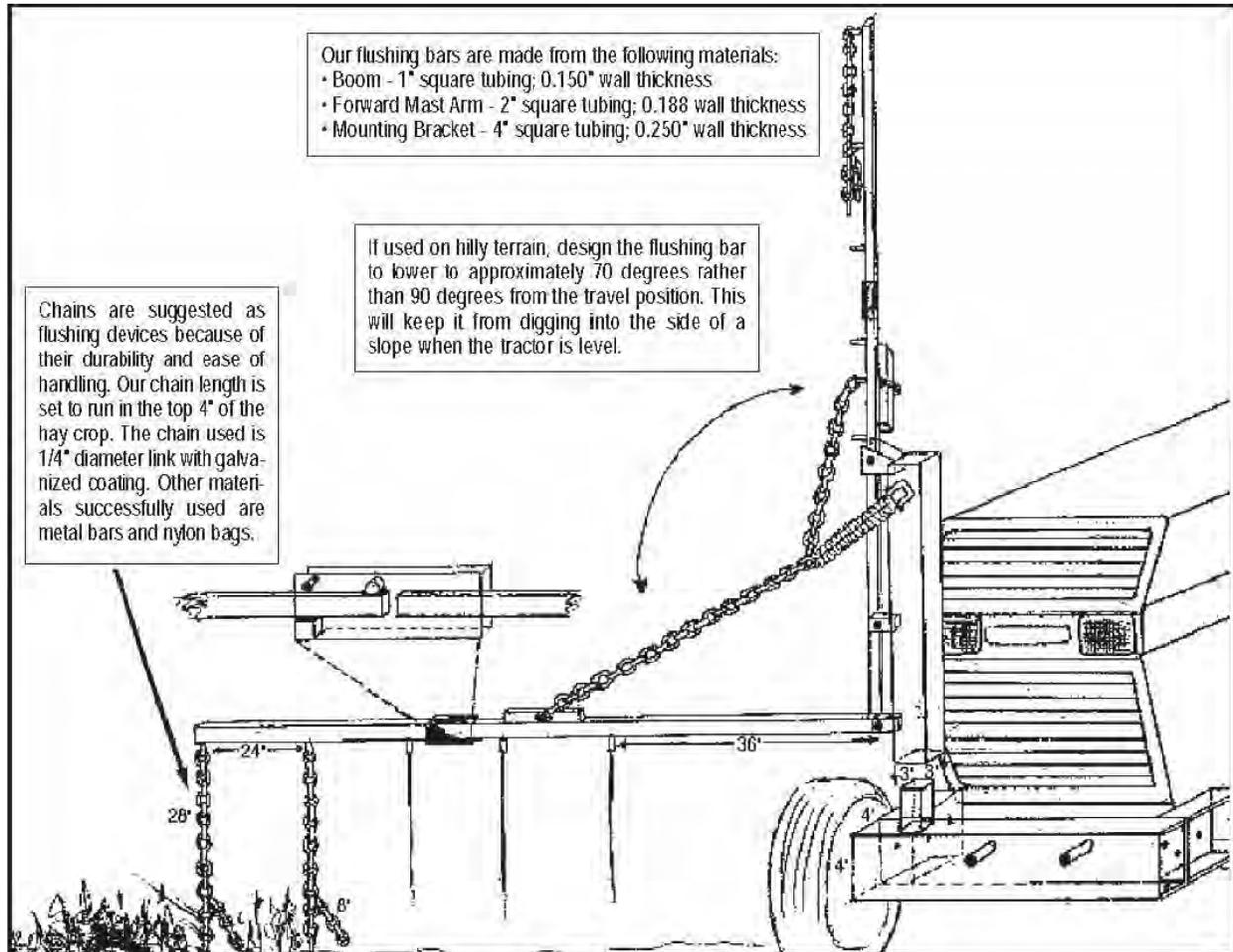


Figure 1. A flushing bar mounted on a tractor will reduce mortality of wildlife during haying operations. (Illustration courtesy of Ducks Unlimited Canada.)

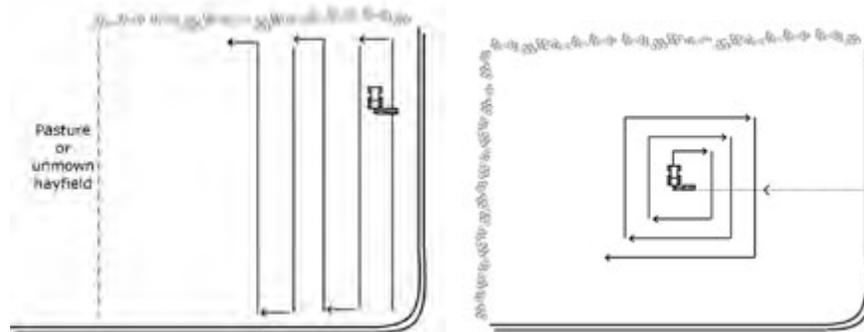


Figure 2. Mowing hay in a pattern that allows wildlife to escape to adjacent cover can reduce mortality. (Illustration courtesy of Cornell University Cooperative Extension.)