



## 511 – FORAGE HARVEST MANAGEMENT IMPLEMENTATION REQUIREMENTS

<b>Name:</b>	<b>Farm No./Tract No.:</b>
<b>Address:</b>	<b>Field Number(s):</b>
<b>Assisted by:</b>	<b>Financial Assistance Program:</b>
<b>Date:</b>	<b>Contract Number:</b>

**Practice Purpose(s)** (check all that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> To optimize yield and quality of forage at the desired levels. | <input type="checkbox"/> To use forage plant biomass as a soil nutrient uptake tool. |
| <input type="checkbox"/> To promote vigorous plant re-growth.                           | <input type="checkbox"/> To control diseases, insects, and weeds.                    |
| <input type="checkbox"/> To manage for the desired species composition.                 | <input type="checkbox"/> To maintain and/or improve wildlife habitat.                |

**Associated Practices**

This practice may be applied alone or in combination with other supporting Delaware conservation practice standards.

- The following practices are needed, and have been or will be implemented: (check all that apply)
- |  |   |
|--|---|
| <input type="checkbox"/> Conservation Crop Rotation (328)  | <input type="checkbox"/> Prescribed Grazing (528)                 |
| <input type="checkbox"/> Forage and Biomass Planting (512) | <input type="checkbox"/> Upland Wildlife Habitat Management (645) |
| <input type="checkbox"/> Integrated Pest Management (595)  | <input type="checkbox"/> Other practices (specify):               |
| <input type="checkbox"/> Nutrient Management (590)         |   |
- No associated practices are needed.

**Practice Specifications**

**Forage Harvest Management Layout**

- Practice location(s) is/are shown on the conservation plan map.

Field(s)	Acres	Forage Species	Storage Method

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Management Specifications - Forage Harvest Guidelines for Established Legume and/or Grass Stands <sup>1/</sup>							
Plant Species (check all that apply)	Harvest Period	Growth Stage for Harvest <sup>2/, 3/</sup>	Average Number of Cuttings <sup>4/</sup>	Stubble Height After Harvest	Minimum Height at First Killing Frost		
<b>LEGUMES</b>							
<input type="checkbox"/> Alfalfa	1 <sup>st</sup> cut	Late bud to early bloom.	3 – 5	3 – 4 inches	Final cutting of legumes should have at least 45 days of growth and can be harvested just before or immediately after the first killing frost.		
	2 <sup>nd</sup> & successive cuts	Early bloom.					
<input type="checkbox"/> Birdsfoot Trefoil	1 <sup>st</sup> cut	Early bloom.	3				
	2 <sup>nd</sup> cut	Mid to late bloom.					
<input type="checkbox"/> Ladino Clover	All cuts	Early to mid bloom.	3				
<input type="checkbox"/> Red or Alsike Clover	1 <sup>st</sup> cut	First bloom to early bloom.	3				
	2 <sup>nd</sup> cut +	Late bud to early bloom.					
<input type="checkbox"/> Annual Lespedeza	All cuts	Mid to full bloom.	2				
<b>COOL-SEASON GRASSES</b>							
<input type="checkbox"/> Orchardgrass, Fescue, Bluegrass, and other non-jointed grasses	1 <sup>st</sup> cut	Boot stage.	2 – 3	3 – 4 inches (2 – 3 inches for Bluegrass)	5 – 6 inches		
	Successive cuts	After 8 to 10-inch recovery.					
<input type="checkbox"/> Smooth Brome, Timothy, and other jointed grasses	1 <sup>st</sup> cut	Smooth Brome – medium to full head. All others – early to full head	2 – 3				
	Successive cuts	Wait 6 weeks and cut again. Timothy usually won't produce a second cut until fall.					
<b>WARM-SEASON GRASSES</b>							
<input type="checkbox"/> Eastern Gama Grass	1 <sup>st</sup> cut	Late boot stage.	3			8 inches	8 – 10 inches
	Successive cuts	Add N and cut again in 6 – 8 weeks.					
<input type="checkbox"/> Switchgrass, Big Bluestem	All cuts	Late boot stage.	Usually only one cutting.	4 – 6 inches	8 inches		
<input type="checkbox"/> Caucasian Bluestem				3 – 4 inches	6 inches		
<input type="checkbox"/> Summer annual grasses (Sudan Grass or Sudan/Sorghum crosses)	All cuts	Sudangrass: 18-24 inches tall. Sorghum x sudangrass: typically 24 to 30 inches for hay. <b>Caution:</b> Delay green-chopping until grass is 18 inches in height or taller to avoid adverse effects of prussic acid.	2 – 3 (Sorghum only once.)	4 – 6 inches	Frosted forage should not be grazed for at least a week after frost to allow prussic acid content to dissipate.		

See next page for footnotes.

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### Notes for Forage Harvest Guidelines

- For additional hay harvest recommendations, refer to published agronomy guides or other recognized references.
- Definitions of developmental stages of forage legumes and grasses (Source: *The Penn State Agronomy Guide*):

Stage of Maturity	Definition*
<b>Legumes</b>	
Early bud	Visible flower buds on at least one stem (1%).
Mid bud	50% of the stems have at least one bud.
Late bud	75% of the stems have at least one bud, no visible flowers.
First bloom	Flowers on at least one stem. (1%)
Early bloom	10% of the stems have at least one flower.
Mid bloom	50% of the stems have at least one flower.
Full bloom	75% of the stems have at least one flower, no visible seed pods.
<b>Grasses</b>	
Vegetative	Leaves only, stems not elongated (specify height).
Stem elongation	Stems elongating. Specify early or late jointing.
Boot	Flowers head is enclosed in a flag leaf sheath and not showing.
Heading	Flower head emerging or emerged from flag leaf sheath, but not shedding pollen.
Anthesis	Flowering stage, anthers shedding pollen.
Milk stage	Seed immature, endosperm milk.
Dough stage	Well-developed seed, endosperm doughy.
Ripe seed	Seed ripe, leaves green to yellow brown.

\*Randomly select 100 stems from the field and determine the percentage of stems at the most mature stage of development.

- Harvesting of legume-grass mixes:

**Alfalfa-grass mixes** should be cut based on the maturity of the alfalfa, when alfalfa is in late bud to early bloom stage. All other **legume-grass mixes** should be cut based on grass maturity.

- The actual number of cuttings per year will depend on temperature, rainfall, and other site-specific conditions.

### Management Specifications - Optimum Moisture Levels for Storing Forage

Storage Method (check all that apply)	Percent (%) Moisture for:	
	Hay	Corn Silage
<input type="checkbox"/> Upright or tower, conventional	60 – 65	63 – 68
<input type="checkbox"/> Upright or tower, oxygen limit	40 – 55	55 – 60
<input type="checkbox"/> Bunker or horizontal	65 – 70	65 – 70
<input type="checkbox"/> Bag silo (plastic tube)	50 – 60	65 – 70
<input type="checkbox"/> Baleage (plastic-wrapped round bale)	50 – 60	N/A
<input type="checkbox"/> Field-cured hay	15 – 20	N/A
<input type="checkbox"/> Forced-air dried baled hay	20 – 35	N/A

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<b>Operation and Maintenance</b> (check all that apply)		
<input type="checkbox"/> Before forage harvest, clear fields of debris that could damage equipment or, if ingested by livestock, lead to sickness or death.		
<input type="checkbox"/> To control the spread of forage plant diseases and weeds, clean harvesting equipment after harvest and before storing.		
<input type="checkbox"/> Do not cut forage until dew, rain, or irrigation water on leaves has evaporated. Monitor weather conditions and take action accordingly before and after cutting to optimize forage wilting or curing time, maintain forage quality, and prevent forage swaths or windrows from smothering underlying plants.		
<input type="checkbox"/> Minimize the time large or small bales of cured forage are allowed to remain drying in the field. This will prevent smothering of underlying plants and subsequent weed invasion of the damaged areas.		
<input type="checkbox"/> To insure adequate root reserves, allow plants to reach an appropriate height before the first killing frost.		
<input type="checkbox"/> Check for disease, insect damage, and weed infestations. If an incidence threatens stand survival, take corrective action to keep the pest under control. To the extent feasible, “spot” spray or mow to control weeds, so that desirable plants are not destroyed unnecessarily. Control noxious weeds as required by state law.		
<input type="checkbox"/> Where wildlife habitat is a concern, use the following harvesting techniques: <ul style="list-style-type: none"> <li>• Provide nesting habitat by deferring mowing and harvest operations during the primary nesting season (April 15 to August 15). Leave field edges unharvested and undisturbed for a minimum width of 35 feet. For optimum results, unharvested strips should be at least 50 feet wide, preferably adjacent to woody cover, or leave the entire field unharvested during the primary nesting season.</li> <li>• Use harvesting patterns that provide escape routes for wildlife. Begin on one side of the field and work back and forth across the field toward the other side (edge to edge), or begin in the center of the field and work outward (inside to outside).</li> </ul>		
<input type="checkbox"/> Apply soil amendments periodically, based on soil test results, if needed to meet desired yield goals, promote plant regrowth, and help maintain the life of the stand. The use of commercial fertilizer and other forms of plant nutrients must be in compliance with Delaware nutrient management regulations.		
<input type="checkbox"/> Regardless of silage storage method, ensure good compaction and an airtight seal to exclude oxygen and mold formation. Do not seal hay, because it can result in heat build-up, moisture, and mold problems.		
<input type="checkbox"/> Time of year or frequency of use restrictions, if any (list):		
<input type="checkbox"/> Other requirements, or follow-up needed (describe):		
<b>Plan Approval</b>		
<b>Certified Planner Signature</b>	<b>Title</b>	<b>Date</b>
<b>Plan Received and Accepted</b>		
<b>Client Signature</b>	<b>Date</b>	
<b>Certification of Practice Completion</b>		
<b>This Forage Harvest Management Practice has been implemented and meets the requirements of Delaware NRCS Conservation Practice Standard 511. Any changes to the planned practice are noted in Practice Specifications.</b>		
<b>Certified Planner Signature</b>	<b>Title</b>	<b>Date</b>