

PASTURE AND HAYLAND PLANTING

(Acre)
Code 512

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

Establishing and reestablishing long-term stands of adapted native or introduced forage species.

II. Purposes

This practice may be applied as part of a conservation management system to accomplish one or more of the following purposes.

- Establish adapted and compatible species, varieties, or cultivars.
- Improve or maintain livestock nutrition and/or health.
- Extend the length of the grazing season.
- Provide emergency forage production.
- Reduce soil erosion by wind and/or water.

III. Conditions Where Practice Applies

This practice may be applied on cropland, hayland, pastureland, and other agricultural lands where forage production is feasible and desired.

IV. Federal, State, and Local Laws

Users of this standard should be aware of potentially applicable federal, state and local laws, rules, regulations or permit requirements governing **pasture and hayland planting**. This standard does not contain the text of federal, state, or local laws.

V. Criteria

A. General Criteria Applicable to All Purposes Stated Above

1. Plant species and their varieties shall be selected based upon:
 - Climatic conditions, such as annual rainfall, seasonal rainfall patterns, growing season length, humidity levels, temperature extremes, and the USDA Plant Hardiness Zones.

- Soil condition and position attributes such as pH, available water holding capacity, aspect, drainage class, and natural fertility.
- Plant resistance to disease and insects common to the site or location.
- Plant compatibility with other forage species and their selected cultivar(s) in rate of establishment, maturity, and growth habit when seeded together as a forage mixture.

2. Seedbed Preparation and Planting

a. Conventional Seeding

- 1) A firm seedbed shall be prepared to a minimum depth of 3 inches. It should be relatively free of competing vegetation and contain enough fine soil particles for uniform shallow coverage of the seed as well as contact with moisture and nutrients.
- 2) On fields where the predominant slope is 6 percent or greater, all tillage and planting operations must be on the contour and seeding will either be done with the use of a companion crop or by leaving at least 30 percent of the crop residue on the surface after planting.
- 3) Grass and legume seed shall be drilled uniformly over the area at a depth of ¼ to ½ inch using a grassland drill, grain drill with press wheels, cultipacker seeder, or by broadcasting and cultipacking before and after seeding.

b. Inter-seeding of Legumes and Grasses into Existing Stands

- 1) Graze or clip to a height of 1 inch before seeding, or before emergence of the new seeding.
 - 2) A drill manufactured for no-till shall be used unless the ground is soft enough to allow penetration of the disk openers of a conventional grain drill.
- c. No-Till Renovation Seeding

- 1) All existing vegetation should be killed with herbicides preferably in the fall prior to planting, and new, more productive forage species are seeded into the old sod or existing crop residue.
- 2) Use a drill manufactured for no-till planting and plant at a depth of $\frac{1}{4}$ to $\frac{1}{2}$ inch.

d. Frost Seeding

- 1) Seeding shall be made in late winter/early spring into either fall seeded winter annuals or closely grazed pasture.
- 2) Frost seedings shall not be made on areas covered with ice or snow, and must be made before the frost is out.
- 3) Frost seedings will only be used to interseed legumes into existing pastures. Seeding rates will be $\frac{2}{3}$ of the pure stand rate shown in Table 3.

3. Seeding Periods

The specific date that provides the best chance for success will vary from south to north and from year to year with prevailing moisture and temperature conditions. Late summer seeding is generally riskier than spring seeding. Planting at either end of the allowable range is riskier than the middle of the range. Seeding dates are as follows:

Table 1

Perennial Cool Season Grasses and Legumes
(See Figure 1)

	Spring	Late Summer
North	5/1 - 6/15	7/15 - 8/10
Central	4/15 - 6/1	8/1 - 8/21
South	4/1 - 5/15	8/7 - 8/29

Table 2

Perennial Warm Season Grasses
(See Figure 1)

	Spring Seeding	Fall Dormant Seeding
Northern Zone	Thaw - 7/15	10/8 - Snow Cover
Central Zone	Thaw - 6/30	10/15 - Snow Cover
Southern Zone	Thaw - 6/30	11/1 - Snow Cover

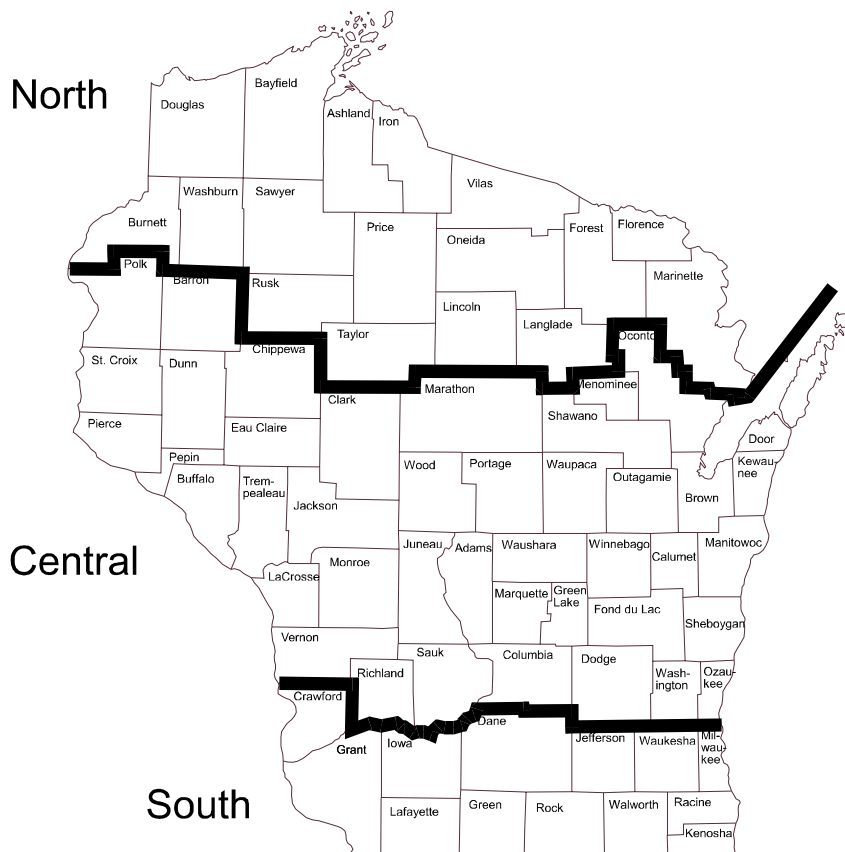
a. Perennial Cool Season Grasses and Legumes

Seeding may occur between the spring and late summer dates shown in Table 4 if adequate moisture is present for germination and early seedling growth. Mulching or no-till planting is required during this time period. Field moisture evaluations must be documented in the case file.

b. Perennial Warm Season Grasses

Seeding may occur after the Spring Seeding dates if adequate moisture is present for germination and early seedling growth. Mulching or no-till planting is required during this time period. Field moisture evaluations must be documented in the case file. Seeding is not allowed after the end date for Late Summer Seeding from Table 4. This gives the plants 6 weeks of growth before the median date of the first killing frost.

Figure 1



4. Liming, Fertilizing

Refer to NRCS Field Office Technical Guide (FOTG), Section IV Standard 590, Nutrient Management, to develop fertilizer and lime recommendations.

5. Seed

- a. All seed shall be of high quality and meet all requirements of Wisconsin Seed Laws. Certified seed should be used when available.
- b. All pasture and hayland seeding rates will be given in pounds of Pure Live Seed (PLS). If more than 20 percent of the legume seed is hard seed, increase

the seeding rate for legumes by the percent hard seed.

6. Inoculation

Legume seed shall be inoculated. Inoculant shall be specific to the legume seeded. When more than one legume species is used, each species will be inoculated separately.

7. Species Selection

- a. A seeding mixtures from Table 3 or other seeding mixtures may be developed following the guidelines presented in this section.

- b. Any seeding mixture which is developed, outside of those in Table 3, must be approved by the appropriate Area Resource Conservationist. "Perennial Forage Crop Variety Update for Wisconsin."
- c. Guidelines for Mixture Development
 - 1) Based on the predominant soil type, find the appropriate pasture and hayland suitability group in section II-K of the Field Office Technical Guide.
 - 2) Identify species that are suited to the pasture and hayland suitability group and use only those species.
 - 3) Species planned for pasture or hayland should be compatible with the planned management of the entire operating unit. Select species that provide good forage for grazing or hay as appropriate.
 - 4) Mixtures will consist of no more than two grass species having similar growth habit and similar season of use. No more than two legumes species with similar growth habit and season of use may be added to the grasses.
 - 5) When two grass species are selected they shall comprise an equal percentage of their full seeding rate.
 - 6) On pasture, grasses should comprise at least 30 percent of the mixture.
 - 7) Warm-season grasses and cool-season grasses shall not be mixed for pasture or hayland use.
 - 8) For pasture and hayland purposes, warm-season grasses will be established in stands of single species to facilitate uniform forage maturity
- 8. Variety Selection
 - a. Cool Season Grasses and Legumes
 - b. Warm Season Grasses
 - See Table 5.
- 9. Seeding Rate
 - a. Full Seeding (Conventional and No-Till Planting)
 - Refer to Tables 1 and 2.
 - b. Inter-seeding
 - Seed at one-half the rate of the full seeding.
- 10. Management During Establishment
 - a. New seedings shall not be grazed until thirty days after emergence or until plants are large enough to be grazed without stand damage.
 - b. Mowing or applying herbicides should be used to control competitive weeds. Mowing should be done when cool season grasses reach 6-8 inches tall and before the weeds develop a mature seed. The residue from mowing should be removed to avoid smothering the new seedlings. Warm season grasses should be mowed no lower than 6-8 inches after August 1.
- B. Additional Criteria for Improving or Maintaining Livestock Nutrition and /or Health**
 - Select plants that are capable of supplying the desired level of nutrition for the kind and class of livestock to be fed.
- C. Additional Criteria for Extending the Grazing Season**
 - Select plants that stockpile well, i.e. produce well and maintain good nutritional quality into late fall and winter.
- D. Additional Criteria for Providing Emergency Forage Production**
 - Select plants such as summer annuals that will produce forage during periods when other on-

farm forage is unavailable to meet livestock needs.

VI. Considerations

- A. Since erosion during the seeding year will cause permanent rills and gullies, extra care should be taken during the seeding year to reduce erosion to as low a level as possible. Consideration should be given to reseeding erosive pasture in small plots over a period of years, so that the whole field is not exposed to erosion at the same time or the use of no-till seeding on the field.
- B. Having, and maintaining adequate soil nutrient levels will provide a better chance of having a successful seeding.
- C. Bloat is a potential hazard with pasture mixtures dominated by legumes.
- D. In most cases, proper management of existing stands of forage will increase pasture production more than reseeding or inter-seeding. Longevity and persistence will be increased by rotational grazing systems that provide plant recovery periods and discourage selective grazing. See NRCS FOTG, Section IV Standard 528A, Prescribed Grazing.

VII. Plans and Specifications

Specifications for the establishment of pasture and hay plantings shall be documented in job sheets or narratives for each site or management unit according to the criteria, considerations, and operations and maintenance in this standard.

VIII. Operation and Maintenance

The growth of desired seedlings shall be monitored and evaluated. To evaluate a new or existing stand for forage production, refer to Wisconsin Agronomy Technical Note 1, Guidelines for Herbaceous Stand Evaluation.

IX. References

University of Wisconsin Extension Publication A1525, "Perennial Forage Crop Variety Update for Wisconsin."

University of Wisconsin Extension Publication A3529, "Wisconsin Pastures for Profit".

Forage Management in the North, Smith, D., 1981.

USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section IV, Practice Standards and Specifications.

USDA, NRCS, Agronomy Technical Note 1, Guidelines for Herbaceous Stand Evaluation.

Table 3

Seeding Mixtures	Lbs. PLS ² Per Acre	Suitable for ¹		
		Silage	Hay	Managed Pasture
Alfalfa plus ³	8	1	1	2
Smooth Bromegrass Or Reed Canary Grass ⁴	3-6			
Alfalfa ⁵	6-8	1	2	1 ⁵
Orchard Grass	2- 4			
Red Clover or Ladino Clover	6	2	3	1
Orchard Grass	2- 4			
Improved White Clover or	3	3	3	1
Ladino Clover and	3			
Perennial Ryegrass	20 - 25			
Festolium or Tall Fescue	25	2	3	1
Improved White Clover or	3			
Ladino Clover	3			
Big Bluestem or Switchgrass	10 6	3	1	1
Side Oats Grama ³	2			
Perennial Ryegrass and Timothy ⁶	8-10 2-3	3	2	1
Birdsfoot Trefoil	6			
Perennial Ryegrass ⁷	10 -12	2	2	1
Kentucky Bluegrass	7			
Ladino or improved White Clover	3			

¹ Suitability rating is for the mixture.

1. Preferred.
2. Second Choice.
3. Not recommended for this purpose.
- x. Adapted - not necessarily best suited.

² PLS = pure live seed.

³ For use on sandy soils.

⁴ Reed Canarygrass will only be utilized on droughty sites that do not adjoin wetlands and are not directly connected to wetlands by concentrated flow channels. Only non-alkaloid varieties of Reed Canarygrass will be utilized.

⁵ Varieties with phytophthora root rot resistance should be used and late maturing varieties of orchardgrass should be selected.

⁶ For poorly drained sites

⁷ Northern sites with good snow cover and cool summers

Table 4
Recommended Pure Stand Rate

Grasses	PLS Pounds Per Acre	Legumes	PLS Pounds Per Acre
<u>Cool Season</u>			
Orchardgrass	10	Alfalfa	12
Smooth Bromegrass	16	White Clover	3
Tall Fescue	10	Birdsfoot Trefoil	8
Timothy	8	Ladino Clover	3
		Red Clover	10
<u>Warm Season</u>			
Big Bluestem	10	<u>Legumes</u>	
Indiangrass	10	If more than 20% of the legume seed is hard seed. Increase the seeding rate for legumes by the % hard seed.	
Switchgrass	6		

Seeding mixtures based on these pure stand rates will provide at least 40 Pure Live Seeds per Square Foot.

Example: A hayland stand of 80% alfalfa and 20% orchardgrass is desired. What would be the seeding rate of each species in the mixture in pounds of Pure Live Seed?

To solve this problem, take the pure stand seeding rate in PLS pounds per acre for each specie, multiply this value times the percent of that specie desired in the mixture and the answers will be the seeding rates of each specie in pounds of Pure Live Seed per acre.

Specie	Pure Stand Seeding Rate Pounds/Acre	X	Percent in Mix	=	Seeding Rate Pounds PLS/Acre for Mixture
Alfalfa	12		80%		9.6
Orchardgrass	10		20%		2.0

Table 5
Recommended Varieties of Warm-Season Grass for pasture and hayland
 (See Figure 1)

Specie	Variety	Area of Adaptability
Big Bluestem	Bison	North
	Bonilla	Central
	Champ	South
	Pawnee	South
	Rountree	Central & South
Indiangrass	Holt	Central & South
	Rumsey	South
	Tomahawk	North
Switchgrass	Blackwell	South
	Cave-in-Rock	South
	Dacotah	North
	Forestburg	Central
	Nebraska 28	Central
	Pathfinder	South
	Sunburst	Central
	Trailblazer	South

¹ No-till drills have a few essential modifications that set them apart from conventional drills or seeders. For one thing, the no-till drills are heavy, usually with down-pressure springs on the planter units. Other desirable equipment features include: a rolling coultter, double disk or angled disk openers, depth bands, wheels or other methods that allow fine tuning of seed placement, narrow packer wheels to firm soil around the seed.