

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
SOUTH DAKOTA SUPPLEMENTS ITALICIZED**

CONSERVATION COVER

(ac.)
CODE 327

DEFINITION

Establishing and maintaining perennial vegetative cover to protect soil and water resources on land retired from agricultural production.

PURPOSE

To reduce soil erosion and sedimentation, improve water quality, and create or enhance wildlife habitat.

CONDITIONS WHERE PRACTICE APPLIES

On land retired from agricultural production, including land entered into retirement programs. This practice does not apply to plantings for forage production or to critical area plantings.

GENERAL CRITERIA

A seedbed will be prepared that is free, or very nearly free, of all competing vegetation and is not subject to erosion. A firm seedbed will be provided in all cases. A seedbed is firm enough when it will support the weight of an average person and their boot heels do not sink into the

soil over a maximum of one-half inch, when they walk across the area to be seeded. Harrowing, packing with two or more passes with an empty press drill, or using a commercial or homemade seedbed packer may firm seedbeds that are too soft.

The previous two years of herbicide application should be documented for the area to be seeded. Any potential carryover problems should be addressed by delaying seeding, establishing a cover crop, and/or changing species to be planted.

The presence or absence of weed populations, especially noxious weeds will impact seedbed preparations. Each field should be evaluated for weed pressure. Seeding on fields with heavy weed pressure will be delayed until weeds are controlled. This may mean a protective cover crop may need to be planted.

If the existing seedbed has an erosion, weed, or chemical carryover problem, a protective cover crop will be established. The permanent seed mixture will then be drilled into the undisturbed, dead cover crop during the proper seeding dates.

ALTERNATIVE TEMPORARY COVER CROPS

COVER CROP	MINIMUM SEEDING RATES	SEEDING DATES
<i>Oats or Barley</i>	<i>¼ bu./ac.</i>	<i>April 1 to June 1</i>
<i>Sudangrass</i>	<i>8 lbs./ac.</i>	<i>June 15 to July 15</i>
<i>Grain Sorghum</i>	<i>6 lbs./ac.</i>	<i>June 15 to July 15</i>
<i>Oats or Barley</i>	<i>¼ bu./ac.</i>	<i>July 15 to Aug. 15</i>
<i>Millet</i>	<i>10 lbs./ac.</i>	<i>July 15 to Aug. 15</i>

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

SOUTH DAKOTA TECHNICAL GUIDE
SECTION IV

NOTICE SD-89
JANUARY 2000

Maximum row spacing for a cover crop should be 20 inches.

Prevent the temporary cover crop from producing viable seed by planting late in the growing season, killing the crop with herbicides, or clipping in the late boot stage. Cover crop residue should not be any taller than 12 inches in height. If it gets too tall, the excess over 12 inches can be clipped off or harvested by haying or grazing.

Existing corn, soybean, sorghum, millet, and small grain stubble may provide an adequate seedbed if enough residue exists to protect the site from erosion. Seeding into sunflower residue is not recommended. Herbicides and/or tillage must be used when necessary to control weeds and volunteer grain prior to seeding.

High residue producing crops such as small grains and corn may produce residue levels that are difficult for many grass drills to seed into. In these situations it is imperative that the straw and chaff residues be adequately spread at harvest or removed from the field. The grass drill to be used must also have the capabilities of drilling into high residue levels.

When existing stubble is tilled to control weeds or level fields, enough residue should remain to adequately protect the field from erosion. Tilled seedbeds should be firmed prior to planting if necessary.

Existing perennial vegetation will be destroyed prior to seeding. This may be accomplished through chemical or mechanical means. If tillage is used, a minimum of two years of cultivation and cropping is recommended to control existing vegetation. If chemical methods are used, multiple applications are generally required to achieve satisfactory results.

When planning seedbed preparation operations, the type of grass seeding equipment available will strongly influence options.

Seeding equipment will be a drill that will place the seed at the proper depth, provide a uniform flow of seed at the proper rate, and have packer wheels to press the soil firmly over the seed. In lieu of packer wheels, the area can be cultipacked after seeding.

Seeding depth for loam, silty clay loams, and silty clay soils is one-quarter to one-half inch. Seeding depth for sands, loamy sands, and sandy loam soils is one-half to one inch.

Seeding dates that provide the best chance of success will vary from north to south and east to west with the variation in soil temperature. Cool season grasses will germinate when soil temperatures are as low as 39 to 45 degrees Fahrenheit (F), but for warm season grasses soil temperatures must reach 50 to 56 degrees before germination will occur. The dates listed below are averages that may be changed two weeks in either direction depending on current conditions.

SEEDING DATES

EARLY SPRING PRIOR TO 5/15 – Best for cool season species, second best period for planting warm season species. Best if prior to May 1.

LATE SPRING 5/15 to 6/15 – Best period for warm season species. Do not plant cool season species during this period.

EARLY FALL 8/1 to 9/1 – Cool season species only, provided that soil moisture is adequate at or near the surface and to a substantial depth. Second best period for cool season grasses.

DORMANT 11/1 to spring thaw – Cool season species only (with the exception of switchgrass). Third best period for cool season species. Soil temperature should be at 38 degrees F or less at 10 a.m. to prevent germination.

When mixtures which contain both warm and cool season species are to be planted, the seeding date selected should be based on the most dominant part of the mixture. For instance, if cool season grasses make up 70 percent of the seeding, then use the early spring, early fall, or dormant seeding dates.

Tables 1A, 1B, and 1C contain recommended species mixes and seeding rates based on range sites and Technical Guide areas for the establishment of permanent native grasses. Although as little as a single species will meet specifications, establishing five or more species will enhance biological diversity, wildlife habitat, and other ecosystem functions. When four species are selected, a minimum of two native grasses and at least one native forb, shrub, or introduced or native legume must be selected. When five or more species are selected, a minimum of three native grasses and at least one native shrub, forb or introduced or native legume will be planted. Seeding rates in Table 1A for the one, two, and three species mixes reflect a

predetermined percentage each species will make of the mix and should be used as is. Seeding rates listed in Tables 1B and 1C are full rates and should be multiplied by the selected percentage the species will make of the mixture to obtain the per acre seeding rate for the species. Native species are preferred.

Table 2 contains recommended species mixes for establishing permanent introduced grasses and legumes. Table 3 contains recommended species mixes for the establishment of introduced and native species for permanent wildlife habitat. When five or more species are planned to be seeded, utilize Tables 1B or 1C to select a minimum of two native grasses and at least two shrub, forb, or legume species best suited for the wildlife species of concern. Table 4 contains recommended species mixes of introduced and native species best suited for the establishment of permanent vegetation on the upland portion of a wetland restoration. All seeding rates for the mixes contained in Tables 2, 3, and 4 reflect a predetermined percentage each species will make of the mix and should be used as is.

Generally, seed should not be mixed together at the time of purchase. Only seeds with similar characteristics (i.e., fluffy, slick and large, slick and small) should be mixed together. Mixing seeds which do not have similar characteristics makes drill calibration difficult and may result in uneven stands.

No nurse crops (oats or other small grain planted at the same time as grass seed) will be allowed. If a carrier is needed to help feed seed through the drill, cracked corn or rolled oats may be added to the mixture.

Adapted improved varieties of native grasses, forbs, and shrubs have been developed and released and should be used when available. When named varieties are not used, utilize seed from as near as possible to the area being seeded. Ideally, seed with a variety not stated (VNS) should be from a source no more than 300 miles south and 150 miles north of the area to be seeded. At a maximum, the seed will have an origin of one of the states that surround South Dakota (Montana, Wyoming, Nebraska, Minnesota, North Dakota, and Iowa). Table 5 provides a list of approved varieties to be used when establishing conservation cover.

Alfalfa varieties are required to have a fall dormancy rating of three or less. Varieties found in alfalfa

blends (mixes containing more than one variety) should also have a fall dormancy rating of three or less. The Pasture and Hayland Planting (512) specification contains a publication of the Alfalfa Council listing fall dormancy ratings for alfalfa varieties. Common alfalfa should come from local production fields with known production potentials. Use certified seed when available.

Seed must meet all state seed laws. Germination tests must have been completed within nine months of planting. A farmer or rancher who raises his own seed will have it tested for germination and purity.

All seeding mixtures will be calculated on a Pure Live Seed (PLS) basis. The percent PLS is calculated by multiplying the percent germination (includes hard seed) by the percent purity and dividing by 100. The amount of bulk seed required to be planted can be calculated by dividing the PLS lb./ac. to be seeded by the percent PLS of the bulk seed.

Fertilization has not proven beneficial to grass seedings and is not recommended.

During the establishment period, excessive amounts of competitive weeds will be controlled by either herbicides or by clipping. Control weeds that compete with seedlings for sunlight and/or moisture during the growing season of the species planted. Clip weeds when they reach a height of six to eight inches and begin competing for moisture. Clipping should be done before the seeds on the weeds develop. Herbicides may also be applied to control weeds. Consult the practice Pest Management (595) and the South Dakota Nutrient and Pesticide Management Guide for herbicide recommendations.

Established vegetation will require periodic maintenance to maximize plant and animal diversity and can be accomplished by prescribed burning or mechanical (mowing, disking, etc.) biological (grazing, insect releases, etc.) or chemical methods or a combination of the four. Any selected method will need to insure protection from erosion and be in compliance with any legal and program constraints.

Maintenance practices and activities should not disturb wildlife cover during identified critical periods for wildlife species of concern on the site. In South Dakota, this period is generally from spring green up until August 1. Exceptions can be made for periodic maintenance activities during critical

periods when necessary to maintain the health of the plant community.

Maintenance measures must be provided to control severe outbreaks of noxious weeds and other invasive species and to comply with state noxious weeds laws. Spot spraying of weeds is preferred as it will minimize the impact on desirable forbs and legumes as compared to spraying the entire acreage.

Rotating management/maintenance practices throughout the field will help minimize any detrimental impacts on wildlife to a smaller acreage. This may not be feasible on small acreage but may enable management to be accomplished over a period of years on larger tracts.

Annual mowing of established cover for generic weed control is not allowed.

CONSIDERATIONS

This practice may be used to promote the conservation of declining species including threatened and endangered species.

Where applicable, this practice may be used to conserve and stabilize archeological and historic sites.

Where wildlife management is an objective, the food and cover value of the planting can be enhanced by using an habitat evaluation procedure to aid in selecting plant species and providing or managing for other habitat requirements necessary to achieve the objective.

The use of native species (grasses, forbs, and legumes) should be considered when wildlife habitat is purpose.

In riparian areas, consider the use of native plant communities for conservation cover.

If a native cover comes up other than what was planted and it meets the intended purpose and the landowners objectives the cover should be considered adequate.

The width of a wetland buffer must be adequate to protect the wetland from wind and water borne sediments.

PLANS AND SPECIFICATIONS

For standard plantings, appropriate forms, worksheets, etc., will be used to develop specifications and documentation. Plantings that require more detailed information may require the use of other practices prior to planting and require a specific site specification prepared.

OPERATION AND MAINTENANCE

Operation. *Identify any required items needed to assist in stand establishment such as mowing, burning, flash grazing, and herbicides to control weeds. Address insect and disease control needs where they are likely to create establishment problems.*

Maintenance. *Any necessary replanting due to drought, insects, or other uncontrollable event which prevented adequate stand establishment should be addressed as soon as possible. Recommendations may vary from complete re-establishment to overseeding or spot replanting. Thin stands may only need additional grazing deferment during the growing season*

TABLE 1A. ESTABLISHMENT OF PERMANENT NATIVE GRASSES

ONE TO THREE SPECIES	EAST RIVER MLRAS ^{1/} PLS LBS	WEST RIVER MLRAS ^{2/} PLS LBS	SUITABLE FOR THE FOLLOWING ECOLOGICAL SITES
Switchgrass	2.3	2.3	LSb, SSb, Cov, Lov, Sb, Cy, Si, Sy, LT
Switchgrass	1.8	1.8	LSb, SSb, Cov, Lov, Sb, Cy, Si, Sy, LT
Green needlegrass	1.0	1.0	
Western wheatgrass ^{3/}	4.0	4.0	LSb, SSb, Cov, Lov, Sb, Cy, Si, Sy, LT,
Green needlegrass	2.4	2.4	Cp, TCp, Sa, VSw, SwG, Sw, SwC, TU
Western wheatgrass ^{3/}	2.8	2.8	LSb, SSb, Cov, Lov, Sb, Cy, Si, Sy, LT,
Green needlegrass	1.2	1.2	Cp, TCp, Sa, VSw, SwG, Sw, SwC, TU
Sideoats grama	2.0	2.0	
Big bluestem		1.5	LSb, SSb, Cov, Lov, Sb, Cy, Si, Sy, LT
Little bluestem		1.0	
Switchgrass		1.0	
Big bluestem	1.5		LSb, SSb, Cov, Lov, Sb, Cy, Si, Sy, LT
Indiangrass	1.5		
Switchgrass	1.0		

FOUR SPECIES – Mixed stand of at least two native grasses and at least one shrub, forb, or legume species – utilize Table 1B or 1C to design a seeding which meets these criteria as well as meeting the participants' wildlife and other resource objectives.

FIVE OR MORE SPECIES – Mixed stand of at least three native grasses and at least one shrub, forb, or legume species – utilize Table 1B or 1C to design a seeding which meets these criteria as well as meeting the participants' wildlife and other resource objectives.

^{1/} MLRAS 102A, 102B, 53B, 53C, 55B, 55C.

^{2/} MLRAS 54, 58D, 60A, 61, 62, 63A, 63B, 64.

^{3/} Thickspike wheatgrass may be substituted for Western wheatgrass if the later is not available and only west of the Missouri River. To obtain a seeding rate for Thickspike wheatgrass, multiply the Western wheatgrass seeding rate by .72.

**TABLE 1B. ESTABLISHMENT OF PERMANENT NATIVE GRASSES AND NATIVE SEEDING MIXES
BEST SUITED FOR PERMANENT WILDLIFE HABITAT
EAST OF THE MISSOURI RIVER
MLRAS 102A, 102B, 53B, 53C, 55B, 55C**

Maximum Percentage of Species per Ecological Site ^{1/}

	PLS lbs. per acre for a full seeding	Number of Seeds per PLS Pound	LSb, SSb, COv, LOv, Sb	SM, WL, WM ^{4/}	Cy, Si	Cp, TcP	So, Sy	VSw, SwG	Sw, SwC, TU	SL ^{5/}	DC ^{5/}	CD ^{5/}
GRASSES ^{2/}												
Alkali sycamore	0.5	1,758,000								30		
Big bluestem	5.3	165,000	60		30		20	10	25			
Blue grama	1.1	825,000			10	40	20	25	25			
Canada wildrye	7.6	115,000	20		10							
Green needlegrass	5.2	168,000	25		50	40	20	15	30		40	
Indiangrass	5.0	175,000	30		30		20		10			
Little bluestem	3.4	260,000	25		30	25	30	25	40	...		
Nuttall alkaligrass	0.9	1,000,000								30		
Prairie sandreed	3.2	273,000			10	20	30	10				
Sand bluestem	8.7	100,000					30					
Sideoats grama	4.6	191,000	20		25	20	20	25	30		20	
Switchgrass	2.2	389,000	40		40	25	40		10	50		
Western Wheatgrass	7.9	110,000	25		40	60	20	40	30	80	70	100
FORBS ^{3/}												
Canada milkvetch	3.3	266,000	10		10	10	10	10	10			
Illinois Bundleflower	14.5	60,000	10		10	10	10	10	10			
Prairie coneflower	1.2	737,000			10	10	10	10	10			
Black Samson	7.6	115,000			10		10	10	10			
Dotted gayfeather	6.4	136,000	10		10	10	10	10	10			
Purple prairieclover	3.0	290,000	10		10	10	10	10	10			
White prairieclover	2.3	384,000	10		10	10	10	10	10			
Maximilian sunflower	5.8	150,000	10		10	10	10	10	10			
Western yarrow	0.3	2,800,000	10		10	10	10					
SHRUBS ^{3/}												
Leadplant	7.1	123,000			10		10	10	10			
INTRODUCED LEGUMES ^{3/}												
Alfalfa	4.2	210,000	10		10	10	10					
Alsike clover	1.3	680,000	10		10	10	10					
Birdsfoot trefoil	2.1	418,000	10		10	10	10					
Red clover	3.2	275,000	10		10	10	10					
Sweetclover	3.4	260,000	10		10	10	10					

^{1/} - Each species selected must make up at least 10 percent of the seeding mix; however, a combination of several forb species may be used to meet the 10 percent requirement.
^{2/} - Grasses must make up a minimum of 70 percent of the seeding.
^{3/} - Native forbs and shrubs along with introduced legumes either separately or in combination cannot make up more than 30 percent of the mixture.
^{4/} - Due to poor availability of adapted species, seeding of these sites is limited to introduced or single species plantings.
^{5/} - Site conditions limit the availability of species making it difficult to establish legumes, forbs, or more than single grass species.

**TABLE IC. ESTABLISHMENT OF PERMANENT NATIVE GRASSES AND NATIVE SEEDING MIXES
BEST SUITED FOR PERMANENT WILDLIFE HABITAT
WEST OF THE MISSOURI RIVER
MLRAS 54, 58D, 60A, 61, 62, 63A, 63B, 64
Maximum Percentage of Species per Ecological Site^{1/}**

	PLS lbs. per acre for a full seeding	Number of seeds per PLS Pound	Bov, Cov, LOv, Sb	Cy, LT, SI	Cp, TCp	Csn, Sa, Sy	1/2Sw, SwG	Sw, SwC, TU	SL ^{2/}	DC, SDC ^{3/}	CD ^{4/}
GRASSES^{2/}											
Alkali sacaton	0.5	1,758,000							30		
Big bluestem	5.3	165,000	50	20		30		20			
Blue grama	1.1	825,000	10	20	30	20	30	30	20		
Canada wildrye	7.6	115,000	10								
Green needlegrass	5.2	168,000	50	50	30		15	25		40	
Indiangrass	5.0	175,000	25	10		20					
Little bluestem	3.4	260,000	25	25	10	40	30	60			
Nuttall alkaligrass	0.9	1,000,000			20				30		
Prairie sandreed	3.2	273,000	20	20	20	40	20	20			
Sand bluestem	8.7	100,000				30					
Sideoats grama	4.6	191,000	20	30	20	20	30	40		20	
Switchgrass	2.2	389,000	40	40		40			20		
Western Wheatgrass ^{4/}	7.9	110,000	60	60	60	20	20	50	80	80	100
FORBS^{3/}											
Canada milkvetch	3.3	266,000	10		10	10	10	10	10		
Illinois Bundleflower	14.5	60,000	10	10	10	10	10	10			
Prairie coneflower	1.2	737,000		10	10	10	10	10			
Black Samson	7.6	115,000		10		10	10	10			
Dotted gayfeather	6.4	136,000	10	10	10	10	10	10			
Purple prairieclover	3.0	290,000	10	10	10	10	10	10			
White prairieclover	2.3	384,000	10	10	10	10	10	10			
Maximilian sunflower	5.8	150,000	10	10	10	10					
Western yarrow	0.3	2,800,000	10	10	10	10					
SHRUBS^{3/}											
Leadplant	7.1	123,000		10		10	10	10			
INTRODUCED LEGUMES^{3/}											
Alfalfa	4.2	210,000	10	10	10	10					
Alsike clover	1.3	680,000	10	10	10	10					
Cicer Milkvetch	6.0	145,000	10	10	10	10					
Red clover	3.2	275,000	10	10	10	10					
Sainfoin	29.0	30,000	10	10	10	10					
Small burnet	19.4	42,200	10	10	10	10					
Sweetclover	3.4	260,000	10	10	10	10					

^{1/} - Each species selected must make up at least 10 percent of the seeding mix; however, a combination of several forb species may be used to meet the 10 percent requirement.

^{2/} - Grasses must make up a minimum of 70 percent of the seeding.

^{3/} - Native forbs and shrubs along with introduced legumes either separately or in combination cannot make up more than 30 percent of the mixture.

^{4/} - Thickspike wheatgrass may be substituted for Western wheatgrass - a full seeding rate for Thickspike wheatgrass = 5.7 PLS lbs.

^{5/} - Site conditions limit the availability of species making it difficult to establish legumes, forbs, or more than single grass species.

TABLE 2. ESTABLISHMENT OF PERMANENT INTRODUCED GRASSES AND LEGUMES

SPECIES	EAST RIVER MLRAS ^{1/}	WEST RIVER MLRAS ^{2/}	SUITABLE FOR PASTURE GROUPS
	PLS LBS	PLS LBS	
Reed canarygrass	1.6	1.6	A, B1, B2
Creeping foxtail	1.2	1.2	A, B1, B2
Tall wheatgrass	11.0	11.0	A, C, D1, E, F, G, H, I, J, K
Intermediate wheatgrass*	5.6	5.6	A, C, D1, E, F, G, H, I, K
Alfalfa	2.0	2.0	
Crested wheatgrass		2.5	C, D1, E, F, G, H, I
Alfalfa		2.5	(0 - 6 % slopes only)
Smooth brome grass	3.0		A, D1, E, F, G, H, I, K
Alfalfa	2.5		
Tall wheatgrass	6.4	6.4	A, C, D1, E, F, G, H, I, J, K
Western wheatgrass**	3.2	3.2	
Tall wheatgrass	5.5	5.5	A, C, D1, E, F, G, H, I, K
Alfalfa	2.2	2.2	
Sweetclover	0.5	0.5	
Intermediate wheatgrass*	5.6	5.6	A, C, D1, E, F, G, H, I, K
Alfalfa	2.0	2.0	
Sweetclover	0.5	0.5	
Tall wheatgrass	5.5	5.5	A, C, D1, E, F, G, H, I, K
Western wheatgrass**	2.5	2.5	
Alfalfa	1.0	1.0	
Smooth brome grass	1.6		A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0		
Alfalfa	3.0		
Crested wheatgrass		1.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*		2.0	
Alfalfa		3.0	
Tall Wheatgrass	4.0	4.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0	3.0	
Alfalfa	1.6	1.6	
Sweetclover	0.5	0.5	
Western wheatgrass**	2.0	2.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0	3.0	
Alfalfa	2.0	2.0	
Sweetclover	0.5	0.5	
Tall wheatgrass	1.1	1.1	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.9	5.9	
Alfalfa	1.3	1.3	
Sweetclover	0.5	0.5	
Smooth brome grass	1.3		A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.0		
Alfalfa	1.3		
Sweetclover	0.5		
Western wheatgrass**	0.8	0.8	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.0	5.0	
Alfalfa	1.7	1.7	
Sweetclover	0.5	0.5	
Switchgrass	0.7	0.7	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	4.0	4.0	
Alfalfa	1.7	1.7	
Sweetclover	0.5	0.5	
Switchgrass	1.3	1.3	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	2.0	2.0	
Alfalfa	1.0	1.0	
Sweetclover	0.5	0.5	

*Pubescent wheatgrass may be substituted for Intermediate wheatgrass at any time. To obtain a seeding rate for Pubescent wheatgrass, multiply the Intermediate wheatgrass seeding rate by .88.

**Thickspike wheatgrass may be substituted for Western wheatgrass if the later is not available and only west of the Missouri River. To obtain a seeding rate for Thickspike wheatgrass, multiply the Western wheatgrass seeding rate by .72.

^{1/} MLRAS 102A, 102B, 53B, 53C, 55B, 55C.

^{2/} MLRAS 54, 58D, 60A, 61, 62, 63A, 63B, 64.

TABLE 3. ESTABLISHMENT OF INTRODUCED AND NATIVE SEEDING MIXES FOR PERMANENT WILDLIFE HABITAT

SPECIES	EAST RIVER MLRAS ^{1/}	WEST RIVER MLRAS ^{2/}	SUITABLE FOR PASTURE GROUPS
	PLS LBS	PLS LBS	
Tall wheatgrass	4.0	4.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0	3.0	
Alfalfa	1.6	1.6	
Sweetclover	0.5	0.5	
Tall wheatgrass	1.1	1.1	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.9	5.9	
Alfalfa	1.3	1.3	
Sweetclover	0.5	0.5	
Western wheatgrass	2.0	2.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0	3.0	
Alfalfa	2.0	2.0	
Sweetclover	0.5	0.5	
Western wheatgrass	0.8	0.8	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.0	5.0	
Alfalfa	1.7	1.7	
Sweetclover	0.5	0.5	
Switchgrass	0.7	0.7	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	4.0	4.0	
Alfalfa	1.7	1.7	
Sweetclover	0.5	0.5	
Switchgrass	1.3	1.3	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	2.0	2.0	
Alfalfa	1.0	1.0	
Sweetclover	0.5	0.5	
Western wheatgrass	3.2	3.2	A, C, D1, D2, E, F, G, H, I, K
Green needlegrass	1.4	1.4	
Sideoats grama	0.9	0.9	
Alfalfa	0.5	0.5	
Big bluestem	1.6	2.6	A, C, D1, D2, E, F, G, H, I, K
Indiangrass	1.5	0.5	
Switchgrass	0.7	0.7	
Alfalfa	0.5	0.5	

FIVE OR MORE SPECIES – Mixed stand of at least two native grasses and at least two shrub, forb, or legume species best suited for wildlife species of concern. Utilize Table 1B or 1C to design a seeding which meets these criteria as well as meeting the participants' wildlife and other resource objectives.

*Pubescent wheatgrass, may be substituted for Intermediate wheatgrass at any time. To obtain a seeding rate for Pubescent wheatgrass, multiply the Intermediate wheatgrass seeding rate by .88.

^{1/} MLRAS 102A, 102B, 53B, 53C, 55B, 55C.

^{2/} MLRAS 54, 58D, 60A, 61, 62, 63A, 63B, 64.

TABLE 4. ESTABLISHMENT OF INTRODUCED AND NATIVE SEEDING MIXES BEST SUITED FOR ESTABLISHING PERMANENT VEGETATION ON THE UPLAND PORTIONS OF A WETLAND RESTORATION

SPECIES	EAST RIVER MLRAS^{1/} PLS LBS	WEST RIVER MLRAS^{2/} PLS LBS	SUITABLE FOR PASTURE GROUPS
Tall wheatgrass	4.0	4.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0	3.0	
Alfalfa	1.6	1.6	
Sweetclover	0.5	0.5	
Tall wheatgrass	1.1	1.1	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.9	5.9	
Alfalfa	1.3	1.3	
Sweetclover	0.5	0.5	
Western wheatgrass	2.0	2.0	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	3.0	3.0	
Alfalfa	2.0	2.0	
Sweetclover	0.5	0.5	
Western wheatgrass	0.8	0.8	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	5.0	5.0	
Alfalfa	1.7	1.7	
Sweetclover	0.5	0.5	
Switchgrass	0.7	0.7	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	4.0	4.0	
Alfalfa	1.7	1.7	
Sweetclover	0.5	0.5	
Switchgrass	1.3	1.3	A, C, D1, E, F, G, H, I, K
Intermediate wheatgrass*	2.0	2.0	
Alfalfa	1.0	1.0	
Sweetclover	0.5	0.5	
Western wheatgrass	3.2	3.2	A, C, D1, D2, E, F, G, H, I, K
Green needlegrass	1.4	1.4	
Sideoats grama	0.9	0.9	
Alfalfa	0.5	0.5	
Big bluestem	1.6	2.6	A, C, D1, D2, E, F, G, H, I, K
Indiangrass	1.5	0.5	
Switchgrass	0.7	0.7	
Alfalfa	0.5	0.5	

*Pubescent wheatgrass may be substituted for Intermediate wheatgrass at any time. To obtain a seeding rate for Pubescent wheatgrass, multiply the Intermediate wheatgrass seeding rate by .88.

^{1/} MLRAS 102A, 102B, 53B, 53C, 55B, 55C.

^{2/} MLRAS 54, 58D, 60A, 61, 62, 63A, 63B, 64.

TABLE 5. ALLOWABLE VARIETIES FOR SOUTH DAKOTA CONSERVATION COVER

NATIVE WARM SEASON

Alkali Sacaton
Common*

Big Bluestem
Common*
Bison
Bonilla
Champ
Pawnee
Sunnyview

Blue grama
Common*
Bad River
Willis

Indiangrass
Common*
Holt
Tomahawk

Little Bluestem
Common*
Badlands
Blaze
Camper

Nuttal Alkaligrass
Common*

Prairie Sandreed
Common*
Goshen
Pronghorn

Sand Bluestem
Common*
Garden
Goldstrike

Sideoats Grama
Common*
Butte
Killdeer
Pierre
Trailway

Switchgrass
Common*
Dacotah
Forestburg
Nebraska-28
Pathfinder
Summer
Sunburst
Trailblazer

NATIVE COOL SEASON

Canada Wildrye
Common*
Mandan

Green Needlegrass
Common*
Lodorm

Thickspike Wheatgrass**
Common*
Critana
Elbee

Western Wheatgrass
Common*
Flintlock
Rodan
Rosana

Reed Canarygrass
Common*
Frontier
Ioreed
Palaton
Rise
Vantage
Venture

INTRODUCED COOL SEASON

Creeping Foxtail
Common*
Garrison
Retain

Crested Wheatgrass
Common*
Hycrest
Fairway
Nordan
Ruff
Summit

Intermediate Wheatgrass
Common*
Chief
Clarke
Oahe
Reliant
Slate

Pubescent Wheatgrass
Common*
Manska
MDN-759
Greenleaf
Luna

Smooth Bromegrass
Common*
Bounty
Carlton
Cottonwood
Fox
Lincoln
Manchar
Rebound
Sac
Signal

Tall Wheatgrass
Common*
Alkar
Orbit
Platte

NATIVE FORBS & SHRUBS

Purple Prairieclover
Common*
Kaneb

Canada Milkvetch
Common*
Sunrise

All Others
Common*

INTRODUCED LEGUMES

Alfalfa
Common*
Improved varieties ^{1/}

Alsike Clover
Common*

Birdsfoot Trefoil
Common*
Empire
Viking

Cicer Milkvetch
Common*
Lutana
Monarch

Red Clover
Common*
Kenland
Mammoth

Sainfoin
Common*
Eski

Small Burnet
Common*
Delar

Sweetclover
Common*

*The origin of non-varietal native and introduced grass seed will be limited to North Dakota, South Dakota, Minnesota, Nebraska, Montana, and Wyoming. All foreign seed, including Canadian, must be adapted named varieties.

**Thickspike wheatgrass may be substituted for Western wheatgrass when the later is not available and only west of the Missouri River.

^{1/} Alfalfa varieties must have a fall dormancy rating of three or less to meet specifications. See Pasture and Hayland Planting - 512

Specification for listing of fall dormancy ratings for alfalfa varieties published by the Alfalfa Council.