

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATIONS

PASTURE AND HAY PLANTING

(Acre)
CODE 512

SPECIFICATIONS

1. Seedbed Preparation

All seedbeds shall be reasonably free from competitive vegetation. Seedbeds shall be firm but not so compact that seed cannot be properly covered.

Alternatives

A. Where erosion is not a hazard.

- 1) On clean-tilled land.
- 2) In residue from previous crop.
- 3) With companion crop that is seeded at no more than one-third normal rate (irrigated only).

B. Where erosion is a hazard.

- 1) A dead litter cover established specifically for protection of the grass planting.
 - a Forage sorghums, sudans, millets, or broomcorn are all satisfactory cover crops.
 - b The dead litter crop will be protected from grazing. Seed will not be allowed to mature. A hay crop may be cut but a 10-12" stubble height will be left.
 - c Normally greater than 500 pounds of dead litter will be required on loamy soils and

1,000 pounds on sandy loams or loamy sands.

d The cover crop will be planted and managed so that it will provide the above amounts of dead litter.

e Plant grass at the appropriate time in the undisturbed stubble.

2) Plant in residue from a previous crop that provides the required amount of residue as listed in (1) (c) above.

3) Plant in clean tilled narrow strips alternated with annual crops or residue from prior crops. Use contour strips on sloping land.

4) Plant with a companion crop that is seeded at no more than one-third the normal rate (irrigated only).

5) Select plant species that will improve soil fertility and tilth in order to prepare land for next crop in rotation.

Companion crops shall be clipped and removed or shredded as soon as they become competitive for light or moisture. Companion crops generally become highly competitive by the time they reach the boot stage.

2. Adapted Species, Varieties and Mixtures

A. Species

Conservation practice general specifications are reviewed periodically, and updated if needed. To obtain the current version, contact the natural resources conservation Service.

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Species are listed in Tables III, IV, & V and each is designated with a "P", "S", or "N" for various soil groups. Many species are suited to some soil groups. However, past experience and research indicates some species are better suited than others because of ease of establishment, stand longevity, yields, palatability and adaptability to grazing management. Preferred species within any group are designated with a "P"; i.e., cool season, warm season legumes.

B. Varieties

See Table VI (See #10 after Table VI for Sprigged Grasses)

C. Mixtures

1) Mixtures of cool season and warm season grasses will not be planted. Management of such a mixture is so difficult that invariably one species is lost in a short period of time.

2) Plant warm season grasses in pure stands of a single species.^{1/}

3) Cool season species are easier to manage in pure stands.^{1/}

a) Pasture: Grasses may be planted with or without a legume. If the legume comprises about 10 percent of the seed mixture, vegetative growth will be approximately 75 percent grass and 25 percent legume. Bloat is normally not a problem until the amount of legume forage exceeds 35-40 percent.

b) Hazard: Generally one cool season grass and one legume seeded in equal parts (PLS basis) make an effective mixture and produce maximum yields.

3. Fertilizer

A. Use the amount and analysis of fertilizer indicated by soil test. If information from soil tests is not available, apply 30 pounds of actual N and 30 pounds of P₂O₅ prior to seeding.

B. Refer to the standards and specifications for Nutrient Management fertilizer requirements after the grass is established.

4. Seeding Dates

A. Dryland (nonirrigated)

Dates of seeding will correspond to the high probability (60 percent or more) of receiving effective precipitation (0.6 inches or more) during any three week period and to the period of the year when temperatures are suitable for seed germination and seedling survival.

B. The table below shows preferred dates for seeding on dryland:

^{1/} The addition of either warm season or cool season legumes is normally recommended.

Resource Area	Table I	
	Warm Season	Cool Season & Legumes
HP-1* Cp-1, HP-2&3	Apr 1 to Aug 1	Feb 15 to Aug 1
CP-2, 3	June 15 to Aug 1	May 1 to Aug 1
CP-4	July 1 to Sept 1	June 15 to Sept 1
WP-1*, 2	June 1 to Aug 1	July 1 to Aug 15
WP-3	June 15 to Aug 15	June 15 to Aug 15
RM-1*, 2*, AN-1* ^{2/}	June 1 to Aug 1	June 1 to Aug 1
HIV-1, 2	July 1 to Aug 1	June 15 to Aug 15
AN-2, 3- ^{2/}	July 1 to Aug 15	June 15 to Aug 15
ND, SD1, 2, 3	Pasture and Hayland Planting on dry land not recommended because of low rainfall and low probability of adequate rainfall to assure seedling establishment.	

* Dormant fall seedings (seed late enough so seed does not germinate until spring) are satisfactory in HP-1, RM-1, 2, AN-1, WP-1.

Fungicide treatment to prevent seed deterioration is recommended.

- ^{2/} RM-1 - Sangre de Cristo and eastern slope of San Juan ranges.
 RM-2 - Western Sangre de Cristo and San Juan ranges.
 AN-1 - Chuska, Zuni, and Cebolleta ranges.
 AN-2 - Black Range, Mogollon, and San Mateo ranges.
 AN-3 - Sacramento, Guadalupe, Capitan, and Gallina ranges.

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|--|---|
| <p>C. Irrigated (See #10 after Table VI for Sprigged Grasses)</p> <p>1) Cool Season Species</p> <p>a) Where irrigation water is available throughout the year, the best time to seed cool season grasses and legumes is 45 to 60 days prior to the average first fall frost although they may be seeded anytime during the growing season except the last 45 days prior to the average killing frost.</p> <p>b) The second preferred period for seeding cool season grasses and legumes is early spring from the</p> | <p>date of the last killing frost to one month after that time.</p> <p>c) Where irrigation water is not available throughout the growing season, restrict seeding dates to the period when water will be available for at least 30 days following seeding.</p> <p>2) Warm Season Species</p> <p>a) The preferred time to seed warm season species is three to six weeks after the last killing frost in the spring.</p> <p>b) Warm season species may be seeded any time during the frost</p> |
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free period except for the last six weeks before the average first fall frost provided irrigation water is available for two months following seeding.

5. Seeding Rates

- A. The minimum rate for pasture and hayland planting will be at least 20 pure-live-seeds per square foot. The optimum rate is generally higher and varies due to seed size, method of planting, percentage of hard seeds, seedbed condition and moisture conditions. The rates shown under the minimum column generally are based on an application of about 20 pure-live-seeds per square foot. Rates in this column assume that seed will be planted with good seeding equipment.
- B. If mixtures are used, the amount of each species is based on percentage of each.
- C. Seeding rates for row seeding should be one half the rate shown.
- D. A variation of 25% above or below the seeding rate is allowable. For planning purposes, the 100% rate as shown will be used.

6. Seed

- A. Seed shall be high quality with up-to-date germination and purity analysis.

B. Certified seed is preferred.

7. Inoculation

- A. Legume seed should be inoculated with bacterium specific to the species if determined to be needed.
- B. Inoculation is advisable in all situations but may not be needed if the species has been grown on the field during a period of five years prior to seeding.

8. Seeding Methods

- A. Drilling is the preferred method. Drills used for grass and legume seeding should have depth bands, good seedbox agitators to prevent bridging, double disc furrow openers and good packer wheels. Any type of drill is preferable to broadcasting.
- B. Broadcasting reduces the chance of successful seedings but is permissible where other methods are not available. This method is suited for weed-free seedbed only. If seed is broadcast, the field should be harrowed and packed following seeding. For successful broadcast seedings, cultipacking is nearly essential. Packing ensures that the seed is in contact with the soil and greatly improves the chances for a successful seeding.

Table II
Rate Per Acre - Pounds of PLS

<u>Species</u>	<u>Pounds of PLS Minimum</u>	<u>Species</u>	<u>Pounds of PLS Minimum</u>
<u>Cool Season Grasses</u>			
Crested Wheatgrass	4.5	Kleingrass	2.0
Intermediate Wheatgrass	10.0	Lehmann lovegrass	0.5
Meadow brome	11.0	Little bluestem	3.4
Russian wildrye	5.5	Sand bluestem	7.0
Creeping foxtail	1.5	Sand lovegrass	1.0
Orchard grass	2.0	Sideoats grama	4.5
Pubescent wheatgrass	11.0	Switchgrass	3.5
Reed canarygrass	2.0	Weeping lovegrass	1.0
Smooth bromegrass	7.0	Yellow bluestem	1.0
Tall Fescue	15.0	Atlantic coastal panic	15.0
Timothy	1.0		
Tall wheatgrass	11.0	<u>Rate Per Acre - Pounds of PLS</u>	
Western wheatgrass	8.0	<u>Legumes or Forbs</u> ^{3/}	
Basin wild rye	5.7	Alfalfa	1.2
Matua Grass	16.0	Alsike clover	0.3
		Birdsfoot trefoil	0.5
<u>Warm Season Grasses</u>		Cicer milkvetch	1.6
Alkali sacaton	1.0	Sainfoin	10.0
Bermudagrass	2.0	Strawberry clover	0.7
Big bluestem	5.0	Sweetclover	0.8
Blue grama	1.5	White clover	0.3
Blue panic	2.0	Small burnet	5.0
Buffalograss (Bur)	16.0		
Galleta caryopsis	2.0		
Galleta florets	6.0		
Indiangrass	5.0		

^{3/} Based on planting 5 seed per square foot.

Proper depth placement is essential for good stands. Generally smaller seed should not be planted as deep as larger seeds.

9. Seedbed Preparation

- A. A good, firm seedbed is essential for successful grass plantings. Too loose a seedbed or excessively cloddy fields are the cause of many grass seeding failures.
- B. A good method of measuring seedbed firmness is to check the depth of a footprint. If you sink into the seedbed much over the depth of your shoesole, the seedbed is too loose and should be packed prior to seeding.

- A. Plant 1/4 to 1/2 inch deep.
- B. Lovegrasses will be planted on the surface. If a drill is used, take the drops out of the shoe and allow them to swing free. If broadcast, do NOT harrow or otherwise disturb the area after seeding. Even large numbers of clods can cause a lovegrass seeding to fail when the clods disintegrate and cover the seed too deeply.

10. Planting Depth

11. Management During Establishment

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- A. Do not graze or cut for hay until plants are well established. become competitive enough to adversely affect the seedlings.
- 1) Irrigated plantings - this will generally be at the late boot stage for grasses and bud stage for legumes. C. Be alert for buildup in insect populations. Take immediate action to control pests.
- 2) Dryland plantings - one full growing season or until the stand is established whichever is longer. D. If fertilizer need is indicated during seedling establishment, fertilize according to soil test or fertilizer specifications.
- B. Control weeds and competitive vegetation by mowing or spraying before they E. After plants are established, manage in accordance with specifications for "Prescribed Grazing".

Table III
IRRIGATED

PASTURE AND HAYLAND PLANTING

Species	Soil Groups ^{4/}							Temp. Regimes ^{5/}		
	A	B	C	D	E	F	G	Frigid	Mesic	Thermic
<u>Warm Season Grasses</u>										
Alkali sacaton	P ^{6/}	P	P	P	S	P	S	N	P	P
Bermuda grass	P	P	S	P	P	P	S	N	S	P
Blue Panic*	S	S	N	S	N	N	N	N	N	S
Blue Grama	P	P	P	P	S	N	S	P	P	P
Big bluestem	S	N	N	S	P	N	P	S	P	P
Galleta	P	P	P	P	S	S	N	N	P	P
Indiangrass	S	N	N	S	P	N	P	S	P	P
Kleingrass*	S	N	N	N	N	S	N	N	N	S
Lehmann lovegrass	P	S	S	S	S	N	N	N	N	S
Little Bluestem	P	P	P	P	P	N	N	P	P	P
Sand bluestem	S	S	N	S	P	N	N	S	P	P
Sand lovegrass	S	S	S	S	S	N	N	S	P	S
Sideoats Grama	P	P	P	P	S	N	S	P	P	P
Switchgrass	P	S	N	S	P	S	P	S	P	P
Weeping lovegrass	P	S	S	P	P	N	N	N	S	P
Yellow bluestem	P	P	S	P	S	N	N	S	P	P
Buffalograss	S	S	S	S	S	N	N	N	S	P

Table IV
IRRIGATED

PASTURE AND HAYLAND PLANTING

Species	A	B	Soil Groups ^{4/}					Temp. Regimes ^{5/}		
			C	D	E	F	G	Frigid	Mesic	Thermic
<u>Legumes & Forbs</u>										
Alfalfa	P	P	S	P	S	S	S	P	P	P
Alsike clover	S	S	S	S	N	P	P	P	P	S
Birdsfoot trefoil	P	S	S	P	S	N	S	P	S	S
Cicer Milkvetch	S	S	S	S	S	S	P	P	S	S
Strawberry clover	S	S	S	S	S	P	P	P	P	S
Sweet clover	S	P	P	P	S	S	N	P	P	P
White clover	S	S	S	S	N	N	S	P	S	S
Sainfoin	S	S	N	N	N	N	N	S	S	N
Small Burnett	P	P	P	P	P	S	P	P	P	P
<u>Cool Season Grasses</u>										
Crested wheatgrass	P	S	S	S	S	N	N	S	S	N
Intermediate wheatgrass	P	P	S	P	S	S	S	P	P	S
Russian wildrye	S	S	N	N	N	P	N	S	S	N
Meadow brome	S	S	S	S	S	N	S	P	P	S
Creeping foxtail	P	N	N	S	S	S	P	P	P	N
Orchardgrass	S	S	S	P	S	N	S	P	P	S
Pubescent wheatgrass	P	P	S	P	S	S	S	P	P	S
Reed canarygrass	S	N	N	S	N	S	P	P	P	S
Smooth brome	P	S	S	P	S	N	S	P	S	N
Tall Fescue	P	P	S	P	S	P	P	P	P	P
Tall wheatgrass	P	P	S	P	S	P	S	P	P	P
Timothy	S	S	S	S	S	N	P	P	S	N
Western wheatgrass	S	P	S	S	S	P	P	P	P	S

Table V
DRYLAND^{7/}

PASTURE AND HAYLAND PLANTING

	Soil and Site Adaptation								
	<u>Textural Group</u>			<u>Special Features</u>			<u>Temperature Regime</u>		
	Fine	Med	Mod	Coarse	Sal/Alk	Wet	Frigid	Mesic	Thermic
Alfalfa	S	P	P	S	S	N	P	S	N
Alkali sacaton	P	P	S	S	P	S	N	P	P
Alsike clover	S	S	S	N	S	S	S	N	N
Bermuda grass	P	P	P	P	P	P	N	P	P
Blue grama	P	P	P	S	S	S	P	P	P
Crested wheatgrass	N	P	P	N	N	N	P	S	N
Intermediate									
wheatgrass	S	P	P	S	N	N	P	S	N
Orchardgrass	S	P	P	S	N	S	P	S	N
Pubescent wheatgrass	S	P	P	S	N	N	P	S	N
Russian wildrye	S	S	N	N	S	N	S	S	N
Reed Canarygrass	S	P	P	S	S	P	P	S	S
Sand bluestem	N	N	S	P	N	N	S	P	S
Sideoats grama	P	P	P	S	N	S	S	P	P
Small burner	P	P	P	P	N	S	P	P	S
Smooth bromegrass	N	S	S	S	N	N	P	S	N
Sweet clover	S	S	S	S	S	N	S	S	S
Switchgrass	S	S	S	S	S	S	S	P	P
Tall Fescue	S	P	P	S	P	S	P	P	S
Tall wheatgrass	S	S	S	N	P	S	S	P	P
Weeping lovegrass	S	S	P	P	N	N	N	P	P
Western wheatgrass	P	P	S	S	P	S	P	S	N
Yellow bluestem	P	P	P	S	N	S	P	P	P

- 4/ Group A - No major soil problem, adequate irrigation water.
 Group B - No major soil problem, spring irrigation water only.
 Group C - Shallow and very shallow soils, spring irrigation water only.
 Group D - Shallow and very shallow soils, adequate irrigation water.
 Group E - Very coarse sand, adequate irrigation water.
 Group F - Saline and alkali soils, adequate irrigation water.
 Group G - Wet soils, adequate irrigation water.

5/ See Table V

6/ P = Preferred - Encourage use of these species.

S = Suitable

N = Not suited or poorly suited - Discourage use of these species.

* Suited to southern part of thermic zone only.

- 4/ Group A - No major soil problem, adequate irrigation water.
 Group B - No major soil problem, spring irrigation water only.
 Group C - Shallow and very shallow soils, spring irrigation water only.
 Group D - Shallow and very shallow soils, adequate irrigation water.
 Group E - Very coarse sand, adequate irrigation water.
 Group F - Saline and alkali soils, adequate irrigation water.
 Group G - Wet soils, adequate irrigation water.

5/ See Table V

7/ Pasture or hayland plantings are generally not successful in areas with less than 15 inches of precipitation. See specifications for Range Seeding for species best adapted to drier areas.

Table VI
PASTURE AND HAYLAND PLANTING - STATEWIDE
Preferred Varieties - Listed in Order of Preference

Species	Varieties	<u>Warm Season Grasses</u>	
		Bermudagrass	Common, Giant**
<u>Cool Season Grasses</u>		Big bluestem	Kaw
Creeping foxtail	Garrison	Buffalograss	Texoka
Crested wheatgrass	Hycrest, Nordan	Indiangrass	Llano
Intermediate wheatgrass	Amur, Tegmar, Oahe	Kleingrass	Selection-75
Meadow brome	Regar	Sand bluestem	Eiida
Orchardgrass	Paiute, Potomac, Latar, Berber (low growing)	Sand lovegrass	Bend
		Switchgrass	Alamo,* Greenville, Blackwell
Pubescent wheatgrass	Luna	Weeping lovegrass	Morpa, Ermelo
Russian wildrye	Vinall		
Reed canarygrass	Ireed	<u>Legumes & Forbs</u>	
Smooth brome	Lincoln, Southland **	Alfalfa	Mesilla, Zia (check for the best variety in your area)
Tall Fescue	K-31, Alta, Fawn, Kenhv	Birdsfoot trefoil	Granger, Cascade
Tall wheatgrass	Jose	Cicer milkvetch	Lutana
Thickspike wheatgrass	Critana	Small burnet	Delar
Timothy	Climax	Sweet clover	Madrid, Spanish
Western wheatgrass	Arriba, Barton	Sainfoin	Renumex, Remont

* Alamo is not suited for dryland pasture.

** For MLRA 41 and 42 only, other varieties also available

10. **Sprigged or Sodded Grasses**

A. **Warm Season (Irrigated Only in NM)**

1) **Propagation of Sprigs** (Bermudagrass)

Sprigs (rhizomes) will be planted in rows using a sprigging machine equipped with furrow openers and press wheels. Sprigs should be covered 1-3 inches deep and rows should not exceed 36 inches. Dormant sprigs will be fully covered 2-3 inches while growing or "live" sprigs should have a portion left above ground. Sprigs should be placed in moist, pre-irrigated soil and

the rows will be packed at time of sprigging or immediately after.

Sprigs will be healthy, uninjured, live stems, stolons and rhizomes. Sprigs should not be cut or chopped nor allowed to "dry out". Protect sprigs from sun and hot dry winds.

A manure spreader or other method of broadcasting sprigs on the ground can be used to evenly distribute rhizomes or when planting stolons. This method should normally be used only on sandier soils or where irrigated. Doubling the amount of sprigs is normally recommended when using this method. Immediately after distribution, cover with a disk to a depth of 2-4

inches and smoothly finish with a roller or cultipacker. Soil must be moist!

2) **Sprigging Dates:** Bermuda

Sprigs should not be placed in the soil before the soil temperatures average 75-80 degrees Fahrenheit. In southern New Mexico, where sprigging is most suitable, the optimum dates are from May 1 to June 15. (Seeded varieties can be planted 15 to 20 days sooner but no later than 6/15)

3) **Sprigging Rate:**

Sprig at 20-25 bushel per acre rate under normal conditions. If broadcasting or sprigging is delayed from time of digging by travel time, increase rate to 30-35 bushel per acre.

4) **Hybrid Sprig Varieties:**
(propagation by sprigs only)

Coastal
Hardie
Midland 99 (more cold-hardy)
Tifton 85
Jiggs (less cold-hardy)

5) **Criteria for Determining Stand Establishment**

Failure – less than 5 live plants per 100 row feet

Questionable – 5-10 live plants per 100 row feet (consider vigor, competition, economics)

Satisfactory – Over 10 live plants per 100 row feet

Pasture plantings should be evaluated at the end of the first growing season following planting or at the end of the second growing season depending on characteristics of planted species.

6) **Fertility**

Based on soil tests, sprigs at planting need 35 lbs/ac of actual Nitrogen (N), 50 lbs/ac of actual Phosphorus (P), and 50 lbs/ac of actual Potassium (K). After establishment, it takes 50 lbs/ac of Nitrogen, 15 lbs/ac of Phosphorus, 42 lbs/ac of Potassium, and approximately four (4) inches of water to produce one (1) ton of grass per acre.