

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE SPECIFICATION**

**RANGE PLANTING**

(Ac.)

**CODE 550**

**SPECIFICATION**

**Site Preparation**

If strong erosive winds are expected, protect the range planting to stabilize the soil. Barriers such as snow fence or nylon or plastic wind screens can be used for this purpose.

Where needed for installation of engineering or vegetative erosion control practices, grade steep slopes to a suitable grade (preferably 3:1 or flatter).

On some sites, soil amendments may be required to raise or lower the pH to a level, which will support plant growth. Normally either the technician or the client will know if the area will support plant growth. However, in the case of an oil spill, chemical spill, or some other unusual circumstance, a soil test to determine the pH and other chemical properties of the soil may be required. If plant nutrients are to be applied a soil test is strongly encouraged.

On sites which are large enough and sufficient rainfall or irrigation water is available, a dead litter crop (such as winter wheat grown as a cover) may be established rather than mulching.

**Seedbed Preparation**

The seedbed prior to seeding should be firm but not compacted to the point that mulch tucking, or anchoring, will be inhibited. Where mulching will be employed, and tucking is planned, the area should be tilled so that a four inch minimum depth of firm but friable soil is present. If a dead litter or cover crop is present, no additional seedbed preparation is necessary.

**Fertilizing**

Apply fertilizer according to a soil test unless fertility is known to be adequate. If fertility levels are unknown, soil test and apply recommended fertilizer during the final seedbed preparation (see the Nutrient Management 590 practice). When a cover crop is used, apply all of the phosphorus during the seedbed preparation for the cover crop and wait to apply the nitrogen until after the grass is planted. If a seed mix contains a legume, additional N may not be needed.

When high carbon mulches such as hay or wood fibers are used, apply an extra 20 pounds per acre of nitrogen per ton of mulch to the standard recommended rate.

Up to 15 pounds per acre of the recommended nitrogen may be applied with the seed. When this is done, the remainder may either be applied pre-plant, or preferably, after the grass has germinated and reached at least the three leaf stage. In most cases, delaying the nitrogen application until the grass is up and actively growing reduces its loss to invading weeds, leaching, or runoff.

**Seed and Seeding**

The species selected for seeding are determined by the specific site conditions for each range planting. Soil type, climate, slope, and exposure must all be considered as the planner uses the best available information to select species to solve the specific problem. The Range planting - 550 jobsheet will normally offer an adequate selection.

High quality named varieties will be used. All must have had a germination and purity analysis completed within the past 12 months.

Table 1 shows suitable species and planting dates for a cover crop or dead litter crop. Planting dates are indicated by MLRAs as grouped in the table.

It is important to specify a planting date early enough to establish enough cover to protect the site from wind and water erosion. Subsequently, vegetation cover should be established before extreme weather conditions exist which may cause severe erosion.

**Table 2 Species Table** shows the perennial species available for planting in a range planting. Species not listed may

be added to the Job sheet spreadsheet by the planer after consulting with the NRCS NM State Rangeland Management specialist or plant materials specialist. Use non-native mixes only as a last resort when natives will not meet your objectives.

Use **Table 3 Recommended Species** and the applicable Ecological Site Description (ESD) to be sure that the selected plants will be adapted to and grow on the site with regards to salinity, water table, shade, and precipitation.

**Table 1 Range Planting (dead litter or cover crop)**

SPECIES	PLANTING DATES BY MLRA		
	SD, HP-3, & CP-4 (date)	HP-1, HP-2, CP-1, CP-2, CP-3, WP-(all), & ND (date)	RM-1, RM-2, HV-1, & HV-2 (date)
Barley (for fall)	8/15 to 11/1	8/1/ to 10/1	8/1 to 10/1
Cowpeas	4/15 to 8/1	5/1 to 7/15	5/1 to 7/15
Forage Sorghums	4/15 to 8/1	5/1 to 8/1	5/1 to 7/15
Millet (Foxtail)	4/15 to 8/15	5/1 to 8/1	5/1 to 7/15
Millet (Pearl)	4/15 to 8/15	5/1 to 8/1	5/1 to 7/15
Oats (fall)	8/15 to 11/1	8/1/ to 10/1	Not Suited
Oats (spring)	3/1 to 5/16	3/1 to 5/15	4/1 to 5/15
Rye (cereal)	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Triticale (winter)	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Wheat (winter)	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Winter Peas	8/1 to 10/1	8/1 to 10/1	7/15 to 9/15

**Note: Do not plant any cover unless soil moisture is available or rain is on the way.**

**Rate of Seeding**

The rate of seeding is based on 20 seeds per square foot using the Range Planting 550 job sheet. Tree or shrub planting should be specified on the job sheet in the additional specification section. The Tree/Shrub Establishment Standard, specification, job sheet can be used to inform planting and management techniques using these species, particularly where they are installed in a separate operation from the Range Planting.

**Time of Seeding**

In northern areas cool season species can be seeded when there is good soil moisture. Cool season species may be planted anytime during the growing season except for during the last 45 days prior to the average killing frost date. However, in the dry desert areas it is preferred to delay seeding until July, when the period of the monsoon rain weather pattern usually begins. Several

consecutive rainfall events are required to establish a seeding. Cool season species may also be seeded anytime during the dormant period (generally from November to March). When the seeding is done early in this period it allows for more winter moisture to accumulate in the soil. Disturbances like disking, harrowing, and seeding tend to dry out the soil surface.

The preferred time for warm season species is 3-6 weeks after the last killing frost in the spring, although they may be seeded any time during the growing season except the last 45 days prior to the average killing frost date. In the desert areas it is desirable to delay seeding until July after the monsoon storm weather pattern have developed.

Generally, the planting time for a seeding will correspond to the high probability (60% or more) of receiving effective precipitation (0.6-1.0 inch during any 3 week period) as outlined in Table 2 Planting time for Perennials.

**Table 2 Planting time for Perennials**

<b><u>Resource Area</u></b>	<b><u>Planting Date for Perennials</u></b>
HP-1, CP-1, HP-2 & 3	<b><i>November 1</i></b> to August 1
CP-2, 3, & 4; WP-1, 2, & 3	<b><i>November 1</i></b> to August 1
RM-1 & 2; AN-1, 2, & 3; HIV-1 & 2; ND; SD-1, 2, & 3	<b><i>July 1 to August 20</i></b>

Dormant fall cool season seedings (seeded late enough so seed does not germinate until spring) can be planted in WP-1 & 2; RM-1 & 2; AN-1, 2 & 3; HIV-1 & 2, and HP-1 & 2.

**Seeding Methods**

The proper amount of seed must be evenly distributed, placed at the proper depth, and measures taken so that most seed is in contact with the soil. Most seed needs to be placed no more than 10 times the diameter of the seed in depth. Generally, seed should be planted at a depth between ½ inch – 1 inch depth unless it is very small (1,000,000 seed per pound or smaller). Seeding depth for very small seed should be at about a ¼ inch.

Planting may be done by one of the following methods:

**Drilling:** Drilling is the preferred method and should be used whenever possible. Drills must be equipped with hoppers that can properly meter out the seed. Seeds that are fluffy will require special agitators or bulking agent (such as rice hulls or cracked corn) to insure proper seed disbursement. The drill should also have depth bands, or some other positive type of control, to prevent seeding too deeply. The drill should be equipped with packer wheels or the area should be rolled immediately after seeding. Firm soil-seed contact is essential to insure successful plantings.

### **Rangeland Drill Calibration:**

1. Determine the desired Pure Live Seed (PLS) seeding rate.
2. Calculate the bulk seeding rate = Desired PLS in pounds per acre / PLS% (Example 9 pounds PLS per acre specified / 60% of the seed purchased is pure live seed = 15 pounds per acre bulk rate must be applied to the field).

**Calibration steps;** Please refer to the Publication; **Calibrating Drills and Broadcast Planters for Small-Seeded Forages** at;

[http://www.uaex.edu/Other\\_Areas/publications/PDF/FSA-3111.pdf](http://www.uaex.edu/Other_Areas/publications/PDF/FSA-3111.pdf) or TECHNICAL NOTE 7; USDA-NRCS PMC SPOKANE, WASHINGTON Titled: SEED QUALITY, SEED TECHNOLOGY AND DRILL CALIBRATION. Dated: FEBRUARY, 2005 [http://www.wsu.edu/pmc\\_nrcs/Docs/Technical\\_Note\\_7\\_Seed\\_Tech\\_and\\_Drill\\_Calibration.pdf](http://www.wsu.edu/pmc_nrcs/Docs/Technical_Note_7_Seed_Tech_and_Drill_Calibration.pdf) for calibration details.

**Broadcast Seeding:** Broadcasting of seed either by aerial or ground operation may be used when competing vegetation has been eliminated either by fire, mechanical or chemical methods. It is limited to situations where the terrain or obstructions prohibit the use of a drill. Ground operations may be by hand, whirlwind-type seeder or drill without a seed placement mechanism (e.g., furrow openers, depth control devices). Broadcasting, without covering or packing, requires no less than 1½ times the amount of seed used for drilling. A seed dribbler on a track-tractor may be used in broadcast seeding.

Broadcast uniformly and cover seed by drag, harrow, or cultipacker (or in some cases, livestock may be driven through the area) so that as many seeds as possible will be covered.

Where piñon, juniper, mesquite, creosote bush, and/or whitethorn species are

cleared mechanically and drilling cannot be accomplished, seed by broadcasting on disturbed areas before rain has settled the soil. Depend on soil sloughing to cover seeds.

On flat burned areas, broadcast seed before rain has settled the ashes. On steeper slopes, seed will wash off with the ash during the first significant storm event. On slopes over 15 percent where there is significant ash cover, seeding should be done after the first rain.

On shredded or mowed areas of brush, broadcast immediately prior to or following brush management activities.

On root-plowed areas, broadcast immediately following root-plow operation.

### **Mulching**

**Where to Use:** Mulch should be used on all range plantings where there is danger of damaging wind or water erosion, except those planted into a dead litter cover crop (Reference the Range Seeding Standard, Code 550 for information on preparing a dead litter crop). Also, Mulching conserves soil moisture and may reduce evapotranspiration demands of the seedlings. Subsequently, mulching can be the difference between success and failure for all seeding on sites that receive less than 15 inches of annual moisture.

Mulching can also be done by enclosing sections of the range planting and feeding livestock in the enclosed area to mulch and firm soil over the seed. Livestock must be moved as the area is covered by manure and waste feed. Remove the stock when there is approximately 1 inch buildup of manure and waste feed. Livestock densities must be kept high in the area to promote even distribution and adequate hoof action and animal impact.

### **Weed Management**

**During Establishment:** Control weeds as necessary by judicious mowing or chemical treatment.

High density of weeds will aggressively compete for moisture, light, and nutrients and may limit seedling establishment. Livestock can be used with careful management. This technique is called "Flash Grazing".

**1. Flash Grazing** is defined as a weed control practice that uses livestock to reduce weed growth instead of mechanical equipment. On all seedlings where weeds are a problem, Flash Grazing may be used to control weeds during the establishment period. It may be used in place of mowing for weed control if the operator has adequate livestock to obtain the desired benefits.

The Flash grazing stocking rate is to be at least three Animal Unit Equivalents per acre, and the grazing period is limited to a maximum of three days per area of treatment.

If an area to be grazed is too large, it should be subdivided with temporary fencing and grazed according to a Prescribed Grazing plan. If seeded species are being pulled up by the livestock, they will be removed immediately.

"Flash Grazing" is to begin when palatable immature weeds such as kochia, Russian thistle, barnyardgrass, crabgrass, cheatgrass and other palatable annuals reach 6 to 12 inches in height. Area is to be grazed until the weeds are grazed uniformly to a height of 3 to 5 inch stubble.

Grazing may be repeated as necessary until July 15. A minimum of 30 days rest is required before regrazing is permitted. No grazing is permitted after July 15 during the growing season, so that seedlings will have adequate time to store food reserves and adequate foliar cover to help the soil resist erosion.

Livestock are to be grazed on seeded fields under dry soil conditions.

If wet muddy conditions occur, livestock will be removed and not allowed to reenter until a firm surface is present.

## 2. Mechanical Control

- (a) Cutter bar or rotary type mower. Weeds should be clipped prior to bloom stage. If desirable pollinator plants are present, mowing could be delayed until just before setting of viable seed.
- (b) Cultivation -rotary hoes, or sweeps, are effective in controlling weeds on row plantings.
- (c) Limited controlled grazing may be used to control broadleaf weeds and annual grasses in the second growing season. Livestock numbers should be sufficient to accomplish desired control. Remove livestock if seedling damage occurs.

**3. When chemical weed control is used**, careful consideration of potential toxic effects on desirable plants, wildlife, and water contamination. Use only herbicides that have been approved in the state for such uses and be sure and follow the label directions. On dune stabilization projects, no weed control should be done. The presence of the weeds is one of the major factors in slowing wind erosion. (in 1-3 years perennial grasses will replace the weeds.)

- (a) Federal, state and local laws govern the use of herbicides. These laws will be checked and complied with in each county.
- (b) Generally, seedling grasses will not be sprayed with herbicides until they are past the four-to-five-leaf state except when current label instructions specifically allows for an earlier application.
- (c) Generally, post emerged herbicide sprays will be applied to weeds when they are seedlings or in a succulent growth stage. Pre-emerged herbicides can be applied during the dormant

season. Follow current label instructions.

(d) Grasses may be damaged if herbicides are applied when air temperature exceeds 95 degrees Fahrenheit.

(e) The selection of herbicides and application will be based on current label instructions.

**After Establishment:** Areas that have a poor stand should be reviewed for causes of failure and the area reestablished. Wait for at least three complete growing seasons before making your decision to replant. Grass seed can stay viable in the soil for several years.

In most areas of the state, fertilizer will not be needed to maintain a stand. Always perform a soil test to verify that a fertilizer application is needed.

Exclude general livestock grazing until the area is stabilized (usually requires at least 2 years of growing season rest)

If properly managed, many range plantings provide excellent wildlife habitat. This should be a consideration during planning, and when selecting plant species. (Reference Upland Wildlife Habitat Management specifications, Code 645).

### **ESTABLISHING TREES AND SHRUBS**

Establishing trees and shrubs is optional and will be used primarily when the planting is being modified to improve wildlife habitat.

Specifications for establishing trees and shrubs are included in Farmstead and Feedlot Windbreaks (380), Field Windbreaks (392), Recreation Area Improvement (562), and Tree Planting (612).

### **PLANS AND JOBSHEETS**

The job sheet will include, but is not limited to, recommended species, seeding rates and dates, establishment methods, nutrients needed, and other establishment

information. Specifications will be recorded on Range Planting 550 job sheet, or form designed to provide specific requirements for the practice.

## **OPERATION AND MAINTENANCE**

### **Control of Livestock Grazing**

All newly seeded areas will be deferred from all grazing by domestic livestock from date of planting to the end of the second growing season or later, if necessary, to allow for stand establishment. Grazing may be permitted during the dormant period between the growing seasons, if plants are well rooted. Following the establishment period, grazing use will be in accordance with the Prescribed Grazing specifications.

### **Weed Control**

Control competition as needed by mowing, shredding or with chemicals. If chemicals are used, follow all warnings and instructions as listed on the label.

### **Rodent and/or Insect Control**

Where rodents or insects cause excessive damage to seeded areas, appropriate methods to control them will be used. Contact the appropriate state or federal agencies as appropriate.

### **Specific Operation and Maintenance Recommendations for Your Installation:**

Table 3 - Recommended Species								
Species	Preferred Variety	Origin	Shade Tolerance	Anaerobic Tolerance	Salinity Tolerance	Precipitation Low	Precipitation High	National Wetland Indicator
Alkali Muhly	Westwater	Native	Tolerant	Medium	High	12	40	FACW
Alkali Sacaton	Salado	Native	Intolerant	Low	High	5	13	FAC
Arizona Fescue	Redondo	Native	Intolerant	None	None	10	16	UPL
Baltic Rush		Native	Intolerant	High	High			ACW, OBL
Beardless Wildrye	Shoshone	Native	Intolerant	Medium	Medium	7	60	UPL
Big Bluegrass								
Big Bluestem		Native	Intolerant	Medium	Medium	12	55	FACU, FAC
Big Sacaton		Native	Intolerant	None	Low	5	20	UPL
Blue Grama	Hachita, Lovington	Native	Intolerant	None	Medium	7	22	UPL
Blue Wildrye		Native	Tolerant	High	Medium	16	60	FACU
Bluebunch Wheatgrass		Native	Intolerant	None	Low	10	35	UPL
Bluejoint		Native	Intolerant	High	None	14	65	FAC, OBL
Bottlebrush Squirreltail	Tusas	Native	Intolerant	None	Low	8	20	UPL
Buffalograss		Native	Intolerant	High	High	7	24	FACU
Bush Muhly		Native	Intermediate	None	Low	5	12	UPL, FACU
California Oatgrass		Native	Intolerant	None	Low	6	40	FACU-, FACW
Canada Wildrye		Native	Tolerant	None	Medium	10	45	FACU, FAC
Canada Wildrye		Native	Tolerant	Low	Medium	20	45	FACU, FAC+
Cane Bluestem		Native	Intolerant	None	Low	12	20	UPL

Table 3 - Recommended Species								
Species	Preferred Variety	Origin	Shade Tolerance	Anaerobic Tolerance	Salinity Tolerance	Precipitation Low	Precipitation High	National Wetland Indicator
Common Spikerush		Native	Intolerant	High	Low	16	60	OBL
Crested Wheatgrass		Introduced	Intolerant	None	Medium	6	30	UPL
Deergrass		Native	Intolerant	None	Low	10	18	UPL, FACW
Fringed Brome		Native	Tolerant	Low	Low	12	40	FACU, FACW
Galleta	Viva	Native	Intolerant	None	Medium	5	18	UPL
Giant Dropseed		Native						
Hardstem Bulrush		Native	Intolerant	High	Low	12	60	OBL
Idaho Fescue		Native	Intermediate	Low	None	12	20	UPL
Indian Ricegrass	Paloma	Native	Intolerant	None	Low	6	16	UPL
Indiangrass		Native	Intolerant	Low	Medium	12	40	UPL, FACW
Inland Saltgrass		Native	Intolerant	High	High	5	70	FAC, FACW
Little Bluestem	Pastura	Native	Intolerant	None	None	12	40	UPL
Managrass		Native						
Meadow Barley		Native	Intolerant	High	Medium	20	80	FAC, FACW
Nebraska Sedge		Native	Intolerant	High	Low	14	32	OBL
Needle & Thread		Native	Intolerant	None	None	5	20	UPL
Nodding Brome		Native	Tolerant	None	Low	2	20	UPL
Nuttall's alkaligrass		Native	Intolerant	High	High	24	45	FAC, OBL
Orchardgrass		Introduced	Intermediate	None	Low	16	60	FACU
Perennial Ryegrass		Introduced	Intolerant	None	Low	30	60	FACU, FAC

Table 3 - Recommended Species								
Species	Preferred Variety	Origin	Shade Tolerance	Anaerobic Tolerance	Salinity Tolerance	Precipitation Low	Precipitation High	National Wetland Indicator
Perennial Threawn								
Plains Lovegrass		Native	Intolerant	None	Low	5	18	UPL
prairie Dropseed		Native	Intermediate	None	None	20	35	UPL, FACU
Prairie Junegrass		Native	Tolerant	None	None	14	20	UPL, FACU
Redtop		Introduced	Intolerant	Medium	None	30	60	FACW, OBL
Rough Bentgrass		Native	Intolerant	Low	Low	14	60	FAC, FAC+
Sand Bluestem	Elida	Native	Intolerant	None	None	10	30	UPL
Sand Dropseed		Native	Intolerant	None	Medium	8	16	UPL
Sand Lovegrass		Native	Intolerant	Low	Low	14	35	UPL
Scratchgrass		Native	Tolerant	Medium	High	12	40	FACW, FACW+
Sideoats Grama	Vaughn, Niner	Native	Intolerant	None	Medium	6	25	UPL
Slender Wheatgrass	San Luis	Native	Intolerant	None	Medium	16	40	FAC, FACU
Spike Bentgrass		Native	Intolerant	Medium	Low	6	30	FACW
Spike Muhly	El Vado	Native	Intolerant	None	None	13	17	UPL
Spike Trisetum		Native	Intermediate	None	Low	12	50	UPL, FACW-
Streambank Wheatgrass	Sodar	Native	Intolerant	Low	High	8	25	
Switchgrass	Blackwell	Native	Intolerant	Low	Medium	20	40	FAC, FACW
Tall Dropseed								
Tall Wheatgrass	Jose	Introduced	Intolerant	Low	High	10	32	

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<b>Species</b>	<b>Preferred Variety</b>	<b>Origin</b>	<b>Shade Tolerance</b>	<b>Anaerobic Tolerance</b>	<b>Salinity Tolerance</b>	<b>Precipitation Low</b>	<b>Precipitation High</b>	<b>National Wetland Indicator</b>
Threadleaf Sedge		Native	Intolerant	None	None	8	24	
Thurber's Needlegrass		Native	Intolerant	None	Low	6	16	
Timber Oatgrass		Native	Intermediate	None	Medium	6	20	FACU, FAC
Tobosa		Native	Intolerant	None	Medium	5	13	UPL
Tufted Hairgrass		Native	Intolerant	Low	Low	14	24	FACW, FAC
Tufted Hairgrass		Native	Intermediate	Low	Medium	20	45	UPL, FACU
Vine Mesquite		Native	Intermediate	Medium	Medium	8	30	FAC, FACU, FACW
Weeping Lovegrass		Introduced	Intolerant	Low	Low	15	40	
Western Wheatgrass	Arriba	Native	Intolerant	Medium	High	10	32	FAC, UPL

**NOTES:**