Appendix C

Guidance on Seed Selection and Seeding of Temporary Vegetation on Disturbed Areas

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GUIDANCE ON SEED SELECTION AND SEEDING OF TEMPORARY VEGETATION ON DISTURBED AREAS

Temporary vegetative cover on disturbed areas should be used to reduce erosion from both wind and water sources. Because of the complex climatic differences that exist throughout the state of New Mexico, seeding guidelines need to be tailored to specific natural resource areas of the state.

The guidance of the U.S. Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) shall serve as the basis for making seeding recommendations for a particular site. NRCS Conservation Practice Standard and Specification Code 340, *Cover Crop*, shall serve as the preferred guide for seed species and rates, seeding methods, and seeding dates for construction projects in New Mexico.

In addition, the following plants, taken from Table 1 in the above-mentioned specification, are highly recommended as temporary cover for construction sites:

- Barley
- Forage sorghums
- Millet
- Oats
- Rye
- Winter wheat

Seeding rates listed in the NRCS *Cover Crop Specification* (340) for dryland areas shall be used on construction sites that will not be irrigated, and seeding rates may need to be doubled if less than ideal conditions exist at the specific site.

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DRAFT

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

COVER CROP
(acre)
CODE 340

DEFINITION

Grasses, legumes, forbs, or other herbaceous plants established for seasonal cover and conservation purposes.

PURPOSES

- Reduce erosion from wind and water
- Increase soil organic matter
- Manage excess nutrients in the soil profile
- Promote biological nitrogen fixation
- Increase biodiversity
- Suppress weeds
- Provide supplemental forage
- Manage soil moisture
- Protect seedling crops from wind abrasion

CONDITIONS WHERE PRACTICE APPLIES

On all lands requiring vegetative cover for natural resource protection and where seasonal cover can be established. In addition, on orchard land where seasonal or perennial cover is needed for one of the listed purposes.

CRITERIA

General Criteria Applicable to All Purposes

Plant species, seedbed preparation, seeding rates, seeding dates, seeding depths, and planting methods will be consistent with NM 340 Cover Crop Specification. The seeding rate will be determined to establish a pure live seed (PLS) rate of 20 seeds/ft^2 on dryland sites and 30 seeds/ft^2 on irrigated land. Stared rates in Table 1 of the NM 340 specification can be different than the above-mentioned criteria.

The species selected will be compatible with the nutrient management and pest management provisions of the plan.

Cover crops will be terminated by harvest, frost, mowing, tillage, and/or herbicides in preparation for the following crop. Herbicides used with cover crops will be compatible with the following crop.

Cover crop residue will not be burned.

Volunteer herbaceous vegetation may be managed to meet one or more of the purposes as long as there are no noxious weeds in the cover, and the cover is destroyed before hard seed is made by problem plants.

Additional Criteria to Reduce Erosion from Wind and Water

Cover crop establishment, in conjunction with other practices, will be timed so that the soil will be adequately protected during the critical erosion period(s).

Plants selected for cover crops will have the physical characteristics necessary to provide adequate protection.

The amount of surface and/or canopy cover needed from the cover crop shall be determined using current erosion prediction technology.

Additional Criteria to Promote Biological Nitrogen Fixation

Either the specific Rhizobia bacteria will be present in the soil or the seed will be inoculated at the time of planting legumes.

Nitrogen credits from legume cover crops will be accounted for in the Nutrient Management Practice Code 590.

Additional Criteria to Manage Excess Nutrients in the Soil Profile

Cover crops will be established and actively growing before expected periods of high precipitation or irrigation that can cause leaching.

Cover crop species will be selected for their ability to absorb large amounts of nutrients from the rooting profile of the soil. Plants high in protein and that have high biomass (yield) capability will absorb more nutrients. Fall planted grass species such as winter wheat and cereal rye has the best chance of establishment before winter sets in.

The above ground biomass can be removed from the field for maximum nutrient removal efficiency. This can be done by grazing, green chop or haying.

The aboveground biomass can also be recycled into the soil and used by the next planted crop. Plan the incorporation of the cover crop so that the breakdown (decomposition and mineralization) of plant nutrients coincides with the growth needs of the next crop.

Additional Criteria to Increase Soil Organic Matter

Cover crop species will be selected based on producing high volumes of organic material to maintain or improve soil organic matter.

The NRCS Soil Conditioning Index (SCI) procedure will be used to determine the amount of biomass required. See NM Agronomy Technical Note 42.

The cover crop will be terminated as late as feasible to maximize plant biomass and still prepare the seedbed for the subsequent crop.

Additional Criteria to Increase Biodiversity

Cover crop species shall be selected that, have different maturity dates, attract beneficial insects, serve as a trap crop for damaging insects, and/or provide food and cover for wildlife habitat management.

Additional Criteria for Weed Suppression

Species for the cover crop will be selected for their chemical or physical competition with weeds.

Cover crops residues will be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

For long-term weed suppression, perennials and/or biennial species can be used.

Additional Criteria to Provide Supplemental Forage

Species selected will have desired forage traits, be palatable to livestock, and not interfere with the production of the subsequent crop.

Forage provided by the cover crop may be hayed or grazed as long as sufficient biomass is left for resource protection.

Additional Criteria for Soil Moisture Management

Terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop. Terminated cover crops shall be left on the soil surface until the subsequent crop is planted.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to optimize soil moisture removal.

Additional Criteria for Protecting Seedling Crops from Wind Abrasion

Crops listed on **TABLE 1 – CROP TOLERANCES* TO BLOWING SOIL** as Very Low Tolerance will be planted into a standing dead cover crop using narrow tilled bands.

TABLE 1 - CROP TOLERANCES* TO BLOWING SOIL
(*From seedling emergence to field stabilization)

Tolerant T	Mod. Tolerance 3 t/ac	Low Tolerance 2 t/ac	Very Low Tolerance 0 - 0.5 t/ac
Barley	Corn	Alfalfa	Alfalfa Seedlings
Buckwheat	Cotton	Broccoli	Asparagus
Flax	Cucumbers	Cabbage	Carrots
Grain Sorghum	Onions (>21 days)	Lima Beans	Celery
Millet	Orchard Crops	Peas	Eggplant
Oats	Soybeans	Potatoes	Lettuce
Rye	Sunflowers	Snap Beans	Muskmelons
Wheat	Sweet Corn	Sweet Potatoes	Onion seedlings (<21 days)
			Peppers
			Spinach
			Squash
			Strawberries
			Sugar Beets
			Table Beets
			Tomatoes
			Watermelons

Developed in consultation with ARS Researchers, Manhattan, KS (3/98)

NOTE: When working with crops not listed above, compare their vegetative characteristics with the crops above and select the tolerance factor that best meets the needs of the crop. Contact the State Conservation Agronomist for additional assistance.

CONSIDERATIONS

Select species capable of rapid growth especially when using annuals.

Select species that are compatible with the overall cropping management system. This is especially important when selecting perennial or annual reseeding species for orchards, vineyards and similar plantings.

Consider esthetic values, fire hazards, and wildlife food and cover when selecting species.

Consider past or probable herbicide treatments, legume inoculation, tillage requirements and nitrogen needs when selecting species.

The cover crop should be terminated as late as feasible to maximize plant growth and still prepare the seedbed for the subsequent crop.

Deep-rooted species provide maximum nutrient recovery.

Consider that grasses utilize more soil nitrogen, and legumes utilize both nitrogen and phosphorus.

Avoid cover crop species that attract potentially damaging insects.

Acceptable benefits, for most purposes, are usually accomplished when the plant density is at least 20 stems per foot^2, the combined canopy and surface cover is at least 60 percent, and the above ground (dry weight) biomass production is at least 2,700 bs/acre.

Cover crops may be used to improve site conditions for establishment of perennial species.

PLANS AND SPECIFICATIONS

Plans and specifications will be prepared for the practice site. Specifications will include, but are not limited to, **recommended species**, **seeding rates and dates**, **establishment methods**, **nutrients needed**, and **other establishment information**.

Specifications will be recorded on NM 340 job sheets, or forms designed to provide specific requirements for the practice.

Acceptable species, seeding rates, and planting dates for annuals can be selected from **Table 1** and **Table 2**. Acceptable species can be perennials can be selected from **Table 3.**

OPERATION AND MAINTENANCE

Growth of the cover crop should be managed. Growth can be by mechanical forage harvest, tillage, grazing, or herbicide. Planting date can also regulate growth if cold weather stops growth.

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE SPECIFICATION

COVER CROP
(acre)
CODE 340

SPECIFICATIONS

- **Cropland Cover Crops**

Table 1 shows suitable species for cropland, seeding rates, and planting dates. Most plants in **Table 1** can be used for grazing. Planting dates are by MLRAs as grouped in **Table 1**.

Seeding rates in **Tables 1, 2, and 3** are based on 20 seeds/ft^2 for dryland and 30 seeds/ft^2 for irrigated. These rates are for ideal conditions for seeding. When conditions are less than ideal (poor seedbed preparation, poor seeding equipment, unreliable seed placement, or broadcast application with poor incorporation) **the seeding rates should be doubled**. This is very important to have a successful planting.

Seeding rates of stared (*) species in column 1 may not be practical at the 20 and 30 plants/ft^2 rates. Rates for those species may be reduced to table rates.

Mustard, oilseed radish, and rapeseed have soil fumigant properties, and can be used just prior to planting a root crop to reduce the risk of rootknot nematode damage. Cowpeas, vetch, winter peas, clovers, and sun hemp are legumes and can add nitrogen when used as a green manure crop. The annual grain crops can be used to temporally stabilize construction sites when soil moisture is available.

It is important to specify a planting date early enough to establish enough cover to protect the field from wind erosion. If cover is needed after cotton to protect a sandy field then if should be harvested first to get the cover established.

Following low residue-producing crops such as chile, cotton, and peanuts, small grain can be flown on the field just before harvest, and watered up after harvest. This technique reduces the labor and time in the fall to establish a cover.

Many times cropland will fail to meet a soil condition index rating greater than zero. This is because there is not enough biomass produced to make the rotation sustainable. A cover crop may make the rotation sustainable.

Use non-native mixes if native seed is not available or natives will not perform well for the needed use.

- **Other Cover Crop Sites (Orchards)**

Cover crops for orchards include the annual crops (**Table 2**) listed for cropland plus perennial crops (**Table 3**). Planting dates for the latter should correspond to rates and dates for irrigated pasture and hayland.

Table 2 shows plant mixes that can be used for short a period cover on irrigated land.

Table 3 shows perennial cover for longer time spans. These are typically orchard ground covers or Alley Cropping.

- **Non-irrigated**

The potential use of cover or green manure crops on non-irrigated land in New Mexico is limited. Those crops having greatest potential for success include the winter small grains, millet, sorghum and sweetclover. Seeding rates are listed in **Table 1**. Seeding dates should be based on soil moisture and probability of rainfall.

TABLE 1 - CROPLAND COVER CROP SPECIES

SPECIES	SEEDING RATES		PLANTING DATES BY MLRA		
	DRY PLS (lbs/acre)	**IRR. PLS** (lbs/acre)	**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)	65	100	8/15 to 11/1	8/1/ to 10/1	8/1 to 10/1
Chickery	Not Suited	2	8/15 to 9/15	8/1 to 9/1	8/1 to 9/1
Clover, Alsike	4	5	3/1 to 4/15	4/1 to 5/1	4/1 to 5/1
Clover, Red	4	5	3/1 to 4/15	4/1 to 5/1	4/1 to 5/1
Clover, Strawberry	4	4	3/1 to 4/15	4/1 to 5/1	4/1 to 5/1
Cowpeas	25*	40*	4/15 to 8/1	5/1 to 7/15	5/1 to 7/15
Forage Sorghums	10*	20*	4/15 to 8/1	5/1 to 8/1	5/1 to 7/15
Millet (Foxtail)	4	4	4/15 to 8/15	5/1 to 8/1	5/1 to 7/15
Millet (Pearl)	10	15	4/15 to 8/15	5/1 to 8/1	5/1 to 7/15
Mustard	Not Suited	8*	8/15 to 9/15	8/1 to 9/1	8/1 to 9/1
Oats (fall)	60	100	8/15 to 11/1	8/1/ to 10/1	Not Suited
Oats (spring)	60	100	3/1 to 5/16	3/1 to 5/15	4/1 to 5/15
Oilseed Radish	Not Suited	18	8/15 to 9/15	8/1 to 9/1	8/1 to 9/1
Rapeseed	Not Suited	7	8/15 to 9/15	8/1 to 9/1	8/1 to 9/1
Rye (cereal)	48	70	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Ryegrass	Not Suited	4	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Sun Hemp (SD only)	Not Suited	20*	4/15 to 8/1	Not Suited	Not Suited
Sweetclover (fall)	4	5	8/1 to 10/1	7/15 to 9/15	7/15 to 9/1
Sweetclover (spring)	4	5	3/1 to 4/15	4/1 to 5/1	4/1 to 5/1
Triticale (winter)	55	82	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Turnips	Not Suited	8	8/15 to 9/15	8/1 to 9/1	8/1 to 9/1
Vetch (annual)	12*	24*	8/1 to 10/15	8/1 to 10/15	8/1 to 10/1
Turnips	Not Suited	8	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Chickery	Not Suited	4	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Wheat (winter)	58	88	8/15 to 11/1	8/15 to 10/15	8/1 to 10/1
Winter Peas	22*	30*	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

TABLE 2 - IRRIGATED ANNUAL COVER - ORCHARDS AND OTHER COVER CROPS

Species	Seed-Mix Options, PLS					
	A **lbs/acre &** (% of stand)	**B** **lbs/acre &** (% of stand)	**C** **lbs/acre &** (% of stand)	**D** **lbs/acre &** (% of stand)	**E** **lbs/acre &** (% of stand)	**F** **lbs/acre &** (% of stand)
Winter Wheat			88 (100%)			70 (90%)
Hairy Vetch				30* (100%)		15 (10%)
Field Peas					80*(100%)	
Cereal Rye	70 (100%)					
Triticale		80 (100%)				

TABLE 3 - IRRIGATED PERENNIAL COVER

Species	Seed-Mix Options[1], PLS				
	A **lbs/acre &** (% of stand)	**B** **lbs/acre &** (% of stand)	**C** **lbs/acre &** (% of stand)	**D** **lbs/acre &** (% of stand)	**E** **lbs/acre &** (% of stand)
Birdsfoot Trefoil				3 (50%)	
Canada Bluegrass (ground cover)	3 (100%)	1 (100%)			
Creeping Red Fescue (ground cover)				2 (50%)	
Tall Fescue (hay or graze)					6 (100%)
Tall Wheatgrass (hay or graze)			8 (100%)		

[1] *1 lb/acre of Alsike clover can be added to all mixes if a legume is desired.*

- **Planting**

1. Plant cover crops in a weed-free seedbed by drilling or broadcasting. If broadcasting the seed, seeding rates are doubled.

2. Planting depth should be about 10 time the diameter of the seed. Soil should be firmed over the seed.

3. Preplant starter fertilizer is helpful if a soil test indicates a need or soils are in poor condition. Use 30 lbs/ac N and 60 lbs/ac P_2O_5. These should be worked into the soil surface.

- **Management**

1. Allow cover to grow to the needed height. Stop growth by tillage or herbicide. Grazing may also be used to control height. Be sure to prevent hard seed set if volunteering is an issue.

2. Legumes and to a lesser degree vegetated stages of growth of other plants, can release large amounts of nutrients when incorporated into warm moist soil. Care should be taken to time the destruction of a cover because of the spike of nutrients released to the next crop.

3. Do not remove cover during nesting season for the birds of concern. Many use March through June.

4. Maximum wind erosion control and seedling protection is obtained by direct seeding (No-till) into winter killed or herbicide killed cover.

5. Delay tillage (removing the cover) of the cover as long as possible before seedbed preparation for the next crop.

PLANS AND JOBSHEETS

Plans and specifications will prepared for the practice site. Specifications will include, but are not limited to, **recommended species**, **seeding rates and dates**, **establishment methods**, **nutrients needed**, and **other establishment information**.

Specifications will be recorded on NM 340 job sheets, or forms designed to provide specific requirements for the practice.

Acceptable species, seeding rates, and planting dates for annuals can be selected from **Table 1 and Table 2**. Acceptable species can be perennials can be selected from **Table 3.**

OPERATION AND MAINTENANCE

Growth of the cover crop should be managed. Growth can be by mechanical forage harvest, tillage, grazing, or herbicide. Planting date can also regulate growth if cold weather stops growth.

NATURAL RESOURCES CONSERVATION SERVICE

CRITICAL AREA PLANTING
(acre)
CODE 342

Definition

Planting vegetation, such as trees, shrubs, vines, grasses, or legumes, on highly erodible or critically eroding areas (does not include tree planting mainly for wood products).

Purpose

To stabilize the soil, reduce damage from sediment and runoff to downstream areas, and improve wildlife habitat and visual resources.

Conditions Where Practice Applies

On highly erodible or critically eroded areas. These areas usually cannot be stabilized by ordinary conservation treatment and management and, if left untreated, can cause severe erosion or sediment damage. Examples of applicable areas are dams, dikes, mine spoil, levees, cuts, fills, surface-mined areas, and denuded or gullied areas where vegetation is difficult to establish by usual planting methods.

Specifications Guide

Species of grasses, legumes, shrubs, and trees; methods and rates of planning; fertilizer and lime requirements; planting site preparation; time of mulching; mulching; and irrigation.

Planning Consideration for Water Quantity and Quality

Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.

2. Effects of vegetation management on soil moisture.

3. Effects of snowcatch and melt on the water budget.

4. Effects of increased organic matter on water-holding capacity of the soil.

5. Potential for a change in plant growth and transpiration because of changes in soil water volume.

Quality

1. Effects on erosion and the movement of sediment and soluble and sediment-attached substances carried by runoff.

2. Filtering effect of vegetation on movement of sediment and dissolved and sediment-attached substances.

3. Short-term and construction-related effects on downstream water course.

4. Potential for earth moving to uncover or redistribute toxic materials and effect on water or vegetation.

5. Effects on the use and management of nutrients and pesticides and resulting effects on surface and ground water quality.

6. Effects on the visual quality of downstream water resources.

NATURAL RESOURCES CONSERVATION SERVICE

CRITICAL AREA PLANTING
(acre)
SUPPLEMENT

CODE 342-1

PLANNING CONSIDERATIONS

A critical area is defined as land which has been disturbed by natural erosion, construction activities or mismanagement and which requires special treatment, or management to return it to an environmentally or ecologically acceptable condition.

Some shaping of critical areas may be required, either to allow for the special management that may be required, or to make the area conform to the surrounding area. Shaping is normally required when the critical areas are overfalls, gullies, or other severely eroded natural areas.

During planning, the changes in vegetation which could effect water quantity, such as volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, ground water recharge, organic matter, water holding capacity of the soil, and snowcatch and melt all should be considered.

Water quality effects such as erosion and sediment movement, use of pesticides or nutrients, the filtering effect of vegetation, the potential for uncovering toxic materials during construction, and the short-term construction-related damages also should be considered during the planning process.

SPECIFICATIONS

Part 1 of these specifications, “Establishing Grasses or Legumes,” applies to all critical area plantings.

Part 2, “Establishing Trees and Shrubs,” is optional and will be used primarily when the planning is being modified to improve wildlife habitat.

Part 3, “Stabilization of Blowouts and Dunes,” pertains to treatment of wind erosion problem areas.

1. Establishing Grasses or Legumes

A. Site Preparation

(1) If necessary, divert off site water away from the critical area. This may require a permanent diversion, or in other instances, a temporary measure may be used that will be effective during the period of vegetative establishment.

(2) If strong erosive winds are expected, protect the critical area with barriers such as snow fence or nylon or plastic wind screens. Many types of barriers are available. Check with the State Office Resource Technology Section for additional information.

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

(4) On construction sites, mined areas, or other critical areas where the exiting surface material is either physically or chemically unsuited to support vegetation, a suitable material will be evenly spread on the surface to allow for plat growth. Required depths will be determined on each site. In some cases, only an inch of soil which will allow seeds to germinate will be all that is needed, in other sufficient soil to sustain plant growth will be required. Required depths will be determined on each specific site. However, the deeper the unsuitable surface is covered, the easier it will be to establish and maintain vegetation.

(5) On some sites, soil amendments may be required to raise or lower the ph to a level that will support plant growth (3.5 to 9.0). Normally either the technician or the cooperator will know if the critical area will support plant growth. However, in the case of an oil or chemical spill, or some other unusual circumstance, a soil test to determine the ph and other chemical properties of the soil may be required.

(6) On sites which are large enough, and sufficient rainfall or irrigation water is available, a dead litter crop may be established rather than mulching, and the specifications for Range Seeding may be used except that the seeding rate will be doubled.

B. 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 trucking is planned, the areas 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.

C. Fertilizing

(1) Apply fertilizer according to a soil test unless fertility is known to be adequate. If fertility levels are unknown, apply at least 30 pounds of actual nitrogen and 60 pounds of phosphate (P205) per acre during the final seedbed preparation. 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 and has reached the stage shown in (3) below. Phosphorous is immobile in the soil and needs to be worked into the root zone as deeply as possible.

(2) When high carbon mulches such as hay or wood fibers are used, apply the extra 20 pounds per acre of nitrogen per ton of mulch.

(3) 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 3-leaf stage. In most cases, delaying the nitrogen application until the grass is up and actively growing prevents its loss to invading weeds, leaching, or runoff.

(4) To develop nutrient recommendations, refer to Nutrient Management Specifications, Code 630, for the required procedures.

D. Seed and Seeding

(1) The species selected for seeding are determined by the specific site conditions for each critical area. Soil type, climate, slope, and exposure must all be considered as the SCS technician uses the best available information to select

species to solve the specific problem. Plant Guides and the Vegspec computer program will normally provide the needed information.

(2) Certified seed of named varieties will be used when available. Otherwise, uncertified seed of locally adapted species may be used. All seed must have had a germination and purity analysis completed within the past 12 months.

E. Rate of Seeding

Double the seeding rates shown under the minimum column in the Range Seeding (550) or Pasture and Hayland Planting (512) specifications.

F. Time of Seeding

(1) Irrigated

a. If irrigation water is available throughout the year, the best time to seed cool-season species is 45-60 days prior to the first fall frost. However, cool-season species may be seeded anytime during the growing season except the last 45 days prior to the average killing frost date.

b. The second preferred period for cool-season species is early spring, from the date of the last killing frost to one month after that date.

c. 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.

(2) Dryland

The time of dryland seeding will correspond to the high probability (60% or more) of receiving effective precipitation (0.6 – 1.0 inch during any 3 week period).

Resource Area	**Planting Date[1]**
HP-1, CP-1, HP-2, 3	January 1 to August 1
CP-2, 3, 4; WP-1, 2, 3; RM-1, 2; AN-1, 2, 3; HIV-1, 2; ND; SD-1, 2, 3	January 1 to May 1 and June 15 to August 1

[1]Dormant fall cool season seedings (seeded lat enough so seed does not germinate until spring) are satisfactory in WP-1 and 2; RM-1 and 2; AN-1, 2 and 3; HIV-1 and 2; and HP-1 and 2. Treatment with a fungicide to prevent seed deterioration is recommended.

(3) Seeding may be done at any time, IF it is the judgment of the SCS Technician that the seeding will not ever be done unless it is completed outside of the above listed dates. It should be noted that these seedings should be the exception rather than the common occurrence and the reason for the exception will be clearly documented in the Technicians Notes.

G. Seeding Methods

The proper amount of seed must be evenly distributed, placed at the proper depth, and measures taken so the most seed is in contact with the soil. Seed such as Indian ricegrass or Coastal panicgrass which must be seeded 1-2 inches deep should be seeded separately from other species which require shallow seeding. Seeding may be done by one of the following methods:

(1) 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. Fluffy seeded species will require special agitators or “picker fingers” 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.

(2) Broadcasting – Seed must be evenly distributed. This is best accomplished by using some type of whirlwind or hydro seeder. Following seeding the area should be harrowed, dragged, or raked by hand to provide some soil covering for the seed. Following this operation, depending on the soil type and field condition, the area may need to be rolled for compaction. Again, a good soil-seed contact is essential in obtaining good stands.

H. Mulching

(1) Where to Use – Mulch should be used on all critical areas where there is danger of damaging wind or water erosion and on ALL dryland CAT seedings except those planted into a dread litter cover crop (Reference paragraph 10 in the Range Seeding Specifications, Code 550 for information on a dead litter crop).

(2) For detailed information, refer to the standard and specification for Mulching, Code 484.

I. Management

(1) During Establishment

Control weeds as necessary by judicious mowing or chemical treatment and exclude livestock. When chemical weed control is used, careful consideration is required as to its effects on the grass seedlings, 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, now weed control should be done. The presence of the weeds is one of the major factors in slowing wind erosion. In 1-3 years the weeds will be replaced by perennial grasses.)

(2) After Establishment

a. Fertilize as necessary to maintain a vigorous stand. A current soil test will insure that proper fertilizer applications will be made.

b. Exclude livestock entirely until the area is stabilized. Graze only lightly after stabilization. (Reference specifications for Proper Use, Code 528; Fencing, Code 382; and Livestock Exclusion, Code 472).

c. If properly managed, many stabilized critical areas provide excellent wildlife habitat. This factor should be considered during planning when plant species are being selected. (Reference Wildlife Upland Habitat Management specifications, Code 645).

2. Establishing Trees and Shrubs

Specifications for establishing trees and shrubs are included in Section IV, Farmstead and Feedlot Windbreaks (380), Field Windbreaks (392), Recreation Area Improvement (562), and Tree Planting (612). New Mexico Form 211K, "Steps in Tree Planting" Technical Guide Section IIB should also be used.

3. Stabilization of Blow Outs and Dunes

The three parts of most sand dunes or blowout areas include: 1) the contributing area; 2) the front (upwind) side of the dune; and, 3) the back (downwind) side of the dune. Each of these areas requires a separate treatment. The contributing area is usually characterized by monuments or hummocks, water erosion channels, and a relatively cemented, impervious subsoil. The front side of the dune is characterized by relatively smooth gentle slopes, which the back side of the dune normally has a smooth but very steep slope. The entire area is generally very unstable, low in organic matter and fertility, and the dunes usually have low available water holding capacities.

Blowouts and sand dunes should be treated in a sequence so that the stabilized parts are not subject to damage, and suffer erosion, by the unstabilized areas. The usual, and most successful, sequence is to treat the contributing area first followed by the front and back slopes. The following table provides an outline of times for needed activities:

Year	Month	Part of Area	Operation or Activity
One	Any	Whole	Fence
One	May – June	Contributing Area	Smooth if needed, list, leaving surface cloddy, construct wind barriers
One	July – September	Contributing Area[1]	Plant cover crop or seed and mulch
Two	July – August	Contributing Area	Plant grass if adequate cover is available
Two	July – August	Front and Back Slopes	Plant grass
3-6	All	All	Do not graze until grass is well established and then graze lightly

[1]*Depending upon the type of grass seeded, the front slope may also be sown to a cover crop. However, if grasses such as Atlantic Coastal Panicgrass or Indian Ricegrass are seeded which need to be covered 2-3 inches deep a cover crop may not be desirable. If a mixture of shallow seeded native species are planned, then a cover crop can be planted at the same time as the contributing area.*

A. Fence

Fence entire area, including a stripe at least 50 feet wide outside of the critical area, unless the areas is in a field which is included in a grazing system which allows for deferment during the entire growing season. Some areas may require fencing since they will be so sensitive that total deferment may be required to keep vegetation upon them. Dunes are much more sensitive to grazing pressure than other critical areas and

consequently even under a rotational grazing system the treated area may need to be fenced to prevent re-activating the dune.

B. Treatment

Instead of using a cover or dead litter crop, the area may be seeded and mulched as discussed under Number 1 above.

(1) Contributing Area

a. Where desired, or where they will cause problems in equipment handling or vegetation establishment, hummocks and channels may be knocked down, smoothed or filled.

b. On slopes of 3% or less, list perpendicular to the prevailing erosive winds. On steeper slopes, list on the contour. This may result in part of the rows being parallel with the prevailing winds. However, generally the contour varies sufficiently to provide adequate barrier protection. Establish wind barriers. Where possible use old hay bales placed end to end across the area perpendicular to the prevailing erosive winds at intervals of 300-350 feet. (This is much wider than spacing determined using the Wind Erosion Equation. However, experience has shown that this distance will satisfactorily reduce the sand blowing from the contributing area IF the area between the barriers has been properly listed.) A single bale high will suffice but two bales high is much better. Any material may be used to form the barriers, stacked yucca, sagebrush, snowfence, etc. However, old hay bales are the best.

c. Drill or broadcast a cover crop of sudan or sorghum if planting in the summer, or small grains if planting in the fall, on the area which has been listed.

d. The following year drill a mixture of grasses, forbs or shrubs into the dead litter crop.

(1) Upwind (Front) Slope

a. Shape if necessary.

b. Drill a cover crop at the same time the contributing area is planted, unless a grass which needs to be dragged to be covered, such as Atlantic Coastal Panicgrass, is planned for broadcasting. In this case, leave the upwind slope bare.

c. The following year seed grass into the dead litter crop at the same time the contributing area is seeded.

(2) Downwind (Back) Slope

The downwind slope is normally too steep to drill. Consequently, seed will be broadcast at the same time as the front slope is planted, both for the cover crop and for the perennial vegetation.

C. Fertilizing

Follow the procedures under Number 1 above.

D. Seeding

Follow the procedures under Number 1 above.

E. Mulching

Follow the procedures under Number 1 above.

F. Management

Follow the procedures under Number 1 above.

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