

Critical Area Planting (acre)

Conditions where practice applies

On highly erodible or critically eroding 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.

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).

Specifications guide

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

Purpose

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

CRITICAL AREA PLANTING (Acre)

SPECIFICATIONS

A. Critical areas except dunes

1. Seeding Grasses and/or Legumes

Site Preparation - On soils with a severe erosion hazard, the slope length must be limited to a distance which will help prevent erosion and rilling. A diversion above the slope may be required; also adequate drainage, a stable channel for the water course to prevent cutting action, and a stable flat area for drainage discharge or drop structure are usually necessary. Urban areas will need a well drained water disposal system.

Seedbed preparation - On sites where equipment can operate and seedbed preparation is needed, prepare a seedbed as for pasture planting. Where equipment cannot operate, remove debris, if any, and smooth. Seedbed work may be omitted where slopes are about 1 to 1 or rocks are dominant.

Seeding and fertilizing - Where equipment can operate, use a drill. Where equipment cannot operate, broadcast seed and hand rake or use a spiketooth harrow when possible to cover the seed. Seed should be $\frac{1}{4}$ to $\frac{1}{2}$ inch deep. Seed in early spring, March 1 to May 1; or early fall, September 1 to October 10. Fertilize at a rate of approximately 40 to 80 pounds of available nitrogen and, if needed, 80 pounds P_2O_5 and 80 pounds K_2O . On 1 to 1 slope especially, or any slope hydroseeding may be used and seed, fertilizer, and wood fiber mulch applied at one time.

Mulching - Use a mulch with seeding where erosion problem is severe or seedling establishment is difficult. Use 2 to 2½ tons of straw mulch or hydroseeding with 1500# to 2000# wood fiber per acre. Straw provides best results, but has less value on 1 to 1 or steeper slopes. Anchor straw mulch in place where needed by:

- a. Colter or notched type disc set straight. Anchor to a depth of two inches with a space of about 12 inches between colters.
- b. Anchor by hand with a square point spade. Push mulch into soil two inches deep about every 12 inches.
- c. Anchor with asphalt emulsion at the rate of 200 gallons per ton of mulch.

Types of weed free mulch:

- a. Native grass hay - broken or chopped

- b. Tame grass hay - broken or chopped
- c. Clean grain straw - broken or chopped
- d. Jute netting
- e. Wood fiber for hydroseeding
- f. Excelsior (good erosion control)
- g. Peat moss or bark dust in urban areas

Species - Refer to Interagency Guide for Conservation and Forage Seedings, or use one of the following mixtures for usual situations:

Western Oregon		Eastern Oregon	
Tall Fescue	20 lbs.	Crested wheatgrass	12 lbs.
Creeping Red Fescue	10 lbs.	Hard Fescue	4 lbs.
Common Ryegrass	5 lbs.	Sheep Fescue	4 lbs.
White Dutch Clover	3 lbs.		

Seeding rates - Use double or triple amounts or more of seed normally used for other uses. Extreme erosion hazard areas such as stream banks before major flood season should receive an early seeding, straw mulch, and the seeding mixture should include 10# to 30# of winter grain. Grain straw may contain some grain seed that will volunteer moderately.

Irrigation may be helpful if this is practical. Frequent light irrigations are best for establishment. Water applied at too high a rate may cause erosion and must be avoided.

Maintenance - For a vigorous cover, fertilizing may be needed for several years after planting on poor sites. September application of 60# of nitrogen for the first year or two are important. Protect from grazing or other damage. Repair any damage as needed.

Vegetation of new construction work should be done before winter, usually in September or October. Late fall construction should be avoided since winter cover is hard to provide at that time. After November 1, apply mulch. A chance may be taken on a permanent seeding without a mulch at 100# of winter grain.

2. Sodding - This method of stabilizing is extremely effective though usually very costly.

Prepare as good a conventional seedbed as possible.

On some areas it may be necessary to roughen the area with mechanical equipment, fertilize and spread topsoil to a 2 inch depth.

Lay sod strips out 2 inches thick, fitting them together as tightly as possible. Use only adapted sod type grass. Adequate sod is formed only by sod forming grasses such as bentgrass, bluegrass, and creeping red fescue.

Tamp or roll lightly and stake the sod down as needed on steep slopes.

Top dress with a small amount of topsoil working it into the cracks between sod pieces with a broom or back of a rake.

Water carefully and keep moist until well established.

3. Establishment of Other Ground Cover

Prepare area for planting according to need and intended use in line with above.

Species for Western Oregon. (Selection depends on soil, problem, and location).

Periwinkle (*Vinca major* and *Vinca minor*) 18" x 18" spacing - November 1 to March 1.

Kinnikinnick 18" x 18" spacing - November 1 to March 1.

Aaronsbeard St. Johnswort (*Hypericum calycinum*) 18" x 18" spacing - November 1 to March 1.

Flat pea (*Lathyrus sylvestris*) - seed solid - March 1 to May 1, or set plants 3' x 3' spacing - March 1 to May 1.

Woody cover (native plants)

Blackberries 2' x 3' spacing - November 1 to March 1.

Scotch broom 4' x 4' spacing - November 1 to March 1.

Snowberry 18" x 18" spacing - November 1 to March 1.

Red trailing raspberry 18" x 18" - November 1 to March 1.

Salal 18" x 18" spacing - November 1 to March 1.

Species for Eastern Oregon.

Matrimony vine - root cuttings - 30" x 30" March 1 to May 1.

Snowberry 18" x 18" spacing - November 1 to March 1.

Golden willow 18" x 18" spacing - March 1 to May 1. (Care must be exercised in using this species as it spreads rapidly on some sites).

Native willow - 18" x 18" - March 1 - May 1.

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Mulch area after planting with straw, sawdust, or barkdust.

Fertilize with a complete fertilizer following planting and as needed later to obtain and keep needed amount of cover.

Irrigation - the first year will help assure adequate establishment and cover.

Maintain cover by protection from grazing and other damage.

3. Urban Sites

In addition to seeding and planting, special attention is needed as to protection of existing trees, saving and use of topsoil on the site, erosion control during construction, complete non-erosive water disposal systems, and temporary debris basins.

4. Logging Roads, Skid Trails and Landings.

Special care is needed to do seeding soon after construction and use. Interagency Seeding Guide mixtures should be used. Seed and fertilizer without mulch may be adequate. Light harrowing for a seedbed and/or covering seed is desirable, if practicable. Seeding should be in conjunction with establishment of water diversion structures (water bars).

5. Emergency Seeding of Burned Areas

Seed adapted tree species and/or grass-legume mixtures in line with Interagency Seeding Guide. Seed grass-legume mixture on ashes soon after burn and before fall rains when possible. Broadcast by helicopter, airplane, or by hand. Light burns and grassland burns usually provide too little ash for successful broadcast seeding, consequently drilling provides the best results.

B. Coastal dunes in MLRA-1

1. INITIAL STABILIZATION WITH VEGETATION

- a. Protect the area from fire, grazing, and traffic.
- b. Plant the area with culms of European beachgrass (*Ammophila arenaria*).
- c. Plants shall be cleaned by shaking sand from roots and dead stalk removed by stripping the culms.
- d. Tops shall be cut back to a uniform height of 50 cm (20 inches) sorted, bundled, and stored in a cool, moist condition till planted.

- e. Culms will be planted 30 cm (12 inches deep) with 3 live culms per hill and the soil compacted to exclude air from the root nodes. The plant tops shall be upright and extend approximately 20 cm (8 inches) above ground uniformly.
 - f. Planting will be done when moisture is within 7.5 cm (3 inches) of the ground surface, and when the average maximum air temperatures are below 12.8° C. (55°F.). This is usually between Nov. 1 and March 1. No planting is done when temperatures are below freezing. Plants not heeled in should be kept moist, out of the sun and wind and planted within 8 hours after digging.
 - g. Hills are spaced 45 cm x 45 cm (18" x 18"). Steep banks or areas exposed to high wind intensity may be spaced 30 cm x 30 cm (12" x 12") with 5 culms per hill.
 - h. All areas planted shall be fertilized with commercial fertilizer at the rate of 45 Kg. (40 pounds) of actual nitrogen per acre.
 - i. Planting shall be made beginning on the windward side of the area.
 - j. New planting on steep banks or areas with high wind intensity are to be fertilized the same day as planting.
 - k. The planting shall be fertilized annually or every other year according to need or until permanently stabilized with a secondary planting.
 - l. Paved access paths and roads should not be constructed straight across the dunes but rather placed on a curve or angle to the predominant wind direction.
2. SECONDARY STABILIZATION PLANTINGS CAN BE GRASSES AND LEGUMES OR WOODY PLANTS.

a. Secondary stabilization with grasses and legumes.

1. Secondary seedings are made only after the initial stabilization has become fully effective. (Normally the next winter.)
2. Selection of adapted species and rates of seeding will be made from the following mixtures or from the Oregon Interagency Seeding Guide.

<u>Species</u>	<u>Kg/ha</u>	<u>lbs/acre</u>
Tall wheatgrass	25	22
or tall fescue	18	16
creeping red fescue	8	7
white clover	2	1.8
or purple beachpea	15	13.3

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3. Plantings are made during October.
4. Fertilize with 300 Kg/ha with 16-20-0 (267 lbs/ac)

b. Secondary stabilization with woody plants.

1. Secondary plantings are made only after the initial stabilization has become fully effective.
2. Plant nursery grown stock of 2-0 scotch broom (*Cytisus scoparius*), shore pine (*Pinus contorta*), or a combination of these species, using a spacing of 2.4m x 2.4m (8 ft. x 8 ft.) interplanted so there is an actual spacing of 1.2m (4 ft.) between the shore pine and scotch broom.
3. Plant scotch broom 30 feet wide, and 24" x 36" spacing as an effective firebreak on secondary plantings.
4. Planting shall be done from Nov. 15 to February 15.

c. INLAND DUNES

1. STABILIZATION WITH VEGETATION

- a. Protect the dune area from fire, grazing, and traffic. Fencing may be essential.
- b. Plant dune area with 'Volga' variety of mammoth wildrye clones to establish protective cover.

Volga wildrye clones (*Elymus giganteus*) provide initial and permanent protection.

Planting - Use two culms per hill, each culm/40 cm (16") long, 20 cm (8") underground and 20 cm/above ground. Begin at toe of dune on the windward edge and continue up to crest of dune. Do not select clones that have a seed head. Hills are spaced 50 cm x 50 cm (20" x 20").

- c. Time of Planting - November through February. Dig and plant when temperatures stay below 13° C. (55° F.)
- d. Fertilize with 50 kg/ha (45#/ac of actual nitrogen) when buds on short nodes at base of culms begin to grow. Ammonium sulphate preferable.
- e. Irrigate for establishment with 7.5 to 10 cms (3" to 4") about May 15 where irrigation water is available.
- f. Maintenance - Replace any blow out plants each year and fertilize weak spots.

erosion control.

- I. Effect of date of planting. Journal ASA 40:512-512
- II. Influence of density of planting. Journal ASA 40:603-609
- III. Influence of kind and amount of fertilizer.
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2. STABILIZATION BY MULCHING (LESS DESIRABLE)

Materials to use are:

- a. Gravel - .75 to 1.5 cu. meters/93 sq. m. (1 to 2 cubic yards per 1000 square feet). Use gravel of mixed sizes. (Note: single size gravel tends to sink into surface).
- b. Straw - 6.5 to 11 tons/ha (3 to 5 tons per acre). Spread and run over with a disc set straight to anchor the straw.
- c. Manure 22 - 44 tons/ha (10-20 tons per acre) may also be used. Spread uniformly over the area.
- d. A picket or brush fence 1.0 to 1.5 m. (3 to 5 feet) This is effective temporarily for a distance equal to ten times its height.

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