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PRACTICAL GUIDES FOR SEEDING GRASS ON SKID ROADS, TRAILS, AND LANDINGS, FOLLOWING LOGGING ON EAST-SIDE FORESTS OF WASHINGTON AND OREGON[1]

by

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Seeding to perennial grasses is an effective method for stabilizing soil, preventing invasion by undesirable plants, and increasing forage production on ground denuded during logging. A survey in 1948 of 52 areas seeded between 1940 and 1946 found 80 percent of the seedings to be medium or better in success, and 45 percent good or very good in success. A careful check showed no evidence that these seedings decreased subsequent regeneration to ponderosa pine.

Logging and slash disposal create bare ground. From surveys of several cutting areas east of the Cascades, it is estimated that 10 percent or more of the ground is completely denuded of vegetation during the timber harvest. This denuded ground and disturbed soil is made up of skid trails, skid roads, landings, and areas where slash has been burned. Such bare, churned-up or burned-over soil is undesirable from the standpoint of good resource management. The denuded ground should be covered with desirable types of vegetation as rapidly as possible. One of the easiest and simplest ways

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1/ Study on which these guides are based was a joint administration-research project to which J. O. Gjertson was detailed. Guidance on the project was provided by Fred H. Kennedy of the Division of Wildlife and Range Management and Joseph F. Pechanec of the Division of Range Research.

of doing this is by seeding the denuded areas to perennial grasses. The following few guides on where, what, when, and how to seed, outline procedures to be used.

WHERE TO SEED

Nearly all ground within the ponderosa pine zone that is totally denuded by skidding, road construction, or slash disposal can be successfully seeded. Results have generally been better in the open ponderosa pine type than in more dense mixed timber.

Only areas where ground disturbance has taken place within the previous year should be seeded. Results usually have been disappointing where areas denuded more than a year have been seeded.

Satisfactory natural revegetation has become established on ground disturbed only lightly in skidding or where root portions of native perennials still exist. Such areas need not be reseeded.

PRELIMINARY TREATMENT

Before seeding, skid roads and trails on slopes steeper than 20 percent should have small dams constructed at intervals to divert the water off the road. It might also pay to pile slash occasionally on deeply cut skid trails to form dams or diversions.

Landings and spur roads where most of the soil has been pushed in piles or out to the side should be leveled by the operator immediately after logging.

WHAT SPECIES TO SEED

Mixtures made up of 3 to 4 species of perennial grass are desirable for use in seeding denuded areas. There are two reasons why a mixture is desirable. First, the denuded ground in an area may present a wide variety of sites, from swales and bottoms with favorable soil to rocky scab ridges. Second, no one single species has all of the needed characteristics. Rapidly starting species are needed to stabilize the soil as quickly as possible. Aggressive, long-lived, well-rooted perennials are needed to prevent erosion, provide forage and keep out undesirable plants. Shade tolerance is needed because some of the denuded ground is moderately to heavily shaded.

All mixtures for use within the ponderosa pine zone or at higher elevations should be built around the use of timothy and orchardgrass. These two have been consistently the best throughout the region. They are small seeded, rapid starting, and adapted to broadcasting because the seed needs very little coverage by soil. Also, orchardgrass is very shade tolerant.

To be used with these two species are several grasses which have proved fairly good on the projects surveyed in 1948. These are:

Smooth bromegrass (Manchar strain) is slow starting but palatable, long-lived, sod-former, successful where moisture and soil conditions are good.

Tall oatgrass (Tualatin only) is a tall, relatively fast-starting prolific species.

Crested wheatgrass is a slow-starting species that has proved good on the Fremont and at the lower fringes of the ponderosa pine type. It should not be used at elevations higher than 5,000 in the Blue and Wallowa mountains, 6,000 feet in the Fremont country, and 4,000 feet in Washington.

Chewings fescue is a slow-starting, deep-rooted bunch former, generally most successful where moisture and soil conditions are good.

Two grasses which have generally done only fair are:

Slender wheatgrass which can take the place of crested wheatgrass at the higher elevations.

Canada bluegrass which is a slow starting, low-growing grass suited to soils of low fertility.

Species which have not shown up well or which have failed quite often are sweet clover, Kentucky bluegrass, big bluegrass, highland bentgrass, and red top. Some of these, under more careful trial or using better seed, may prove to be worth while, but on the basis of trials so far it does not seem advisable to include them in the mixture.

Species which have shown great promise in experimental work but which have not been adequately tried for use in seeding skid roads and landings are intermediate wheatgrass, pubescent wheatgrass, blue wildrye, alta fescue and a special strain of sheep fescue. Blue wildrye and the sheep fescue have proved very good in skid road seeding work in Montana.

Some caution should be exercised with the use of sod-forming species until more is known regarding the degree to which they prevent successful regeneration to desirable tree species. The survey conducted during 1948 failed to show any harmful effects but it is known from experience elsewhere that sod-forming species may be undesirable.

The rate of seeding should be at about 8 and not more than 10 pounds per acre, with 1 pound of timothy and 2 pounds of orchardgrass going into the mixture. The remainder should be made up of not more than two of the species cited as having proved fairly good.

Four suggested mixtures are as follows:

For drier sites

1.	Orchardgrass	2 pounds per acre
	Timothy	1 " " "
	Crested wheatgrass	5 " " "
2.	Orchardgrass	2 " " "
	Timothy	1 " " "
	Crested wheatgrass	2½ " " "
	Smooth bromegrass	3½ " " "

For more moist sites

3.	Orchardgrass	2 " " "
	Timothy	1 " " "
	Tualatin oatgrass	2½ " " "
	Smooth bromegrass	3½ " " "
4.	Orchardgrass	2 " " "
	Timothy	1 " " "
	Tualatin oatgrass	2½ " " "
	Chewings fescue or sheep fescue	2½ " " "

In making up mixtures not less than the following poundage per acre should be used for each of the following species:

Crested wheatgrass	2½ pounds
Intermediate wheatgrass	4 "
Slender wheatgrass	4 "
Tualatin oatgrass	2½ "
Smooth bromegrass	3½ "
Mountain bromegrass	4½ "
Canada bluegrass	2 "

WHEN TO SEED

Areas skidded in the winter and early spring should be seeded in the early spring. Those skidded in the summer and fall should be seeded in the late fall. In both cases, seeding should be done within one year of the time disturbance occurred.

Late fall has actually proved the best time of year to plant. At this time the soil surface is rough and fairly loose. Low temperatures do not permit germination until spring. Winter precipitation

provides ample spring moisture for germination and growth. Road conditions are usually favorable for travel into the area.

Early fall planting, even though more easily done, is risky. In many years the grass seed will germinate early in the fall and the seedlings often will subsequently be destroyed by frost heaving during the late fall, winter, or spring.

HOW TO SEED

Motorized broadcast seeders, where available, should be used. Good distribution of seed is assured on areas that lend themselves to travel with a jeep or pickup. Where steep slopes or rough terrain prevent use of jeep or truck, seed should be broadcast using a cyclone-type hand seeder. Even where the use of motorized equipment is possible, the use of the hand broadcaster is necessary to seed short spurs, burned areas, and isolated spots of denuded ground.

Both the motorized and hand broadcasters should be calibrated by trial runs to provide reasonable assurance that seed is not being wasted by too heavy application or that the rate of seeding is not too light.

Under most conditions within the region, dragging or brushing to cover grass seed is not essential for success, except on some of the drier sites. On drier portions of the Fremont and fringe types on other forests, brushing or harrowing may pay.

Brushing or harrowing may also be desirable on areas skidded during the winter or early spring but which are not seeded until late fall. Under these conditions spring and early summer rains smooth out the surface of the soil and make it quite compact.

GRAZING MANAGEMENT NEEDED AFTER SEEDING

Most of seedings made so far have been successes without complete protection from grazing.

On the other hand, several seedings have been poor or very poor in results primarily because of overgrazing and trampling the first growing season after seeding.

Where it can be conveniently arranged to provide at least partial protection for the new seedings the first year, undoubtedly it will pay to do so. This can be more easily done on sheep ranges than on cattle ranges. On cattle ranges such partial protection may be secured by placing salt away from disturbed areas, riding to keep stock from using logged areas too heavily, or changing the place where cattle are to be turned in at the beginning of the spring.

On heavily grazed cattle ranges, it may be desirable to shift to species of low palatability if it is not possible to give some protection to the seeded areas.