

# Roadside Vegetation Management in Idaho

J. E. RINARD

## ABSTRACT

The objective of roadside vegetation maintenance on Idaho's highways is to provide "a low-growing grass on the shoulder-foreslope areas and a mix of taller grasses, forbs, flowers, shrubs or trees beyond the shoulder to the right-of-way boundary." To accomplish this, vegetation establishment work is classified as landscape or functional. Landscape projects are classified as high, medium, or low level with regard to maintenance costs and are planned and maintained accordingly. Functional revegetation projects, which make up the major roadside effort in Idaho, are planned according to four climatic zones, using eight different grasses and three legumes, plus natives and additional grass varieties for problem areas. Maintenance of the functional projects is carried out through five phases from early spring to late fall and involves the coordination of spraying, blading, mowing, brush clearing, reseeding-planting, and fertilization. This program, intended to hold maintenance costs at the lowest possible level and comply with state weed laws, has resulted in an overall cost reduction in functional roadside maintenance of nearly 21 percent during the last 3 years.

Vegetation on roadsides is beneficial in controlling erosion, dust, and sedimentation. It limits the spread of undesirable weeds, while providing valuable cover for wildlife. It also creates a visual experience that tends to reduce accidents caused by driver fatigue. The policy of the Idaho Division of Highways is to promote the growth and control of as much native and other adaptable vegetation on roadsides as is compatible with safe highway use, attractive appearance, and minimum maintenance.

The objective of Idaho's roadside vegetation program is to have vegetation growing on all roadside areas where its presence is suitable. This is provided by "a low-growing grass on the shoulder-foreslope areas and a mix of taller grasses, forbs, flowers, shrubs, or trees beyond the shoulder to the right-of-way boundary." The intent is to remove undesirable vegetation (noxious weeds and excessive growers) in such a manner that there is no regrowth and at the same time assist desirable vegetation to become established and to remain vigorous. When undesirable vegetation is removed, either mechanically or chemically, the ground will not remain bare, but will reestablish with whatever species is at hand, whether good or bad. Because of this, the job is not complete until desirable vegetation is established.

The achievement of the roadside vegetation objective requires control and coordination of such activities as spraying, blading, mowing, brush clearing, reseeding-planting, and fertilization. This program is intended to hold maintenance costs at the lowest possible level and provide compliance with Idaho noxious-weed laws.

## CLASSIFICATIONS

Seeding and planting can be classified into two types: landscape and functional. Landscape is primarily for beautification; however, it has some aspects of functional. Although functional is primarily for the stability and integrity of the roadway, it has some aspects of landscape. With this in mind,

Idaho Department of Transportation, P.O. Box 7129, Boise, Idaho 83707.

Idaho has developed a multifaceted system that has proven beneficial in the planning, design, construction, and maintenance of the vegetation phases of highway projects.

In Idaho seeding and planting programs generally include only two alternatives: use of the standard dry-land seed mix or use of lawn grass seed and fully irrigate. Often the dry-land seedings are not successful and result in a poor quality turf with related undesirable weeds. Lawn grass turf seedings, although of good quality, are costly to establish and require a high degree of costly maintenance. The two primary grasses used in Idaho are sodar wheatgrass and durar hard fescue, which, if properly used, provide additional levels of turf quality to consider.

These two grasses, if planted on the proper sites as shown in the seeding guide, will do an excellent job. They will respond to irrigation water and will provide a more dense cover as the amount of water is increased. Care should be taken to avoid over-irrigation because this will cause bluegrass to invade the sodar and fescue. Proper use of these grasses provides a desirable flexibility.

It should be recognized that the extent to which cities or other agencies will, or can, go in providing proper care and maintenance of roadside areas is not always known; however, use of this plan allows the Idaho Division of Highways to determine a safe level and allows some flexibility, either up or down, should desires or capabilities change in future years. It is important that the agencies concerned determine the level of turf quality that is suitable and that they have good prospects for proper maintenance. This requires thorough discussion with the city, county, or others who may have responsibility for maintenance so that they will fully understand the alternatives and agree on the proposal.

## Landscape

The landscape classification is subdivided into high, medium, and low levels with regard to maintenance costs. The use of native plants becomes more important in designing the lower landscape levels and

functional revegetation projects. Listed in the order of decreasing cost, the following levels, if understood and used, allow the division to satisfy most needs as required based on desires and construction and maintenance resources.

#### High-Level Maintenance

High-level maintenance normally involves the seeding of a good lawn grass (usually bluegrass); installing a complete, permanent irrigation system (irrigation interval 1 to 2 weeks); frequent mowing (1- to 2-week intervals); and planting suitable flowers, shrubs, ground cover, and trees as desired. This level provides the designer the greatest flexibility in formal planning and choice of planting materials; however, construction costs are much higher and maintenance costs remain high with little flexibility over the years. At this level, cumulative maintenance costs should be expected to equal construction costs in 6 to 10 years (1).

#### Medium-Level Maintenance

Medium-level maintenance is based on the seeding of the proper primary grass; installing a permanent, minimal irrigation system (irrigation interval 2 weeks to 1 month); more frequent mowing (2-week to 1-month intervals); and native dry-land shrubs and trees as desired. This level provides the widest range of flexibility in maintenance costs. Irrigation could vary from as little as once per month to a maximum of every 2 weeks and still maintain a reasonable condition. A fairly wide selection of flowers, shrubs or trees is permitted and mowing requirements would be related to irrigation. Should the irrigation water become unavailable, the turf will not be lost, but will survive and respond when water becomes available again. Should overirrigation of the primary grass turf occur more often than 2-week intervals, blue grass would be expected to invade. At this level the cumulative maintenance costs should be expected to equal the construction costs in 10 to 15 years (1).

#### SOUTHERN IDAHO TYPE SITES

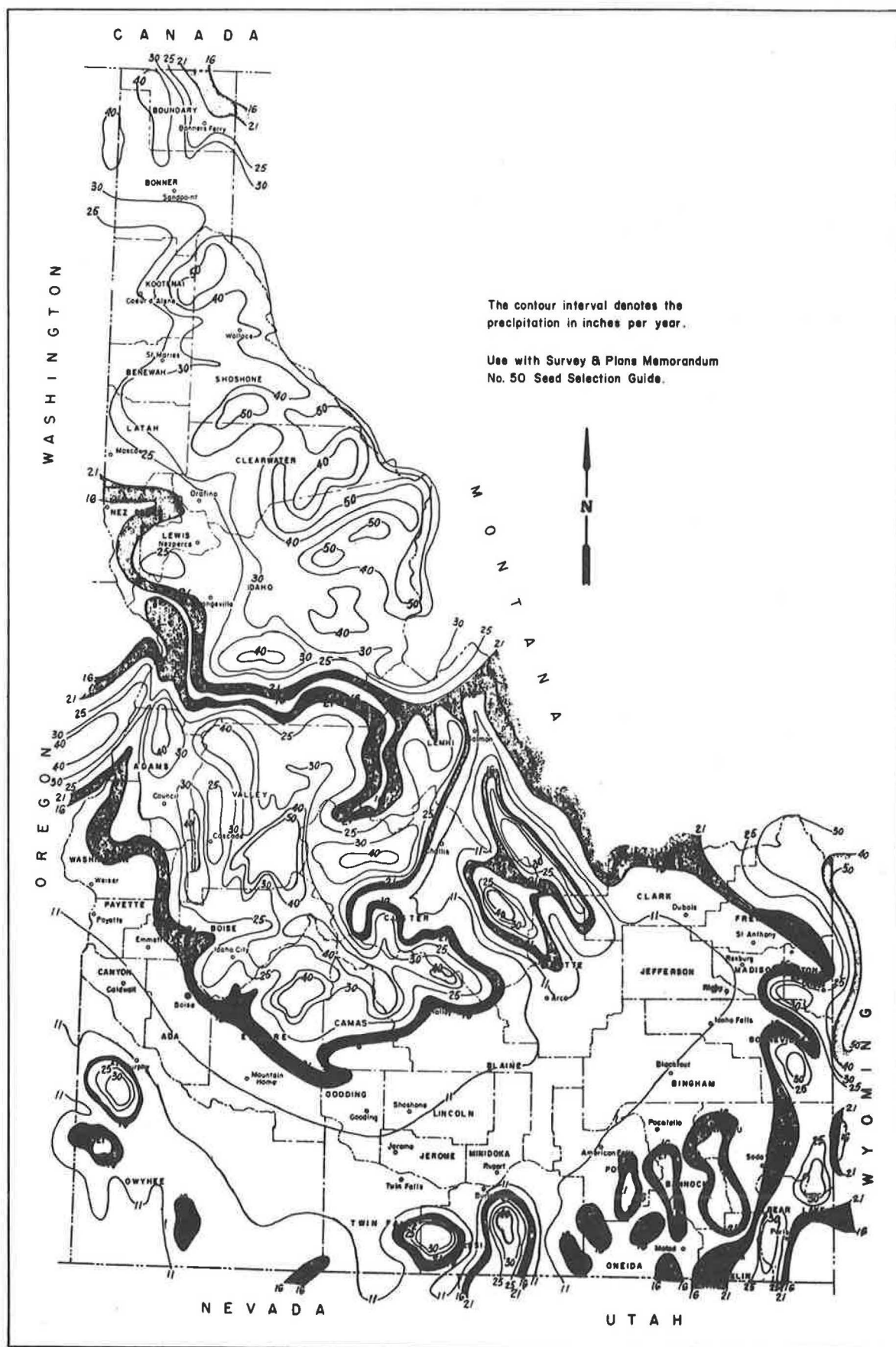
Mix No. 1 8-12 in. Mean Annual Precipitation (MAP)	Bulk Seed Per Acre, lb
Grasses	
Sodar streambank W.G. (AGRI)	9
Siberian W.G. (AGSI)	3
Fairway crested (AGCR)	2
Legume	
Madrid clover (MEOF)	1
Natives	
To be determined	3
Total	18
Mix No. 2 10-17 in. MAP	
Grasses	
Sodar streambank W.G. (AGRI)	9
Topar pubescent W.G. (AGTR2)	6
Fairway crested (AGCR)	2
Legume	
Ladak alfalfa (MESAL)	1
Natives	
To be determined	3
Total	21

#### NORTHERN IDAHO TYPE SITES

Mix No. 1 15-22 in. MAP	
Grasses	
Durax hard fescue (FEOVD)	7
Tegmar dwarf intermediate W.G. (AGINI)	6
Manchar smooth brome (BRIN)	3
Legume	
Ladak alfalfa (MESAL)	1
Natives	
To be determined	3
Total	20
Mix No. 2 20-in. MAP	
Grasses	
Durax hard fescue (FEOVD)	7
Meadow foxtail (ALPR)	4
Manchar smooth brome (BRIN)	3
Legume	
White dutch clover (TRRE)	1
Natives	
To be determined	3
Total	18

Note: Symbols for identification taken from U.S.F.S. "Intermountain Range Plant Symbols," 1977 and S.C.S. "Idaho Plant List," 1976.

FIGURE 1 Seeding guide.



**FIGURE 2** Seeding site map.

### Low-Level Maintenance

The lowest level of maintenance is based on seeding the proper primary grass, along with the optional use of suitable amounts and combinations of establishment water; native (dry-land) flower, shrub, and tree seed; native flower, shrub, and tree plants; and mowing.

Seeding with normal dry-land seeding methods is, of course, the lowest cost method; however, several years are usually required for a satisfactory level of growth to be developed. In view of this, it is desirable to use establishment irrigation water wherever feasible to obtain a thicker turf in a much shorter time.

Native flower, shrub, or tree seed may be included and is particularly desirable on steep slopes. This may be followed 2 or 3 years later by planting native seedlings to supplement the direct seeding. Should mowing be desired, there would be no need for the natives. In some locations, mowing could be planned for only part of the area, ideally the flatter portions. At this level of beautification, one mowing fairly late in the summer should be sufficient. Early or more frequent mowing would tend to weaken the turf.

With low-level maintenance, the cumulative maintenance costs should be expected to equal the construction costs in 20 to 35 years (1).

A variation that might be used on the two lower levels is installation of a partial irrigation system that would provide water to selected shrubs or trees. This gives a much wider choice of shrubs or trees, or both, and yet leaves maintenance of the larger turf area on the lower cost level.

### Functional

Next to low-level landscaping is functional seeding and planting. This area of functional seeding and planting is where the greatest effort is expended in Idaho.

Idaho has 64,000 linear miles of roads that service an area of 83,557 square miles, and the state highway system includes 5,000 miles of the total. State highways are found at elevations ranging from 738 to 8,701 ft above sea level, in moisture zones that range from less than 8 in. of precipitation annually to more than 50 in. The climatic diversity of the state by itself makes functional vegetation management on roadsides a challenging task. In addition, the Idaho Division of Highways has to deal with problems related to steep, rocky, disturbed areas, usually a result of highway construction.

For the functional seedlings, the state has been divided into four zones, and the seed mixes are matched with the moisture and conditions of each zone (see Figures 1 and 2). Eight different grasses and three legumes are used, and native seeds of trees, shrubs, and forbs are included where the opportunity exists for success and where their presence is suitable. Additional grass varieties are available for use in problem areas of sand or alkali soils.

In the drier areas (southern Idaho) sodar stream-bank wheatgrass is the primary grass, whereas durar hard fescue is the primary grass in northern Idaho or areas that have more than 15 in. of annual precipitation. Shoulder-foreslope grass mixes are still being developed with particular interest in short-stemmed, low-growing fire-resistance traits, and grasses that are sod formers as opposed to bunch grasses.

The primary goal is to plant the "right grasses in the right places" along roadsides. When right-of-way seedings were first seriously considered in about

1952, the author was working for the Soil Conservation Service (SCS), and part of the work was to assist the state highways with seedings. At that time, the soil conservation districts furnished seeding equipment; the SCS provided a substantial amount of seed and went right out on the roadsides and did the job. Looking back at the old letters and records concerning these efforts, it is easy to see that little was known then about selecting the right grass for the right place on the right-of-way. The objective was to get something to grow, anything, anywhere. Today a good roadside professional knows his grasses like an artist knows his paints, and he can use them in somewhat the same manner. A stage of knowledge in the use of native flower and shrub seeds has now been reached, similar to that in the use of grasses 30 years ago.

### THE IDAHO PROGRAM

The Idaho Roadside Vegetation Maintenance Program involves five phases through the season, beginning immediately following snow melt in March and April and carrying through to freeze-up in November and December. The five phases are early spring, late spring, summer, early fall, and late fall. These phases are rotated over a 3-year cycle so that the roadsides are completely treated once every 3 years. One-third of the roadsides are fully treated each year. All are partially treated each year. Herbicides are heavily relied on but the job is considered only half done when the spraying is completed.

During early spring, roadsides are seeded, planted, and fertilized. Late spring is the first spray phase with herbicides, primarily Tordon® 101, with solid spraying of the shoulder foreslopes. The summer phase involves primarily the use of 2,4-D, and in the late fall phase Tordon® 22K is used. Limited sterilizing is, as suitable, done during either spring or fall. In the late fall phase, seeding, planting, and fertilizing is again done in those areas suitable for fall operations.

Another treatment introduced during the last 3 years in the early spring phase is the use of herbicides, such as Oust® and Telar®, and growth retardants, primarily Embark®. Of course, if all the right grass were in the right places there would be no need for concern about this, but that goal will not be reached for many years. Too many roadsides are already seeded with the wrong grass in the wrong places.

During the past 3 years this maintenance program has reduced mowing costs and shoulder pulling costs by 50 percent. Elimination of excess shoulder sterilization has also reduced costs. At the same time the costs of the herbicide treatment has increased, however. An overall reduction of nearly 21 percent has occurred in roadside maintenance costs (2).

### REFERENCES

1. Idaho Surveys and Plans Manual, Section 14-760. Idaho Department of Transportation, Boise (undated).
2. Idaho Transportation Resource Management Systems (TRMS) Reports. Idaho Department of Transportation, Boise, 1982, 1983, 1984.

Reference to product brand names is for informational purposes only and is not to be construed as product endorsements by the sponsors.

Publication of this paper sponsored by Committee on Roadside Maintenance.