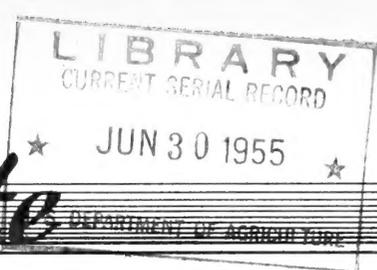


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Research Note

INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION Ogden, Utah

No. 12

September 1954

GRASS - CAFETERIA STYLE IN SOUTHWESTERN MONTANA

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In artificial seeding one must know whether a species is adapted to the site, and something about its growth habits and form. He should also know which species are palatable to stock and to what extent they are preferred over existing native forage. This paper provides some information on the relative palatabilities to cattle of seeded grasses when available on a free-choice basis. It is derived from a cooperative seeding project established in 1951 by the Beaverhead National Forest and the Northern Rocky Mountain Forest and Range Experiment Station.^{1/}

The study area is located on Dry Fawn Bench in the upper Ruby River Valley on the Beaverhead National Forest at an elevation of approximately 7,000 feet. Slopes are generally 8 to 10 percent and mostly east-northeast. Approximately 539 acres of grass, sagebrush, and timberlands lying at the heads of Dry Fawn and Wet Fawn Creeks were fenced to control livestock use. The fenced area was typical of much of the upper Ruby spring cattle range. Within this enclosure 47.8 acres were disked once in 1951 with a heavy offset disk harrow to eliminate sagebrush and 118 acres were cleared the next year with an Olson rotobeaater. The disked range was broadcast with a mixture of several grasses but the rotobeaten area was not seeded. Thirteen grasses were broadcast in 79 plots of varying shape and size (from 360 to 870 square feet) located on the lower edge of the disked area. Grasses planted were hard fescue, Russian wildrye, crested, intermediate, pubescent, slender, and western wheat, meadow brome, smooth brome (Lincoln strain), big blue, green needle, orchard, and tall oat.^{2/} Plantings of hard fescue were replicated in seven plots and the other grasses in six.

^{1/} Consolidated in 1954 with the Intermountain Forest and Range Experiment Station with headquarters at Ogden, Utah.

^{2/} Common and technical names of grasses mentioned are listed at the end of this report.

The entire area was closed to grazing by livestock for two growing seasons after planting. During the 1953 grazing season, 114 head of mixed cattle, plus an undetermined number of calves, were allowed to graze at will within the fenced area for 3 weeks from July 1 to July 22 before they were trailed to summer range. Thus, readily available to the cattle on a free-choice basis were the 13 seeded species on the 79 plots, a mixture of seeded grasses on the main seeded area, and native grasses on rotobeatn and undisturbed sites.

A measure of species preference was obtained by comparing the percent of plants of the various species grazed by the cattle. While availability and abundance are known to affect choice of various grasses by stock, it was felt that, since each species had been replicated six or seven times, and a considerable volume was available, such a comparison would give a measure of the relative preference for the various species. Ratings were made approximately 1½ weeks after grazing started and again after the cattle were removed following 3 weeks of grazing.

Soon after grazing started it became apparent that the cattle preferred almost all the seeded species over the two most common native grasses, Idaho fescue and thickspike wheatgrass. After 1½ weeks, half or more of the plants of all of the seeded grasses except hard fescue had been grazed, while only 15 percent of the Idaho fescue and 26 percent of thickspike wheatgrass plants had been used. After 3 weeks all seeded species were more heavily grazed than either of the two native grasses (table 1).

The various grasses may be classed into three fairly distinct groups based on preference by the cattle. As shown in table 1, seven species--intermediate wheatgrass, Russian wildrye, orchard, meadow brome, smooth brome, pubescent wheat, and tall oat--were most preferred. More than 75 percent of the plants of each of those species had been grazed after 1½ weeks of use. Least preferred and classed in Group III were big bluegrass, western wheatgrass, hard fescue, and the two natives, Idaho fescue and thickspike wheatgrass, each with less than 55 percent of the plants grazed. After 3 weeks of use by the cattle, the three preference groups still remained though several species had moved into another class. Green needlegrass and crested and slender wheatgrasses advanced to Group I while big bluegrass and western wheatgrass moved up to Group II. Hard fescue still remained the least preferred of the seeded species, with a little less than half the plants grazed. However, the two native grasses were still less preferred than hard fescue, with only 39 percent of the thickspike wheatgrass and 18 percent of the Idaho fescue plants grazed. It is noteworthy that relative positions of the grasses changed very little between ratings. Only pubescent wheatgrass and hard fescue changed their relative standings, the former advancing from sixth place 1½ weeks after grazing started to fourth place after 3 weeks of use, and the latter advancing from second to third least preferred.

Table 1. Relative preference by cattle for thirteen seeded and two native grass species as measured by percent of plants grazed

| Species | Percent plants grazed | |
|-------------------------|-----------------------|--------------------|
| | 1½ weeks of grazing | 3 weeks of grazing |
| <u>Seeded grasses</u> | <u>Group I</u> | <u>Group I</u> |
| Intermediate wheatgrass | 92.0 | 99.0 |
| Russian wildrye | 87.8 | 97.1 |
| Orchardgrass | 87.7 | 94.3 |
| Meadow brome | 81.3 | 91.7 |
| Smooth brome, Lincoln | 80.0 | 89.3 |
| Pubescent wheatgrass | 77.2 | 92.2 |
| Tall oatgrass | 77.0 | |
| | <u>Group II</u> | |
| Crested wheatgrass | 69.9 | 84.7 |
| Green needlegrass | 65.2 | 83.0 |
| Slender wheatgrass | 61.9 | 81.6 |
| | <u>Group III</u> | <u>Group II</u> |
| Big bluegrass | 52.4 | 73.2 |
| Western wheatgrass | 49.2 | 74.0 |
| | | <u>Group III</u> |
| Hard fescue | 25.1 | 49.0 |
| <u>Native grasses</u> | | |
| Thickspike wheatgrass | 26.0 | 39.0 |
| Idaho fescue | 14.7 | 18.0 |

Probably the ratings made 1½ weeks after grazing started more nearly represent the actual preference by cattle for the various species than ratings made later. This is so because, while there was no shortage of forage at any time during the grazing period, both seeded and native species were more abundant and available at the start of grazing than later.

The information in table 1 points out one of the inherent problems in managing artificially seeded range surrounded by native range, where the seeded grasses are considerably more palatable to cattle than the native species. In such cases cattle distribution must be carefully controlled so that the native range will be properly used without overusing the seeded range.

Two words of caution are in order at this point. First, the intensity of grazing recorded in this study is not necessarily the recommended level of use for the various species. Recommendations on level of use have not yet been formulated. Second, it should not be construed that the grasses in Groups II and III are undesirable in a seeding program or lacking in nutritive qualities.

Information on relative palatability is most valuable to a land manager when properly integrated with knowledge of species adaptability and growth habits. When so integrated, such information will enable the manager to plant grasses which will yield the most forage when he wants it. For example, intermediate wheatgrass is a highly desirable grass to plant if it is adapted to the site and if an abundance of early palatable forage is desired. If control of soil erosion is the desired objective, then other considerations than palatability, such as volume of litter produced, may be the chief criterion.

List of Grasses Mentioned in Report

| <u>Common Name</u> | <u>Technical Name</u> |
|--------------------------|-------------------------------|
| Big bluegrass | Poa ampla |
| Bromes | |
| Meadow | Bromus erectus |
| Smooth, Lincoln strain | Bromus inermis |
| Fescues | |
| Hard | Festuca ovina var. duriuscula |
| Idaho | Festuca idahoensis |
| Green needlegrass | Stipa viridula |
| Orchardgrass | Dactylis glomerata |
| Russian wildrye | Elymus junceus |
| Tall oatgrass | Arrhenatherum elatius |
| Wheatgrasses | |
| Crested, Standard strain | Agropyron desertorum |
| Intermediate | Agropyron intermedium |
| Pubescent | Agropyron trichophorum |
| Slender | Agropyron trachycaulum |
| Thickspike | Agropyron dasystachyum |
| Western | Agropyron smithii |

