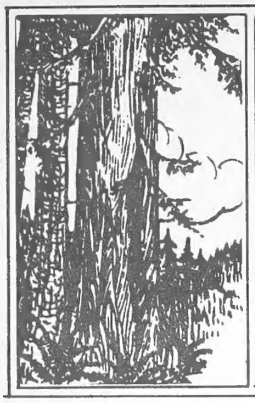

FOREST RESEARCH NOTES

U.S.DEPARTMENT OF AGRICULTURE
FOREST SERVICE
CALIFORNIA FOREST AND RANGE
EXPERIMENT STATION *

STEPHEN N. WYCKOFF, Director

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# RELATIVE RATING OF FORAGE SPECIES FOR RESEEDING FOREST RANGES IN NORTHEASTERN CALIFORNIA

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"What to plant?" is usually the first question to be asked when artificial reseeding is considered for the improvement of deteriorated range. To help answer the question, forage plants have been tested by the California Forest and Range Experiment Station on the Lassen, Modoc, and Plumas National Forests since 1946. This paper gives relative ratings of 46 species, on the basis of their performance during the first 3 years of testing. Twenty of these species are native to the United States; 26 are introductions from foreign countries. Twenty of the 46 species were rated good or better for the ponderosa pine zone, but only 3 for the Great Basin sagebrush zone.

For these tests, nursery row seedings were made in each of the 3 years at different locations in the Great Basin sagebrush zone at an elevation of about 4500 feet, and in the ponderosa pine zone at elevations of 5600 to 7500 feet. In each of the zones the sites selected for seeding were depleted dry range areas dominated by sagebrush. The results are not applicable to wet meadow sites.

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* MAINTAINED AT BERKELEY, CALIFORNIA, IN COOPERATION WITH THE UNIVERSITY OF CALIFORNIA.

The experimental areas were not cultivated after seeding but were treated in the same way as large-scale reseeding projects, including protection from livestock grazing for at least 2 years. Each species was planted in a separate 5- by 20-feet plot. The plots were replicated twice and randomized at each of the site locations. Seedbed preparation included plowing with one-way wheatland plow in the summer to eradicate the sagebrush, and light discing in the autumn to smooth the seedbed before marking the rows for hand seeding. A six-row runner-type marker, constructed of 2- by 4-inch boards set on edge and pulled by a wheel tractor, was used for making rows about 2 inches deep and 2 inches wide. The rows were spaced 20 inches apart. In making the rows, the runners firmed the soil in the bottom of the rows--an aid in retaining soil moisture. The seed was scattered in the rows by hand and covered by a single-disc grain drill or a heavy log chain dragged across the rows.

Relative ratings from 1 (the highest) to 10 (the lowest) were made for each plot toward the end of each growing season. The first-year rating was on density of stand and vigor. Thereafter, the ratings also considered forage and seed production. The relative numerical ratings were averaged and assigned adjective ratings for use in this report.

High germination and strong seedling vigor are two very important characteristics for species used in reseeding ranges. Although some native plants are well adapted to certain sites, they might not be suitable for use in artificial revegetation if germination is low and seedlings are weak. On the other hand, it should be recognized that such ratings as these give an advantage to species which produce forage quickly. Species that develop slowly and persist over a long period of time may give the highest average yield of forage, but are at a disadvantage when evaluated at the end of 3 years.

A better appraisal of the more promising species will be made after another 2 years. Larger plots now under study will also strengthen the evaluation. Then too, strains of the better species have been obtained from plant breeders or selected from native grasslands and are now under test in range plots. Therefore, the ratings given in the accompanying table may be refined. The present list, however, should prove helpful to range managers wanting to know what species to seed; it represents the best evaluation available from performance in the nursery rows.

# ADAPTABILITY OF FORAGE SPECIES
for
Reseeding Ranges in Ponderosa Pine and in
Great Basin Sagebrush Zones of Northeastern California

| Species | Ponderosa pine zone | Great Basin sagebrush zone | Native (N) or Introduced (I) |
|---|---|---|---|
| **Grasses** | | | |
| Agropyron cristatum | Good | Good | I |
| " dasystachyum | | Medium | N |
| " elongatum | Good | Medium | I |
| " inerme | | Good | N |
| " intermedium | Good | Excellent | I |
| " riparium | Good | Medium | N |
| " smithii | Poor | Poor | N |
| " spicatum | Good | | N |
| " trachycaulum | Good | Medium | N |
| " trichophorum | Good | | I |
| Agrostis alba | Poor | Failure | I |
| " alba tenuis | Medium | | I |
| Alopecurus pratensis | Good | | I |
| Arrhenatherum elatius | Poor | Failure | I |
| Bromus erectus | | Poor | I |
| " inermis | Good | Poor | I |
| " marginatus | Medium | Poor | N |
| Dactylis glomerata | Good | Poor | I |
| Elymus canadensis | Good | Medium | N |
| " glaucus | Medium | Poor | N |
| " junceus | Poor | Poor | I |
| " triticoides | Medium | | N |
| Festuca arundinacea | Good | Failure | I |
| " idahoensis | Poor | Poor | N |
| " ovina | Medium | | I |
| " rubra commutata | Medium | Poor | I |
| Hordeum bulbosum | Medium | Failure | I |
| Lolium perenne | Medium | | I |
| Oryzopsis hymenoides | | Failure | N |
| Phalaris arundinacea | Medium | | N |
| Phleum pratense | Good | Failure | I |
| Poa ampla | Good | Medium | N |
| " nevadensis | Good | Failure | N |
| Stipa lemmoni | | Medium | N |

# ADAPTABILITY OF FORAGE SPECIES
for
Reseeding Ranges in Ponderosa Pine and in
Great Basin Sagebrush Zones of Northeastern California (Cont.)

| Species | Ponderosa pine zone | Great Basin sagebrush zone | Native (N) or Introduced (I) |
|---|---|---|---|
| **Legumes** | | | |
| Astragalus cicer | Good | | I |
| " falcatus | Medium | | I |
| Lotus americanus | Poor | Failure | N |
| " corniculatus | Good | | I |
| " uliginosus | Good | | I |
| Lupinus calcaratus | Good | Poor | N |
| Medicago sativa-falcata | Poor | Medium | I |
| Melilotus officinalis | Good | | I |
| Trifolium hybridum | Poor | Failure | I |
| " involucratum | Medium | | N |
| " repens latum | Poor | Failure | I |
| **Browse** | | | |
| Purshia tridentata | Poor | Failure | N |