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- 3) Some revisions slightly change time of N application
- 4) New methods or tests for assessment of N rate have been developed that provide field specific rate recommendations. Two examples are the Pre-Sidedress Nitrate Test for silage and sweet corn production
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- 6) Potassium rates are increased when residue is removed rather than returned such as baling wheat and grass seed straw

Native meadows

Eastern Oregon—east of Cascades

E.H. Gardner

Native meadows produce a significant portion of the hay used for winter feed in eastern Oregon. Without fertilization, an average meadow will yield approximately 1 ton of hay per acre. With proper fertilization, yields often can be increased by 2 to 3 tons, and hay quality such as protein content is improved. Native meadows fall into three broad classifications: (1) Nevada bluegrass, (2) rush-sedge-grass, and (3) rush.

Nevada bluegrass meadows respond to applications of nitrogen. Rush-sedge-grass meadows respond to a combination of nitrogen, phosphorus, and sulfur. Rush (wire grass) meadows usually are flooded for long periods and do not respond to fertilization.

Fertilized meadows usually reach optimum hay stage earlier than unfertilized meadows. Quality and protein content of early cut hay is greater than later cut hay.

Nitrogen (N)

Nitrogen is the most limiting fertilizer element in meadow hay production. In addition to increasing yield, the application of N improves hay quality such as protein content.

1. An annual application of 60–80 lb N/a has given the greatest economic return. Where a good stand of legume such as white tip clover is present, N rates may be reduced by as much as 50 percent.
2. Rates of N as high as 150 lb/a gave some increases in yield but did not give as high a return for money expended.
3. Apply nitrogen annually in late fall or early spring. The residual effect of N the year following application is small.

Phosphorus (P)

Phosphorus applied in combination with N has given increased yields on native meadows that contain a legume such as white tip clover. It also is possible, by careful fertilization and management, to increase the amount of legume in the stand, resulting in better quality hay. Nitrogen fertilizer increases the growth of grass, which competes with the legume. As indicated in the section on

N, the rate of N application may be reduced when legumes are present. Soil tests have proved fairly accurate for predicting P response on native meadows. See Table 1.

Table 1.—P fertilization rates for native meadows.

If the soil test for P is (ppm)	Apply this amount of phosphate (P ₂ O ₅) (lb/a)
0–5	60–80
5–10	40–60
over 10	0

Apply phosphorus in the late fall or early spring.

Sulfur (S)

Sulfur applications of 20–30 lb/a have stimulated legume growth in meadows in all areas except Harney County and a portion of Grant County.

Sulfur fertilizers contain S as sulfate or elemental S. Since plants absorb S as sulfate, this form is immediately available to plants. Elemental S must oxidize to sulfate in order to be available to plants.

Where S is deficient, apply sulfate annually at 20–30 lb S/a. Fine-ground (less than 40-mesh) elemental S can be applied every second year at 40–50 lb S/a.

Coarser forms of elemental S such as “popcorn” S oxidize more slowly and should be applied less frequently but at higher rates such as 100 lb S/a every 5 or 6 years.

Sulfur often is provided by other fertilizer materials used to supply N and/or P such as ammonium sulfate or ammonium phosphate sulfate (16-20-0-15). Gypsum is another source of sulfate.

Other Nutrients and Amendments

Applications of other nutrients such as potassium and magnesium and amendments such as lime have not increased yields or quality of hay on native meadows. Likewise, micronutrients such as boron and zinc have not improved hay crops.



This publication is out-of-date but may contain some useful information

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For More Information

How to Take a Soil Sample, and Why, EC 628, by E.H. Canfield (revised 1997). No charge.

A List of Analytical Laboratories Serving Oregon, EM 8677, by J. Hart (revised 1997). No charge.

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Fertilizer and Lime Materials, FG 52, by J. Hart (reprinted 1997). No charge.

You can access the above publications, as well as FG 22, *Native Meadows: Eastern Oregon—East of Cascades*, our Publications and Videos catalog, and many other publications via our Web site at eesc.orst.edu

This fertilizer guide is based on experiments and field trials conducted by C.B. Rumburg and C.S. Cooper, U.S. Dept. of Agriculture, and R.O. Peterson, Oregon State University.

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