Tall fescue is grown for turf or forage seed on a broad range of soils in western Oregon. Typical seed yield is 1,200 to 2,000 lb/acre. Higher yields do not require additional nutrients beyond amounts recommended in this guide. These recommendations, especially for nitrogen, are adequate for production of more than 2,500 lb/acre seed on sites where soil pH and drainage do not limit yield.

Research has demonstrated that plant growth regulators increase tall fescue seed yields. However, use of plant growth regulators does not increase the need for nitrogen, phosphorus, potassium, or sulfur fertilizer.

Appropriate management practices from seedbed preparation to harvest must be performed in a timely manner for optimum seed yield. Low soil pH, poor drainage, insects, diseases, and weeds all reduce seed yield. Increasing fertilizer rates when nutrients are in adequate supply will not compensate for other limiting factors.

Soil testing is recommended to determine nutrient availability. Sample and analyze soil before planting to provide a basis for lime, phosphorus, potassium, calcium, and magnesium application. A single sample should represent a single soil type, or the same management practices in a field, and should not exceed 40 acres.

If a tall fescue field remains in production for more than 4 years, sample soil after the third year, especially if you bale the straw. Local Oregon State University Extension Service offices can provide additional information, including the publications *A List of Analytical Laboratories Serving Oregon*, *Monitoring Soil Nutrients Using a Management Unit Approach*, and *Soil Test Interpretation Guide*. (See “For more information,” page 3.)

Nitrogen (N)

Nitrogen recommendations in this guide are in addition to the nitrogen supplied by the soil. Soil typically supplies 50 to 100 lb N/acre annually, depending on soil type and stand age. Soil nitrogen supply is usually highest after tillage, about 100 lb N/acre for the first 2 years of a stand, decreasing to about 50 lb N/acre in subsequent years.

Poorly drained soils with more than 5 percent organic matter supply more nitrogen than well-drained soils with lower organic matter. Use lower nitrogen rates for poorly drained soils, as these soils have shown an erratic response to higher rates.

New seeding

Apply 20 to 40 lb N/acre at seeding. If nitrogen is banded at planting, at least 1 inch of soil should separate the seed from the fertilizer so the fertilizer does not delay crop emergence. If charcoal seeding is used, nitrogen may be included in the charcoal solution.

Established stand

Post-harvest residue management does not alter nitrogen fertilizer need. Regardless of whether the straw is removed, chopped back, propane burned, or open field burned, tall fescue fields have a similar nitrogen requirement in typical 3- to 4-year rotations.

Fall application

Fall nitrogen is necessary to increase the number of reproductive tillers and is important for optimum seed yield. In OSU on-farm field tests, fall nitrogen increased seed yield by an average of 170 lb/acre compared to no fall nitrogen. Apply 30 to 40 lb N/acre in early October. Fall nitrogen rates higher than 40 lb N/acre did not increase seed yield in field tests as long as adequate nitrogen was applied in the spring.

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Spring application

Spring nitrogen application commonly increases seed yield 300 to 900 lb/acre compared to no spring N application. Optimum tall fescue seed yield typically can be produced by applying 90 to 140 lb N/acre as soil drains and spring growth starts, usually beginning in March. Lower rates of nitrogen are suggested for the poorly drained and higher organic matter soils of the Willamette Valley. Nitrogen rates below 90 lb N/acre produced top seed yields in 50 percent of the sites in on-farm research from 1998 to 2000. However, only 10 percent of the sites responded with top seed yield when nitrogen application was above 135 lb N/acre.

Although not essential for optimum seed yield, a split nitrogen application is recommended for uniformity and ease of management, to accommodate crop uptake, and to provide flexibility in avoiding unfavorable weather conditions. The final nitrogen application should occur before mid-April.

Do not apply nitrogen to fields with standing water. Nitrogen applied when soils are saturated and plants are yellow will not promote growth.

Phosphorus (P)

Compare the results of a soil test that uses the Bray method for phosphorus to the values in Table 1 to determine the rate of P₂O₅ to apply for a new seeding or established stand.

When banding phosphorus at planting, at least 1 inch of soil should separate the seed from fertilizer. For established fields, phosphorus can be applied at any time.

Table 1.—Phosphorus fertilizer application rates for tall fescue based on a soil test using the Bray extractant for determination of plant-available P.

<table>
<thead>
<tr>
<th>If soil test* for P is (ppm)</th>
<th>New seeding (lb/acre)</th>
<th>Established stand (lb/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–15</td>
<td>40–60</td>
<td>30–40</td>
</tr>
<tr>
<td>16–25</td>
<td>40–60</td>
<td>0</td>
</tr>
<tr>
<td>over 25</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Bray P1

Potassium (K)

Compare the results of a soil test that uses the ammonium acetate extraction for potassium to the values in Table 2 to determine the K₂O rate. When banding potassium at planting, at least 1 inch of soil should separate the seed from fertilizer. Do not exceed 30 to 40 lb K₂O/acre when banding potassium with seed at planting. A banded application of N plus K should not exceed 90 lb/acre total nutrients (not fertilizer material). For established fields, potassium can be applied anytime.

Table 2.—Potassium fertilizer application rates for tall fescue based on a soil test using the ammonium acetate extractant for determination of plant-available K.

<table>
<thead>
<tr>
<th>If soil test* for K is (ppm)</th>
<th>New seeding (lb/acre)</th>
<th>Bale Burn/chop (lb/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–100</td>
<td>200–250</td>
<td>150–200</td>
</tr>
<tr>
<td>101–150</td>
<td>100–200</td>
<td>100–250</td>
</tr>
<tr>
<td>151–200</td>
<td>30–40</td>
<td>50–100</td>
</tr>
<tr>
<td>over 200</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Ammonium acetate

Sulfur (S)

A spring sulfur application of 10 to 15 lb/acre is preferred, but sulfur also can be applied in the fall.

Micronutrients

Seed yield increases from micronutrient applications generally are not expected in western Oregon. Although soil test boron (B) levels normally are low (less than 0.2 ppm), seed yield increases from boron application have been limited and inconsistent. Tissue and soil test boron have risen with a soil boron application. A single application of 1 lb B/acre will increase tissue boron for several years.

Zinc (Zn) usually is adequate for grass seed production when the DTPA soil test is above 0.6 ppm. If the soil test is below 0.6 ppm, apply 1 to 5 lb Zn/acre on a trial basis.

Lime

Stand establishment can be marginal or even fail if soil pH is below 5.0. When soil pH is less than 5.5, lime is recommended. Use Table 3 (page 3) to determine the lime application rate based on the SMP buffer. Do not exceed 5 tons/acre in a single lime application even if the SMP lime requirement is greater.

For best results, mechanically incorporate lime during seedbed preparation. Topdressing lime is not as effective as incorporation. Topdressing lime without incorporation raises soil pH in only the surface inch of soil and will not produce changes in plant growth for at least 1 year after application. Topdressed lime applications should not exceed 1 to 2 tons/acre.
Table 3.—SMP buffer lime requirement for tall fescue.

<table>
<thead>
<tr>
<th>SMP buffer</th>
<th>5.6 (tons/acre)</th>
<th>6.0 (tons/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.8–5.0</td>
<td>6–5**</td>
<td>8–7**</td>
</tr>
<tr>
<td>5.1–5.3</td>
<td>5–4</td>
<td>7–6</td>
</tr>
<tr>
<td>5.4–5.6</td>
<td>4–3</td>
<td>6–4</td>
</tr>
<tr>
<td>5.7–5.9</td>
<td>3–2</td>
<td>4–3</td>
</tr>
<tr>
<td>6.0–6.2</td>
<td>2–1</td>
<td>3–2</td>
</tr>
<tr>
<td>6.3–6.5</td>
<td>0</td>
<td>2–1</td>
</tr>
<tr>
<td>over 6.5</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*The combination of calcium carbonate equivalent, moisture, and fineness determines lime score. Lime application rates are adjusted for score. Rates in Table 3 are based on 100-score lime. Lime score is legally required for all materials marketed as “liming materials” in Oregon. For more information about lime score and liming materials, see FG 52-E, Fertilizer and Lime Materials Fertilizer Guide.

**The higher lime rate is required for the lower buffer test reading.

Calcium (Ca) and magnesium (Mg) exist in the soil in adequate quantities when soil pH is above 5.5. For acidic soil with less than 0.5 meq/100 g soil or 60 ppm magnesium, apply 1 ton dolomite/acre. Dolomite and lime have approximately the same capability to neutralize soil acidity and increase soil pH. An alternative to dolomite is to broadcast 30 lb Mg/acre annually. Compare the cost before choosing a magnesium source.

Use of most common nitrogen fertilizers increases surface soil acidity and lime need. Urea and other ammoniacal nitrogen sources acidify soil approximately 0.1 pH unit for each 100 lb N/acre. For example, if nitrogen is applied at the rate of 140 lb/acre, the soil pH will decrease by approximately 0.14 pH unit. If 140 lb N/acre is used for 3 years, soil pH will decrease approximately 0.4 pH units.

Thus, the use of nitrogen fertilizer beyond crop need has a double cost. The first cost—the nitrogen fertilizer itself—is not offset by increased seed yield or economic return. Second, the additional nitrogen acidifies soil which then requires additional lime to raise the soil pH. Application of 50 lb N/acre above crop need will require an additional 0.3 ton lime/acre in 3 years.

For more information
OSU Extension publications
Many OSU Extension Service publications may be viewed or downloaded from the Web. Visit the online Publications and Videos catalog at http://extension.oregonstate.edu

Copies of many of our publications and videos also are available from OSU Extension and Experiment Station Communications. For prices and ordering information, visit our online catalog or contact us by fax (541-737-0817), e-mail (puborders@oregonstate.edu), or phone (541-737-2513).


A List of Analytical Laboratories Serving Oregon, FG 528 (revised 2002).

Monitoring Soil Nutrients Using a Management Unit Approach, PNW 570-E (October 2005).


Other publications

