

The following fertilizer guidelines are based on research conducted by the University of Idaho and other land-grant institutions in the western United States. The guidelines are based on relationships between soil test data and yields of oats. The suggested fertilizer rates are designed to produce above-average yields if other factors

Table 2. Nitrogen needed for cereal straw (residue) breakdown.

Residue	N need
(tons)	(lb/acre)
0	0
0.5	7.5
1	15
2	30
3	45
4	50
More than 4	50

Note: One ton of residue is produced for each 20 bu of wheat or 1,400 lb of barley grain produced.

Nitrogen credit from previous legume crop—If the previous crop was a legume (peas, chickpeas, alfalfa, clover, birdsfoot trefoil, or lentils), the residue constitutes a small nitrogen credit. This credit is much smaller for a spring-seeded crop such as oats because at least 60 percent of the legume residue has already broken down and the resulting plant-available N will be accounted for in a soil test. The N credit value for the previous legume can

Phosphorus

Oats have a relatively low phosphorus (P) demand, but an adequate amount must be available for use by the plant (Table 6). Thus, if the soil level of P is low, the crop will respond to applied P.

If your soil contains more than 4 ppm based on the NaOAc soil test method (or > 40 ppm using the Bray I method or > 12 ppm using the NaHCO₃ method) additional fertilizer P is not needed. However, if you are using reduced tillage you may apply up to 30 pounds P₂O₅ in a band. This band containing P should be placed either below or with the seed at planting.

Phosphorus should be either banded or incorporated into the seedbed before or at planting. Broadcast-plowdown, broadcast-seedbed incorporated, and drill-banding are commonly used methods of application. Drill-banding P is usually the most efficient application method, allowing placement with, below, or to the side of the seed. Choose whichever application method is most convenient. Note: If the P material banded with the seed contains N, do not apply more than 20 pounds N per acre.

Table 6. Phosphorus fertilizer rates for oats based on a soil test.

Soil test P (0 to 12 inches) ¹	Application rate
0-4 ppm	30-40 lbs P ₂ O ₅ /acre
5-10 ppm	15-20 lbs P ₂ O ₅ /acre
11-15 ppm	10-15 lbs P ₂ O ₅ /acre
16-20 ppm	5-10 lbs P ₂ O ₅ /acre
21-40 ppm	0-5 lbs P ₂ O ₅ /acre
>40 ppm	0 lbs P ₂ O ₅ /acre

- The ammoniacal forms of N (ammonium and ammonia) do not leach as readily as nitrate. When temperature and moisture are favorable for plant growth, however, ammoniacal N and urea are quickly converted to the nitrate form at temperatures above 50°F. Thus, N applied in the spring, regardless of its form, is subject to leaching in areas of heavy precipitation.
- Starter or pop-up fertilizers have had limited success. Starter fertilizers have been most effective when soils were cold and root growth could be stimulated by a readily available supply of both P and N.
- Avoid banding high amounts of fertilizer close to the seed. High amounts of N and K can result in salt damage during germination.
- Fall N fertilization for spring cereal crop production is acceptable as long as the risk of groundwater contamination is not high based on the USDA-NRCS Idaho Nutrient Transport Risk Assessment (INTRA) model.
- Banding fertilizer improves N and P use efficiency. Consequently, if applying N, P, or both in a band, cut the recommended fertilizer application rates by 10 to 15 percent.
- Lower soil disturbance in reduced tillage systems results in lower soil temperature, which in turn reduces organic matter mineralization rates. Consequently, N fertilization rates are often slightly higher in reduced tillage systems.

Further reading

BUL 704, *Soil Sampling*, \$2.00

CIS 811, *The Relationship of Soil pH and Crop Yields in Northern Idaho*, 35 cents.

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CIS 447, *Alfalfa*

CIS 453, *Winter Wheat*

CIS 785, *Winter Rapeseed*

CIS 788, *Bluegrass Seed*

CIS 815, *Blueberries, Raspberries, and Strawberries*

CIS 820, *Grass Seedings for Conservation Programs*

CIS 826, *Chickpeas*

CIS 851, *Legume and Legume-Grass Pastures*

CIS 853, *Grass Pastures*

CIS 911, *Northern Idaho Lawns*, also available in print for \$1.00

CIS 920, *Spring Barley*

CIS 954, *Winter Barley*

CIS 1012, *Spring Canola*

CIS 1083, *Lentils*

CIS 1084, *Spring Peas*

CIS 1101, *Soft White Spring Wheat*

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