

Crop Production and Soil Management Series



FGV-00442

Field Crop Fertilizer Recommendations For Alaska

CEREAL GRAINS

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CONTENTS

Application Method.....	1
General Recommendations.....	2
Southcentral Alaska	2
Interior Alaska	2

Spring grains can be grown on a wide range of Alaskan soils. In addition to requiring good drainage and reasonable tilth, soils should be tested for fertility and pH. Fertilizer application rates should be based on nutrient soil test levels; selecting grain species (i.e. barley vs. oats) must take soil pH into consideration.

The fertilizer recommendations that follow are for spring barley, oats, and wheat grown for grain. Cereals grown for hay or silage are included in Extension Publication FGV-00149A, *Field Crop*

Fertilizer Recommendations for Alaska—Forage Crops. The recommendations are based on low soil test levels, are specific for the areas indicated, and may vary somewhat for areas outside those designated, depending upon soil characteristics and climate.

APPLICATION METHOD

Banding the fertilizer in or adjacent to the row is preferred over broadcast application and mechanical incorporation for most row crops, including small grains. A portion of the crop's nutrient requirement may be banded at planting as a starter to promote early vegetative growth. In other situations, the total nutrient requirement may be banded at planting.

The possible advantages of banding versus broadcast application include: 1) increased efficiency of nutrient uptake resulting from higher local concentration and minimum soil contact particularly for phosphorus (P); 2) high concentration near the roots may stimulate root growth and nutrient uptake

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in cold soils; 3) minimizes nutrient availability to weeds and allows the crop to get ahead of weeds and other pests; 4) may promote earlier maturity in small grains; and 5) planting and fertilization are combined in one operation.

A potential disadvantage may result from placing the band too near the seed reducing germination or emergence from high salt or from ammonia burn. Nitrogen (N) and potassium (K) constitute the greatest hazard, while P poses little risk. This is fortunate since the greatest efficiency advantage from banding is with P.

As a rule of thumb, rates applied with the seed should not exceed 30 lb N/a or 60 lb N+K₂O/a for N sources other than urea. Not more than 10 lb urea-N/a (22 lb urea/a) should be applied with the seed. There are no restrictions for banding P with the seed.

Situations will arise when required rates (Table 1) exceed the safe limits for banding with the seed. Potassium can be broadcast as muriate or sulfate of potash and incorporated prior to planting. Additional N should also be broadcast and incorporated prior to planting. Some grain drills are equipped to band fertilizer to the side of the row not in contact with the seed. For those situations, all of the fertilizer may be applied in the band.

GENERAL RECOMMENDATIONS

Southcentral Alaska

Many soils in the Matanuska and Susitna Valleys and on the Kenai Peninsula have native pH values less than 5.5. Barley and wheat generally do not perform well in that range, particularly where free aluminum is present in the soil solution. For grain, an early maturing oat variety such as Toral or Nip is recommended.

Table 1. Fertilizer recommendations for small grains grown in Southcentral Alaska.*

Practice	N	P ₂ O ₅ lb/a	K ₂ O
New Ground	60	100	30
Continuous Grain	60	60	30**
Grain following fallow	40	40	20
Grain following potatoes	10	20	10

* Rates listed are for band application of P₂O₅ and K₂O. Rates should be increased 25 percent for broadcast application.

** Potash rates assume the straw remains on the field. If straw is removed, increase the rate by 50% the following year.

Small grains are members of the grass family and will respond to N, however, since small grains generally tend to have low stalk strength, too much N may result in lodging. Additionally, high N rates delay grain maturity that, coupled with

short growing season, may result in crop loss. Since southcentral Alaska's climate tends to be cooler and wetter than Interior Alaska, even greater care should be taken to ensure adequate, but not excessive N rates.

Interior Alaska

Table 2 summarizes fertilizer recommendations for the Tanana Valley (including Fairbanks and Delta Junction), the Yukon River Valley, and the Copper River Valley. These regions tend to have higher soil pH values, therefore grain selection for acid tolerance is less critical. These regions also have warmer and drier growing conditions compared to Southcentral Alaska, plus grains

generally require higher N rates for maximum production and are less prone to lodging.

The soils of this region have a lower P fixation capacity and greater K supplying capacity than those of Southcentral Alaska and lower rates of P and K are generally required. However, response to sulfur (S) has been obtained in the Delta area and is recommended in continuous grain rotation.

Table 2. Fertilizer recommendation for small grains grown in Interior Alaska.*

Practice	N	P ₂ O ₅	K ₂ O	S
		lb/a		
New Ground	80	80	40	10
Continuous Grain	80	40	20	10
Grain Following Fallow	60	40	20	10

* Rates listed are for band application of P₂O₅ and K₂O. Rates should be increased by 25% for broadcast application.

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