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Idaho
Fertilizer
Guide

ONIONS

The following fertilizer guidelines are based on relationships established between University of Idaho soil test and crop yield response. The fertilizer rates suggested are based on research results and are designed to produce above average yields if other factors are not limiting production. Thus, the fertilizer guide assumes use of good crop management practices.

The suggested fertilizer rates will be accurate for your field provided (1) the soil samples represent the area to be fertilized, and (2) the crop history information supplied is complete and accurate.

NITROGEN (N)

Idaho onion fields may respond to some fertilizer nitrogen. The N rate used can have a marked effect on the yield of onion crop along with other management factors.

Nitrogen rates required depend upon some of the following factors: preceding crop, N carry-over from the preceding crop, plant population, crop residues plowed down, soil type and leaching losses from over-irrigation.

The nitrogen guide rates which follow indicate an application range. High rates are suggested for growers already producing 700 to 800 cwt/acre and where soil or crop management is not a limiting factor.

Nitrogen Soil Test

A nitrogen soil test can evaluate the carry-over from heavily fertilized row crops such as sugar beets, potatoes or onions. Since nitrate nitrogen ($\text{NO}_3\text{-N}$) is mobile, the soil samples should represent solid depths of 0 to 12 inches and 12 to 24 inches.

The soil values in Table 1 represent the sum of the nitrate nitrogen and ammonium nitrogen (NH_4) in the top 2 feet of soil by 1 foot increments. (Multiply ppm x 4 to give pounds N/acre.) In the absence of soil test information, crop history may be used to approximate nitrogen needs (Table 2).

PHOSPHORUS (P)

Onions may respond to phosphorus fertilizer if soil levels are low. The soil test is based on extractable phosphorus present to depths of sampling — either plow depth (0 to 9 inches) or 0 to 12 inches. Table 3 shows rates of P to apply for different soil test levels.

POTASSIUM (K)

Onions require medium levels of available soil potassium. Soil levels and rates of fertilizer needed are shown in Table 4.

Table 1. Nitrogen fertilizer guide based on N soil test.

Total soil test N (ppm) (0 - 24" depth)	N application (16. N/acre)*
0 - 10	120 - 80
10 - 20	79 - 39
20+	0

* Add 15 pounds N for each ton of grain straw or non-legume residue plowed under up to 50 lb. N/acre.

Table 2. Nitrogen fertilizer guide based on previous crop.

Previous Crop	N Application (lb. N/acre)
Grain & residue	120
New land	80
Row crop	40
Beans, peas or alfalfa stubble	0

Table 3. Phosphorus fertilizer based on soil tests.

Soil test inches soil depth		Apply pounds per acre	
0-9	0-12		
Phosphorus (P) ppm*		P_2O_5	(P)
0-4	0-3	240	(106)
5-8	4-6	160	(71)
9-12	7-10	80	(35)
12+	10+	0	(0)

* Soil extractant for P is NaHCO_3

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Table 4. Potassium fertilizer rates based on soil tests.

Soil test inches soil depth		Apply pounds per acre	
0-9	0-12	K ₂ O	(K)
Potassium (K) ppm *			
0-50	0-38	240	(200)
51-100	39-75	160	(133)
101-125	76-94	80	(66)
+ 125	+ 94	0	(0)

* Soil extractant for K is NaHCO₃

MICRONUTRIENTS

Zinc — Onions are sensitive to low zinc levels in the soil. When soil test for zinc is below 0.8 ppm in the plow layer or 0.6 ppm at 0 to 12 inches soil depth or where land leveling has exposed white, limey subsoil, apply zinc fertilizer at a rate which will supply 10 pounds of metallic zinc per acre.

Other micronutrients — "Shotgun" applications of micronutrient mixtures containing boron, manganese, iron and copper "for insurance" have not been shown to be responsive or economical and are not suggested.

GENERAL COMMENTS

1. Fertilizer applied near time of plant need is used most efficiently. However, time of fertilizer application and placement is largely a matter of personal preference, convenience and equipment availability.

2. Nitrogen applied with irrigation water is an effective means of supplementing the crop during the growing season. Do not use aqua or anhydrous ammonia in sprinkler system application.

3. Over-irrigation and nitrogen leaching are a hazard on sandy and light-textured soils and may require use of high rates of nitrogen or mid-season applications to supply the crop needs.

4. Irrigation practices and weed, insect and disease control significantly influence the efficiency and effectiveness of your fertilizer applications and your ultimate crop yield.

5. Fertilizer materials such as phosphorus, potassium and zinc should be thoroughly incorporated by plowing or banding. These materials can be effectively fall-applied.

6. High rates of nitrogen fertilizer are toxic to young onion plants and should be mixed into the soil at the 0 to 8 inch depth or banded at least 6 inches to the side of the row.

If you have questions regarding the interpretation of this information, please contact your County Extension Agent.

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