

**Oat Fertility Trial at Minot**

2019 and 2020 Combined Means

**Summary:** The main objective of this trial was to observe and document the effects of applied fertilizers on agronomic factors, seed quality and grain yield. Data from both years was combined and is presented in the table above. Residual soil fertility analysis did not indicate deficiencies in phosphorus, potassium, chloride or sulfur, however, nitrogen levels were relatively low (less than 30 lbs/A). Fertilizer treatments were applied between rows during planting. Growing conditions for both years were fairly similar with mild temperatures and below normal precipitation. Results did not indicate any statistical differences between treatments for any agronomic or seed quality factors. NDVI ratings were collected with a hand held "GreenSeeker" instrument at flag leaf and those ratings were strongly correlated with grain yield. Grain yields tended to increase with increasing rates of nitrogen, however, they tended to peak and level off at the 100 pound per acre rate. The application of UAN during the late boot growth stage did not significantly enhance seed quality or grain yield and therefore would not be a recommended practice. Applications of AMS and potash showed no enhanced effect on agronomic factors, seed quality or grain yield.

Fertility Treatment	Heading Date	Plant Height	NDVI	Test Weight	1000 KWT	Grain Yield
	DAP <sup>1</sup>	inches	0-1 <sup>2</sup>	lbs/bu	g	bu/A
75 lbs total N/A* applied in a mid-row band at planting	58	33	0.66	36.3	31.4	105.9
100 lbs total N/A applied in a mid-row band at planting	58	34	0.68	36.1	32.1	110.5
125 lbs total N/A applied in a mid-row band at planting	58	34	0.70	36.4	31.5	112.5
150 lbs total N/A applied in a mid-row band at planting	58	35	0.71	36.1	31.3	113.1
75 lbs total N/A at planting + 20 gal UAN/A late boot	58	33	0.68	36.3	31.5	108.4
50 lbs/A AMS applied in a mid-row band at planting	58	33	0.67	36.1	31.3	103.2
50 lbs/A Potash applied in a mid-row band at planting	58	33	0.64	36.6	32.3	98.1
Trial Mean	58	34	0.68	36.3	31.6	107.4
C.V. %	10.8	10.8	11.1	4.9	7.1	11.0
LSD 0.05	NS	NS	NS	NS	NS	9.6

\*Total N = residual soil N + legume N credit + applied N (urea)

<sup>1</sup> Days After Planting

<sup>2</sup> NDVI: An indication of photosynthetic activity which is strongly associated with yield.

NS = no statistical difference between fertility treatments.

Variety: Hayden

Seeding Rate: 1 million PLS/A

Previous Crop: soybean

Tillage System: no-till

Soil Type: Williams Loam