Dry Bean Nitrogen Fertility Trial

Trial ID: 2020-DBN01 – R.M. of Norfolk Treherne

Objective: Quantify the agronomic and economic impacts of nitrogen fertilizer rates in dry beans

Summary: Nodulation declined as nitrogen rate increased. The 0 and 35 lb N/ac treatments yielded significantly greater than the 105 lb N/ac treatment. The yield of the 70 lb N/ac treatment was not significantly different from yield at the other rates. Nitrogen fertilization was not economic at this trial.

Trial Information

Treatment	0 vs 35 vs 70 vs 105 lb N/ac
Soil Texture	Loamy Fine Sand
Previous Crop	Corn
Tillage	Conventional
Spring Soil N	34 lb/ac (0-24")
Seeding Date	June 2
Variety	Vibrant Pinto
Seeding Rate	77 000 seeds/ac
Row Spacing	20"
Plant Stand @ VC	60 000 plants/ac
Harvest Date	September 11

Nodulation†

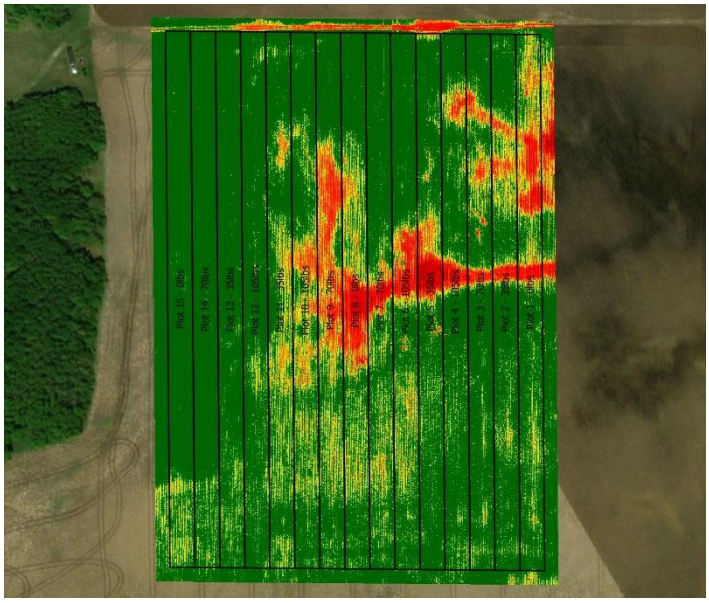
	Average Nodulation Rating @R2†
0 lb N/ac	3.6
35 lb N/ac	3
70 lb N/ac	1.1
105 lb N/ac	0.83

† 0 = no nodules, 1 = Poor (<5/plant), 2 = Fair (<10/plant), 3 = Good (<20/plant), 4 = Excellent (>20/plant)

Soil Test N

Treatment	0-24" Spring (lb N/ac)	0-24" Fall (lb N/ac)
0 lb N/ac	38	42
35 lb N/ac	34	34
70 lb N/ac	31	26
105 lb N/ac	34	26

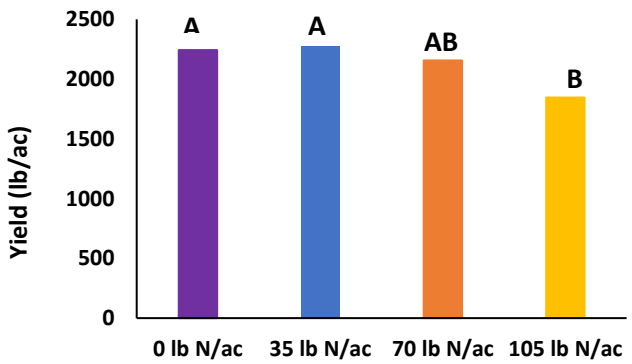
Field NDVI Image July 25



Precipitation (mm)

	May	June	July	August
Normal	58	77.1	76.5	58.7
Rainfall	42.2	40.2	70.7	20.3

Yield by Treatment



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T 204 745.6488
www.manitobapulse.ca

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Overall Yield & Economics

	Mean (lb/ac)	Cost ǂ	Change in Profit/ac (@ dry bean price of $0.30-$0.35/lb) ǂǂ
0 lb N/ac	2243		
35 lb N/ac	2270	$16/ac	
70 lb N/ac	2156	$32/ac	
105 lb N/ac	1846	$48/ac	0 lb N/ac → 105 lb N/ac: -$167 to -$188/ac 30 lb N/ac → 105 lb N/ac: -$159 to -$180/ac
P-Value	0.0172		
CV	13%		
Significance	**Yes**	**Economic**	**No**

ǂ Based on estimated urea cost of $472/MT, from an MB Ag survey of retailers

ǂ ǂ Change in profit/ac is the difference between the change in income/ac, from a significant difference in yield, and the change in cost/ac with increasing N rate. Change in profit/ac is presented as a range across dry bean prices of $0.30/lb to $0.35/lb