Field Pea Seeding Rate Effects on Yield and Various Agronomic Traits in Northeastern North Dakota, 1997-1999.

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Field pea planting rate trials were conducted at the Langdon Research Extension Center from 1997-1999 and off-station locations in Nelson and Towner counties in 1998 and 1999. The objective of the studies was to evaluate seeding rate effects on yield and other agronomic traits of field peas across northeastern North Dakota. The cultivar 'Integra' (yellow-cotyledon) was sown at six seeding rates ranging from 150,000 to 400,000 pure live seed (pls)/acre in a randomized complete block design with four replications at each location. Individual plots were 7 – 6 inch spaced rows x 16 feet long. Stand counts were taken on each plot after emergence. Planting dates ranged from April 30 to May 25 across the locations. Other production practices were followed according to NDSU recommendations.

Maximum yields were obtained at 300,000 and 350,000 pls/a at 5 of the 7 locations. When averaged across locations, the 300,000 pls/a planting rate had the highest yield but was not significantly different from the 250,000, 350,000 or 400,000 pls/a seeding rates (Table 1). Stand counts generally increased with seeding rates but varied among locations (Table 2). Percent emergence was highest at the 150,000 and 200,000 pls/a seeding rate. This observation of higher survival rates at the lower seeding rates has been seen in other crops and may be due to self thinning. Days to maturity (Table 3) increased at the lower seeding rates. Seeding rate effects on days to flower, vine length, lodging, test weight and seeds/pound were all non-significant (Table 4).

Table 1. Seeding rate effects on field pea yield across several locations, 1997-1999.

	Yield (bu/a)							
Planting Rate Seeds/Acre	L97	L98	L99	N98	N99	T98	T99	7-site Avg
150,000	65.2	68.0	54.2	48.6	49.7	56.1	39.9	54.5
200,000	60.3	67.6	55.3	49.0	50.0	56.6	41.2	54.3
250,000	62.1	73.5	62.1	48.1	50.6	59.3	47.7	57.6
300,000	63.6	74.4	65.6	49.4	54.2	63.1	49.8	60.0
350,000	62.4	71.1	64.1	49.2	51.5	68.9	51.5	59.8
400,000	59.8	69.9	65.8	46.7	48.9	66.7	50.2	58.3
LSD 5%				5.6				3.2

L=Langdon, N=Nelson County, T=Towner County

Table 2. Seeding rate effects on field pea stand count across several locations, 1997-1999.

Planting Rate		Stand Count (plants/ft^2							7-site	Avg %
Seeds/Acre	Seeds/ft^2	L97	L98	L99	N98	N99	T98	T99	Avg	Emergence
150,000	3.4	3.3	4.1	2.3	3.6	2.7	3.9	2.4	3.2	94
200,000	4.6	4.1	4.6	3.7	5.5	3.4	4.7	2.4	4.1	89
250,000	5.7	5.6	5.6	3.0	5.1	4.9	5.5	3.1	4.7	82
300,000	6.9	7.3	7.0	4.1	6.5	4.3	7.8	4.0	5.9	86
350,000	8.0	7.6	8.5	4.5	8.0	5.9	7.5	4.2	6.6	83
400,000	9.2	9.6	9.0	5.0	10.0	5.8	8.7	3.7	7.4	80
LSD 5%					1.4				0.9	

L=Langdon, N=Nelson County, T=Towner County

Table 3. Seeding rate effect on field pea days to mature at Langdon, 1997-1999.

Planting Rate	Days to Mature			
Seeds/Acre	L97	L98	L99	3-site Avg.
150,000	86	94	98	93
200,000	85	94	97	92
250,000	84	94	97	92
300,000	84	94	97	92
350,000	83	94	97	91
400,000	82	94	96	91
LSD 5%		0.9		1.2

L=Langdon

Table 4. Seeding rate effect on various agronomic traits of field pea averaged across several locations, 1997-1999.

Planting Rate Seeds/Acre	Days to Flower	Plant Height (inches)	Test Weight (lbs/bu)	Seeds/ pound	Lodging (0-9)
150,000	54.2	43.3	62.2	1924	6.6
200,000	54.1	44.7	62.1	1966	6.3
250,000	53.8	45.0	62.1	1931	6.8
300,000	53.8	44.2	61.9	1930	6.9
350,000	53.8	44.4	61.9	1940	6.5
400,000	53.7	43.7	62.0	1963	7.0
LSD 5%	NS	NS	NS	NS	NS