Atlantic Grain Council (AGC)

Field Strip Trial Research for Nova Scotia

2016 AGC-NS Soybean Plant Population for Planters

Funding provided by:

Summary: Replicated field strip trials in 2015-2016 at seven farm locations have looked at soybean yield response to lower plant populations. These trials were all done with planters, except in one location, and have compared 190,000 seeds per acre to 160,000 and 130,000 approximate seed rates in 15 inch row spacing. Current soybean seeding rates in the Maritime Provinces are usually in the range of 180,000-200,000 seeds per acre. Research done by DalAC (formerly NSAC) about 10 years ago in Nova Scotia was done at soybean populations of 200,000 seeds per acre and higher in both 6 & 12 inch row spacing and showed inconclusive yield trends. Recent research out of both Wisconsin & Ontario has shown a positive yield response with much lower soybean plant populations.

In Table 1, the plant population counts at the four-2016 trial sites are listed with the attempted seeding rates. Where the plant populations varied so much between the trial sites it was decided to not combine the data and report the statistical analysis for each site separately. There was no significant difference in the yield, harvest moisture, test weight and crude protein for the three seeding rates at any of the seven trial sites in 2015 or 2016. Yields were very good at all sites ranging from 3100-3900 kilograms/hectare (1.25- 1.5 tonne/acre). The 2015 trial results can be found on either the Atlantic Grains Council or Perennia websites.

This research would indicate that Maritime growers using planters with 15 inch row spacing could safely use seeding rates of 165,000-170,000, if achieving a final plant population of 135,000 to 155,000 plants per acre. Atlantic Grains Council field trials have begun in 2016 to study the optimal seeding rate for grain drills that have 6-7 or 12-14 inch row spacing.

Many thanks to the Atlantic Grains Council grower levy research fund, plus federal and Nova Scotia funding contributions through Growing Forward 2. Thanks also to the participating growers and the statistical analysis by Melanie Leclerc. Report by Jack van Roestel at Perennia.

Table 1: 2016 Seeding Rates and Plant Population Counts for this Trial

Trial Location for 2016	Seeding Rate Treatments	Planter Seeds/acre Rate Setting	Plant Population Counts/acre	Plant Pop % of Seed Rate	Planting Date
N.DeGraaf	190,000	195,000	178,400	91%	May 19
(Hillaton field)	160,000	167,000	149,300	89%	
	130,000	135,000	120,500	89%	
N.DeGraaf	190,000	195,000	150,800	77%	May 21
(Centreville field)	160,000	167,000	126,800	76%	
	130,000	135,000	101,500	75%	
Dykeview Farms	190,000	195,000	132,200	68%	May 11
(I.Newcombe)	160,000	165,000	114,400	69%	
	130,000	135,000	99,250	74%	
G.Damsteegt	190,000	196,000	187,250	96%	May 20
	160,000	168,000	161,750	96%	
	130,000	136,000	127,900	94%	

Plant counts on 15 inch rows done on 7 feet of linear row (1/5000th acre). We did 20 counts per plot.

Site 1: Nick de Graaf, Hillaton, Kings Co. (harvested October 12th, with 0.5 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Yield at 14% moisture (kg/ha)
120,500	38.8 a	75.2 a	3920 a
149,300	38.8 a	74.7 a	3933 a
178,400	39.2 a	75.4 a	3893 a

Means followed by the same letters are not significantly different at $\alpha = 0.05$

Site 2: Dykeview Farms –I. Newcombe, Canard, Kings Co. (Oct 6th, with 0.9 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Yield at 14% moisture (kg/ha)
99,250	37.5 a	75.4 a	3649 a
114,400	37.4 a	75.0 a	3702 a
132,200	37.7 a	75.5 a	3672 a

Means followed by the same letters are not significantly different at α = 0.05

Site 3: Gerrit Damsteegt, North Salem , Colchester Co. (Oct. 7th, with 0.9 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Yield at 14% moisture (kg/ha)
127,900	40.5 a	76.0 a	3085 a
161,750	40.9 a	76.4 a	3250 a
187,250	40.6 a	76.3 a	3185 a

For all sites data was analysed using Minitab 17 Statistical Software. ANOVA was performed using General Linear Model. Means Comparison was done with the Tukey Method at 95% confidence.

Site 4: Nick de Graaf, Centreville, Kings Co. (harvest October 5th, with 0.75 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Yield at 14% moisture (kg/ha)
101,500	37.3 a	74.1 a	3122 a
126,800	37.4 a	73.8 a	3189 a
150,800	38.7 a	73.8 a	3122 a

Means followed by the same letters are not significantly different at α = 0.05

Grower	2015 Crop	2016 Soybean Variety	Planting Date	Planter Used	Seed Rate Adjustment
Dykeview Farms (I.Newcombe)	Grain Corn	Hyland HS 03RY33 (2625 CHU)	May 11	JD 1790 Vacuum Planter (Split 24 at 15" row spacing)	Seedstar in-cab Monitor
N. De Graaf	Grain Corn (both sites)	Syngenta S10-P9 (2800 CHU)	May 19 & 21	Case 1240 AFS 38' Planter (15" rows)	In-cab Monitor
G.Damsteegt	Silage Corn	Pioneer P06T28R (2650 CHU)	May 20	JD 1780 Max Emerge XP Vacuum Planter (15 " row spacing)	Move Chain onto right Driven-Driver Sprockets