Atlantic Grain Council (AGC)

Field Strip Trial Research for Nova Scotia

2015 AGC-NS Soybean Plant Population Trial

Summary: Current soybean seeding rates in the Maritime Provinces are usually in the range of 185,000-200,000 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. It is the objective of this trial to look at soybean yield response to lower plant populations comparing an attempted seeding rate of 190,000 seeds/acre to 160,000 and 130,000 seed rates in 15 inch row spacing.

In Table 1, the plant population counts at the three trial sites are listed for 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. What was extremely surprising however, was at the DeGraaf trial site how little yield differences there were over such a wide range of plant populations (i.e. 3901, 3981 & 3925 kg/ha yield for the respective plant populations of 174,000 to 147,000 and down to 119,000 plants per acre). The same sort of surprising trend also occurred at Dykeview Farms trial site where again similar yields of 3884, 3820 & 3705 kg/ha resulted over a fairly wide range of plant populations of 152,000 to 131,000 and down to 107,000 plants per acre. All these trial sites had three replications of each seeding rate. The yields at these three 2015 trial sites were extremely high; however before Nova Scotia growers reduce seeding rates significantly in 15" row spacing, it's crucial we get another year of testing yield response to lower soybean plant populations.

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Table 1: Attempted 2015 Seeding Rates and Plant Population Counts for this Trial

Trial Location	Seeding Rate/ac Treatments	Planter Seed Rate Setting	Plant Counts/acre	Plant Pop % of Seed Rate
N.DeGraaf	190,000	196,000	174,200	89%
	160,000	169,000	147,400	87%
	130,000	136,000	118,500	87%
Dykeview	190,000	190,000	151,900	80%
	160,000	160,000	131,100	82%
	130,000	130,000	107,200	82%
D.McCurdy	190,000		143,100	
	160,000		129,700	
	130,000		124,900	

Plant counts on 15 inch rows done on 7 feet of linear row (1/5000th acre). Did 14 counts per plot.

Site 1: Dykeview Farms -Ian Newcombe, Gibson Woods, Kings Co. (harvest Oct 7th, with 0.6 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Moisture % at harvest	Yield at 14% moisture (kg/ha)
107,000	36.9 a	76.8 a	12.7 a	3705 a
131,000	36.9 a	76.7 a	12.6 a	3820 a
152,000	37.3 a	76.8 a	12.7 a	3884 a

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

Site 2: Nick de Graaf, Atlanta, Kings Co. (harvested October 6th, with 0.9 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Moisture % at harvest	Yield at 14% moisture (kg/ha)
119,000	38.1 a	74.9 a	14.7 a	3925 a
147,000	38.2 a	75.2 a	14.9 a	3981 a
174,000	38.2 a	74.9 a	14.5 a	3901 a

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

Site 3: Duncan McCurdy, Clifton, Colchester Co. (harvest Oct 28th, with 0.4 acre plots)

Population (plants/ac)	Crude Protein %	Test weight (kg/HL)	Moisture % at harvest	Yield at 14% moisture (kg/ha)
125,000	37.2 a	74.3 a	12.5 a	3118 a
130,000	37.4 a	76.4 a	12.4 a	3431 a
143,000	37.5 a	75.7 a	12.6 a	3562 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 and 95% confidence.

Grower	2014 Crop	2015 Soybean Variety	Planting Date	Planter or Drill Used	Seed Rate Adjustment
Dykeview Farms (I.Newcombe)	Grain Corn	Hyland HS 03RY33 (2625 CHU)	May 19	JD 1790 Vacuum Planter (Split 24 at 15" row spacing)	Seedstar in-cab Monitor
N. De Graaf	Grain Corn	Syngenta S10-P9 (2800 CHU)	May 18	JD 1780 Max Emerge XP Vacuum Planter (15 " row spacing)	Move Chain onto right Driven-Driver Sprockets
D. McCurdy	Grain Corn	Syngenta S007-Y4 (2450 CHU)	May 27	Sunflower 9412 No-Till Drill (15" rows)	Change fluted seed meter shaft in cups