CFAES OHIO STATE UNIVERSITY EXTENSION – HARDIN COUNTY

Soybean Seeding Rates in Muck Soils

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INTRODUCTION

Farmers are looking for ways to reduce input costs to make their crop production enterprises more profitable given lower market prices and higher expenses. Agronomically, narrow rows usually yield better than wider rows because of quicker canopy cover and less competition with weeds for nutrients and sunlight. Row widths are often determined by machinery availability such as planters and other management decisions. Muck soil is high in organic matter, carbon, and nitrogen. Soybeans planted in muck soils grow well vegetatively because of available nitrogen but are sometimes limited in yield during reproductive stages of growth. The purpose of this study is to determine which combination of row widths and seeding rates work best for soybean production in muck soils.

OBJECTIVES

The objectives of these studies include determining if there is a yield difference between 15 and 30-inch rows in studies where both row widths are compared and if so, which width produces the best yield and at what seeding rate. If only one row width is compared, the objective is to determine the seeding rate that produces the best yield.

METHODS

Three years of soybean seeding rate studies testing up to six different seeding rates in both 15-inch and 30-inch rows. Each study has been conducted using randomized strips that have been replicated at least three times across this field scale on-farm research. In addition to seeding rates, the author has taken stand counts as well as soil tests. Although seeding rates were treatments studied, factors that remained the same include seed variety, fertilizer, tillage, and weed control. Economic factors were also studied in both 2017 and 2018 with this on-farm research that has also been featured in The Ohio State University eFields book. These studies were conducted in muck soil, where organic levels were higher than mineral soils. As a result, yields were not as high as soybeans grew well vegetatively, however did not yield as well as other studies. In addition, the researcher tested soil health and soybean cyst nematodes in this study.

CONCLUSIONS

Results of the 30-inch row study in 2016 indicated that the highest yielding soybeans were seeded at 162,000 seeds per acre while the 15-inch row study from the same year produced the highest yield at 213,000 seeds per acre. Results of the 15-inch row studies in 2017 indicated that the highest yielding soybeans were seeded at a rate of 210,000 seeds per acre while best economic seeding rate was 210,000 seeds per acre which returned the most profit per acre. Results of the 15-inch row studies in 2018 indicated that the highest yielding soybeans were seeded at a rate of 180,000 seeds per acre while best economic seeding rate was 120,000 seeds per acre which returned the most profit per acre.

KEY PARTNERS

The project contact expresses appreciation to on-farm collaborators Paul Ralston and Doris Ralston in Hardin County. Thanks to the Ohio Soybean Council for supporting this research. Thanks also to OSU Extension interns for data collection and processing. Hardin County interns assisting with this project were Kaitlyn Beale, Dillon Rall, and Sydney Geberin.

PROJECT CONTACTS

For inquiries about this project, contact Mark Badertscher, Hardin County Extension (badertscher.4@osu.edu).

RESULTS

2016 - 30 inch rows

Seeding Rate seeds/ac	Stand Count V5 plants/ac	Yield bu/ac
60,000	24,000	45.30 a
85,000	50,000	45.00 a
112,000	47,666	54.27 b
135,000	65,666	59.17 bc
162,000	83,000	59.67 c
189,000	122,666	57.47 bc

2016 - 15 inch rows

Seeding Rate seeds/ac	Stand Count V5 plants/ac	Yield bu/ac
101,000	80,000	57.40 a
112,000	70,000	61.17 ab
135,000	112,666	63.30 b
162,000	87,000	65.37 be
189,000	159,000	62.07 b
213,000	133,000	68.97 e

2017 - 15 inch rows

Seeding Rate seeds/ac	Stand Count V8 plants/ac	Yield bu/ac
60,000	39,000	33.80 a
90,000	65,000	43.90 b
120,000	81,666	49.25 c
150,000	92,666	53.48 d
180,000	123,000	52.43 cd
210,000	135,000	59.44 e

2018 – 15 inch rows

Seeding Rate seeds/ac	Stand Count V8 plants/ac	Yield bu/ac
60,000	51,250	67.46 a
90,000	75,750	70.22 ab
120,000	105,500	73.93 c
150,000	124,500	72.98 bc
180,000	129,750	75.56 c
210,000	182,500	73.52 c