

Seeding Rate and Planting Date Effect on Soybeans

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Objective

To determine the soybean grain yield effect of seeding rate and date of planting.

Background

Crop Year: 2013	Tillage: No-till
Location: O.A.R.D.C. NW Ag Research Station	Planting Date: see below
County/Town: Custar, OH , Wood County	Nitrogen: none
Soil Type: Hoytville clay loam	Seeding Rate: see below
Drainage: systematic subsoil	Harvest Date: October 1, 2013
Previous Crop: corn	

Methods

The treatments were replicated four times in a randomized complete block design on each date. Plot size- 10 x 40 feet each entry. Harvest data was collected from the center 7 feet. All treatments received the same tillage and herbicide application. On October 25, 2012 chisel plow tillage on all treatments. On November 27, 2012 field cultivated all treatments. No spring tillage performed. The following spring, all treatments were no-till and drill seeded to Pioneer 92Y92 soybeans. Glyphosate herbicides were applied on May 6, 2013 and July 15, 2013.

Results

Table 1. Seeding rate effect on yield across all planting dates

Seeding Rate	Yield bu/A all planting dates
125,000	44.5 ^a
175,000	45.7 ^b
225,000	46.7 ^b

^a Means with different superscripts differ at $P < 0.05$

LSD (0.05) = 1.2

Table 2. Seeding date effect on yield across all seeding rates.

Planting Date	Yield bu/A all seeding rates
May 6	57.0 ^a
May 17	52.0 ^b
June 3	45.9 ^c
June 28	27.7 ^d

^a Means with different superscripts differ at $P < 0.05$

LSD (0.05) = 3.1

There was an interaction between seeding rate and planting date ($P < 0.05$)

Table 3. Effect of seeding rate by planting date

Planting Date	Seeding rate	Yield Bu/acre
May 6	125,000	55.1 ^a
May 6	175,000	57.9 ^b
May 6	225,000	57.9 ^b
May 17	125,000	51.2
May 17	175,000	52.8
May 17	225,000	52.1
June 3	125,000	46.0 ^{cd}
June 3	175,000	44.3 ^c
June 3	225,000	47.4 ^d
June 28	125,000	25.6 ^e
June 28	175,000	27.9 ^f
June 28	225,000	29.5 ^f

a Within each planting date the means with different superscripts differ at $P < 0.05$
LSD (0.05) = 2.2

Summary

Table 4. Economic return of seeding rate by date

Planting Date	Seeding rate	Yield bu/acre	Gross Income \$/acre	Seed Cost \$/acre	Income Remaining \$/acre
May 6	125,000	55.1	\$ 688.75	\$ 51.25	\$ 637.50
May 6	175,000	57.9	\$ 723.75	\$ 71.75	\$ 652.00
May 6	225,000	57.9	\$ 723.75	\$ 92.25	\$ 631.50
May 17	125,000	51.2	\$ 640.00	\$ 51.25	\$ 588.75
May 17	175,000	52.8	\$ 660.00	\$ 71.75	\$ 588.25
May 17	225,000	52.1	\$ 651.25	\$ 92.25	\$ 559.00
June 3	125,000	46.0	\$ 575.00	\$ 51.25	\$ 523.75
June 3	175,000	44.3	\$ 553.75	\$ 71.75	\$ 482.00
June 3	225,000	47.4	\$ 592.50	\$ 92.25	\$ 500.25
June 28	125,000	25.6	\$ 320.00	\$ 51.25	\$ 268.75
June 28	175,000	27.9	\$ 348.75	\$ 71.75	\$ 277.00
June 28	225,000	29.5	\$ 368.75	\$ 92.25	\$ 276.50

Economics: Gross income = yield x \$12.50 /bu; Seed cost = \$0.41 per 1,000 seeds x seeding rate; Income remaining = gross income – seed cost.

Discussion:

Except for the June 3 date of planting, all other comparisons did not have a significant yield difference between the 175,000 and 225,000 seeding rate. This suggests that the 225,000 seeding rate was too high. Also, income remaining after seed cost suggests that the 175,000

seeding rate resulted in the highest income except for the June 3 planting date. Stand counts were variable and may account for the difference in the June 3 planting date.

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