

Wheat Seeding Rate Evaluation

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Objective

The objective of this study was to evaluate the yield response of one wheat variety to four different seeding rates, ranging from 1.2 to 2.1 million seeds per acre.

Background

Crop Year:	2008	Herbicide:	
Cooperator:	Farm Focus/Marsh Foundation	POST	Express 75DFat 0.33 oz/A +
County/Town:	Van Wert/Van Wert	(April 23)	MCPA Amine at 0.75 pt/A +
Soil Type:	Hoytville clay; Hoytville silty clay loam	Variety:	AgriPro Coker- Branson
Drainage:	Non-systematic tile	Insecticide:	Mustang Max @ 3 oz/A on June 17 for armyworm
Previous Crop:	Soybeans	Row Width:	7.5 inches
Tillage:	No-till	Planting Rate:	Variable-see Methods
Soil Test (2005):	pH 6.7, P 47 ppm, K 156 ppm	Planting Date:	October 8, 2007
Fertilizer:	245 lb/A 13-9-18 surface broadcast (October 5)	Harvest Date:	July 7, 2008
	220 lb/A 37-0-0-8.5S broadcast topdress (April 17)		

Methods

This study was set up with four different seeding rates replicated four times in a randomized complete block design. The seeding rates used in this trial were:

- 1) 1.2 million seeds/acre
- 2) 1.5 million seeds/acre
- 3) 1.8 million seeds/acre
- 4) 2.1 million seeds/acre

The study was planted on October 8, 2007 using a John Deere 750 no-till drill. The drill was calibrated for the proper seed drop for each target seeding rate based on the 11,500 seeds per pound seed count reported on the AgriPro Coker Branson variety seed tag. Plot size was 27.5 feet wide by 1,070 feet long. Plots with wheel tracks from the late-season spraying of insecticide for armyworm control had 1 foot of width subtracted if there was one wheel track within a plot, and 2 feet subtracted if there were two wheel tracks within a plot. Not all plots had wheel tracks so this adjustment to plot width was required to offset wheat that was flattened down by this application.

Head counts at harvest time were estimated by counting the number of heads in one foot of row at six separate locations within each plot. These counts were converted to heads per acre. Harvesting was accomplished with a John Deere 6620 combine equipped with a calibrated AgLeader PF3000 yield monitor. Plot weights were determined with a calibrated weigh wagon. Moistures were taken from the yield monitor average reading for each plot. All yields were adjusted to 13.5% moisture.

Results

Treatment	Moisture	Wheat Yield	Head Count
	(%)	(bu/ac)	(heads/ac)
1.2 million seeds/acre	13.5	92.5	3,917,500
1.5 million seeds/acre	13.3	95.6	3,720,300
1.8 million seeds/acre	13.4	95.5	4,057,000
2.1 million seeds/acre	13.4	97.3	4,068,500
LSD (P=0.05)	NS	NS	NS
CV(%)	< 1	2.5	4.6

NS= not significant

Summary

For this single-year wheat seeding rate study there were no statistical differences between the treatments for moisture, yield, or head count. The head counts taken in this study would indicate that lower seeding rates were able to produce the same number of heads per acre, and the same yields.

From an economic standpoint, each 300,000 seeds/acre increase in the seeding rate increased seed cost by \$8.32 per acre. This is based on the 2007 seed cost of \$15.95 per 50-pound bag of seed. This would require an additional 1.4 bushel/acre yield increase for each additional 300,000 seeds dropped based on a harvest time market price of \$6 per bushel.

According to Ohio State University agronomists, the optimum seeding rate is 1.2 to 1.6 million seeds per acre (18 to 24 seeds per foot of 7.5-inch row) when planting during the two weeks following the fly-safe date. During the third and fourth week after the fly-safe date, the optimum seeded rate is 1.6 to 2.0 million seeds per acre (24 to 30 seeds per foot of row). Fly-safe date for Van Wert County is September 26. Planting date for this trial was 12 days after the fly-free date.

A similar study conducted at Farm Focus in 2007 (http://farmfocus.osu.edu/wheat_seeding_rate-07.pdf) indicated there was a significant difference in yield between 1.2 million seeds/acre and 2.0 million seeds/acre seeding rates. That study was planted 17 days after fly-free date, and weather conditions in the fall of 2006 were much less conducive to stand establishment and tillering than those experienced in the fall of 2007.

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