RYE PLANTING DATE IN KENTUCKY, 2021-2022

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INTRODUCTION

With more interest in growing rye for grain in the United States, four universities are examining the planting dates of rye to better understand crop development in rye. This study involves the following principal investigators:

1. Jochum Wiersma, University of Minnesota
2. Shawn Conley, University of Wisconsin
3. Laura Lindsey, The Ohio State University
4. Chad Lee, University of Kentucky

METHODS AND MATERIALS

Lexington

Rye was planted into a Bluegrass Maury silt loam at 2 to 6% slopes.

Seeding dates included:

1. September 17, 2021
2. October 1, 2021
3. October 19, 2021
4. November 29, 2021

Seeding Rates included the following target seeds per acre:

1. 400,000
2. 600,000
3. 800,000
4. 100,000
5. 120,000

Muriate of potash (0-0-60) was applied to the field before planting according to soil test recommendations and nitrogen rates were applied at Feekes 3 growth stage. Fertilizer phosphorus was not required. Rye was harvested with a Wintersteiger Classic combine. Seed weights were measured on a digital scale and seed moisture and test weight were measured with a Perten AM 5200.

RESULTS

Rye seeded October 19 yielded the greatest, followed by rye seeded October 1 and then September 17 (Table 1). Rye seeded in November 29, 2021 did not survive the winter. Temperatures dipped below freezing 2 of the four nights following the latest planting (Figure 1). Temperatures fluctuated from lows in the 50's to lows below 26 F over the next weeks, allowing the latest planting of rye to emerge and not survive the subsequent freezes.

Lodging was least for rye seeded October 19, 2021, which corresponded with the highest yields.

When averaged across all seeding dates, rye seeded at 1,200,000 seeds per acre yielded the greatest followed rye seeded at 1,000,000 and 600,000 seeds per acre (Table 1). Rye seeded at 400,000 seeds per acre yielded the least. Plant lodging did not increase as seeding rates increased. Seeding rate did not affect plant lodging.

When evaluated by seeding date, rye in the first two seeding dates responded better to higher yields (Figure 2). Rye seeded October 19 yielded greatest at 100,000 seeds per acre.

Figure 1.
Weather at Spindletop Farm, Lexington, KY from September 15, 2021 to December 31, 2021.

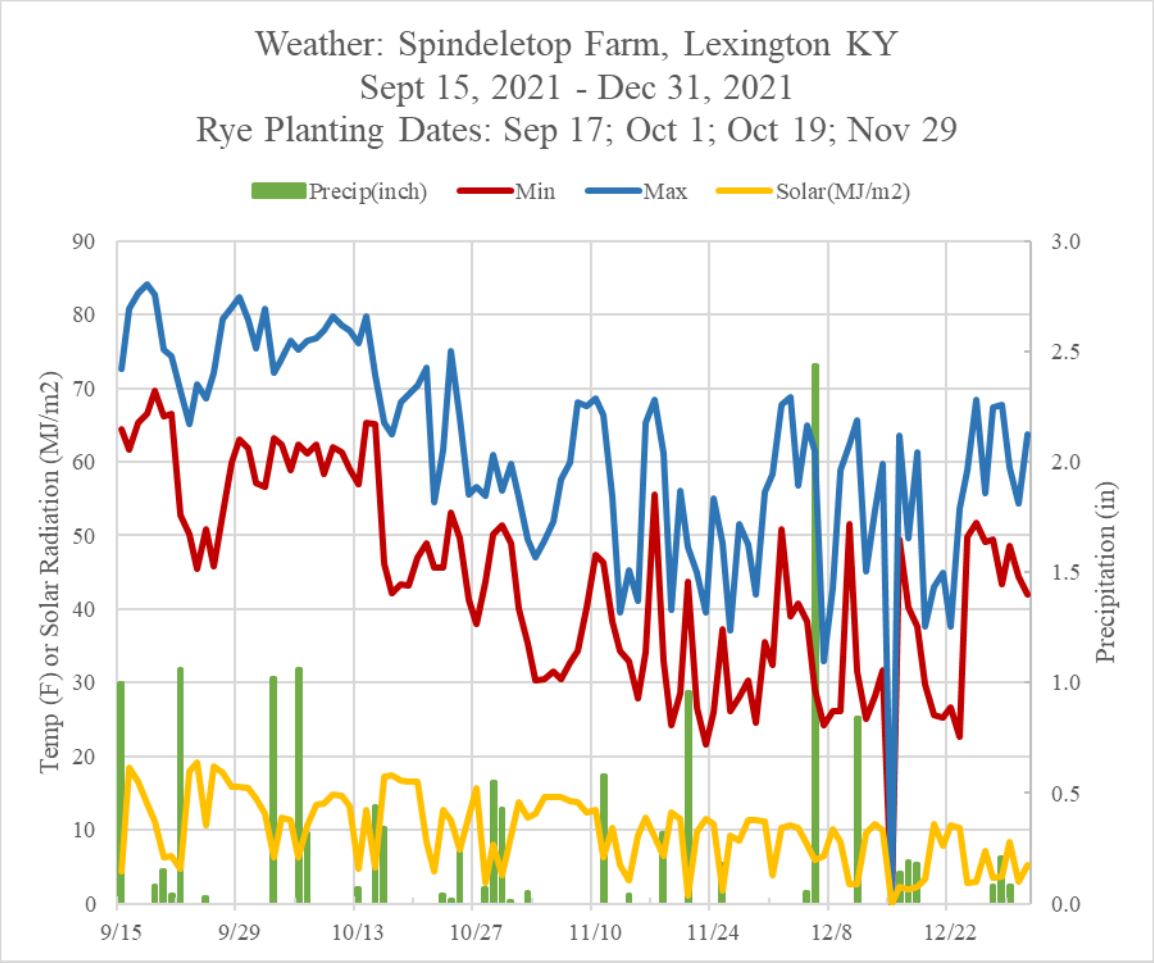
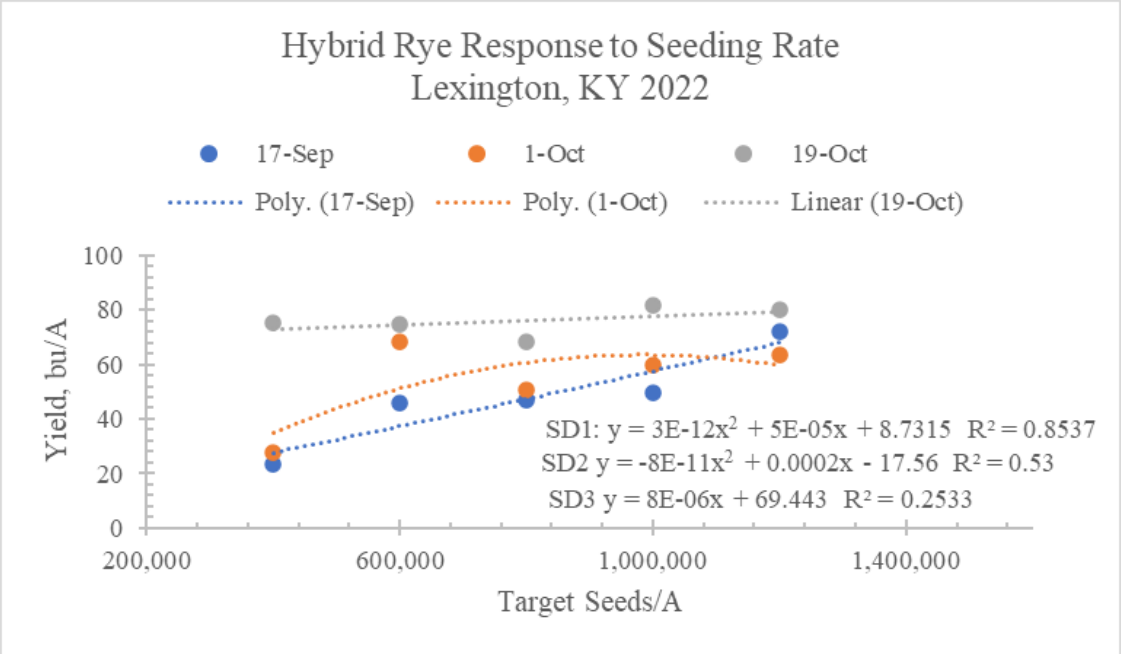


Table 1. Seeding Date and Rate Effects on Hybrid Rye Lodging and Yield, Lexington, KY 2022.

Treatment	YIELD		LODGING	
	Bu/A		(0-9)	
Seed Date Effect				
SD1 - Sept. 17	47.5	b	4.2	b
SD2 - Oct. 1	54.0	b	7.5	a
SD3 - Oct. 19	75.9	a	3.2	c
Seeding Rate Effect				
400K seeds/acre	42.2	c	4.9	a
600K	63.0	ab	5.1	a
800k	55.3	bc	5.4	a
1000K	63.5	ab	4.8	a
1200K	71.7	a	4.3	a
LSD (0.10) SD	*11.04*		*0.94*	
LSD (0.10) SR	*14.25*		*1.22*	
P value SD	*0.0002*		*<.0001*	
P value SR	*0.0156*		*0.6737*	
P value SDxSR	*0.4816*		*0.6596*	
Means are compared within Seeding Date and Seeding Rate.				
Means in the same column with different letters are significantly different (p≤ 0.10).				

Figure 2. Hybrid rye yield response to seed rate for each seeding date at Lexington, KY 2022.



DISCUSSION

The results from 2022 harvest conflict with results from studies in previous years where September planting dates normally resulted in the best yields. In addition, rye normally yielded well at target seeding rates as low as 600,000 seeds per acre and little to no yield increase from higher seeding rates. Rye in the 2022 harvest experienced some freeze damage, which is why rye in the December seeding date did not survive. Rye lodged more this year than the last three or four years. That plant lodging may have confounded other results.

We expect to repeat the trials again in 2022-2023 and compare crop phenology along with yield across the states involved in the trials.

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