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THE OHIO STATE UNIVERSITY EXTENSION

Extension FactSheet

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Effect of Row Spacing on Wheat Yield

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Wheat row spacing work conducted in the mid-1980s indicated that wheat grown in rows spaced 14 inches apart produced yields that were 94 percent of yields from rows spaced 7 inches apart (57.3 bu. vs. 61 bu.). Because the seeding rate per foot of row for wheat is the same for all row widths, the seed cost for 14-inch rows is half that for 7-inch rows. When wheat seed costs $10 per unit and wheat grain is worth $3 per unit, the lower yield from wide rows is almost offset by the reduced seed cost. The additional savings from drills with fewer seed meters and planting units can make the two row spacings equally profitable based on the 1980s data.

In 2000 and 2001, we conducted additional row spacing work. The results of these studies appear in the tables shown in this fact sheet. In both years, the plots were planted within 10 days after the fly-safe date at the rate of 25 seeds per foot of row for both row spacings (120 lbs. and 60 lbs. for 7.5-inch and 15-inch rows, respectively). Nitrogen (30 lbs. per acre) was applied at planting each year to stimulate fall growth, tillering, and winter hardiness.

Effect of Wheat Row Spacing on Yield, Plant Height, and Test Weight of 18 Varieties Tested in 2000.

Data taken from 15" rows:

Variety	Height (in.)	Test Wt.	Yield	Growth Habit*	Disease**
Agra GR962	36	55.0	64.8	2.4	0
AgriPro Foster	36	53.0	60.5	2.1	1
Cert. Patterson	35	54.1	63.4	2.6	1
NK Coker 9474	35	56.0	66.5	3.3	0
AgroPro Patton	35	54.1	62.3	3.4	1
Stine 455	35	55.6	67.5	3.2	0
Wellman W9901	36	55.6	60.8	2.7	0
Wellman W-101	34	54.6	57.6	3.7	0
Croplan 527W	36	53.8	59.5	3.3	0
Indiana INW9824	36	53.8	65.6	2.7	1
Indiana INW9811	36	54.3	65.7	2.4	0
Indiana INW9531	36	55.5	68.3	2.0	1
AGI 540	37	55.6	57.9	3.3	0
Nosco RW1488	35	53.7	56.7	3.2	1
Becks 101	35	54.4	62.9	2.6	0
Shur Gro SG1545	36	56.1	64.6	3.2	0
Stine 422	34	55.1	58.9	2.9	0
Pioneer 25R27	36	55.0	56.1	3.3	0

* Mean of 18 ratings. 1 = closed canopy, 5 = open canopy. (> 3.0 is good for relay cropping).
** 1 indicates serious Septoria leaf blight.

Comparison of 7.5-Inch and 15-Inch Row Spacings (Mean of 18 Varieties by 6 Comparisons):

	7.5" rows	15" rows	Difference
Height	37.0	36.7	0.3
Test Weight	54.9	53.9	1.0
Yield	60.6	56.2	4.4 (7.8%)

Effect of Variety and Row Spacing on Grain Yield and Agronomic Characteristics of Wheat at Two Locations (Bucyrus and Wooster) in Ohio in 2001.

		Height*		Erect**	Lodg.		Head Date***		Test Wt.		Yield		
Company	Entry	7"	15"	15"	7"	15"	7"	15"	7"	15"	7"	15"	15"/7"
		-----in.-----			------%------				-----lb/bu-----		-----bu/ac-----		%
Wellman	W-101	35	34	1	0	0	18	18	55.8	56.3	77.8	77.4	99.5
Stine	455	40	39	1	23	1	21	22	53.9	55.2	74.3	77.6	104.4
Beck's	104	41	40	1	0	0	20	21	55.7	55.7	72.1	67.2	93.2
AgriPro	Gibson	35	34	2	0	0	18	19	57.5	57.0	73.6	70.1	95.2
Peterson Genetics	980329	37	36	2	0	0	21	21	52.9	52.2	72.3	69.4	96.0
J.G. Limited	144J	36	35	1	15	4	18	19	54.3	55.5	69.3	67.7	97.7
Ag Alumni	INW 9811	32	31	2	0	0	19	20	56.2	55.9	74.4	70.9	95.3
AGRA	Zorro	37	35	2	10	0	19	20	57.5	56.7	71.6	67.2	93.9
ShurGro	1530	36	35	1	6	0	18	18	53.4	55.2	76.7	73.4	95.7
Croplan	527W	41	39	1	12	0	19	20	53.5	54.4	63.5	62.0	97.6
Pioneer	25R37	37	36	2	14	0	21	22	59.1	57.4	88.8	80.9	91.1
Bio Plant Res.	BW 244	41	40	1	1	0	19	20	54.8	53.9	67.1	63.2	94.2
PSL Genetics, Inc.	PSL 9903	40	39	1	14	0	20	21	56.0	56.0	62.2	61.7	99.2
J.G. Limited	SR 01488J	39	38	1	24	3	18	19	54.5	55.8	73.3	72.2	98.5
AGRA	Vicar	35	34	2	0	14	22	23	52.7	50.6	69.1	64.0	92.6
AGRA	Lisbo	39	38	2	0	0	21	21	59.3	57.8	86.8	81.4	93.8
AGI	540	41	39	2	0	5	21	22	59.0	58.2	67.1	66.8	99.6
NK	Coker 9474	38	36	2	5	0	20	20	59.6	59.4	72.8	69.8	95.9
AgriPro	D95-2883	39	38	3	2	0	20	21	53.4	53.3	68.9	62.9	91.3
Peterson Genetics	W-301	36	35	2	17	0	19	20	55.5	55.7	72.3	71.1	98.3
Direct Ent. Inc.	DEI 685	42	40	1	15	10	20	20	54.5	56.8	70.7	74.2	105.0
Hubner's	H 201	40	39	1	24	0	21	21	55.9	56.0	74.3	78.1	105.1
AGRA	Honey	37	36	1	4	3	20	21	54.3	54.3	78.8	75.1	95.3
	HIGH	42	40	1	25	14	22	23	59.8	59.0	90.4	82.3	105.1
	MEAN	38	37	1.5	8	2	20	20	55.6	55.6	72.9	70.7	97.0
	LOW	32	31	3	0	0	18	18	51.7	50.5	60.4	59.3	91.9
	LSD (0.3)	0.9	0.80	0.3	11	5	0.3	0.3	1.3	0.9	4.6	4.1	

* Height in inches.
** Growth Habit: 1 = bushy or closed canopy; 5 = erect or open canopy (good for relay cropping).
*** Date in May when 50% of heads were emerged from the flag leaf sheath.

These data indicate that some wheat varieties may be more profitable to produce in wide rows than narrow rows due to savings in seed and machinery cost. Varieties that perform well in wide rows tend to be either tall by nature or grow tall due to favorable weather. They also have a non-erect growth habit that allows them to fill in the wide row middles which will also compensate for skips in the row or low population. High rates of tillering also favor higher yields in wide rows. Tillering is favored by planting within seven days after the fly safe date and the application of 25 pounds of nitrogen at planting. Normally, 15-inch-row wheat yields 5% to 15% less than wheat grown in 7.5 inch rows. In 2001, excessive tillering and vegetative growth reduced that normal difference in yield.

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