

# HOW PERFECT DO WHEAT STANDS NEED TO BE?

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We all want a perfect stand. It looks good and makes us feel good about our farming operation. We also believe that it is reflected in our final yield and the overall yield potential of the crop.

Stands are usually not perfect. This is especially true for no-till wheat. In fact, this is one of the reasons that producers have shied away from this practice. Many times the stand looks bad and it is felt that it would probably reduce yields.

But is this true? We have many farmers that use tramlines in their wheat and studies indicate that they do not reduce yields. The rows on each side of the tramline seem to compensate for the loss of stand in the skipped rows. If this is true, then a certain amount of stand loss in a wheat field can be tolerated. The question is how much?

## **METHOD:**

In order to better understand the effects of skips (stand loss) on wheat yields, three studies were initiated in the last 2 years. All studies were planted using tillage. Soon after wheat emergence, plants were removed to make skips. In 1999-2000, the skips were 6, 12, or 18 inches long and in 2000-2001 all skips were 12 inches in length. Varying the number of skips resulted in 5, 10, 15, or 20% of the area in plots having skips (stand loss). The trials were planted at 35 seeds/ft<sup>2</sup> with some treatments planted at 25 seeds/ft<sup>2</sup> in 2000-2001. The trials were located at Princeton on the Research and Education Center or in Fulton County. Two varieties (Pioneer 25R26 and Pioneer 2552) were used. The 25R26 variety is a more prolific tillering variety.

## **RESULTS:**

The yields of the trials were very high, so it is a good test for this type of study. The results are very surprising.

### *Length of Skip*

Table 1 shows the yields at different skip lengths. The length of the skip (18 inches or < in this study) seemed to have no effect on the yield. When the percent of area skipped remained the same and the length of the skip increased, there was no significant change in the yield.

### ***Seeding Rate***

The seeding rate may have a small effect on the yield when skips are present. In Table 2, the treatments with 20% of the area skipped had 35 and 25 seeds/ft<sup>2</sup> planting rates. The yields with the 20% area skipped were unaffected by seeding rate in the more prolific tillering 25R26 variety. With the 2552 variety there was a tendency for the yields to be lower at the 20% treatment when the lower seeding rate was used.

### ***Percent of Area Skipped***

The percentage of the area skipped definitely had an effect on the yield (Tables 1 and 2). The effect depended on the variety and the year. Pioneer 2552, which tillers less prolifically, showed lower yields in 2 of the 3 trials when 15% or more of the area was skipped. Pioneer 25R26, which tillers more, did not show a yield reduction even when as much as 20% of the area was skipped. Considering both varieties it appears that 10% of the area could be skipped without having an effect on the yields.

### ***Yield Compensation***

In order for the yields to remain the same with some areas skipped, the yields of plants around the skip must increase. The compensation of the wheat plants surrounding the skips can come from more heads, more grains per head or more weight per grain. Head counts made near harvest in 1999-2000 indicated that the compensation was not made by increased heads due to increased tillering. However, head counts made in 2000-2001 (Table 3) show many more heads in the plants surrounding the skipped areas. The increases were in the order of 35 to 45% more heads/ft<sup>2</sup>.

### **SUMMARY:**

This trial will continue in order to try to verify what has been found to this point. At present, it appears that the length of a skip has no effect on grain yield. When the amount of area skipped is 10% or less, there is no effect on yield regardless of variety. There is also no effect on yield with varieties that tiller prolifically if the area skipped is as high as 20%.

**TABLE 1. EFFECT OF PERCENTAGE OF AREA SKIPPED AND THE LENGTH OF SKIP ON WHEAT YIELDS (1999-2000)**

Area Skipped (%)	Length of Gap (inches)	Wheat Yield (Bu/Ac)	
		Pioneer 25R26	Pioneer 2552
<b>FULTON COUNTY</b>			
0	0	110.3 a*	107.0 ab
5	12	109.0 a	102.3 bc
10	12	104.5 a	108.0 a
10	18	108.0a	107.5 ab
15	12	109.1 a	100.6 c
15	18	105.8 a	100.6 c
<b>PRINCETON</b>			
0	0	-	107.5 b
5	6	-	111.5 ab
5	12	-	113.0 a
5	18	-	108.3 ab
10	6	-	108.5 ab
10	12	-	110.9 ab

\*Means followed by the same letter in individual columns indicate no true differences according to a statistical analysis.

**TABLE 2. EFFECT OF PERCENTAGE OF AREA SKIPPED AND THE LENGTH OF SKIP ON WHEAT YIELDS (2000-2001)**

Area Skipped (%)	Length of Skip (Inches)	Seeding Rate (Seeds/ft <sup>2</sup> )	Wheat Yield (Bu/Ac)	
			Pioneer 25R26	Pioneer 2552
0	12	35	97.2a*	92.0a
5	12	35	92.7a	89.2ab
10	12	35	94.6a	91.0ab
15	12	35	97.9a	85.9bc
20	12	35	92.4a	87.1abc
20	12	25	95.6a	82.5c

\*Means followed by the same letter in individual columns indicate no true difference according to a statistical analysis.

**TABLE 3. EFFECT OF SKIPS ON HEAD COUNTS  
AT PRINCETON (2000-2001)**

<b>Area Skipped</b>	<b>Seeding Rate</b>	<b>HEAD COUNTS (Heads/ft<sup>2</sup>)</b>	
<b>%</b>	<b>Seeds/ft<sup>2</sup></b>	<b>No Skips</b>	<b>Beside Skips</b>
<i><b>PIONEER 25R26</b></i>			
15	35	55.2 b	82.3 a
20	35	53.2 b	75.0 a
20	25	51.8 b	71.6 a
<i><b>PIONEER 2552</b></i>			
20	35	45.9 b	72.2 a
20	25	47.8 b	70.7 a