

Have you ever wondered how a previous crop and tillage affects wheat yields, or rather, are there differences in wheat yield when wheat is planted after soybean, corn, and grain sorghum?

An on-going cropping systems study was established in 1996 at the Southeast Research Center near Columbus, KS to address this question. The site was a Parsons silt loam in a 2-year rotation, but with three crops being grown in two years. Three row crops, soybean, corn, and grain sorghum, were planted using either reduced tillage (disking) or no-till. Wheat was planted in 7.5 inch rows at 90-120 pounds of seed per acre after row crop harvest in the reduced tilled and no-till treatments. All the N and P fertilizer for wheat was knifed below the soil surface.

The seven-year average yield for wheat after soybean, corn, and grain sorghum was 57.1, 55.2, and 53.5 bushels per acre, respectively. While these differences are not great, there was a 6 % yield decrease when wheat was planted after grain sorghum compared to wheat after soybean. Averaged over all the crops, the wheat yields for no-till and reduced-till were 55.1 and 55.4 bushels per acre, respectively. However, wheat no-till planted after soybean (57.8 bushels per acre) yielded slightly higher than wheat reduced-till planted after soybean (56.4 bushels per acre). The difference between wheat no-till planted after soybean has been about 4 bushels per acre greater than wheat reduced-till after soybean the past four years when it has been so dry. For wheat after corn and grain sorghum, the reduced-till wheat yields have been slightly higher than yields of no-till wheat plantings.

What's the bottom line?

Farmers have noted they see some yield differences when wheat is planted after grain sorghum compared to wheat after soybean or wheat after corn. We consistently see wheat yields after soybean are higher than wheat after corn, which in turn, is higher than wheat after grain sorghum. There are a number of reasons for these differences which include, increased soil moisture and nitrogen use and allelopathic compounds in the sorghum residue. However, these differences in wheat yields after the various crops observed in this study are not as great as we've seen in other studies and that can be attributed, in part, to the fact the fertilizer was knifed below the soil surface compared to surface broadcast applications.

Tillage appeared to affect wheat yields very little. Thus, we should expect to see more farmers no-till planting wheat after row crops, especially after soybean. This practice has the potential to save time, money, and soil moisture, while maintaining wheat yields.

For more details about this research see:

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