

# WHEAT YIELD RESPONSE TO OLD CORN ROWS

C. Lee, O. Wendroth and G. Schwab  
Plant & Soil Sciences Department  
University of Kentucky, Lexington, KY 40546  
PH: (859) 257-3203; Email: chad.lee@uky.edu

The benefits of no-till wheat are evident to any producer who has tried the method. There is some evidence that previous corn residue affects growth and development of wheat, and possibly the yield of wheat. As corn yields increase and the resulting residue increases, the relationship between corn residue and no-till wheat yields needs more understanding. We need to understand the biological and physical relationships between corn residue and wheat yield before we can make sound management recommendations. The aim of this study is to better understand the relationship between corn residue and wheat yield from a field-scale perspective.

Tillage and no-tillage wheat yield virtually the same after 13 years of research (Murdock et al., 2005). However, in general wheat yields tend to be lower when the preceding corn crop yielded well and wheat yields are higher when the preceding corn crop yield is lower (Grove, 2005). No-till wheat partitions less biomass to grain relative to conventional wheat (Kumudini and Grabau, 2006). We wondered if the location of the pre-existing corn row relative to the following wheat row

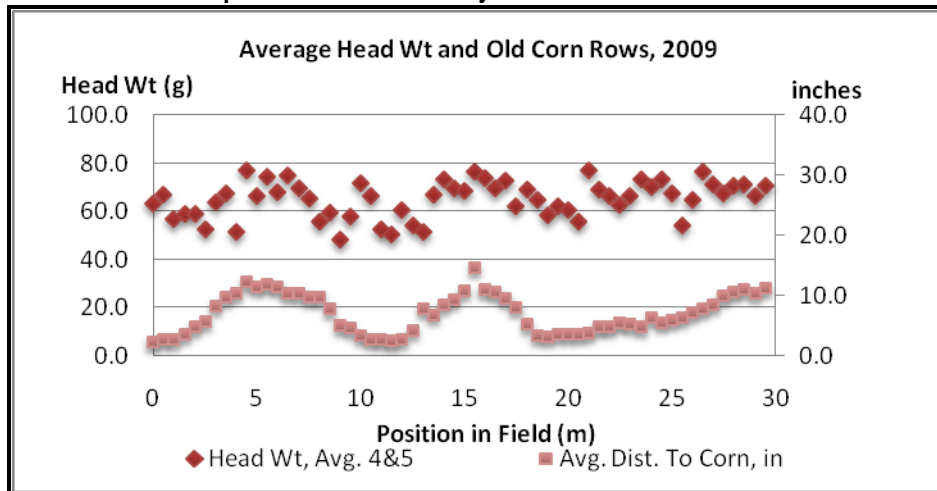
somehow reduced wheat yield, or affected some other part of the partitioning of dry matter into grain.

Based on 2008-2009 research, wheat closer to old corn rows tended to yield less (Fig. 1), head counts were reduced (Fig. 2) and seed counts were relatively unaffected (Fig. 3). The same trends were evident when compared with crop residue as well (Figures 4-6). Old corn rows and corn residue reduce the total wheat heads produced resulting in lower yields.

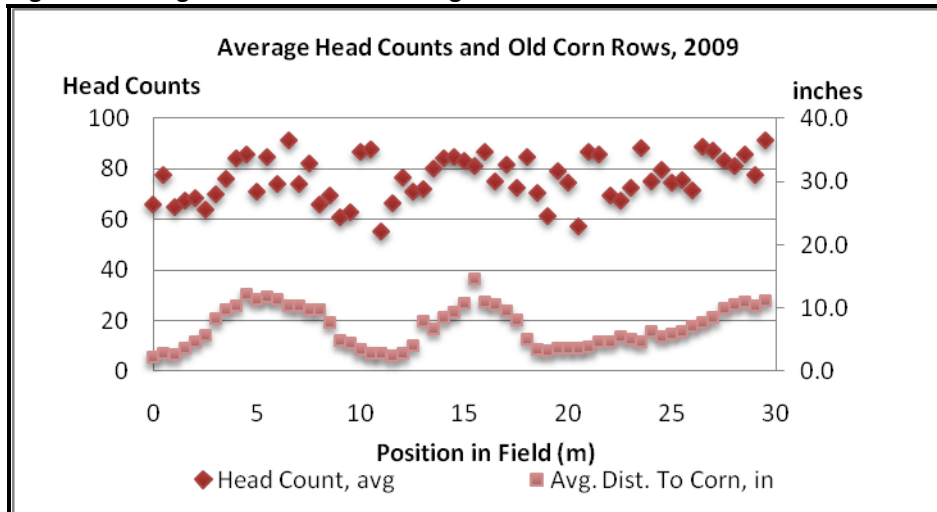
As you walk along a wheat row, corn residue levels increase and decrease relative to the old corn rows. The research from last season implies that wheat yields also fluctuate relative to the old corn rows (and to corn residue). We are beginning to better understand what is occurring on a very small scale in the no-till wheat field. Our next challenge is to determine if we can better manage these old corn rows and corn residue to improve wheat yields?

A combination of large field-scale studies and small-scale sampling should help us answer these questions.

**Figure 1. Average wheat head weight and average distance between wheat and old corn row. Wheat was harvested from 1.6-foot (0.5-meter) sections for 98 feet (30 meters) for a total of 60 harvested sections per wheat row. Two adjacent wheat rows were harvested.**



**Figure 2. Average head count and average distance between wheat and old corn row.**



**Figure 3. Average seeds per head and average distance between wheat and old corn row.**

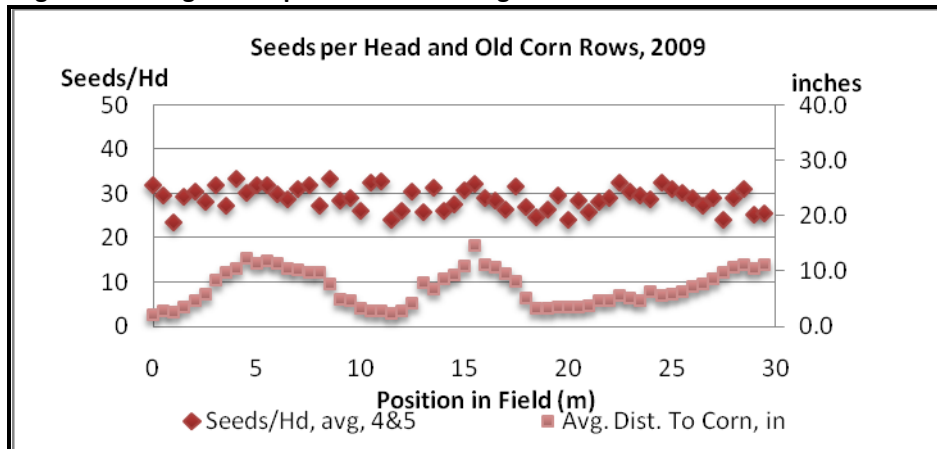


Figure 4. Average head weight compared with average corn residue.

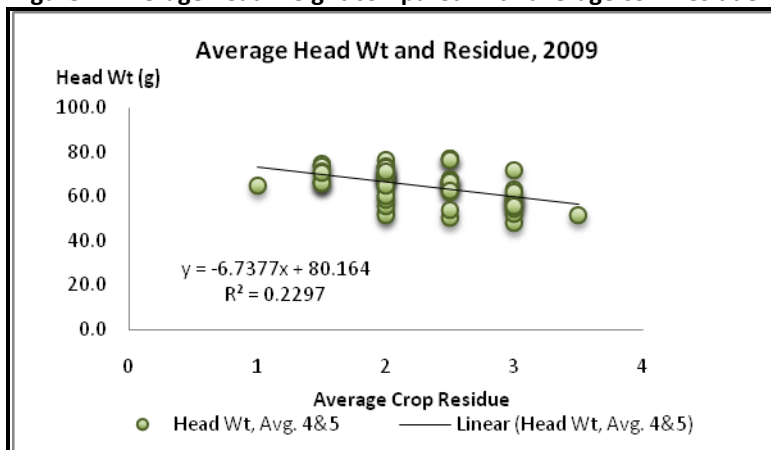


Figure 5. Average head counts compared with average corn residue.

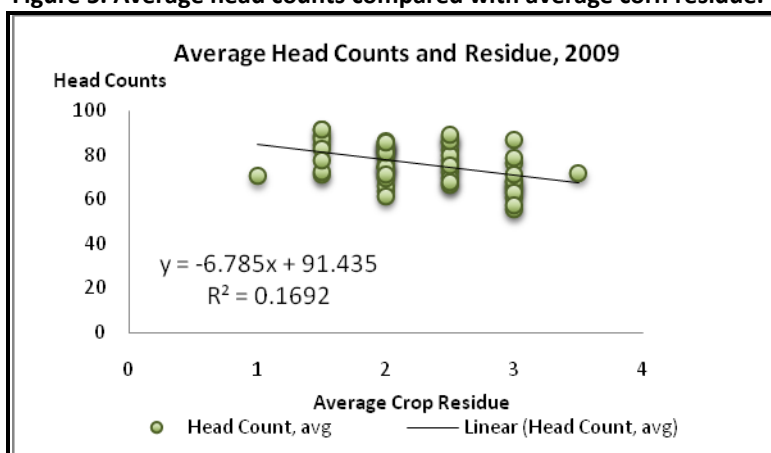
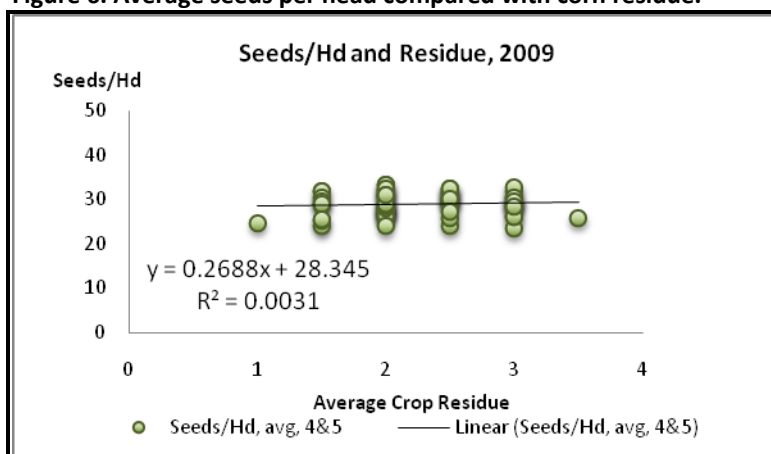


Figure 6. Average seeds per head compared with corn residue.



#### Literature Cited

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