

# WHEAT YIELD RESPONSE TO OLD CORN ROWS, INITIAL OBSERVATIONS

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Tillage and no-tillage wheat yield virtually the same after 13 years of research (Murdock et al., 2005). However, 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 pre-existing corn row somehow reduced wheat yield, or affected some other part of the partitioning of dry matter into grain.

The study was conducted in Logan County near Schocho, Kentucky in 2008 to investigate the effect of the old corn rows on the yield of wheat in a no-till corn field.

Entire wheat plants were harvested in a span of 3 feet from rows of wheat. The entire above ground plant was bagged, dried, weighed and threshed. The threshed seed was weighed. Sixty-four rows were harvested in each of two transects (128 rows total) in a no-till wheat field. Each wheat row was then measured to the nearest corn row. Corn residue in each wheat row was estimated as percent ground cover. Soil samples were taken immediately beside each wheat row with soil probe touching wheat roots (Fig. 1).

Wheat yields, head counts and seed size from each row were then compared to the various parameters measured (distance to a corn row, percent corn residue, etc.). There was little or

no correlation between wheat yield and existing corn rows for the first transect (data not shown). There was a very weak correlation indicating that wheat yields might be reduced as wheat rows get closer to old corn rows (Fig. 2). In addition, wheat yields declined slightly as corn residue increased.

The number of wheat heads had a very weak correlation with corn residue (Fig. 3) meaning that head number decreased as corn residue increased.

While the correlations between wheat yield and existing corn rows are very weak, there is an indication that wheat yields, and wheat head number may be lowered by existing corn rows and/or corn residue. The data from this project is not conclusive and no recommendations or management decisions should be made from this data. We intend to conduct additional studies in during the 2008-2009 growing season.

## **Literature Cited**

Grove, J. 2005. Yield of winter wheat in a long term continuous no-tillage rotation of corn, wheat and double-crop soybean. pp. 17-18. University of Kentucky Wheat Science Research Report 2004-2005.

Kumudini, S. and L. Grabau. 2006. Physiological basis of yield reduction in no-till wheat: final report. Kentucky Small Grain Growers. Available online at <http://www.kysmallgrains.org/research/Kumudini.pdf>.

Murdock, L., J. Herbek, J. Martin, J. James and D. Call. 2005. No-tilled vs. tilled wheat (13 years). pp. 9-10. University of Kentucky Wheat Science Research Report 2004-2005.

Figure 1. Taking soil samples from a transect of wheat

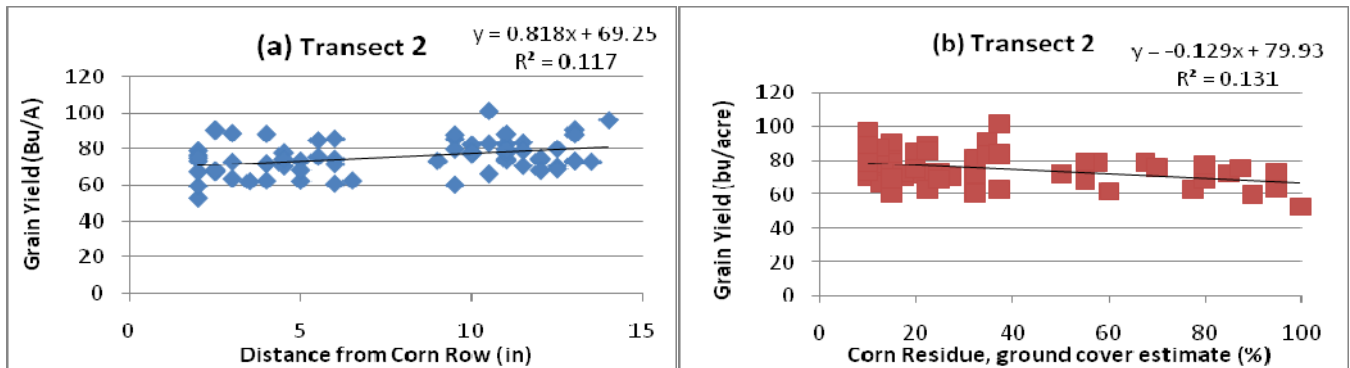


Figure 2. Wheat yield in relation to the nearest old corn row (a) and wheat yield in relation to corn residue (b) for Transect 2.

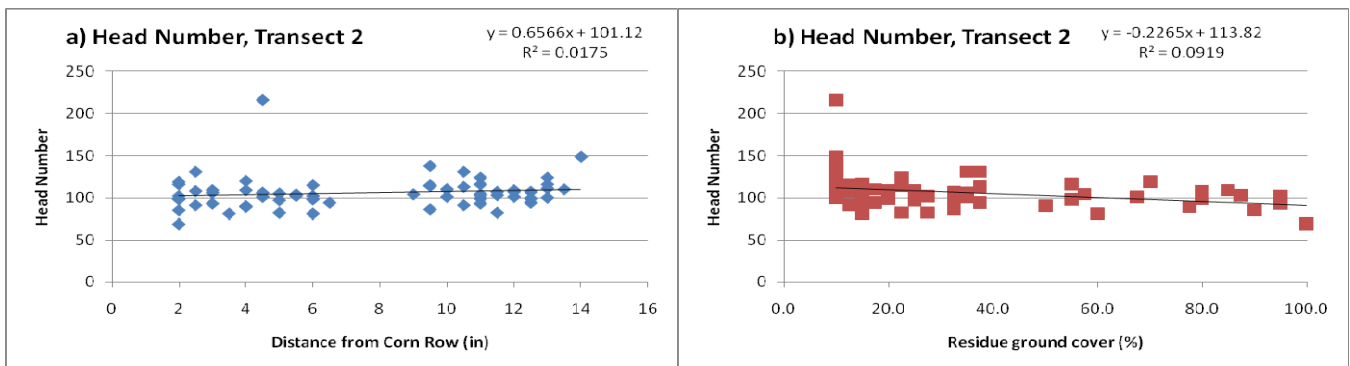


Figure 3. Number of wheat heads relative to distance from corn row (a) and number of wheat heads relative to corn residue (b) in Transect 2.