

YIELD OF MODERN WHEAT VARIETIES AND ITS RELATIONSHIP WITH PLANT HEIGHT AND HEADING DATE

Bill Bruening
Plant and Soil Sciences Department

Introduction:

Do shorter wheat varieties yield less than taller varieties? Do early maturing varieties yield less than later maturing varieties? In a double crop system with soybean, selection of an early maturing wheat variety may be important to limit the yield penalty associated with late planted soybeans. Plant height may also be an important characteristic in varietal selection. Growers may select a variety with short plant height to limit the amount of post harvest field debris. On the other hand, growers interested in straw production in addition to grain production may prefer a tall variety to maximize straw yields. Data from the 2005 Kentucky Wheat Performance Tests are available to determine whether varieties with high yield potential tend to be tall or short; early or late maturing.

Objectives:

To evaluate the relationship between: 1) yield and heading date; and 2) yield and plant height among modern wheat varieties.

Methods:

In the 2005 Kentucky Wheat Variety Tests, seventy eight varieties were evaluated under both conventional and no-till cultural practices. No-till tests were grown at four locations and conventional tests were grown at five locations throughout Kentucky. The experimental design was a randomized complete block. The tests had four replications per entry, and the data presented are the average response from the four replications averaged across the nine tests.

Tests were conducted using intensive management practices. Plots were harvested with a small plot combine.

Yields were calculated from the weight of grain from each plot. Plant height was measured in inches from the soil surface to the top of the grain head. Heading dates were reported as the day an estimated 50% of the heads had extended above the flag leaf collar.

Results and Discussion:

There was no significant relationship between heading date and yield (Figure 1). The average heading date was May 7th and the average yield was 85.6 Bu/A. Most varieties headed between May 4th and May 9th, which corresponded with the occurrence of top yield performance. Varieties which headed before May 4th or after May 9th, though few, tended to have average yield performance. Double crop soybeans yields decrease by 1.5 % for each day of delayed planting. When considering the potential profitability of the double crop system, both yield potential and heading date are important components of wheat variety selection. Although these data indicate no relationship between heading date and yield, this study was based on one years' data and because heading can be influenced by the environment, multiple years' data is needed to provide a more accurate study of the relationship between heading date and yield.

There was no relationship between plant height and yield (Figure 2). Most varieties were between 33 and 39 inches in height. The average plant height was 36 inches. Top yielding varieties ranged from 33 to 40 inches in height. These data suggest that growers can select high yielding varieties with relatively short plant height to minimize residue or tall plant height to maximize straw yields.

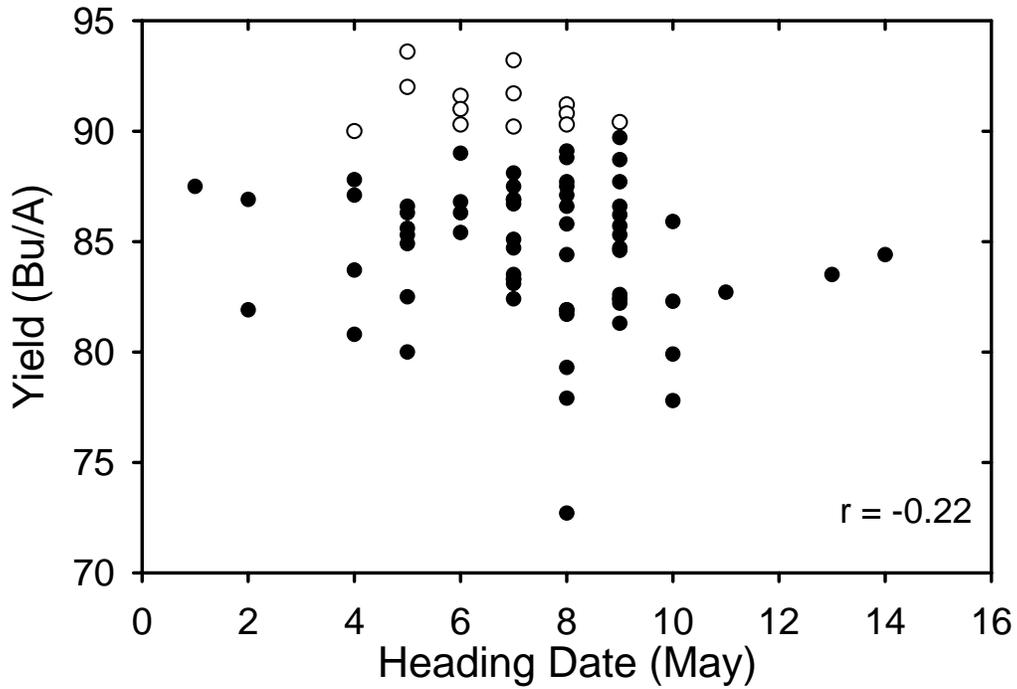


Figure 1. The relationship between heading date and yield. Open circles indicate variety yields that were not significantly different ($p=0.05$) from the top yielding variety.

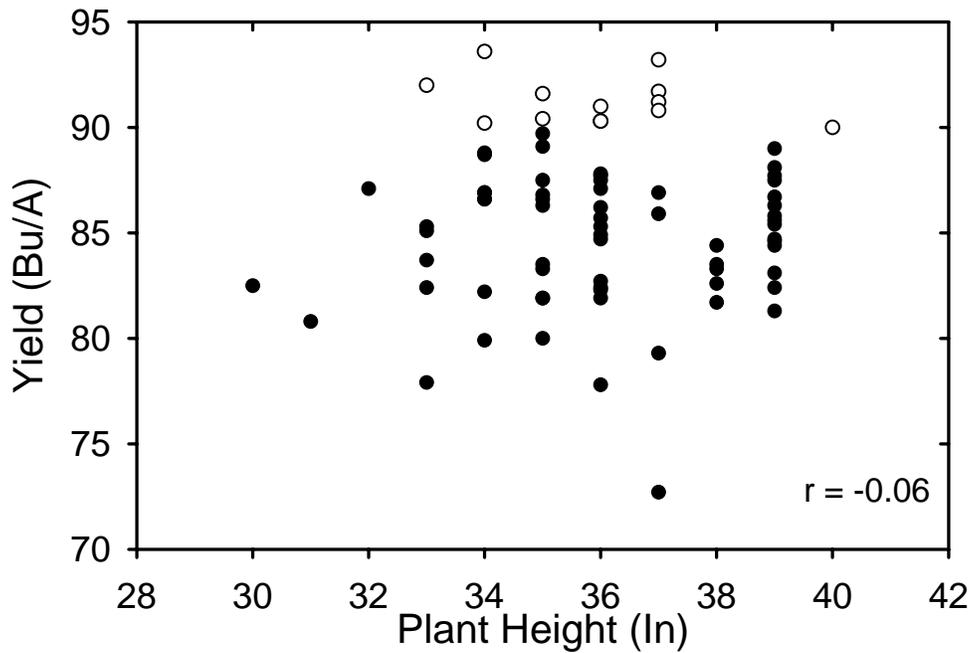


Figure 2. The relationship between plant height and yield. Open circles indicate variety yields that were not significantly different ($p=0.05$) from the top yielding variety.