



UNIVERSITY OF WISCONSIN AGRONOMY, SOYBEAN RESEARCH, UNIVERSITY OF WISCONSIN-EXTENSION

Harvest timing of winter wheat to maximize yield and minimize elevator discounts - 2018

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In a wheat glume

- Wheat yields varied across harvest dates with no apparent trend
- We noted lower test weights in later harvest dates, but it was not a linear trend
- The difference in total pricing discount between the early harvest and late harvest date was negligible
- Elevator discounts were affected mainly by moisture on the first date and solely on test weight on the last date
- By the second harvest date, moisture discounts were very low or zero and any further discounts came from lower test weights
- There was no difference in DON concentration between any of the harvest dates or varieties

A research trial was initiated in the fall of 2017 at the Arlington Agricultural Research Station, Arlington, WI to assess the impact of delayed grain harvest on yield and test weight in soft red winter wheat. Five dates of harvest were used starting when the grain moisture was about 17% and proceeding at ~5 day intervals. Five cultivars of wheat were chosen to represent a range of test weights and were based on the test weight measured in the 2017 WI Wheat Performance Trials. Test weights of the varieties selected ranged from 55 to 60 lbs/bu in the 2017 Trials. Normal, UWEX recommended management and fertilization practices were used in this trial.

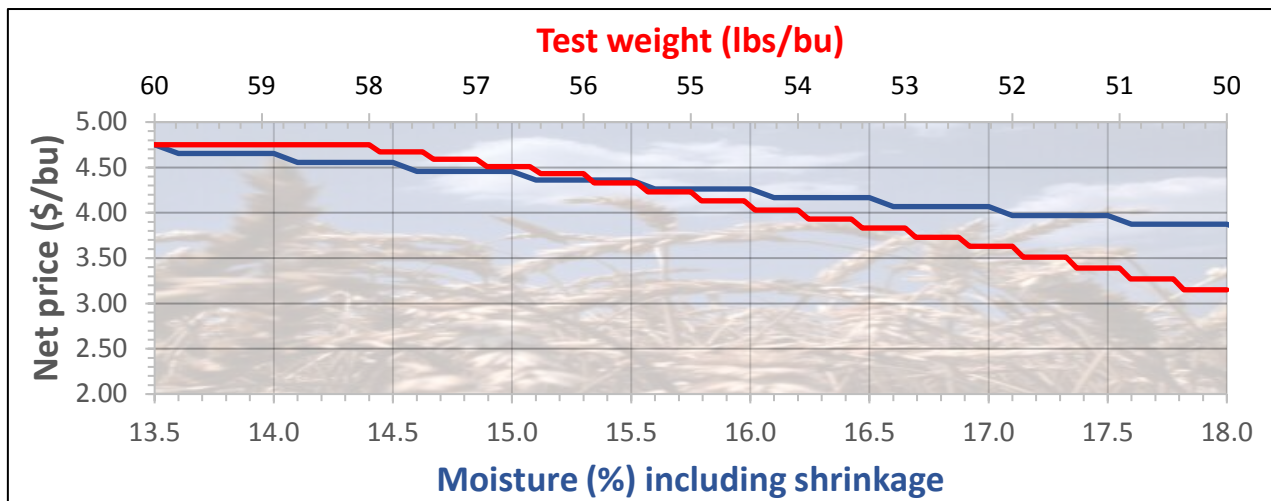


Fig. 1 Net wheat price (market price minus discounts) based on \$4.75/bu wheat market price using test weight or moisture plus shrinkage discounts as advertised by a commercial elevator in south central Wisconsin during the 2018 wheat harvest season.

Table 1. Materials, methods, and location information.

Year:	2017-2018		
Expt. No.	18097		
Title:	Harvest Date Effect on Winter Wheat Yield and Test Weight		
Personnel:	Dr. Shawn Conley, John Gaska, and Adam Roth		
Organization:	University of Wisconsin-Madison, Dept. of Agronomy		
Location:	Arlington Agricultural Research Station, Arlington, WI		
FIELD INFORMATION			
Field:	248C		
Previous Crop:	Soybean		
Soil fertility:	pH: 7.3 O.M.: 3.4 % P: 31 ppm K: 119 ppm		
Tillage:	No-tillage		
EXPERIMENTAL PROCEDURE			
Exp. Design:	RCB Split plot		
Replicates:	4		
Variables:	5 harvest dates 5 varieties		
Plot Size:	Planted:	8' x 25'	
	Harvested:	5' x 21'	
Row Spacing:	7.5"		
Cultivars:	5 varieties		
Planting:	Date:	25-Sep-17	
	Equipment:	No till plot planter	
	Rate:	1.5 million seeds/a	
	Depth:	1"	
Harvesting:	Date:	10-July, 17-July, 23-July, 27-July, 1-Aug-2018	
	Equipment:	Almaco SPC-40 plot combine	
Pesticides:	<u>Material</u>	<u>Rate</u>	<u>Use</u>
	Huskie	15 fl oz/a	Herbicide

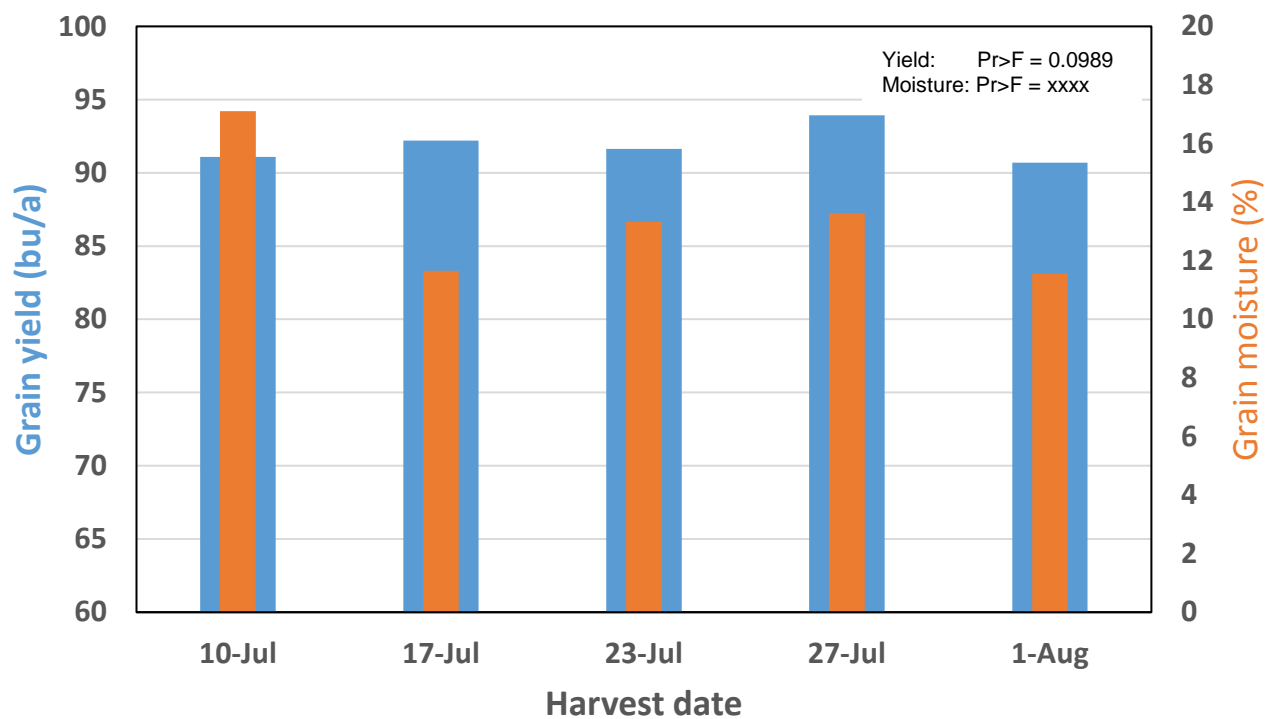


Figure 2. Grain yield (adjusted to 13.5% moisture content) and moisture at five harvest dates across five wheat varieties.

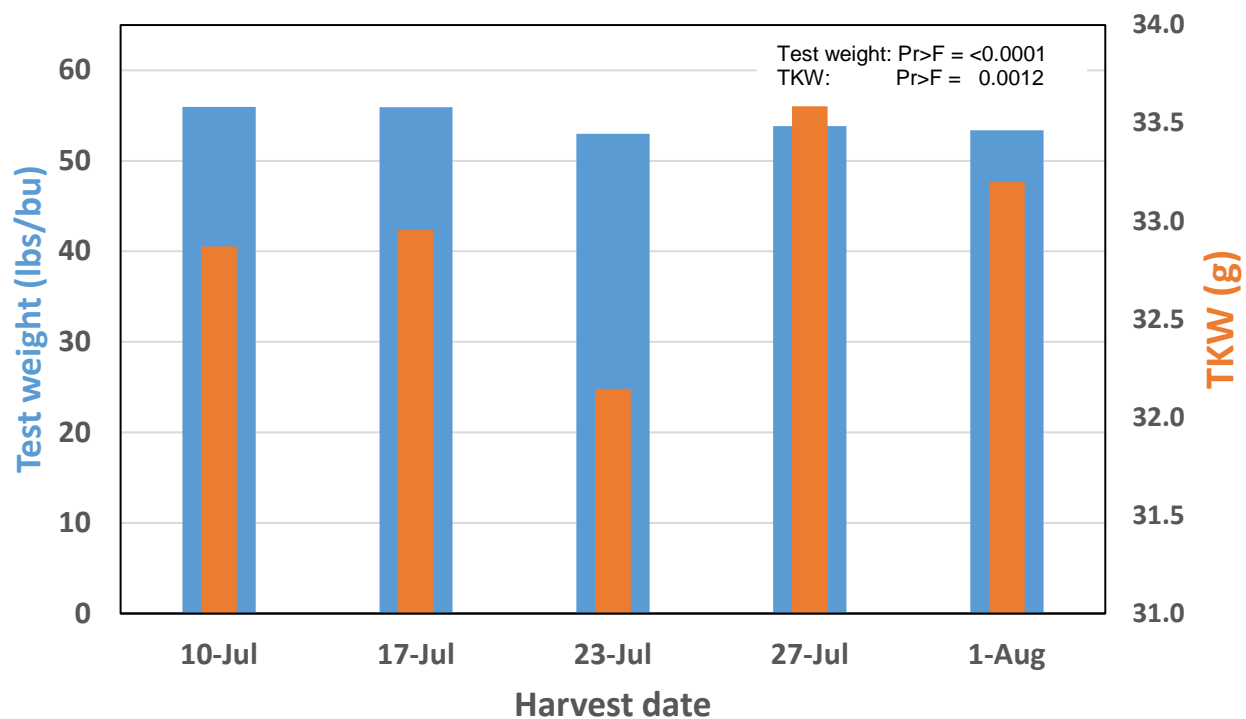


Figure 3. Grain test weight and thousand kernel weight (TKW) at five harvest dates across five wheat varieties.

Results

Harvest date and variety were significant for grain yield, test weight and thousand kernel weight (TKW). The interaction of harvest date and variety for these measured responses were not significant for yield. Harvest grain moisture targets were met on the first harvest date, but settled out between 11.6 and 13.6% for the remaining 4 harvest dates. Based on the values in Fig. 1, the discounts (moisture + shrinkage and test weight) for the first harvest date were \$0.42 for test weight and \$0.48 for moisture, totaling \$0.90. The discount for the last harvest date was \$0.92 for test weight and none for moisture, a difference of \$0.02/bu between the two dates. Reductions in moisture as the season progressed were expected and were noted in this study. Deoxnivalenol (DON), sometimes referred to as vomitoxin, is a mycotoxin that may be produced in wheat and barley grain infected by the *Fusarium* head blight (FHB or scab) fungus. Grain samples were collected from this study at harvest and submitted to the University of MN DON testing lab. DON concentration in the grain averaged 2.12 ppm. There was no statistical difference in DON concentration between any harvest date or any variety. This trial was also conducted in the 2016-2017 season and slightly different results were obtained. Anecdotal evidence from wheat growers of test weight reduction as the harvest season progressed were not observed in this study in 2017, but were evident in this year's study. Test weight discounts continue to be an economic reality for growing wheat in Wisconsin. Adapting sound agronomic practices starting with variety selection, planting date, fertilization, and timely harvest dates along with good grain marketing and straw sales are needed to make wheat a profitable crop.