

TIMELY INFORMATION

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Do Planting Date and Variety Selection Make a Difference in Wheat Production?

Several management decisions before planting a crop can result in higher or lower yields and could increase production costs throughout the season. Planting date and variety selection are two of the most important factors in small grain production that can impact yield potential. Number of tillers per area, tillering rate, heading, seed weight, and grain filling could be impacted by the combination of these factors and interaction with the seasonal climatic conditions. Because environmental conditions change across locations of Alabama, decisions related to planting date and variety should be site specific. Results from a two-year study on the impact of planting date and variety selection on winter wheat production conducted at three different locations in Alabama are presented in this Timely Information report. Two years of data can provide baseline information on the impact of those variables on winter wheat production; however, we are conducting more research to identify the best combinations for use in Alabama.

Description of the Experimental Study

A winter wheat planting date and variety selection study was conducted at the Tennessee Valley Research and Extension Center (TVREC) in Belle Mina, AL, the E. V. Smith (EVS) Research Center in Shorter, AL, and the Wiregrass (WGREC) Research and Extension Center in Headland, AL, during 2010 and 2011. The main goal of the study was to evaluate the impacts of planting date and variety selection on winter wheat growth and grain yield. The experiment included: a) four different planting dates, at approximately 15 day intervals each one (Table 1), and b) three wheat varieties with early, medium and late maturity levels (different vernalization requirements*). The varieties planted were: 'AGS 2060' (early maturity), 'AGS 2035' (medium maturity), and 'Baldwin' (late maturity). Each experimental plot was 12 ft wide by 30 ft long and treatments were replicated five times.

Table 1. Planting dates for the three experimental locations in 2010 and 2011.

Location	Planting date			
	Date 1 (PD1)	Date 2 (PD2)	Date 3 (PD3)	Date 4 (PD4)
	(Average farmer's planting date)			
North - TVS	Oct. 15-17	Oct. 29-30	Nov. 15	Nov. 30
East Central -EVS	Oct. 21-23	Nov. 6-8	Nov. 20-22	Dec. 5
Southeast - WGS	Oct. 29- Nov. 2	Nov. 13-16	Nov. 26-30	Dec. 10-11

* Vernalization is often referred as chilling hours. It is period of low winter temperatures (40-50 °F) that is required to initiate flowering or heading. Wheat varieties have different vernalization requirements.

Results

Yield differences between planting dates and maturity level of the variety

Data collected in 2010 and 2011 showed that wheat yield decreased as planting was delayed (Figure 1). Although the results indicated that yield increases if wheat is planted 15 days earlier than the farmer's planting date, pests such as Hessian Fly and Barley Yellow Dwarf might increase with early planting dates if the climatic conditions favor their reproduction and survival. Average data from both years shows significant yield differences between locations with respect to planting dates and the maturity level of the variety. In North Alabama (TVREC), higher yield was observed by using either a medium or late maturity wheat variety and early planting date (Figure 1a). For the east central location (EVS), planting date had a significant effect on variety yield response. At that location, for the earlier planting dates, medium and late maturity varieties yielded higher than the early maturity variety. There were no yield differences between the varieties for the second and third planting dates; however, the early maturing variety, presumably due to the low vernalization requirements, yielded higher than the medium and late maturity varieties when planted late in the season (Figure 1b). At the southeast location (WGREC), medium and late maturing varieties yielded higher than early maturing for most planting dates (Figure 1c). Although the three wheat varieties planted early in the season, PD1, had higher yield than the other three planting dates, higher yield differences between the varieties were observed at PD3.

The importance of selecting the appropriate planting date according to the variety to be planted was evident in the two years study. Late maturing varieties have higher vernalization requirements (more days with winter temperatures in the range of 40-50F to initiate flowering and heading); therefore, earlier planting dates may prove to be beneficial to accumulate enough chilling hours for heading initiation. In our study, when these varieties were planted late, heading was delayed resulting in wheat filling the grain during hot and dry conditions. Data from the EVS location shows that when planting was delayed, the option of an early maturity variety might be a better choice for that area. It is important to remember that early maturity varieties with low vernalization requirements might enter the jointing and heading phase too quickly if planted too early which can increase the risk for damage from late spring freezes.

In summary, these two years of data suggest that the late maturing varieties should be planted early in the season and early-maturing varieties should be considered for late plantings. As in Figure 1b, early-maturing varieties yield higher if planted late in the season. Note: summary data from the research study is shown in Figure 1.

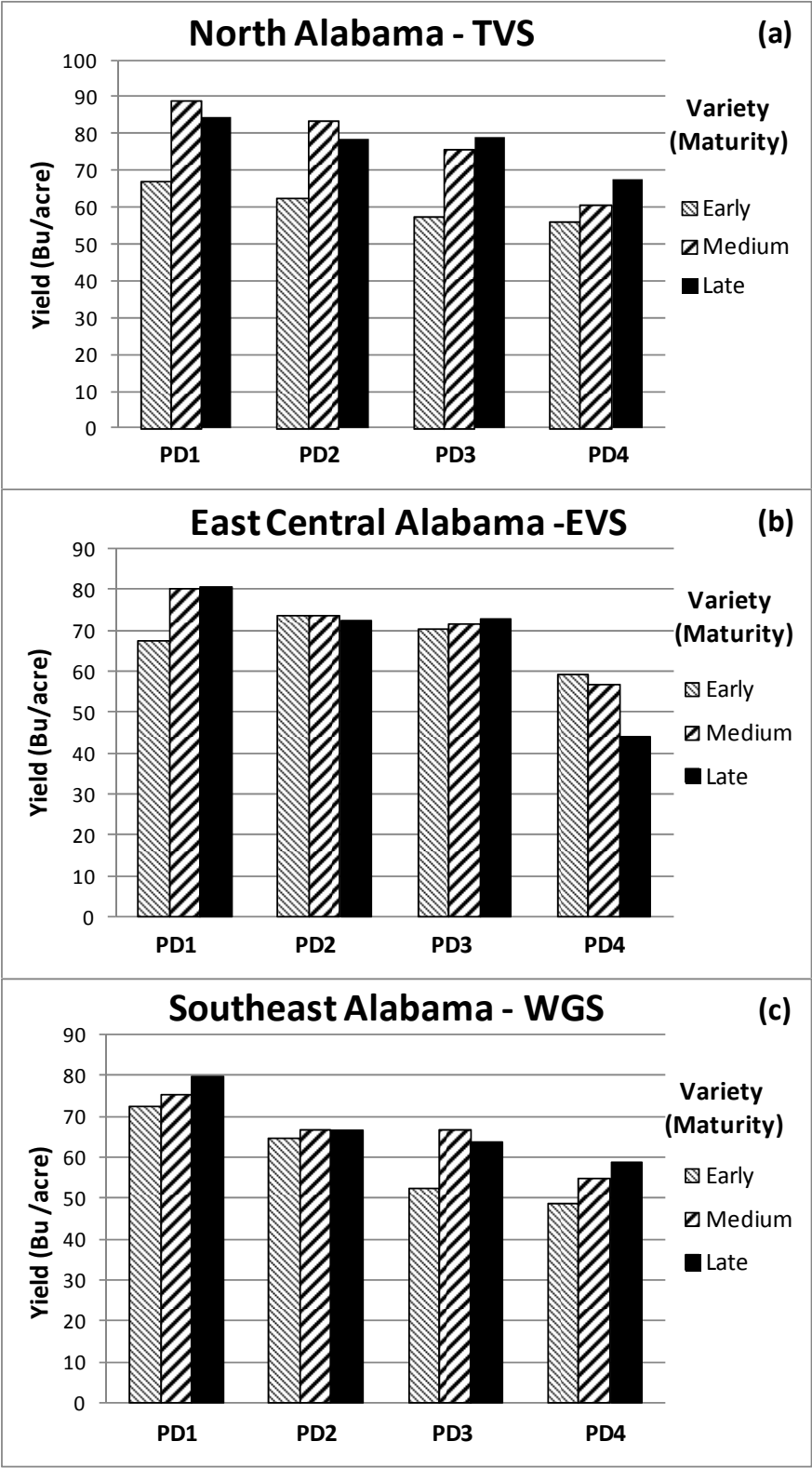


Figure 1. Effect of Planting Date and Variety on Yield of Soft Red Winter Wheat in Alabama. Average of data collected in 2010 and 2011.

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Disclaimer

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