

EFFECT OF PLANTING DATE, VARIETY, AND DEFOLIATION PROGRAM ON YIELD AND FIBER QUALITY**D.M. Dodds****C.H. Koger****Mississippi State University****Mississippi State, MS****R.A. Haygood****J.C. Faircloth****Dow AgroSciences****Collierville, TN****M.A. Jones****Clemson University****Florence, SC****C.L. Main****University of Tennessee****Jackson, TN****C.D. Monks****Auburn University****Auburn, AL****Abstract**

The objective of this study was to determine the effect of different levels of leaf hairiness, planting date, defoliation timing and program on cotton lint yield and fiber quality. Varieties selected for the study were PHY 485 WRF (hairy leaf), PHY 375 WRF (semi-smooth leaf) and ST 4357 B2RF (smooth leaf). April and May planting dates were included in the study sites in MS, TN and VA and a May planting date was used in the AL and SC sites. Treatments included 2 defoliation timings of 50 to 60% open bolls and 90 to 100% open bolls and 2 defoliation programs intended to provide marginal or moderate defoliation. The optimum defoliation program consisted of Dropp at 0.1 lb ai/acre + Def 6 EC at 0.75 lb ai/acre + Prep at 1.13 lb ai/acre whereas the moderate defoliation program consisted of Dropp at 0.1 lb ai/acre + Prep at 1.13 lb ai/acre. Standard small plot trial methods were followed using locally recommended agronomic practices. Seed cotton samples were ginned and fiber samples analyzed using HVI to determine gin turnout, micronaire, strength, length, uniformity and leaf content. A randomized complete block experimental design with a factorial arrangement of treatments was utilized for this study. Location was considered a random effect. Data were analyzed as an unbalanced dataset (Spilke et al. 2005) due to three locations having two planting dates and two locations having one planting date and means were separated using Fisher's Protected LSD @ 0.05.

In these studies, defoliation was influenced by planting date and defoliation program, but not by leaf hair characteristics. Better defoliation was achieved in the April planted cotton as well as with the optimum defoliation program than that achieved with the later planting interval or sub-optimal defoliation program. Lint yield was affected by variety and defoliation timing. PHY 375 WRF produced significantly higher yields than PHY 485 WRF or ST 4357 B2RF and defoliating at 90% versus 50% open bolls resulted in significantly higher yields. A significant planting date by defoliation program interaction was present. The optimum defoliation program resulted in higher yields in the April planting, but not the May planting. Gin turnout, length, and uniformity were influenced by planting date and variety while defoliation timing and program had no effect. April planted cotton tended to have increased gin turnout, length, and uniformity compared to May planted cotton. PHY 375 WRF, ST 4357 B2RF, and PHY 485 WRF had the highest gin turnout, fiber length, and uniformity, respectively. Micronaire was impacted by planting date, variety and defoliation timing. Strength was only impacted by variety with PHY 485 WRF having the highest strength and ST 4357 B2RF the lowest. April planting resulted in less leaf content in ST 4357 B2RF than the other 2 varieties, but there were no differences among varieties in the May planting. The difference in leaf content in the April planting may have been associated with the smooth leaf of ST 4357 B2RF. Planting in April and defoliating at 90% open bolls resulted in decreased leaf content as compared to planting in April and defoliating at 50% open bolls. Defoliation timing did not affect leaf content in the May planting. In addition, use of the optimum defoliation program caused a significant increase of leaf content in the May planting, but not the April planting dates. These trials will be repeated in order to further determine the effect of variety selection, planting data, defoliation program, and defoliation timing on lint yield and fiber quality.