

DETERMINING THE LAST EFFECTIVE BLOOM DATE UTILIZING HEAT UNIT ACCUMULATION IN GEORGIA

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Abstract

In Georgia, growers are often forced to plant cotton later in the growing season than desired. Subsequently, questions arise related to late-season boll maturation and proper crop management to maximize chances of producing a reasonable crop. The time required to mature a boll to harvest varies on several factors, including heat unit accumulation which in cotton are referred to as DD60s, because heat unit calculations are based on average daily temperature minus 60 degrees Fahrenheit. Existing literature reports the number of DD60s required for a flower to mature into a harvestable boll between 700 up to 850. Based on historical weather data in Georgia the last effective bloom date (LEBD) would occur in late-August if 700 DD60s were required for late-season boll maturation. However, the LEBD in Georgia has been traditionally noted to occur in early September. Our objective was to more precisely document the DD60s needed for late-season boll maturation and estimate LEBDs in Georgia. To estimate the DD60s for boll maturation, blooms were tagged in eight late-planted fields between late-August and late-September in 2013. At harvest, each tagged boll was evaluated for maturity and harvestability and the DD60s between flowering dates and first frost dates were calculated by using nearby weather station data. Our results indicated the LEBD varied from September 2nd and September 11th across locations in 2013. The average number of DD60s accumulated from LEBD to first frost date averaged 597. Utilizing 597 DD60s as an adequate amount for boll maturation, the LEBD was estimated in Midville, GA, the northernmost site in the study, for the past 10 years. The average LEBD in Midville was September 5th, ranging from September 2nd to September 16th. Moreover, the LEBD was later than September 8th only once and on September 2nd or earlier in three years. This study provided information that could help cotton growers in Georgia make more informed management decisions about late-planted cotton and provide a method to approximate LEBD in various locations across the Southeast. However, it should be noted that this data was collected in only one year and other factors are involved in boll maturation, therefore further work is needed to validate these predictions.