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# WEED CONTROL PROGRAMS IN LIBERTY LINK COTTON

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## Abstract

Liberty Link® cotton has been available to growers since the 2004 growing season. Marketed by Fibermax®, this cotton is genetically modified to be resistant to glufosinate-ammonium (Ignite®). With this technology, growers can make Ignite® applications up to 70 days prior to cotton harvest. Because Ignite® has no soil activity, foliar uptake is needed in order to receive optimum weed control. Typically, weeds will emerge throughout the entire growing season thus sequential applications of Ignite® may be necessary in order to gain season long weed control. Ignite® has activity on both broadleaf weeds and grasses, however, it is typically more effective on broadleaf weeds. Therefore, the use of graminicides in combination with Ignite® could be useful in obtaining grass control in Liberty Link® cotton.

Experiments were conducted at the Blackbelt Branch Experiment Station in Brooksville, MS. The soil consists of a silty clay loam. The transgenic cotton variety planted was FM 958 LL in 12.6 by 40 feet plots. A two factor factorial experiment arranged in a randomized complete block design was used with each treatment being replicated four times. The two factors analyzed were application order and graminicide. Applications were made in the following orders: Ignite® plus a graminicide, a graminicide followed by (fb) an application of Ignite®, and Ignite® fb an application of a graminicide. The herbicide treatments were comprised of Ignite® 280 SL (2.34 lb ai glufosinate-ammonium/G) at 21.3 oz/A applied either in a tankmix or before/after each of the following: Assure® II (0.88 lb ai quizalofop-p-ethyl/G) at 10 oz/A, Fusilade® DX (2 lb isomer fluazifop-p-butyl/G) at 12 oz/A, Fusion® (2 lb isomer fluazifop-p-butyl + 0.56 lb ai fenoxaprop-p-ethyl/G) at 8 oz/A, Poast® (1.5 lb sethoxydim/G) at 24 oz/A, Poast Plus® (1 lb sethoxydim/G) at 32 oz/A, and Select® (2 lb clethodim/G) at 8 oz/A. Applications were made using a compressed air hooded sprayer system at an output rate of 15 gallons per acre. Visual injury ratings were recorded 7-14 and 21-28 days after each application. The center 2 rows of each 4 row plot was harvested using a plot cotton picker equipped with a bagging unit. Yield totals were calculated in lbs/A from the cotton harvested in each plot.

Application order was significant for both barnyardgrass and pitted morningglory control. These data were averaged over all graminicides. The tankmix application provided 68 to 79% control of barnyardgrass and 40 to 56% control of pitted morningglory. The graminicide fb Ignite® application resulted in as much as 94% control of barnyardgrass. Yields were significantly higher for the tankmix application. It is possible that competition between weed and crop occurred during the time between applications. This study shows that graminicide activity is severely antagonized when applied as a tank mixture with Ignite. Optimum grass control was achieved when the graminicide was applied first and Ignite was applied 7 – 14 days later. When Ignite was applied first followed by the graminicide, grass control was poor. The poor control may be attributed to the larger grasses and/or the reduced activity as a result of plant injury by Ignite. Utilizing graminicides as postemergence applications before an application of Ignite® could add grass control to Liberty Link® cotton systems; however, further research needs to be conducted in order to properly assess weed control as well as yields with different timings between the two applications.