

PERFORMANCE OF ETX, DISPLAY AND SHARPEN AS HARVEST AIDS IN OKLAHOMA COTTON**Shane Osborne****Randy Boman****Department of Plant & Soil Sciences****Southwest Research and Extension Center****Oklahoma State University****Altus, OK****Scott Ludwig****Nichino America, Inc.****Arp, TX****Abstract**

ETX is a new formulation of pyraflufen ethyl with lower use rates offered from Nichino America, Inc. ETX is currently registered for use as both a herbicide for weed control and as a cotton harvest aid. The objectives of this project were to evaluate the effectiveness of ETX as a harvest aid and to compare the performance of ETX to other recently registered harvest aid products including Display and Sharpen. Four replicates of 6 treatments were used including an untreated control. ETX was applied at 1.25 and 1.7 oz/A, Display was applied at 0.6 and 0.8 oz/A, and Sharpen was applied at 1.0 oz/A. All treatments were tank mixed with 32 oz/A of ethephon (6 lb/gallon product) and applied to cotton at 12 gallons/acre (GPA) that exhibited approximately 55-60% open bolls. Although Sharpen provided the greatest amount of defoliation observed at 14 DAT there was very little difference between its performance and the remaining treatments. The defoliation observed from Display did improve as the rate increased and ETX provided similar defoliation regardless of rate. This could be attributed to the extremely favorable weather following application. Results indicate that all products evaluated offer effective harvest aid options to Oklahoma cotton producers.

Introduction

ETX is a new formulation of pyraflufen ethyl with lower use rates offered from Nichino America, Inc. Currently ETX is registered for use as both a herbicide for weed control and as a cotton harvest aid for defoliation and desiccation. While many cotton producers may be familiar with the original formulation of pyraflufen ethyl (ET), they have no experience with this new formulation. The new more concentrated formulation allows for a rate structure equivalent to approximately 60% of the previous formulation's rates. In addition, Sharpen and Display are similar chemistries (PPO inhibitors-group 14) that have been recently registered for use as cotton harvest aids. All three of these products offer growers a unique benefit in addition to their performance as harvest aids. Often times when harvest aids are applied to Oklahoma cotton, adjacent fields of small grains are already emerged. Unlike paraquat (a popular cotton harvest aid) these products are relatively safe when used in proximity to adjacent small grain fields. Due to extensive acreage of small grains in Oklahoma these products have a unique fit for cotton producers. This project was established to evaluate the performance of ETX as a harvest aid in comparison with Display and Sharpen. The objectives of this project were to evaluate the effectiveness of ETX as a harvest aid and to compare the performance of ETX to other recently registered harvest aid products including Display and Sharpen.

Materials and Methods

A randomized complete block design with four replicates was used. The trial was conducted on a clay loam soil. Treatment applications were made with a compressed air, high-clearance sprayer. A spray volume of 12 GPA was applied with Turbo TeeJet nozzles at 60 PSI on September 26, 2013. Cotton was approximately 55-60% open. The site was furrow irrigated, had a yield potential of 2.5-3 bales/acre, and had a moderate canopy at application. ETX was applied at 1.25 and 1.7 oz/A, and each was in combination with 32 oz/A of ethephon (6 lb/gallon product). Similarly, Display was applied at either 0.6 or 0.8 oz/A with 32 oz/A of ethephon. Sharpen was applied at 1.0 oz/A also in combination with 32 oz/A of ethephon. All treatments except Sharpen included crop oil concentrate at ½ % v/v. Sharpen included methylated seed oil at 1% v/v plus ammonium sulfate (17 lbs/100 gallons). Defoliation and open boll visual evaluations were taken 7 and 14 days after treatment. Terminal and basal regrowth were also visually evaluated 21 days after treatment. The data were subjected to analysis of variance and results are presented in figures 1 and 2.

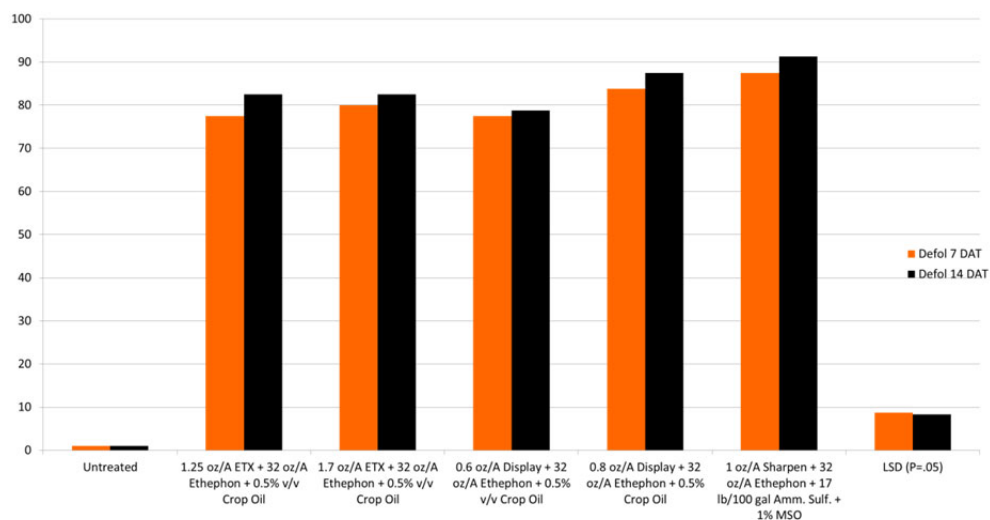


Figure 1. Defoliation 7 and 14 DAT.

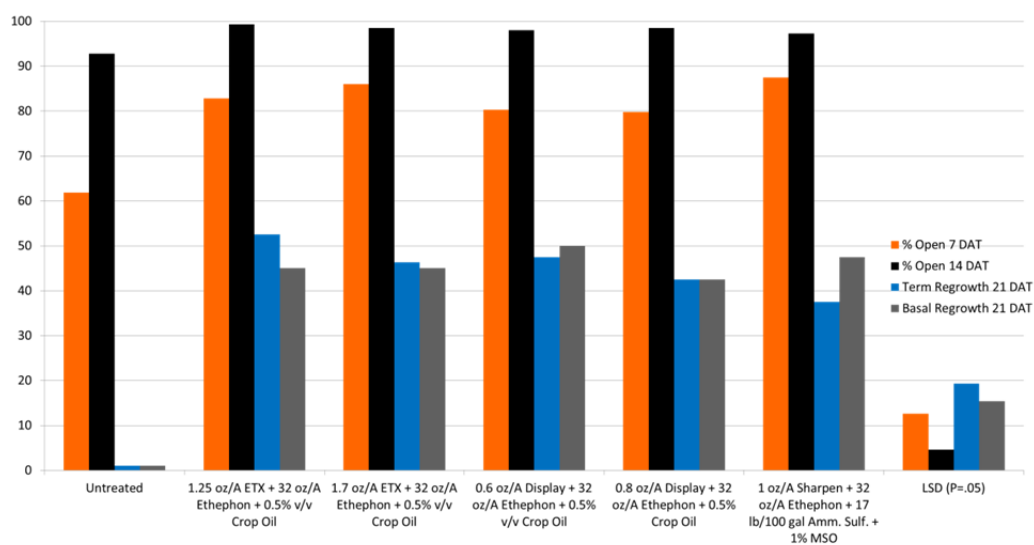


Figure 2. Open boll percentages (7 and 14 DAT) and regrowth (21 DAT).

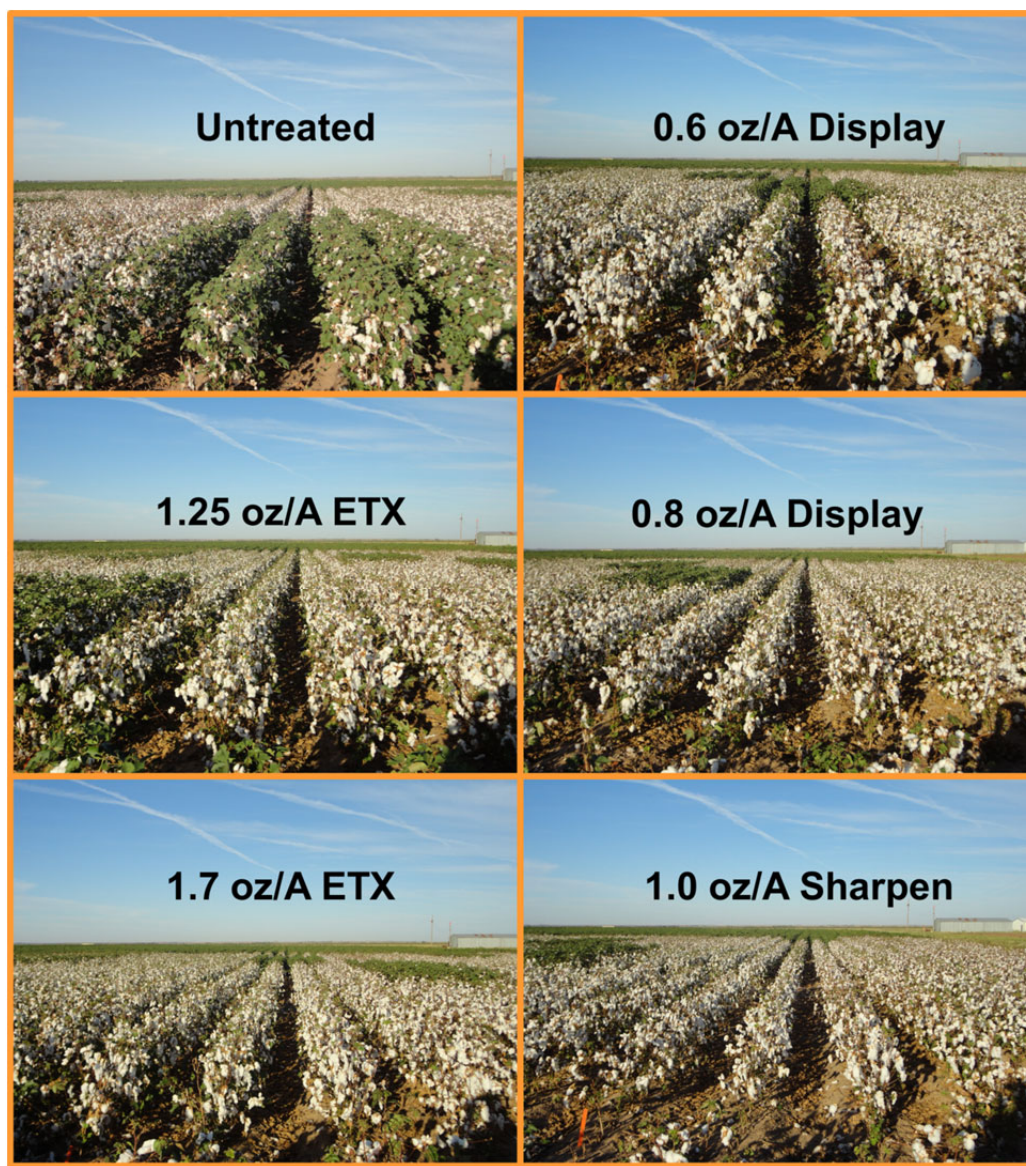


Figure 3. Treatment performance 14 days after application.

Results and Discussion

Defoliation provided by each treatment is presented in figure 1. Seven days after treatment (DAT) the low rate of ETX (1.25 oz/A) provided 78% defoliation. The higher rate of ETX did not significantly increase defoliation (80%) 7 DAT. Similar defoliation (78-84%) was provided by Display. Sharpen provided 88% defoliation 7 DAT. This was significantly greater than the low rates of ETX and Display but similar to higher rates of these products. All treatments provided similar boll opening (80-88%) at 7 DAT, and were significantly higher than the untreated control. ETX (regardless of rate) provided 83% defoliation 14 DAT. Similar defoliation was observed from 0.6 oz/A of Display. The higher rate of Display (0.8 oz/A) defoliated cotton 88% 14 DAT. This was significantly greater than the lower rate. Sharpen provided similar defoliation (91%) 14 DAT. All treatments resulted in > 97% boll opening 14 DAT. Regrowth evaluations were made 21 DAT. Terminal and Basal evaluations were recorded separately. Terminal regrowth was very inconsistent across replicates. Although numerical evaluations ranged from 38 to 53%, there were no significant differences among treatments. Basal regrowth observations were less variable (ranging from 43-50%), but there were no significant differences among treatments.

Summary and Conclusions

The performance of harvest aids products depends heavily upon two factors. One is the condition of the cotton at application time and the other is the weather experienced following application. As stated earlier this cotton was irrigated throughout the growing season and was not stressed at the time of application. It had a moderate crop canopy, was experiencing natural senescence prior to application, and was 55-60% open. Temperatures following application were extremely favorable and in the seven day period following application, 155 degree days (60 degree base threshold) or DD60 heat units were recorded at the site. Average DD60 accumulation during this period is approximately 91. Heat unit accumulation for all 14 days following application totaled 207 (an additional 52 from days 8-14). This is a 51% increase compared to the long-term average (137). In addition, approximately one inch of rainfall was received during the 14 days following application. Although Sharpen provided the greatest amount of defoliation observed (91%) 14 DAT there was very little difference between its performance and the remaining treatments (< 9%). The defoliation observed from Display did improve as the rate increased. ETX provided similar defoliation (83%) regardless of rate. This could be attributed to the extremely favorable weather following application. All three of these products offer effective harvest aid options to Oklahoma cotton producers. All of the treatments evaluated were considered effective enough to enable an efficient picker harvest without a sequential treatment. However, all treatments would have required a sequential desiccant application in order to enable an efficient stripper harvest.

Acknowledgements

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