

COTTON HARVEST-AID TRIALS IN CENTRAL TEXAS

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Abstract

Harvest-aid chemicals prepare the cotton crop for harvest by reducing/eliminating foliage and plant moisture that interfere with mechanical harvesting operations. Desiccation of the entire plant is necessary in regions where cotton is stripper-harvested. The voluntary removal of arsenic acid from the marketplace in 1993 has left many growers searching for an effective, economical replacement. Producers in central Texas currently spend about a \$100/acre in harvest costs -- \$15 harvest-aid chemicals, \$35 stripper harvest, \$50 ginning. Environmental and crop conditions have direct influence on response of harvest-aids. Year-to-year variation is expected and annual harvest-aid field trials are essential in determining proper product selection. The objectives of this research were to evaluate the efficacy of currently registered harvest-aid compounds and experimental materials and to assess the response of Cyclone (paraquat) applied at different times of day.

Field studies were conducted at the Blackland Research Center located near Temple, Texas. Treatments were applied September 2, 1997 at 11:00 am. Cotton variety utilized in this study was Tamcot Sphinx, an early-maturing stripper-type cultivar. Plots were 5 rows wide (30 inch row spacing) x 30 feet. All visual determinations were made from the center three rows to avoid spray-drift influence. Treatments were applied with a self-propelled sprayer calibrated to 10 gallons/acre using 8003 EVS spray tips. A non-ionic surfactant was added to all treatments at 0.25% v/v unless otherwise specified. Treatments included registered and unregistered compounds and numerous tankmix combinations were evaluated in single and sequential applications. Cotton was in the 90% open boll stage when initial treatments were applied. Observations were collected 3, 6, 9, 14 and 17 days after treatment (17 day after treatment observations are presented herein). Compounds evaluated included Cyclone, Def, Dropp, Finish, Ginstar, Harvade, Round-Up and Novartis CGA-248757. All rates are reported in product/acre unless otherwise specified. CGA-248757[[2-chloro-4-fluoro-5[(tetrahydro-3-oxo-1H,3H-[1,3,4]thiadiazolo[3,4-a]pyridazin-1-ylidene)amino]-phenyl]thio]-acetic acid methyl

ester]] is a herbicide that is extremely effective on velvetleaf and has been evaluated as a potential cotton harvest-aid for the past four years. Activity on foliage of sensitive plants is rapid, similar to that of Cyclone. A separate Cyclone application timing study was also implemented at the Blackland Research Center. The 7:00 am treatments were applied September 9, 1997; 3:00 and 7:00 pm applications were applied September 10, 1997. The cotton variety utilized in this study was DPL 50. Cotton was in the 100% open boll stage when treatments were applied. Final evaluations were made 15 days after application. All other procedures were similar to those previously described herein.

The tankmix of Dropp (0.10 lbs./acre) + Def (12 oz./acre) has become the standard harvest-aid for central Texas stripper-harvested cotton and this treatment demonstrated 95% defoliation. Ginstar applied at 4 or 8 oz./acre provided over 93% leaf drop. Finish (32 oz./acre) showed only 76% defoliation. Tankmixes of Finish (32 oz./acre) + Dropp (0.075 lbs./acre) or Finish (32 oz./acre) + Def (6 oz./acre) resulted in 93% defoliation. CGA-248757 compound applied at 1.2 or 2.0 grams ai/acre followed by 1.2 or 2.0 grams ai/acre provided excellent leaf drop (> 94%). Sequential applications were superior in defoliation and regrowth suppression compared to single applications. Cyclone (32 oz./acre) provided 100% desiccation. All other treatments demonstrated less than 10% desiccation. Cyclone (32 oz./acre) and CGA-248757 (various rates) demonstrated the best overall regrowth inhibition.

Results from the Cyclone application timing study showed that rates of 16 and 32 oz./acre applied at 7:00 am resulted in appreciable plant desiccation (42 and 83%, respectively) and poor defoliation compared to similar rates applied at 3:00 and 7:00 pm. The 16 and 32 oz./acre rates applied at 3:00 and 7:00 pm caused very little desiccation (<5%); defoliation was over 90%. Cyclone rates of 4 and 8 oz./acre demonstrated excellent defoliation (>93%) and very little desiccation (<5%) at all application timings. The addition of Scythe (0.5 and 1.0%) to Cyclone (8 oz./acre) did not affect defoliation/desiccation.