## THE EFFECT OF ADJUVANT CLASS ON ABSORPTION OF SELECTED COTTON HARVEST-AIDS, AND RESULTING NECROSIS David Stair and Tom Cothren Texas A&M Univ. College Station, TX Lee Tarpley USDA-ARS Mississispipi State Univ. Starkeville, MS

## Abstract

Cotton (*Gossypium hirsutum*) desiccation/defoliation is required for early harvesting by machine where the natural temperatures do not promote leaf drop. The harvest-aid compounds used to induce leaf drop are not consistently efficacious. Foliar absorption and the leaf area coverage of particular harvest-aid chemicals can greatly affect their efficacy. Tank mix partners and time of application can affect both absorption and coverage.

Greater absorption occurred overall adjuvants after the 8 PM application for Paraquat (1,1'-dimethyl-4,4' bipyridinium dichloride). Time of application was not a significant factor for absorption of CGA248757 ([[2-chloro-4-fluoro-5[tetrahydro-3-oxo-1H,3H-[1,3,4] thiadiazolo [3,4a]pyridazin-1-ylidene)amino]-phenyl]thio]-acetic acid methyl ester). Type of tank mix partner was significant over both application times for Paraguat and CGA248757. WK (nonionic surfactant, DuPont) provided the greatest absorption at both 8 AM (92.4 %) and 8 PM (100 %) compared to no tank mix partner (85.7 % at 8 AM and 98.9 % at 8 PM) for Paraquat while SDS had a negative impact on absorption. Eth-N-Gard provided the greatest absorption after 8 AM applications of CGA248757 (74.9 % versus 56.9 % control) and was the best when averaged over both times. Ammonium sulfate increased uptake of Accelerate (89.1 % versus 54.4 % control). Tank mix partner and time of application were significant for all three harvest-aid compounds coverage. Paraquat had the greatest increases with Eth-N-Gard, CTAB, Scythe and WK after the 8 PM application time  $(0.808 \text{ cm}^2, 0.813 \text{ cm}^2, 0.738 \text{ cm}^2)$ , and 0.680  $\text{cm}^2$  respectively versus 0.527  $\text{cm}^2$  control).

Silwet, CTAB, and WK had the greatest increase in necrotic area after the 8 AM application ( $0.532 \text{ cm}^2$ ,  $0.536 \text{ cm}^2$ , and  $0.468 \text{ cm}^2$  respectively versus  $0.233 \text{ cm}^2$  control). For Accelerate, Eth-N-Gard, Silwet, and WK increased the necrotic area after the 8 AM application ( $0.371 \text{ cm}^2$ ,  $0.336 \text{ cm}^2$ , and  $0.328 \text{ cm}^2$  respectively versus  $0.254 \text{ cm}^2$  control) while none of the tank mix partners increased the necrotic area after 8 PM applications.

All tank mix partners increased the necrotic area for CGA248757 at either the 8 AM or the 8 PM application time. Eth-N-Gard demonstrated the greatest increase after the 8 PM application (0.671 cm<sup>2</sup> versus 0.139 cm<sup>2</sup>) and WK the greatest after the 8 AM application (0.411 cm<sup>2</sup> versus 0.152 cm<sup>2</sup>).

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