

ABSORPTION, TRANSLOCATION, AND METABOLISM OF MESOTRIONE IN GRAIN SORGHUM. Mary Joy M. Abit and Kassim Al-Khatib, Graduate Research Assistant and Professor, Department of Agronomy, Kansas State University, Manhattan, KS 66506.

Studies were conducted under controlled growth chamber conditions to determine if differential absorption, translocation, or metabolism were the basis for the differential response of grain sorghum hybrids to mesotrione. Mesotrione-tolerant ('Dekalb DKS35-70') and -susceptible ('Pioneer 84G62') sorghum grain hybrids were treated with ten 1- μ l droplets of 14 C-labeled mesotrione (specific activity 781 MBq/g). In general, mesotrione absorption was similar in both hybrids. At 1 day after treatment (DAT), absorption was 7% in both hybrids, however; absorption remained near steady 7 DAT in Pioneer 84G62 but increased to 12% in Dekalb DKS35-70. Translocation of 14 C-mesotrione in sorghum hybrids was minimal with less than 30% of the absorbed herbicide translocated out of the treated leaf by 7 DAT. A distinct metabolite of 14 C-mesotrione was identified in both hybrids at 3 DAT. The amount of mesotrione parent compound that remained in Pioneer 84G62 and DKS35-70 were 72 and 65%, respectively. Dekalb DKS35-70 had significantly less mesotrione at 3 DAT compared to Pioneer 84G62, but metabolism of mesotrione was similar for both hybrids at 7 DAT. These results indicate that differential metabolism may explain the differential response of grain sorghum hybrids to mesotrione.