## COTTON TOLERANCE TO APPLICATIONS OF WARRANT AND DUAL MAGNUM IN DICAMBA AND 2, 4-D TOLERANT COTTON D. K. Miller D. O. Stephenson IV LSU AgCenter Baton Rouge, LA

## <u>Abstract</u>

Field studies were conducted in 2017 at the Northeast Research Station near St. Joseph, La and the Dean Lee Research Station near Alexandria, La with the objective to evaluate cotton tolerance to inclusion of residual herbicides at differing application timings in 2,4-D and dicamba tolerant weed management programs. A four-replication factorial arrangement of treatments was used and included herbicide application timing (Factor A: 2-3 lf; 5-7 lf; or 8-10 lf) and herbicide treatment (Factor B: Enlist Duo @ 1.96 lb. ae/A, Engenia @ 0.5 lb. ae/A, or Xtendimax @ 0.5 lb. ae/A each applied alone or in combination with Dual Magnum @ 0.95 lb. ai/A or Warrant @ 0.94 lb. ai/A. Separate studies were conducted for each primary herbicide program. Treatments were applied at designated timings following planting of PHY490W3FE and DP1646B2XF cotton on 5/16 at St. Joseph and 5/8 at Alexandria. Parameter measurements included visual crop injury 5 and 14 d after application (DAT) and yield.

For the Enlist Duo study at 5 DAT, when averaged across herbicide program, greatest injury at Alexandria was observed at the earlier application timings (21 vs 15%) while at St Joseph greatest injury was observed at the earliest application timing (27 vs 20 and 17%). At 5 DAT at Alexandria, when averaged across application timing, greatest injury was observed with Enlist Duo combined with Dual Magnum (27%) and least when applied alone (11%) while at St. Joseph greatest visual injury was observed with Enlist Duo combined with Enlist Duo combined with Dual Magnum or Warrant (26 and 23 vs 15%). At 14 DAT at Alexandria, when averaged across herbicide program, greatest injury was observed at the earlier application timings (8 vs 2%). At Alexandria 14 DAT, when averaged across application timing, greatest injury was observed with Enlist Duo applied in combination with Dual Magnum (10%) and least when applied alone (2%) while at St. Joseph greatest injury was observed with Enlist Duo applied in combination with Dual Magnum (10%) and least when applied alone (2%) while at St. Joseph greatest injury was observed with Enlist Duo applied in combination with Dual Magnum or Warrant (9 and 11 vs 4%). Yield effect was only noted at Alexandria, when averaged across application timing, greatest yield was observed with Enlist Duo applied alone (1676 lb./A) or in combination with Warrant (1525 lb./A) compared to the combination with Dual Magnum (1146 lb./A).

For the Engenia study, an interaction of application timing and herbicide program was observed for injury 5 DAT at both locations. At Alexandria, at the earliest (14 vs 7%) and latest (17 vs 4%) application timings, greatest injury was observed with Engenia applied in combination with Dual Magnum and least when applied alone. No injury was observed for any treatment at the 5-7 lf application timing. At St. Joseph, greatest injury at the earliest application timing was observed with Engenia applied in combination with Warrant (0 vs 28%). At the later timings, injury was equivalent between Engenia combined with Dual Magnum or Warrant. Engenia applied alone resulted in no injury regardless of application timing. At 14 DAT at Alexandria, when averaged across application timings, greatest injury was observed with Engenia combined with Warrant (6%) and least with Engenia applied alone (1%). Yield effects were not noted at either location.

For the Xtendimax study, an interaction of application timing and herbicide program was observed at both locations 5 DAT. At Alexandria, at the earliest application timing, greatest injury was observed with Xtendimax applied in combination with Dual Magnum (16%) and least when applied alone or in combination with Warrant (10%). At the 5-7 If application timing, least injury was observed for Xtendimax applied alone. No injury was observed for any treatment at the 8-10 If application timing. At St. Joseph, greatest injury at the earliest application timing was observed with Xtendimax applied in combination with Warrant (20%). At the later timings, injury was equivalent between Xtendimax combined with Dual Magnum or Warrant.

At 14 DAT, an interaction of application timing and herbicide program was observed at both locations. At Alexandria, at the earliest application timing, greatest injury was observed with Xtendimax applied in combination with Dual Magnum (10%). At the 5-7 lf timing Xtendimax applied in combination with Warrant resulted in equivalent injury to that with Dual Magnum. At the latest timing, injury was equivalent for all treatments. At St. Joseph, greatest injury at the earliest (8%) and latest (5%) application timings was observed with Xtendimax applied in combination with

Warrant while at the 5-7 lf application injury was greatest with Dual Magnum (5%). Xtendimax applied alone resulted in no injury regardless of application timing.