

No Benefit of Adjuvants to Enhance Sufloxaflo and Flupyradifrone For Sugarcane Aphid Management

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Abstract:

Performance may be enhanced by the addition of an adjuvant; however, some pesticides don't need the adjuvant for maximum efficacy. Field trials were conducted to evaluate the effect of adjuvants on the efficacy of Transform WG (sulfoxaflo) and Sivanto (flupyradifrone) on sugarcane aphids in grain sorghum.

A trial was initiated on 4 June 2015 near Sinton, TX. Transform and Sivanto were applied at 0.5 and 3 oz/A, respectively. Each insecticide was applied alone and with crop oil concentrate (COC), non-ionic surfactant (NIS), methylated seed oil (MSO) and silicone surfactant (applied at 0.5% v/v). Sugarcane aphid populations were assessed at 7 and 14 days after treatment (DAT), plant damage was assessed 21 DAT and yield was measured at harvest.

A second trial was sprayed on 6 September 2015 near Rosenberg, TX. Transform (0.5 oz/A) applied alone and with Liberate (NIS), LI700 (NIS), Phase (silicone), and Vader (NIS). Adjuvants were applied at 0.5% v/v. Sugarcane aphid populations were assessed at 3, 8, 16 and 19 DAT.

No benefit was found by adding any of the adjuvants used in these research trials. Both insecticides provided sugarcane aphid control above 95% in the treated plots. Insect counts in both trials showed no differences between the adjuvants and the insecticides used without an adjuvant. Plant injury evaluations, bushel weight and yield in the Sinton trial were not different between the insecticide and adjuvant treatments. Thanks for financial support from the Texas Grain Sorghum Board and United Sorghum Check Off Program. Additional information is available at <http://ccag.tamu.edu/sorghum-insect-pests>.

Introduction

Efficacy of pesticide applications can often be enhanced by the addition of an adjuvant in the spray tank. The adjuvant can positively affect the pesticide application by keeping the active ingredients in suspension, reducing the surface tension or cutting through the leaf cuticle. However, not all pesticide applications benefit from the addition of adjuvants. Thus, it is important to conduct research trials evaluating the effect various adjuvants have on the efficacy of a pesticide application.

The two primary insecticides used for sugarcane aphid (*Melanaphis sacchar*) control in 2015 were Transform and Sivanto. The product labels for these two insecticides do not include a requirement for adding an adjuvant to the pesticide mixture.

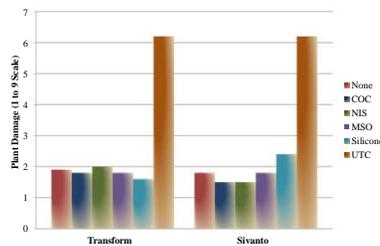


Figure 4. Plant damage from sugarcane aphids in grain sorghum treated with Transform (0.5 oz/A) or Sivanto (3 oz/A) with various adjuvants. (Sinton, TX, 2015)

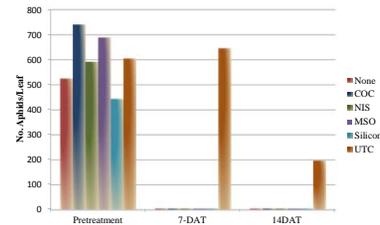


Figure 1. Number of sugarcane aphids per leaf for grain sorghum plants treated with Transform (0.5 oz/A) with various adjuvants. (Sinton, TX, 2015)

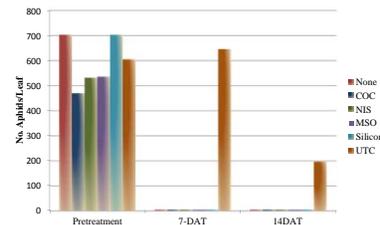


Figure 2. Number of sugarcane aphids per leaf for grain sorghum plants treated with Sivanto (3 oz/A) with various adjuvants. (Sinton, TX, 2015)

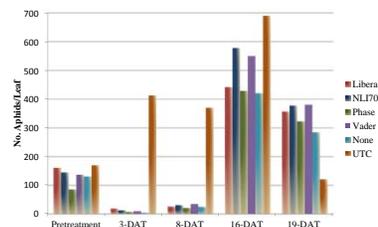


Figure 3. Number of sugarcane aphids per leaf for grain sorghum plants treated with Transform (0.5 oz/A) with various adjuvants. (Rosenberg, TX, 2015)

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Methods

Two applied research trials were conducted in 2015 to evaluate the effect of several adjuvants on the efficacy of Transform and Sivanto for control of sugarcane aphids.

The first trial was conducted near Sinton, TX. Treatments were made on 4 June 2014 to sorghum in early bloom. The applications were made using a 2-row hand-held CO₂ assisted boom sprayer at 15 gallons per acre. Plots were 4 rows wide and 20 feet long and the center two rows were treated. Row spacing was 30 inches wide.

Treatments included Transform (0.5 oz/A) and Sivanto (3 oz/A) alone and with one of the following adjuvants: crop oil concentrate, non-ionic surfactant, methylated seed oil or silicone surfactant. An untreated control was also included.

Pretreatment populations were assessed the day prior to application. Post treatment populations were assessed at 7 and 14 days after treatment (DAT). Plant damage was assessed at 14 DAT. Yield was measured by hand harvesting 10 feet of each of the two center rows.

The second trial was conducted near Rosenberg, TX. Treatments were made on 6 September 2015 to pre-boot to boot stage sorghum. Application method and plot size was the same as the first trial.

Treatments included Transform (0.5 oz/A) alone and with one of the following non-ionic surfactants Liberate, LI700, Vader or the silicone surfactant Phase.

Sugarcane aphid populations were assessed the day prior to application and 3, 8, 16 and 19 DAT. Yield was not measured in this trial.

Results

Both insecticides used in this trial provided excellent control of the sugarcane aphids whether used alone or with the addition of any of the adjuvants (Figures 1, 2, and 3). No differences were detected for aphid populations densities at 7 or 14 DAT in the Sinton trial or at 3 or 8 DAT in the Rosenberg trial. In the Rosenberg trial at 16 DAT, treatments with transform application and LI700 and Vader no longer had fewer aphids than the untreated control. However, all plots had exceeded an economic threshold of 100 aphids per leaf by this time.

In the Sinton trial, all insecticide containing treatments had significantly less plant injury than the untreated control but these treatments were not different from each other (Figure 4). Yield was greatly affected by the sugarcane aphid in the Sinton trial as demonstrated by the very low grain yield in the untreated control (Figure 5). No differences were found in grain yield between the insecticide treatments in this trial.

Both Sivanto and Transform provided excellent control of the sugarcane aphid in this trial. With such good control there is no demonstrated benefit from adding an adjuvant to the application of either of these insecticides.

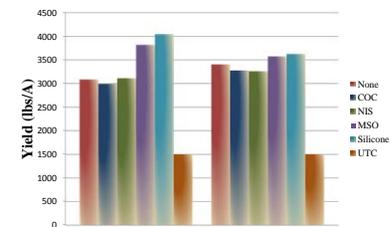


Figure 5. Yield (lbs/A) for sorghum treated with Transform (0.5 oz/A) or Sivanto (3 oz/A) with various adjuvants. (Sinton, TX, 2015)