DOES VOLATILITY OF ENLIST ONE POSE A RISK TO NON-ENLIST COTTON?

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Abstract

Off-target movement of 2,4-D choline applied to commercial fields of Enlist cotton injured adjacent susceptible cotton fields in 2018. An experiment to evaluate the mechanisms of movement of a commercial application of Enlist One (2,4-D choline) to sensitive cotton was conducted on August 8, 2018 at the Lon Mann Cotton Research Station, near Marianna, AR. A one-acre area was treated with Enlist One at 1 qt/A + Liberty (glufosinate) at 1 qt/A in the center of a 10-acre field of XtendFlex (2,4-D susceptible) cotton. Before herbicide application, buckets were placed over marked susceptible plants in 25-foot increments in the downwind direction to edge of the field. The buckets were removed 30 minutes after application. After the application, XtendFlex potted cotton plants were placed in the treated area at 0.5, 24, 48 hours and later removed at 72 hours after application. Arial photos including RGB and NDVI were taken to mark any drift that may have occurred. High volume air samplers were placed in the center of the treated area and directly outside of the treated area on all four sides of the field 30 minutes after application. Sampling media (filter paper and PUFs) were replaced in the high-volume air samplers every 24 hours after application up to 72 hours. The potted cotton plants were evaluated for auxin-like injury symptoms caused by 2,4-D at 14 and 21 days after application. No 2,4-D symptoms were observed on any of the potted plants nor was biomass different from the control plants that were never placed in the treated plot. Likewise, cotton plants in the field in the downwind direction that were covered by buckets up to 30 minutes after application showed no signs of 2,4-D injury whereas uncovered plants were injured 55 to 75%. The NDVI and RGB photos revealed that Enlist One did move out of the treated area injuring susceptible cotton only on the downwind side of the field at time of application. Data collected from the air samplers show that 2,4-D choline did volatize from inside the treated area; however, injury to susceptible cotton from volatilization of 2,4-D choline did not occur based on no symptoms observed on plants covered with buckets during application. Based on these findings, it is concluded that injury to nearby non-Enlist cotton from an Enlist One + Liberty application is most likely the result of physical drift and there is little risk for injury caused by volatilization.