

**THE EFFECT OF COLEX-D™ TECHNOLOGY IN MANAGING DRIFT UNDER FIELD CONDITIONS
WITH THE ENLIST™ WEED CONTROL SYSTEM**

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Abstract

Non-transgenic cotton varieties are extremely sensitive to auxinic herbicide drift. With current industry efforts to develop dicamba and 2,4-D resistant cotton, off target drift of these herbicides is of concern. Dow AgroSciences is developing a new herbicide product featuring Colex-D™ Technology which combines a new 2,4-D choline product, the latest formulation science and a proprietary manufacturing process developed to deliver ultra-low volatility, minimized potential for physical drift and lower odor. Thus, two studies were performed to assess new advances in this technology to combat drift. In 2010, a study was performed to assess the effectiveness of a shielded sprayer to reduce 2,4-D drift, compared to an unshielded (open boom) sprayer. Weedar 64 (2,4-D amine) was applied at 1 lb ae/A and tank mixed with Durango® DMA (glyphosate) at 1lb ae/A. Herbicides were applied to PhytoGen 485 WRF cotton with a WSW wind between 6 to 8 mph. Yield data were collected at harvest to assess the impact of the herbicides in the treated area as well in the drift plume of each treatment. Highly injurious drift was detected 8 rows downwind from the shielded sprayer, and 16 rows away with the unshielded sprayer. Auxinic symptomology was detected at a maximum of 24 rows away from the application area for the shielded boom, and 64 rows away for the unshielded sprayer.

In 2011, a study was performed to compare GF-2726 to 2,4-D amine tank-mixed with Durango at two different boom heights (18 and 36 inches above cotton) in a simulated drift environment with a west wind of ~ 6 mph. GF-2726 contains glyphosate and 2,4-D choline, a new salt formulation of 2,4-D. The formulation has been reported to have a low volatility and a reduced drift potential compared to 2,4-D amine. The study was repeated at two geographic sites (Brooksville, Mississippi and Milan, Tennessee). Herbicides were applied at both sites in July to PhytoGen 375 WRF cotton at 15 GPA and an application speed of ~ 6 MPH with either XR 11003 or XR 11004 tips in Tennessee and Mississippi, respectively. In Tennessee, data were collected using aerial imagery, with visual data collected 3, 7, 14, 21 and 42 days after application (DAA) for visual injury for each row downwind of the applications. Data were also collected 6 and 12 weeks after application (WAA) for visual % fruit loss. Data were collected in Mississippi using aerial imagery prior to application, 4 DAA, and 77DAA with visual data collected 28 and 42 DAA for evidence (yes/no) of epinasty, fruit loss or both. Yield data were also collected at harvest for both sites. Both sites showed that the GF-2726 applications at 18 and 36 inches above the crop appeared to have the best potential for reducing drift, with the lower boom height dispersing less than all other treatments. In Tennessee, visual observations concluded that at 42 DAA, epinasty and fruit loss was detected out to 4 or 5 rows away from the treated area for the 18 and 36 inch boom height applications of GF-2726, respectively. Epinasty and fruit loss was detected out 8 or 9 rows away from the application site 42 DAA for the 2,4-D amine + glyphosate applications at the 18 and 36 inch heights. In Mississippi, fruit loss was detectable 42 DAA up to 21 rows away from the site of application for both the 18 and 36 inch applications of GF-2726. Fruit loss and epinasty were detected 29 rows away from the site of application for both applications of the 2,4-D amine formulation tank mixed with glyphosate. Yield data from both locations indicated little injury response for all applications beyond the treated area. Affected areas were smaller where GF-2726 was applied when compared to 2,4-D amine + glyphosate at either boom height. Yields in the drift plumes were not significantly affected in 2011.

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