

**TRANSFORM™: A NEW INSECTICIDE FOR MANAGING INSECTS IN MID-SOUTHERN U.S.
COTTON**

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Abstract

Sulfoxaflor is a new proprietary insecticide within a novel chemical class developed by Dow AgroSciences. It is active against a broad range of sap-feeding insects including cotton aphids (*Aphis gossypii*), tarnished plant bugs (*Lygus lineolaris*), whiteflies, planthoppers, and scales. Transform™ will be the brand name used for sulfoxaflor in U. S. cotton and it will be formulated as a 50WDG. Field efficacy trials and laboratory assays conducted in 2012 demonstrated cotton aphid, including those populations tolerant to neonicotinoid insecticides, to be highly sensitive to sulfoxaflor at 0.75 oz product/A (0.025 lb ai/A).

Sulfoxaflor has been characterized for activity against tarnished plant bug, *Lygus lineolaris*, in mid-south U.S. cotton from 2008-2012. Results continue to demonstrate that sulfoxaflor insecticide, applied at 1.5 oz product/A (0.045 lb ai/A), was the minimum rate providing robust control of tarnished plant bug. Initial control of tarnished plant bug infestations has been demonstrated at ≤ 5 d and residual control equal to or better than current standards. As with most insecticides, the performance of sulfoxaflor in cotton will be dependent upon tarnished plant bug population level and intensity of infestation. Based upon this research, multiple applications of sulfoxaflor may be required and the interval between applications may vary in cotton for tarnished plant bug management.

Studies were conducted from 2011-2012 to compare sequential applications of sulfoxaflor to programs in which a single application of sulfoxaflor was applied before or after another chemistry active against tarnished plant bug. Results suggested two applications of sulfoxaflor provided efficacy equal to or better, and yield better, than a single application of sulfoxaflor rotated to another chemistry. Furthermore, when sulfoxaflor was used once, it appeared to provide similar control when used either before or after another chemistry.

A large-plot program trial was also conducted in Greenville, MS during 2012 against tarnished plant bug initially infesting cotton at flowering. A program consisting of two sequential applications of Transform™ and then rotated to other chemistries had reduced season mean number of tarnished plant bug nymphs (1.9) and greater lint yields (yield: 1533.7 lbs) compared to a program utilizing only currently registered products (nymphs: 3.2; yield: 1403.8 lbs) and non-treated plots (nymphs: 11.4; yield: 556.3 lbs). Infestations of cotton aphid and spider mites reached treatable levels in programs utilizing only currently registered products and one and two applications, respectively, of an insecticide targeting those secondary pests were required. In a program utilizing Transform™, cotton aphids did not infest plots throughout the season and spider mites reached treatable levels two weeks later than those in the commercial program, requiring a single application. It is likely that early use of Transform™ for tarnished plant bug management delayed the infestation of spider mites.

Sulfoxaflor insecticide will have an excellent fit in cotton IPM programs based on the molecule's spectrum and properties, as a rotational partner with other chemistries, and as a tool for management of insect resistant populations. Recommended scouting techniques for tarnished plant bugs and IPM practices should continue to be utilized.

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