Managing Spotted Wilt in the Northern End of the Georgia Flue-Cured Tobacco Belt

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Tattnall, Candler, Evans & Screven Counties

ABSTRACT:
Trials were conducted from 2013 to 2017 in the Candler, Evans, Screven, and Tattnall County area (*Fig. 3)* to evaluate the continued effectiveness of imidacloprid for management of spotted wilt in tobacco. The trials compared spotted wilt incidence in tobacco grown from imidacloprid treated seedlings versus untreated seedlings. To facilitate comparisons, trays of untreated tobacco seedlings were transplanted at the start of four randomly selected rows (1 tray per row). Spotted wilt incidence and symptomology (*Fig. 1)* were evaluated in the untreated plants and an adjacent row of treated plants resulting in four reps of comparison for each trial. Year to year variation in control was seen, however, imidacloprid remains generally effective.

Fig. 3. The counties in yellow (Screven, Candler, Evans, and Tattnall) make up the northern portion of Georgia's tobacco growing region

Fig. 1. Symptoms of spotted wilt on a tobacco leaf

INTRODUCTION:

Spotted wilt has reduced tobacco yields in Georgia continuously since 1995. Imidacloprid was first found to reduce spotted wilt incidence in 1998. Since 1998, over 180 trials have been conducted to compare imidacloprid treated and untreated plants with a resulting mean of 32% control attributed to imidacloprid treatment *(Fig. 5).* Imidacloprid is effective for season long sucking insect control, including aphids, thrips, and flea beetles. Even when spotted wilt incidence is low it provides these benefits. In 2000, Acibenzolar-S-methyl (Actigard 50WP) was found to provide additional control of spotted wilt when used in conjunction with imidacloprid. It was also found that seedlings treated with Actigard take longer to recover post transplant stress than untreated seedlings or seedlings treated with imidacloprid alone *(Figs. 2 & 4).* The majority of the tobacco grown in the test area is dryland. Historically, spotted wilt incidence has been lower in this area than the state average even in the highest loss years. Historically lower spotted wilt incidence in the northern growing region of Georgia has made growers reluctant to accept the risk of using Actigard treated seedlings. Therefore, it is critical that growers use imidacloprid correctly to get the full benefits of the treatment. The purpose of these trials is to monitor the ongoing performance of imidacloprid in our area.

Fig. 2. Comparison of an Actigard treated row, left, with a row of untreated tobacco plants, on right.

METHODS:

Each trial was conducted to monitor the incidence of spotted wilt in the field throughout the growing season on plants that were treated with imidacloprid in the greenhouse versus plants that were untreated. In the greenhouse, all trays were treated with imidacloprid except those designated untreated. The untreated trays were removed from the greenhouse during treatment. All of the tests were conducted with Admire Pro at 0.8 – 1.0 oz./1000 tray cells. Treatments were applied in a spray-on/rinse off tray drench 2-6 days before transplanting. At each field location, 4 trays containing untreated seedlings were interplanted in 4 randomly selected rows (1 tray per row) between rows of Admire Pro treated seedlings. Each treated and untreated row in the plots consisted of 200 plants. Throughout the growing season, each of the 4 treated rows and the 4 interspersed untreated rows were rated visually for spotted wilt incidence on weeks 2, 4, 6, 8, 10, and 12 of the growing season. The overall average of spotted wilt incidence of the treated rows was compared to that of the untreated rows.

Fig. 4. A transplant treated with Actigard at 2 weeks. These plants often appear yellow and take longer to recover from post transplant stress.

Fig. 5. A field demonstration showing spotted wilt control. Imidacloprid treated rows on left, and untreated plants on right.

RESULTS:

Since spotted wilt control trials began in Georgia in 1998, the state average of percent control of spotted wilt with imidacloprid has been approximately 32%. Long term data shows that greater than 20% control of spotted wilt is needed for the percent control to be significant (*p = 0.05*). The data from the trials conducted in our area show that we achieved significant control of spotted wilt incidence in 13 out of 17 trials (*Table 1*). The levels of control in the northern tobacco production area of Georgia met or exceeded the state average most years. In these trials, stands were generally unaffected by imidacloprid treatments. Detailed spotted wilt records begin in Georgia in 1990. From 1990 to 2014 the northern counties had spotted wilt levels significantly below the state average. However the past 3 years (2015-2017) has seen this trend reversed with much higher spotted wilt levels occurring in the northern counties (*Table 2*). The reasons for this are unclear at present.

Table 1. Summary of On-Farm Spotted Wilt Trials, 2013-2017.

		Average % Spotted Wilt Incidence		
Year/Location	Number of Trials	Untreated Plots	Imidacloprid Treated Plots	% Control
South GA 2013	10	13.9	10.5	20.8
North GA 2013	2	10.2	6.6	34.8
South GA 2014	9	22.8	15.3	32.9
North GA 2014	2	8	4.5	43.8
South GA 2015	5	12.9	8.7	32.7
North GA 2015	4	23.2	14.8	36
South GA 2016	2	44.2	28	36.7
North GA 2016	3	23.4	21.9	6.4
South GA 2017	20	14.7	N/A*	N/A*
North GA 2017	6	18.9	12.3	34.1

**In 2017, South GA plots were treated with Imidacloprid + Actigard.*

Table 2. Summary of Spotted Wilt Incidence on Untreated Plants in On-Farm Trials, 2013-2017.

	(Total # of Trials), Average % Spotted Wilt Incidence	
Year	South GA	North GA
2013	(27) 17.7	(2) 10.2
2014	(19) 23.3	(2) 8.0
2015	(17) 13.8	(4) 23.2
2016*	(7) 41.1	(3) 23.4
2017	(20) 14.7	(9) 29.3

**In 2016, North GA plots missed the farms with the highest Spotted Wilt incidence. Many had >30%, and some had >75% with treated plants. In South GA the incidence ranged from 12-40 % in treated plants.*