LOOKING FOR BETTER WAYS TO CONTROL THRIPS

W.A. Plummer
G.M. Lorenz III
N.M. Taillon
H.M. Chaney Jr
J. Black
University of Arkansas Cooperative Extension Service
Lonoke, AR

Abstract

With the potential banning of the Neonicotinoid class, other treatments are needed to maintain thrips control. Efficacy data on new and currently labeled products will help in proper selection of treatments for consultants and producers. A trial was conducted at the Lon Mann Cotton Research Station, Marianna, Arkansas to evaluate the efficacy of insecticide seed treatment (IST), and in-furrow (IF) sprays for thrips management in cotton.

Introduction

Thrips has become a more difficult pest to control in the last several years. Insecticide seed treatments followed by a foliar application are sometimes needed to achieve control which makes it one of the most expensive pests in Arkansas. Neonicotinoid IST have been the standard for controlling thrips in Arkansas; however, recent studies have indicated that tolerance/resistance has developed to thiamethoxam (Cruiser/Avicta) (Plummer, 2014). Thrips are an early-season cotton pest that have the potential to cause delayed maturity and yield loss in cotton. Typical symptoms of thrips damage on young cotton include ragged crinkled leaves that curl upward, "burnt" edges, and a silvery appearance. The level of damage varies from year to year based on the population of thrips (Hopkins, et. al., 2001). Thrips are the second most damaging cotton pest, infesting 100% of all Arkansas cotton acreage from 2006 to 2014, and the average cost of control and economic loss was around $8 million (Williams, et. al., 2007-2015).

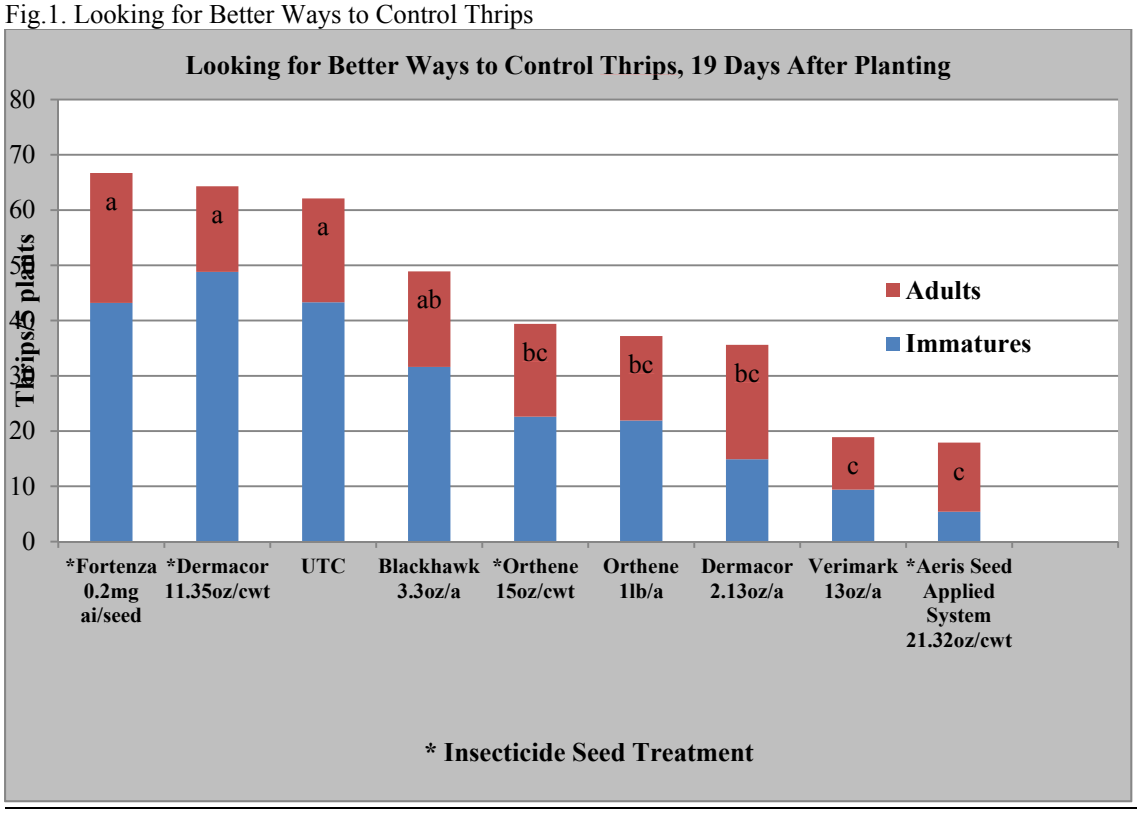
Materials and Methods

Plot size was 12.5 ft by 40 ft in a randomized complete block with 4 replications. Insecticide Seed Treatments consisted of Fortenza (Cyantraniliprole) at 0.2 mg ai/seed, Dermacor (Chlorantraniliprole) at 11.35 oz/cwt, Orthene (Acephate) at 15 oz/cwt, and Aeris Seed Applied System (Imidacloprid) at 21.32 oz/cwt, and In-furrow (IF) treatments were Orthene (Acephate) at 1lb/a, Blackhawk (Spinosad) at 3.3 oz/a, Dermacor (Chlorantraniliprole) at 2.13 oz/a, and Verimark (Cyantraniliprole) at 13 oz/a. All treatments, including the untreated check (UTC), had a base fungicide of Trilex Advanced (1.6 oz/cwt). ISTs were applied using a small batch seed treater. In-furrow treatments were applied at planting using an in-furrow sprayer fitted with a Tee Jet 9001VS flat fan nozzle. Spray volume was 10 gal/a, at 40 psi. Insect density was determined by collecting 5 plants per plot at 19 and 26 days after planting (DAP) in jars with a 70/30 alcohol solution. Plants were washed and filtered in the lab at the Lonoke Agriculture Extension and Research Center, Lonoke, AR, and thrips were counted using a dissecting scope (Burris, et. al., 1990). Thrips damage ratings were taken at 21 and 28 DAP using the scale: 0=no damage, 5=plant loss. Data was processed using Agriculture Research Manager Version 9 (Gylling Data Management, Inc., Brookings, S.D.). Analysis of variance was conducted and Duncan's New Multiple Range Test (P=0.10) to separate means.

Results

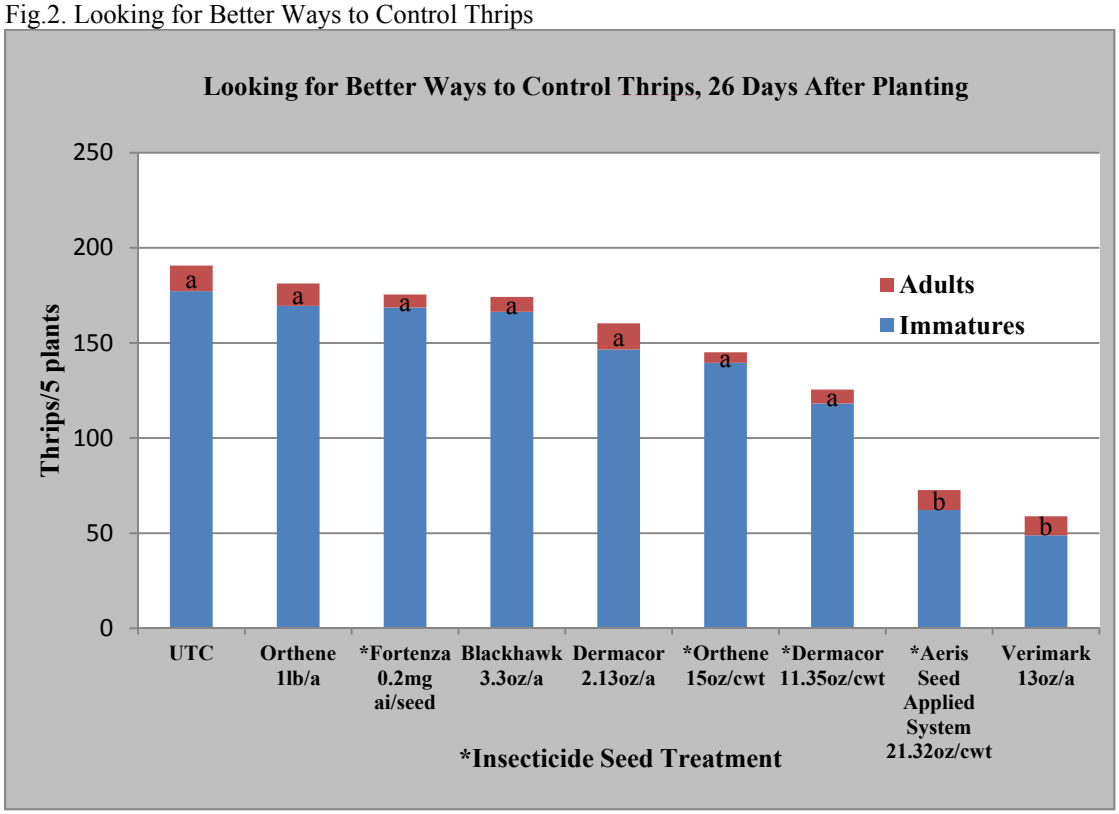
At 19 DAP all treatments had fewer thrips than the UTC except Fortenza (IST), Dermacor (IST), and Blackhawk (IF) (Figure 1), while Verimark (IF) and Aeris Seed Applied System (IST) had fewer thrips than Blackhawk (IF).

Fig.1. Looking for Better Ways to Control Thrips



At 26 DAP the only treatments with fewer thrips than the UTC were Verimark (IF) and Aeris Seed Applied System (IST) (Figure 2).

Fig.2. Looking for Better Ways to Control Thrips



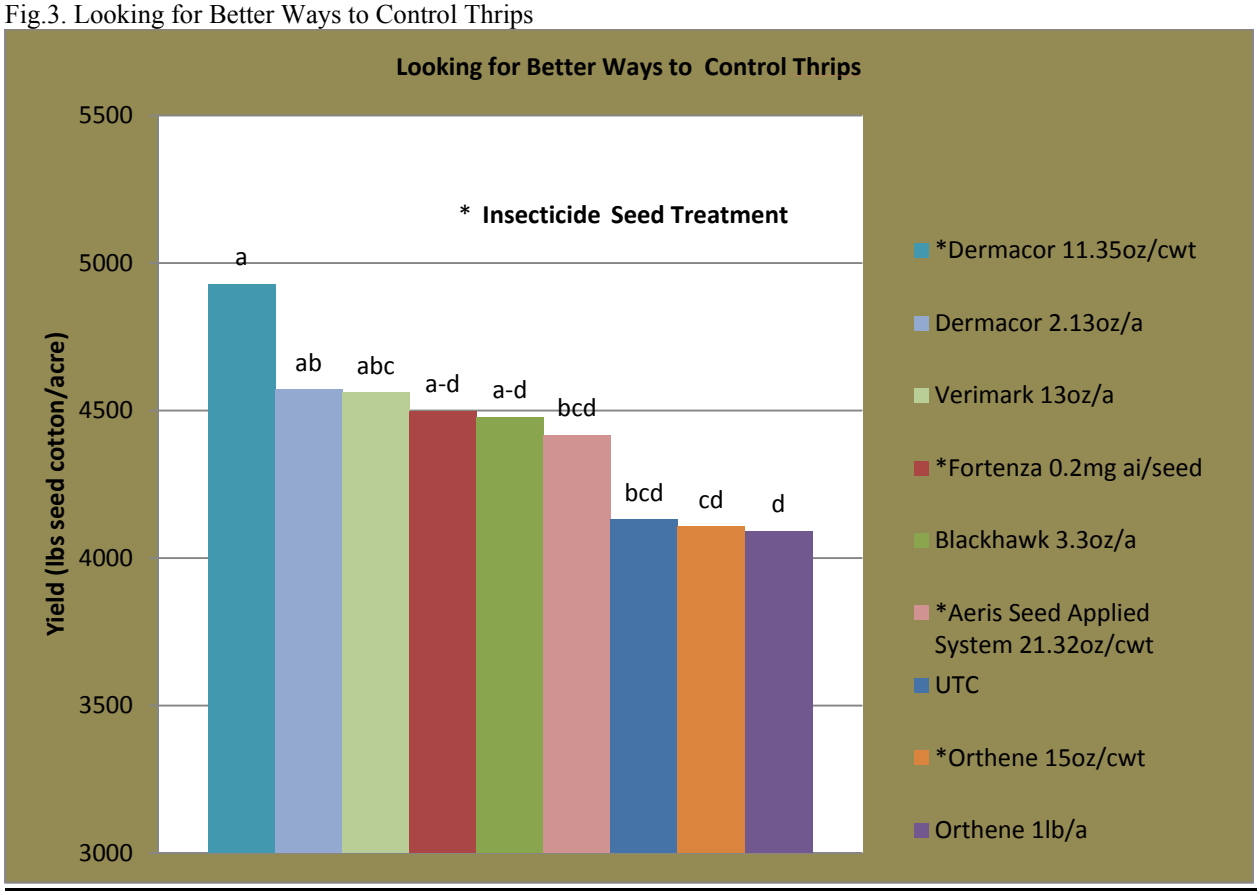
At 21 DAP all treatments reduced damage compared to the UTC except for Dermacor (IF), and Aeris Seed Applied System (IST) reduced damage below all treatments (Table 1). Verimark (IF), Aeris Seed Applied System (IST), and Blackhawk (IF) reduced damage below the UTC at 28 DAP.

Table 1. Looking for Better Ways to Control Thrips

Looking for Better Ways to Control Thrips		
Treatments *Insecticide Seed treatment	Damage Rating scale 0 (no) – 5 (worst)	
	21 Days After Planting	28 Days After Planting
UTC	1.8 a	3.5 a
*Orthene 15 oz/cwt	1.0 b	3.0 ab
Orthene 1 lb/a	1.0 b	3.0 ab
*Fortenza 0.2 mg ai/seed	1.3 b	3.5 a
Verimark 13 oz/a	1.0 b	2.0 c
*Dermacor 11 oz/cwt	1.0 b	3.0 ab
Dermacor 2.13 oz/a	1.8 a	3.3 ab
Blackhawk 3.3oz/a	1.3 b	2.8 b
*Aeris Seed Applied System 21.32 oz/cwt	0.5 c	1.5 c

Verimark (IF) and Aeris Seed Applied System (IST) had less damage than Blackhawk (IF). Dermacor (IST) was the only treatment with a yield higher than the UTC, but did not differ from Dermacor (IF), Verimark (IF), Fortenza (IST), or Blackhawk (IF) (Figure 3). Verimark (IF) can achieve the same level of control as today's standards such as Aeris Seed Applied System (IST); however, it would be impractical for growers to implement this method of application compared to using a Neonicotinoid IST. With the possible loss of the Neonicotinoid class, further evaluation of non-Neonicotinoid ISTs and IF sprays should be continued to find better ways to control thrips.

Fig.3. Looking for Better Ways to Control Thrips



Acknowledgements

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References

Burris, E., A. M. Pavloff, B. R. Leonard, J. B. Graves, and G. Church. 1990. Evaluation of two procedures for monitoring populations of early season insect pests (Thysanoptera: Thripidae and Homoptera: Aphididae) in cotton under seleced management strategies. J. Econ. Entomol. 83:1064-1068.

Hopkins, J. D., J.D Reaper, III, D. R. Johnson, G. M. Lorenz, III. 2001. Thrips Management in Arkansas Cotton. AAES Research Series 497. Pp 216-223.

Plummer W. A., G. M. Lorenz III, n. M. Taillon, H. M. Chaney, and B. C. Thrash. 2015. Control of Thrips with Insecticide Seed Treatments in Arkansas 2014. Summaries of Arkansas Cotton Research 2014. Pp 159-162.

Williams, M. R., et. al. 2015. Cotton Insect Losses 2015. *In: Proceedings Beltwide Cotton Conference 2015.*

Williams, M. R., et. al. 2006-2015. Cotton Insect Losses 2006-2015. *In: Proceedings Beltwide Cotton Conference 2006-2015.*