PERFORMANCE OF SELECTED IN-FUROW AND FOLIAR INSECTIICDES FOR MANAGING SEEDLING THRIPS

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Abstract

Thrips are a predictable pest of seedling cotton in the southeastern US. The recent loss of aldicarb from the marketplace created demand for commercial products that provide inexpensive and lasting thrips suppression. In a replicated experiment, we compared weekly thrips counts, visual ratings, above ground plant biomass after 42 days, and end of year lint yield as a function of labeled or unlabeled in-furrow insecticides. Similar results were obtained with acephate applied directly to the seed, moderate rates of terbufos, and phorate. Low rates of terbufos did not provide good immature thrips suppression.

Introduction

Cotton growers in Georgia and the southeastern US have traditionally utilized granular insecticides, such as Temik 15G, with greater frequency compared to cotton growers in the midsouth. Bayer CropScience, the registrant of Temik 15G, recently announced that it will discontinue selling this product by 31 December 2014 (Bayer CropScience 2010). While seed treatments will likely be substituted for in-furrow insecticides, past research has shown that seed treatments do not provide adequate thrips suppression on early planted cotton using conventional tillage. Growers, researchers, and Extension professionals are interested in identifying compounds that could be drop in replacements for Temik 15G. The objective of this project was to evaluate different rates of several labeled or unlabeled granular insecticides, in addition to acephate applied as a seed treatment for activity against early season thrips in cotton.

Methods

The trial was planted during the last week in April 2011 on conventionally tilled soils as these conditions are optimal for thrips injury. Fungicide only treated cotton seed (PhytoGen 375 WRF) was planted on 36-inch centers in plots that measured 4-rows wide by 40 feet long in an irrigated field. Plots were planted using a two row Monosem precision vacuum planter equipped with hopper boxes. A list of treatments and rates is shown in Table 1. Treatments were arranged in a randomized complete block design and replicated three times.

Table 1. Treatments, active ingredients, and rates used in the experiment

Trade Name	Active Ingredient	Rate (lb per acre)
Counter 20G	Terbufos	2.6
Counter 20G	Terbufos	5.1
Orthene 97	Acephate	6.4 oz per cwt
Orthene 97	Acephate	30 oz per cwt
Temik 15G	Aldicarb	3.5
Thimet 20G	Phorate	2.9
Thimet 20G	Phorate	5.4
Thimet 20G	Phorate	8.3
Untreated		

Thrips populations and damage were assessed using several response variables. Adult and immature thrips were sampled by inverting 5 plants per plot into 70% ethanol in pint size glass jars at 14, 21, and 28 days after planting. At 42 days after planting, five plants per plot were clipped at the soil surface and the plants were dried in a forced air oven at 60 degrees C for 48 h and then weighed. At the end of the year a representative portion of seed cotton was mechanically harvested and extrapolated to lint per acre using a gin turnout of 38%. During flowering, all plots received prophylactic foliar insecticide applications to prevent confounding insect damage.

Results

A summary of results are shown in figures 1-3. Immature thrips counts at 21 days after planting and dry weights at 42 days after planting were inversely correlated ($r = -0.65$; $P < 0.01$) whereas immature counts and end of year lint yield were less related ($r = -0.44$; $P = 0.05$). These results suggest that researchers should consider using dry weights as a direct method of evaluating thrips damage compared to lint yield which may be affected by confounding insect injury and plant compensation.

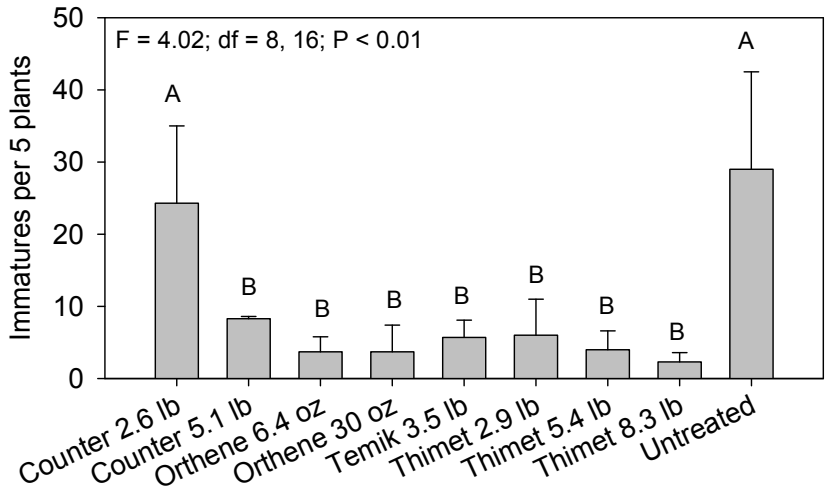

Figure 1. Mean ± SEM number of immatures per 5 plants at 21 days after planting by treatment and rate

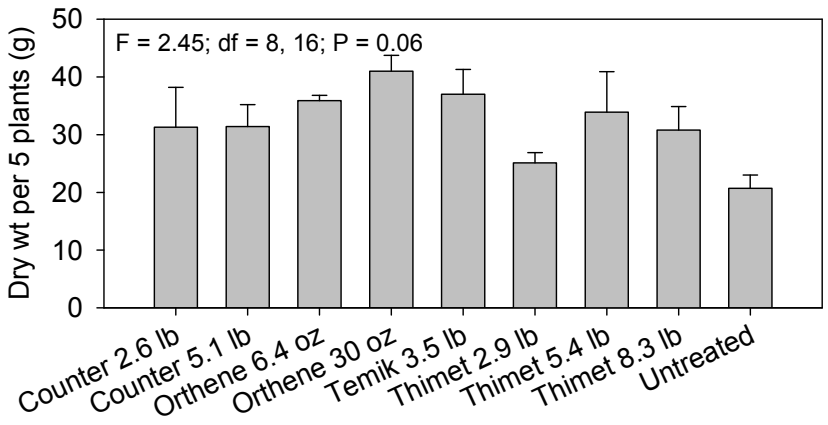

Figure 2. Mean ± SEM dry weight of 5 plants at 42 days after planting by treatment and rate

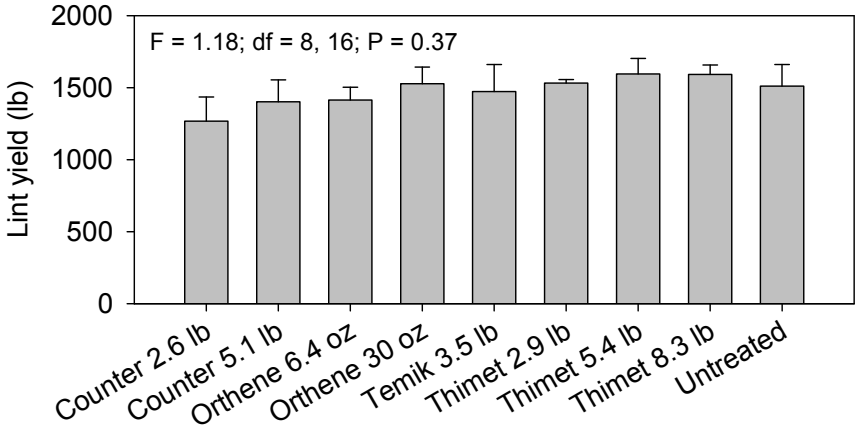

Figure 3. Mean ± SEM lint yield by treatment and rate

Although plots treated with all rates of phorate significantly suppressed thrips below the untreated plots, a slight burn around the edges of the leaves was evident in these plots. Acephate applied as a seed treatment showed promise as a cost effective treatment. Experiments will be repeated in 2012.

Acknowledgements

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