THRIPS, WHEAT, AND INTERCROPPED COTTON

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Abstract

The practice of relay intercropping involves sewing wheat in the fall while leaving skip rows for wheel traffic and subsequent cotton planting in the spring, with the intent to harvest both crops. Relay intercropping experiments were conducted at two on-farm locations in North Carolina in 2009. The objectives of these experiments were 1) to investigate the feasibility of intercropping cotton in wheat in North Carolina, 2) to investigate the effects of 3 common thrips management strategies (seed treatment only, seed treatment plus aldicarb, and seed treatment plus acephate), 3) to investigate the effects of cropping system (intercropping and mono-culture) on cotton physiology, and 4) to determine yield potential of inter-seeded wheat and cotton in North Carolina. Thrips sampling of cotton was conducted at 3, 4, and 5 weeks after planting (WAP). The thrips management strategies significantly reduced thrips populations by more than 67% in both locations and in both cropping systems in all weeks, as compared to the no-insecticide treatment. There were no significant differences between the insecticide treatments until 5 WAP, when the seed treatment alone resulted in higher thrips numbers than seed treatment plus acephate or aldicarb. When comparing cropping systems, the intercropping system reduced thrips populations by 40% in one trial when compared to the mono-culture system. Wheat yields of the no-insecticide, intercropped cotton treatment were not significantly different from the wheat mono-culture control. All wheat yields were significantly reduced by intercropping when insecticides treatments were applied; 14% reduction for seed treatment alone and 25% reduction for seed treatment plus acephate or aldicarb. Wheat yields in the intercropped system were inversely related to cotton plant dry weights at 5 WAP. Extensive mapping of fruit distribution was conducted prior to defoliation. Very few significant physiological differences were found between the mono-cropped and intercropped system, even lint yields were un-affected. Intercropped cotton produced fewer vegetative bolls, slightly delayed maturity, reduced plant height, and improved plant stands. No significant differences were observed due to insecticide treatment, although numerical averages of lint yield and plant population favored seed treatment plus aldicarb. Thrips management strategies had some impact on cotton physiology when compared to the no-insecticide treatment. All strategies improved plant stands, reduced the number of vegetative and outer position bolls, increased height-to-node ratio, and increased lint yield ($p=.15$) by 125–270 lbs./acre depending on insecticide treatment.