

IMPACT OF ALTERNATE HOST MANAGEMENT ON TARNISHED PLANT BUG POPULATIONS

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Abstract

Experiments were conducted in 2000 and 2001 in Tensas parish near Newellton LA, to evaluate the potential of reducing tarnished plant bugs (TPB), *Lygus lineolaris* Palisot de Beauvois, by managing weed host in field border areas adjacent to cotton fields prior to cotton planting.

Two approximately equal test areas were established in each year of which field borders in one were treated with herbicide to control broadleaf weeds. Herbicide applications were initiated 23 February 2000 and 19 March 2001. Strike 3™, a combination of 2,4-D, mecoprop, and dicamba (Riverside Product Label, Terra Industries Inc., Sioux City, IA) was applied at 2.22 kg ai/ha (1.37 + 0.73 + 0.12 kg ai/ha for 2,4-D, mecoprop, and dicamba, respectively) to kill broadleaf weeds.

Each test area in 2000 was divided into two approximately equal quadrants from which four sample areas with a consistent population of weed host were identified for sample collections. In 2001, the test area was expanded and each area was divided into four approximately equal quadrants from which three or four sample areas were identified for sample collection. Four locations within each sample area were chosen from which weed and tarnished plant bug data were collected. A 7.62-meter (m) rope marked in 0.31-m increments was placed through the wild host to provide consistency in data collection. Weed density and species identification was determined by counting the number of weed hosts in a 0.25 m² PVC square placed at random to four of the marked increments along the rope. The weed density and species data were taken prior to the herbicide treatments and three to four weeks post treatment. Tarnished plant bug adults and nymphs were collected from 25 sweeps in each of the four locations within a sample area in the near vicinity of the weed density samples using a standard sweep net (38 cm diameter). Each sample was placed in 3.785 L plastic ziplock bag. The plastic bags were placed in a freezer for 12 to 24 hours then TPB adults and nymphs were counted. Field border sampling was initiated in February prior to herbicide treatments and sweep net data from the field borders were collected weekly continuing through the first week of June.

Cotton fields in each test area were sampled for TPB beginning in June. Sweep net samples were made at five sites in each quadrant in 2000. At each of the five sites, four sets of 25 sweeps were made in the cotton field. In 2001, one to two cotton fields in each quadrant were chosen at random each week to determine TPB populations in cotton fields. Fields were sampled by walking down the cotton row at five sites in each field. Five sets of 20 sweeps were made while traveling through the field. The number of TPB adults and nymphs were determined in the field. In July 2001, cotton in most of the areas began to exceed 1.5 to 2.0 m in height. Because of difficulty sweeping rank cotton, square damage was used to access tarnished plant bug damage. Squares were sampled by traveling through the cotton field at five sites and collecting squares from 10 to 25 plants in five sets. Squares were placed in #2 brown paper bags and dissected in a lab for tarnished plant bug damage evaluation.

Averaged across years, pretreatment weed counts were not different in the two areas and averaged 55 and 59 weeds/m² in the treated and nontreated, respectively. After herbicide treatments, weed counts in the treated area fell to less than 1.0 weeds/m². Weed counts in the nontreated also fell resulting in a count of 16 weeds/m², which could be attributed to weed senescence and burndown applications by the producer.

Tarnished plant bug adults began to increase in the nontreated area beginning the week of 19 April and were significantly higher than those in the treated area until 24 June. Tarnished plant bug adults averaged no more than 1.3 bugs/25 sweeps in the treated area. Adults peaked in the nontreated area at 10.13 bugs/25 sweeps during the week of 16 May. Tarnished plant bug nymphs followed a similar trend. Nymph numbers were numerically higher in the nontreated during the same period, however, the only statistical difference among the two areas was during the weeks of 9 April and 9 May.

Cotton field sweeps revealed erratic numbers with no differences in the two areas. This was partially due to Boll Weevil Eradication Program sprays and insecticide applications by the producers.