

**IMPACT OF ALTERNATE HOST MANAGEMENT ON  
TARNISHED PLANT BUG POPULATIONS  
R. W. Costello, E. Burris and B. R. Leonard  
Louisiana State University Agricultural Center  
Baton Rouge, LA  
G. L. Snodgrass, W. P. Scott and D. D. Hardee  
USDA-ARS-SIMRU  
Stoneville, MS**

**Abstract**

An experiment was conducted in Tensas parish near Newellton LA, on Panola Plantation to evaluate the potential of reducing tarnished plant bugs (TPB), *Lygus lineolaris* Palisot de Beauvois, by managing weed host in field border areas prior to cotton planting. The test area, established in early February 2000, was located approximately 8.0 km north of Newellton between Hwy 65 and 605. Test area one consisted of approximately 500 ha and test area two was approximately 300 ha.

The test area was divided into four approximately equal quadrants of which two were treated with herbicide and two were nontreated. Four sample areas within each quadrant, with a good population of weed host were identified and used for sample collections. Within each sample area, weed and TPB densities were determined from four sample sites. Weed samples were collected by placing a 7.62 meter (m) rope marked in 0.31 m increments through the weed host area. Weed density was determined by counting the number of known weed host in a 0.25 cm<sup>2</sup> pvc square at four locations chosen at random along the rope. Weed densities were determined prior to the herbicide treatment and four weeks post treatment. Tarnished plant bug adults and nymphs were collected from 25 sweeps at each site using a standard sweep net (38 cm diameter) and placed in 3.785 liter (L) plastic bags. The plastic bags were placed in a freezer for 24 hours and then TPB adults and nymphs were counted. All TPB samples were taken in the near vicinity of the weed density samples. Field border samples were collected beginning in late Feb prior to herbicide treatments and were made weekly continuing through the first week of Jun. Data were subjected to analysis of variance and means were compared using standard errors.

Herbicide applications started 26 Feb in test area one. Due to wind restrictions, applications could only be made in early morning. It took approximately four mornings to complete the application. Strike 3<sup>TM</sup>, a combination of 2,4-D, mecoprop, and dicamba (Riverside Product Label, Terra Industries Inc., Sioux City, IA) was applied to kill broadleaf weeds. The herbicide was applied with two John Deere 4955 tractors equipped with a 7.6 m spray boom calibrated to deliver 140 L/ha. A 2922 John Deere equipped with a TeeJet BoomJet off-center flat spray tip (Spraying Systems Co. Wheaton, IL) calibrated to deliver 280 L/ha was used to apply the herbicide to areas in which the larger booms could not reach. Field borders were spot treated with a pump-up hand sprayer or a four wheel ATV equipped with a 4.4 m boom.

Cotton fields in each test area were sampled for TPB beginning 2 Jun, just prior to cotton reaching pinhead square. Sweepnet samples were made at five site locations in each quadrant. At each of the five locations four sets of 25 sweeps were made. The number of TPB adults and nymphs were determined in the field. Square retention data was collected 8, 14 and 29 Jun, at six to eight sites in each quadrant. Retention was determined by randomly choosing an area at each site and counting the number of first position squares on 10 plants. Square retention data was analyzed using the COTMAN program.

Pretreatment weed counts were made on 22 Feb. Broadleaf weeds per square meter prior to herbicide application averaged 33 in the treated area and 40 in the nontreated area with the majority being henbit, *Lamium alexicaule* L. Weeds were sampled again on 21 Mar, approximately four weeks after herbicide application. In the treated area broadleaf weed densities had fallen to 2/m<sup>2</sup>. Weed densities in the nontreated area averaged 20.7/m<sup>2</sup>. Comparison of standard errors revealed that pre and posttreatment counts in the herbicide treated and nontreated area were different. The reduction in the nontreated area was due to senescence of many winter weeds.

Tarnished plant bug adults and nymphs captured in sweep net samples in the herbicide treated area were low throughout the sample period. TPB adults averaged no more than two and nymphs no more than one in 25 sweeps. In the nontreated area, adults and nymphs peaked at 9 and 15, respectively, in 25 sweeps on 9 May. Differences in standard errors between the herbicide treated and nontreated area were observed for adult TPB on all sample dates in Apr and May. Standard errors between the herbicide treated and nontreated area for nymphs collected on 17 and 26 Apr and 1, 9, and 2 May were different. Square retention was greater than 85% on each sample date regardless of herbicide treatment.

Initiation of boll weevil eradication program sprays and insecticide applications by the producer resulted in low numbers of TPB in cotton field samples. This resulted in no differences in TPB numbers in cotton field samples.