MISSISSIPPI - BOLL WEEVIL PHEROMONE TRAPLINES - 1995 TO 1998

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Abstract

Boll Weevil pheromone traplines demonstrated the presence of cotton boll weevil in all cotton growing regions of Mississippi from 1995 to 1998. Traplines were also useful in demonstrating effectiveness of the boll weevil eradication program in the state as well as seasonal movement of weevils from non-eradication areas into areas that had lowered numbers of weevils as a result of eradication efforts.

Introduction

Boll weevil only occupies about 55% of the US acreage (9 states remain weevil free), yet it still rates second highest in the losses ranking. The hill areas of Mississippi traditionally sustained high losses from this pest and high insecticide costs for its control. Delta areas were, until recently, relatively weevil free. Beginning in 1995, with the arrival of boll weevil eradication, these traditional roles have been reversed.

Description

In 1995 traplines were established with a north/south orientation along 5 Mississippi Highway systems. Trapline 1 extended along Highway 1 and 61 from Tunica to Natchez. Trapline 2 extended from the junction of Highway 3 and 4 to Highway 49 through Greenwood south to Jackson. Trapline 3 ran along Highway 51 from Memphis to Jackson. Trapline 4 ran from Michigan City, in Benton County, along Highway 7 then along Highway 9 to Ackerman and Highway 12 to Koscuisko. It then followed Highway 35 to Forrest. Trapline 5 followed Highway 45 from North of Corinth to Brooksville (Figure 1). These same general trapping areas were maintained for 1995, 1996 and 1997. In 1998 the traps were augmented with additional lines running east and west. The northern east/west line started at the Alabama line east of Iuka and followed Highway 72 to the junction of Highway 7 through Holly Springs and on to Highway 4 to Tunica. E/W line 2 followed Highway 6 from Clarkesdale to Tupelo then Highway 78 to the Alabama line. E/W line 3 followed Highway 8 from Rosedale to the Alabama line. E/W line 4 followed Highway 82 from Greenville to Columbus. E/W line 5 ran from Kosciusko to Myersville. E/W line 6 ran from Carthage to Vicksburg (Figure 1). Traps were set in groups of three at five-mile intervals regardless of crop proximity. During the 1995 to 1997 years there were *ca* 820 trapping sites and in 1998 there were *ca* 1400.

Discussion

The Boll weevil remains a pest of cotton in Arkansas, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, Tennessee and Texas. It seems to be losing some ground in losses estimates dropping nearly 2.0% in loss from 1997(Williams, 1998). A total of 507,474 bales of cotton were lost to this pest in these states in 1998. (Table 1). There is some evidence that suggests that as weevil losses drop, other insect losses are also lessened in intensity. The Mississippi pheromone traplines demonstrate the removal of weevils from the hill area of Mississippi as an economic pest of cotton.

1995

In 1995 the state average weevil captures for the *ca* 900 traps in pheromone traplines averaged 40 weevils per trap with an annual average high of 45 weevils per trap in the South Delta ranging down to a low of 32 in the Eastern Hills (eradication had already begun in the fall of 1994 in the Eastern Hills), see Figure 3. The high trap capture occurred in the South Delta on June 7 of 1995 at 123 weevils per trap (Figure 4). The eradication program was stopped in the Eastern Hill area in the fall and winter of 1995, though many farmers in that area opted to participate in a voluntary weevil suppression program in 1996.

1996

State seasonal average weevil numbers for traplines were down to 20 per trap per week for Mississippi with the high of 27 coming from the North Delta and a low of 6 from the Eastern Hills (Figure 5). Weevil sprays and losses in the Eastern Hills were very low in 1996, while there was a decided increase in weevil activity in the western part of Mississippi. The North Delta had the peak high trap average of 129 on September 15 and the South Delta averaged nearly 100 weevils on October 13 (Figure 6).

1997

Eradication was initiated in the fall of 1997 in areas III and IV (Central and Eastern Hills). State seasonal average trap capture numbers were 14 weevils per trap. The North Delta averaged - 29.1, the South Delta - 20.1, the Central Hills - 10.9 and the Eastern Hills - 7.9 (Figure 7). The Eastern Hills had the spring high average capture on June 25 at 44 per trap, but weevil numbers dropped thereafter in that area but increased to a peak of 161 average per trap in the North Delta in early October. The South Delta also had high weevil numbers in the fall of 1997 (Figure 8).

Reprinted from the *Proceedings of the Beltwide Cotton Conference*
Volume 2:1169-1172 (1999)
National Cotton Council, Memphis TN

1998

Eradication was initiated in the South Delta in the fall of 1998. State average weevil captures were at 9.8 per trap for the trapping year. The North Delta averaged 44.8 weevils per trap, the South Delta averaged 14.5, the Central Hills averaged 2.9 and the Eastern Hills averaged 1.1 Weevils per trap for the year (Figure 9). Central and Eastern Hill weevil trap numbers never exceeded averages of 10 weevils per trap per week. The North and South Delta traps had spring peaks of ca 20 per trap in early June, then higher numbers in the fall. The North Delta traps averaged ca 100 weevils per trap on 3 September, 142 weevils on 24 September and 262 on 22 October (Figure 10).

Conclusions

Boll weevil traplines placed along highways in Mississippi have shown that weevil activity has shifted from the eastern portion of the state to the west. The average weevil captures in the Eastern Hill dropped from 32 per trap in 1995 to 1 per trap in 1998. The North Delta averages have increased slightly from an annual average of 43 per trap to 45. The South Delta (45 weevils per trap in 1995) and the Central Hills (40 weevils in 1995) dropped to 15 and 3 weevils respectively in 1998. Weevil impact in Mississippi is definitely being lessened. The boll weevil has been relegated to a non-economic pest in the hill area of Mississippi: losses to weevil were zero in the hills in 1998.

Acknowledgments

This work is supported by a grant from the Mississippi Boll Weevil Management Corporation and by the Mississippi State Extension Service. The author also acknowledges the contribution of Mr. Ed Lamastus, Mr. Ira Jones, Mr. Jesse Crosby, Mr. Kirk Shumpert and Mr. Tommy Wall.

References

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Table 1. Cotton losses to the boll weevil in the US - 1995- 1998

	Percent reduction			
	1995	1996	1997	1998
US	1.7	1.9	4.0	2.3
Alabama	0	0	0	0
Arizona	0	0	0	0
Arkansas	3.2	2.6	1.5	2.0
California	0	0	0	0
Florida	0	0	0	0
Georgia	0	0	0	0
Louisiana	4.6	4.0	3.0	2.6
Mississippi	2.1	2.6	1.4	1.5
Missouri	2.6	0.1	3.4	1.5
New Mexico	0.5	0.6	0.5	1.3
N Carolina	0	0	0	0
Oklahoma	7.3	6.8	7.6	1.7
S Carolina	0	0	0	0
Tennessee	3.3	2.2	3.4	5.2
Texas	2.1	3.0	11.2	7.0
Virginia	0	0	0	0

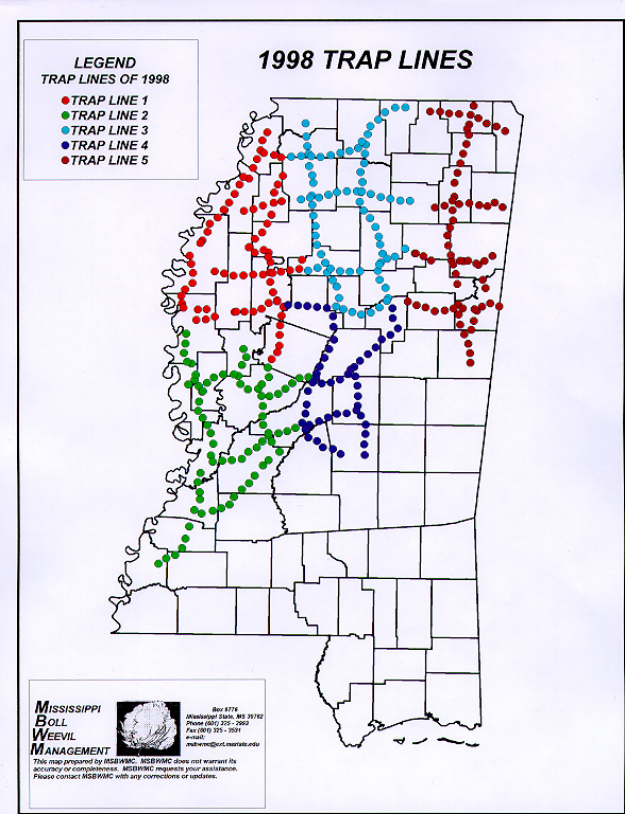

Figure 1. Mississippi pheromone trapline map

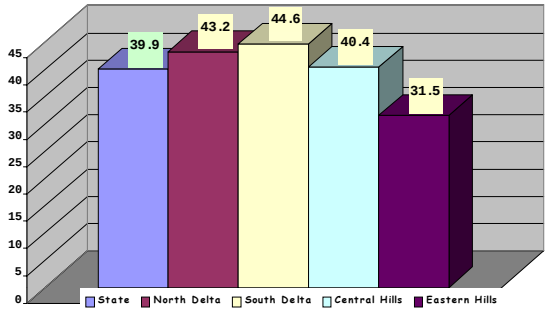

Figure 2. Mississippi - Average number boll weevils per trap by eradication area - 1995

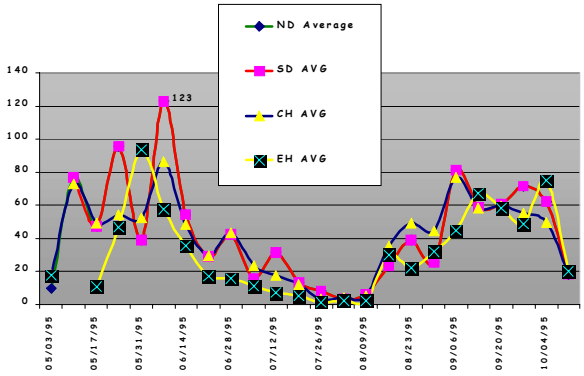

Figure 3. Mississippi - Average number boll weevils per trap by eradication area - 1995

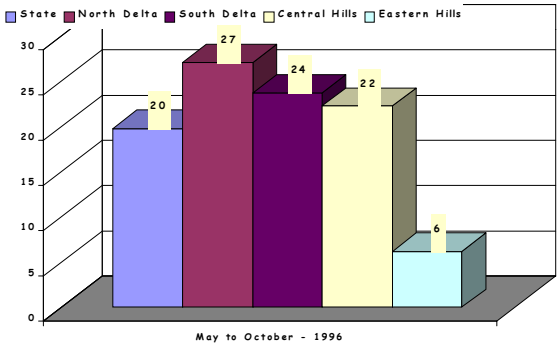

Figure 4. Mississippi - Average number boll weevils per trap by eradication area - 1996

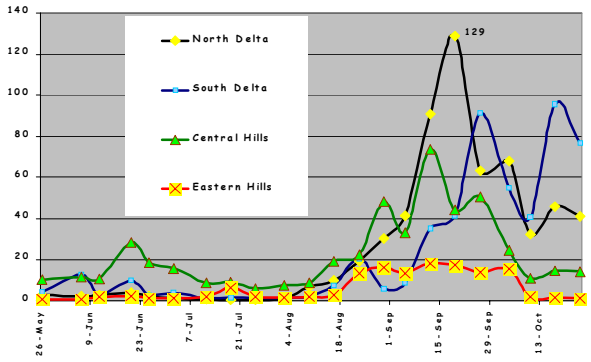

Figure 5. Mississippi - Average number boll weevils per trap by eradication area - 1996

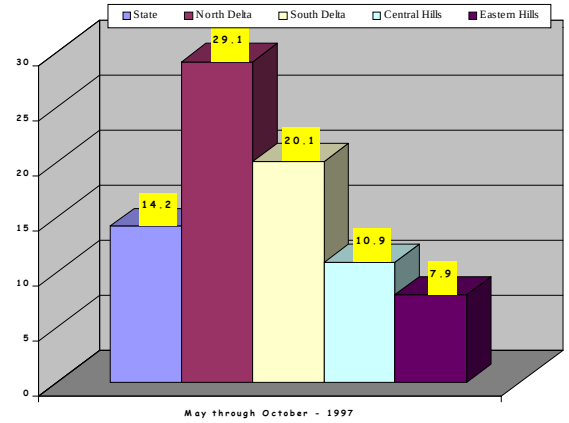

Figure 6. Mississippi - Average number boll weevils per trap - 1997

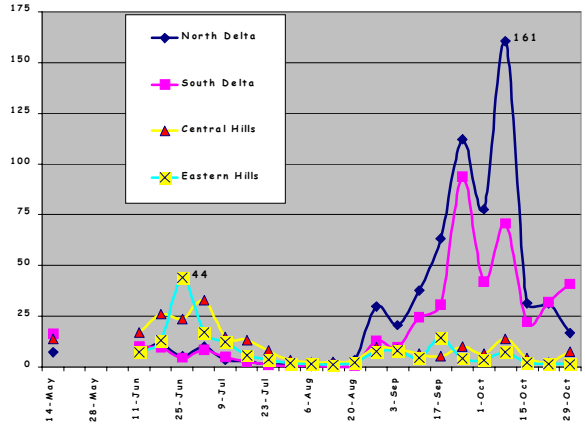

Figure 7. Mississippi - Average number boll weevils per trap by eradication area - 1997

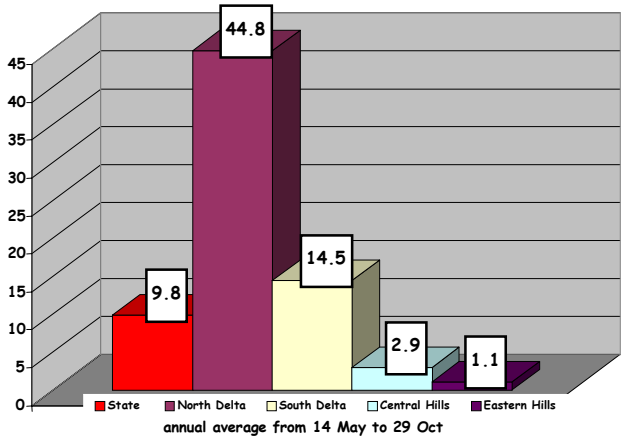

Figure 8. Average number of weevils per trap for Mississippi - 1998

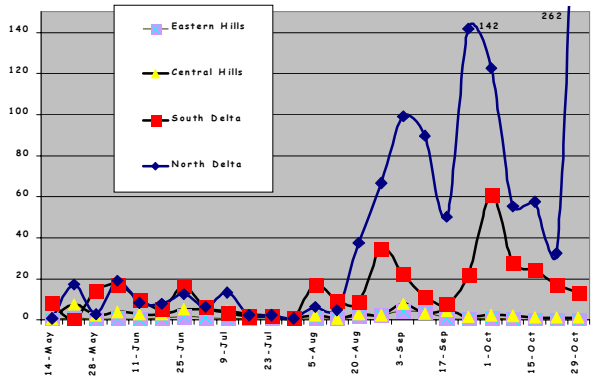

Figure 9. Mississippi - Average number of boll weevils per trap by eradication area - 1998