

## **BOLL WEEVIL EMERGENCE TRENDS ACROSS OKLAHOMA, 1993 - 1995**

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### **Abstract**

Boll weevil monitoring activities across Oklahoma were coordinated by Oklahoma Cooperative Extension Service. This surveillance program helped keep producers in all regions of the State informed of boll weevil emergence trends each year. Boll weevil catches have steadily increased from 68,362 adults trapped in 1993 to 207,706 adults trapped in 1995. The widespread economic loss inflicted across Southwest and South Central Oklahoma since 1993 reflects this increase in weevil survival. Besides helping formulate early-season control strategies, this information is valuable in planning the proposed boll weevil eradication program and upcoming referendum for the state.

### **Introduction**

Oklahoma's climatic conditions, although not as favorable for optimum production as southern states, do offer some advantages related to insect infestations. Normally harsh winters and semi-arid environments limit the spread and damage of the boll weevil in Oklahoma. Before 1990, economically damaging populations of boll weevils were confined to seven counties. However, five consecutive mild winters (1990, 1991, 1992, 1993 and 1994) allowed boll weevils to overwinter successfully across all cotton production regions of Southwest Oklahoma inflicting widespread damage.

### **Methods and Materials**

Boll weevil pheromone trap lines were established in the same location each year. Trap numbers varied each year as traps were added to improve surveillance. A total of 566 pheromone traps were monitored in 1993, 627 traps in 1994, and 696 traps in 1995. Trap lines were synchronized across the state allowing for more uniformity with tabulation. Catches were recorded each year starting the first week of May and ending after the first week of July (a ten-week period). Traps were checked weekly (weather permitting) recording the number of adults captured. The pheromone was replaced every three weeks and the insecticide strips every six weeks. The number of traps per trap line varied from 10 traps in Canadian County to 129 traps in Jackson County in 1995.

## **Results and Conclusions**

A total of 204,395 boll weevils were captured in all trap lines in 1995 compared to 141,555 boll weevils in 1994 and 67,354 adults in 1993 (Table 1). Since number of traps varied per county, boll weevil totals per trap line were converted to number of boll weevils caught/trap/week. Beckham (79.8), Caddo (46.4), Stephens (45.2) and Comanche (44.5) County trap lines were the leading counties in 1995 compared to Comanche (53.7), Jackson (33.7), Kiowa (31.9), and Tillman County (27.9) in 1994 and Tillman (22.6), Jackson (18.5), Comanche (15.2), and Harmon County (11.1) in 1993. This shift in leading boll weevil counties is significant since the extreme southwestern tier counties of Jackson, Tillman, Greer, and Kiowa are boll weevil havens where adults overwinter successfully each year. This northeastward spread of boll weevils not only increased the amount of economic damage inflicted but will also impact the assessment cost of the eradication effort unless a severe winter occurs.

Peak boll weevil emergence varied across the state each year (Figure 1). Emergence trends in 1993 and 1994 is the type that usually occurs most often across Oklahoma. More than 75% of the emergence is suicidal, since adults emerge before square initiation. Typically early-planted cotton begins to square around June 18. Effective emergence is the portion of adult emergence that coincides with squaring cotton improving the chance of survival and reproduction. A delayed emergence occurred in 1995 with nearly 50% of the adults trapped after June 18 increasing the chance of a widespread outbreak.

Enormous numbers of boll weevils developed in fields in September where drought conditions forced cotton producers to abandon spray programs in 1995. Late-planted cotton insured available food for these late-emerging boll weevils to build sufficient fat reserves to overwinter. Oklahoma producers can expect a high number of weevils to survive in all areas of the state in 1996 unless a severe winter like 1983 occurs.

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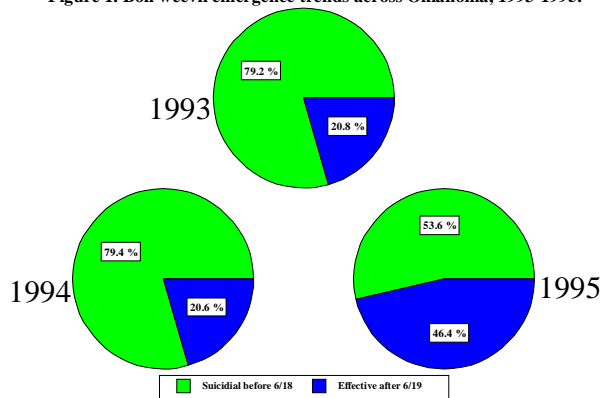
Table 1. Number of Boll Weevils Trapped Across Oklahoma, 1993-1995.

Trap Line County	Total Number Caught	Total Number of Weevils/Trap	Average Number of Weevils/ trap/Wk
<u>1993</u>			
Beckham	1,237	65.1	6.5
Caddo	1,423	71.2	7.1
Canadian	26	2.8	0.3
Comanche	2,736	152.0	15.2
Cotton	174	10.9	1.1
Custer	34	1.9	0.2
Garvin	3	0.3	0.03
Grady	85	3.4	0.3
Greer	2,011	83.8	8.4
Harmon	4,420	110.5	11.1
Jackson	25,742	185.2	18.5
Jackson/Tillman	3,053	132.7	13.3
Jefferson	14	2.0	0.2
Kiowa	2,273	103.3	10.3
McClain	1	0.6	0.06
Roger Mills	160	11.4	1.1
Stephens	301	15.8	1.6
Tillman	22,574	225.7	22.6
Washita	1,087	45.3	4.5
<b>Total</b>	<b>67,354</b>	<b>64.4</b>	<b>6.4</b>
<u>1994</u>			
Beckham	4,837	146.6	14.7
Caddo	3,400	113.3	11.3
Canadian	79	7.9	0.8
Comanche	11,817	537.1	53.7
Cotton	2,080	138.7	13.8
Custer	1,160	55.2	5.5
Garvin	301	30.1	3.0
Grady	405	15.6	1.6
Greer	3,660	152.6	15.3
Harmon	11,148	378.7	37.9
Jackson	41,820	337.3	33.7
Jackson/Tillman	5,708	248.2	24.8
Jefferson	60	10.0	1.0
Kiowa	16,603	319.3	31.9
McClain	127	12.7	1.3
Roger Mills	1,686	76.6	7.7
Stephens	3,407	121.7	12.2
Tillman	27,886	279.9	27.9
Washita	5,371	145.2	14.5
<b>Total</b>	<b>141,555</b>	<b>159.2</b>	<b>15.9</b>

Table 1. Continued.

	<u>1995</u>		
Beckham	25,544	798.3	79.8
Caddo	11,591	463.6	46.4
Canadian	1,370	137.0	13.7
Comanche	10,236	445.0	44.5
Cotton	3,067	153.4	15.3
Custer	6,126	255.3	25.3
Garvin	2,651	265.1	26.5
Grady	2,074	79.8	7.9
Greer	5,184	216.0	21.6
Harmon	13,986	349.7	34.9
Jackson	25,805	200.0	20.0
Jackson/Tillman	11,971	520.5	52.1
Jefferson	0	0.0	0.0
Kiowa	21,900	438.0	43.8
McClain	4,909	446.3	44.6
Roger Mills	6,180	309.0	30.9
Stephens	10,397	452.0	45.2
Tillman	27,596	275.9	27.6
Washita	13,808	373.2	37.3
<b>Total</b>	<b>204,395</b>	<b>343.2</b>	<b>34.3</b>

Figure 1. Boll weevil emergence trends across Oklahoma, 1993-1995.



Average of all trap lines.