

COTTON INSECT LOSS ESTIMATES - 1998

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Abstract

Insects reduced yields by 7.98% across the US in 1998. Bollworm/budworm were the most damaging pests at 2.71% loss, boll weevil was second with 2.30% loss and *Lygus* were third at 1.04%. Insect losses represent more than 1.7 million bales of cotton and cost of insect management plus loss amounts to \$1.224 billion.

Introduction

Assessing insect losses to cotton has never been easy and 1998 may have proven that it is nearly impossible. Contributors to these estimates had more difficulty this year, mainly because of weather factors, than ever before. Twenty-six percent (26%) of cotton losses were attributed to weather in 1998. A great number of acres were lost to drouth, then hurricanes and too much water. Insects certainly did their damage and in some cases used the weather to gain advantage and cause more damage to the 1998 crop. The top three most damaging insects are once more the bollworm/budworm (heliathine) complex, boll weevil, and *Lygus*. The Heliathines infest about 84% of the US acreage and in 1998 *H. zea* made up 70% of the population. Insecticide resistance in this group continues to plague cotton producers and insect managers across the belt. 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. *Lygus* are pests of 57% of US cotton acres in 1998 and also rank annually in the top 5 in bales lost.

Other pests are more cyclic, yet can be found on some acres in most years. Included in this group are the fall and beet armyworms, spider mites, stink bugs, aphids and whiteflies.

There were acres infested by grasshoppers, European cornborers, and saltmarsh caterpillars this year, as well. We also annually have reports of cotton square borer and other members of the armyworm complex attacking the crop. Table 1 lists twenty-one (21) insect pests of cotton and the percentage of US acreage which is infested by each.

Discussion

Bollworm/Budworm Are Ranked Most Damaging at 2.71% Loss

This represents a fairly small upward change in loss over 1997 (2.01%) (Williams, 1998). This complex was dominated again by the bollworm as the predominant

lepidopteran species in 1998. Across the US, 70% of the population was bollworm. Increased corn acreage, the removal of the boll weevil in the southeast and the more than 2.73 million acres of *Bt* transgenic cotton which was planted in 1998 are all reason this continued trend of higher corn earworm numbers. Losses amounted to more than one half million bales of cotton and cost of control was \$16 per acre for the US. Missouri, New Mexico and Tennessee reported greater than 5% loss to bollworm; Alabama, Arkansas, Mississippi, North Carolina and Oklahoma had 4.0% or greater loss (Table 2). Only California, and Virginia escaped with very little or no damage from these pests.

Boll Weevil Is Second at 2.30% Loss

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). 507,747 bales of cotton were lost to this pest in these states in 1998. Texas reported the highest loss to boll weevil at 7.02 (Table 3). Tennessee estimated 5.18% loss to this pest. The other boll weevil states all reported less than 3.0% losses to weevils.

There were 4.85 million acres of cotton in some phase of boll weevil eradication at a cost of more than \$20 million to the farmer in 1998. These costs must also be added to the cost of insect management which amounted to more than \$4 per acre across the US.

Lygus Holds a Third Place Ranking at 1.04% Loss

Plant bugs and cotton fleahoppers destroyed almost 300,000 bales of cotton across the US in 1998. Arizona estimated 7.0% loss to *Lygus*, and California had 3.31% loss to the western plant bug. Most of the midsouth states estimated less than 2% loss to bugs. Texas (0.02% - TPB vs 0.89 - CFH) and Oklahoma (0.0% - TPB and 0.25% CFH) estimate greater losses from fleahoppers than plant bug (Table 4).

Aphids, Thrips, Fall Armyworms, and Stink Bugs Also Damaging Pests

Aphids continue to remain a pest on about 60% of US cotton acres reducing yield by more than 73,000 bales. They were a major problem for Missouri in 1998 causing a 2.2% loss in yield. No other states, except Mississippi at 0.93% and Oklahoma at 0.67%, exceeded 0.5% in losses to aphids, (Table 5). Thrips are pests of cotton every year in all states. In 1998 they are estimated to have reduced yield by 77,000 bales. Alabama reported a 0.95% loss to this early season pest (Table 6). Once more none of the western states reported damage from Fall Armyworm. Thirty-five percent (35%) of US cotton was infested, all east of Texas and Oklahoma. Arkansas, Louisiana and Tennessee reported less than 0.1% loss, Alabama had the most loss at 2.09% (Table 7). Beet Armyworms were a slightly more western pest in 1998. Highest losses to BAW were in

Oklahoma at 1.88% loss. Only Virginia, Alabama and Missouri reported no loss to Beet Armyworm, (Table 7).

Spider mites made a comeback in 1998. California was the big loser with this pest at 1.62% loss. This pest also caused 0.12% loss in Arizona. Nationally we lost more than 53,000 bales of cotton to Spider mites (Table 8).

Stink bugs are another general pest which moves into cotton when pesticide inputs are lowered. In 1998 they appeared as pests in Alabama reducing yields by 0.99%. Georgia also reported a loss of 0.54% (Table 9).

Conclusions

All insects combined across the US reduced yields by 7.98%. This represents more than 1.75 million bales lost. Costs for insect management were \$63.08. When the cost and loss are combined the amount is \$114.28 per acre. These figures show a decrease in bales lost over 1997, but we spent more per acre than 1997.

Acknowledgments

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References

- Williams, M. R., 1999. Cotton insect losses - 1998. Proceedings Beltwide Cotton Conferences.
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Table 1. Insect pests of cotton in the US and the percent of crop infested - 1998

Pest	Acres infested	Percent of US crop infested
Boll weevil	5897852	55
Bollworm/budworm	9051531	84
Pink Bollworm	303578	3
Cotton Fleahopper	3031403	28
Lygus	6158790	57
Cotton Lpperforator	390508	4
Spider Mites	2611335	24
Thrips, early	9725530	91
Beet Armyworm	5069947	47
Fall Armyworm	3718702	35
European C borer	751243	7
Stink Bugs	2538954	24
Grasshoppers	786887	7
Stinkh Catpillars	211021	2
Aphids	6468021	60
Bandwing Whitefly	1555766	15
Sweetpot Whitefly	478800	4
Soybean Loopers	1505035	14
Cabbage Loopers	1029089	10
Western Fl. Thrips	1792603	17
Cutworms	1265902	12

Table 2. Cotton losses to the bollworm/budworm complex - 1998

Area	% pop bollworm	Percent reduction	Bales lost
US	70	2.706	596309
Alabama	54	4.699	46766
Arizona	100	0.040	300
Arkansas	44	4.664	92963
California	72	0.000	3
Florida	70	2.100	3500
Georgia	40	2.769	75000
Louisiana	66	1.540	15402
Mississippi	60	4.220	87293
Missouri	65	6.120	42392
New Mexico	100	5.900	6785
North Carolina	80	4.400	86452
Oklahoma	64	4.000	6000
South Carolina	85	3.500	19763
Tennessee	60	5.864	51016
Texas	94	1.255	62661
Virginia	75	0.007	12

Table 3. Cotton losses to the boll weevil in the US - 1998

Area	Percent reduction	Bales lost
US	2.30	507474
Alabama	0.00	0
Arizona	0.00	0
Arkansas	2.04	40567
California	0.00	0
Florida	0.00	0
Georgia	0.00	0
Louisiana	2.64	26440
Mississippi	1.49	30742
Missouri	1.49	10344
New Mexico	1.28	1476
North Carolina	0.00	0
Oklahoma	1.67	2500
South Carolina	0.00	0
Tennessee	5.18	45056
Texas	7.02	350349
Virginia	0.00	0

Table 4. Cotton Losses to *Lygus* and cotton fleahoppers in the US -1998

Area	% reductn	Bales lost	% reductn	Bales lost
	<i>Lygus</i>	<i>Lygus</i>	fleahop	fleahop
US	1.044	230057	0.208	45736
Alabama	1.794	17859	0.008	75
Arizona	7.000	52500	0.000	0.00
Arkansas	1.059	21104	0.000	0.00
California	3.312	86330	0.000	0.00
Florida	0.281	469	0.000	0.00
Georgia	0.154	4167	0.000	0.00
Louisiana	1.470	14698	0.051	514
Mississippi	0.804	16626	0.011	219
Missouri	0.337	2337	0.000	0.00
New Mexico	0.000	0	0.000	0.00
North Carolina	0.005	99	0.000	0.00
Oklahoma	0.000	0	0.250	375
South Carolina	0.000	0	0.000	0.00
Tennessee	1.468	12770	0.000	0.00
Texas	0.022	1099	0.892	44552
Virginia	0.000	0	0.000	0.00

Table 5. Cotton losses to aphids in the US - 1998

Area	Percent reduction	Bales lost
US	0.333	73441
Alabama	0.147	1463
Arizona	0.000	0
Arkansas	0.119	2376
California	0.201	5238
Florida	0.100	167
Georgia	0.000	0
Louisiana	0.215	2147
Mississippi	0.925	19153
Missouri	2.228	15432
New Mexico	0.175	201
North Carolina	0.007	147
Oklahoma	0.667	1000
South Carolina	0.000	0
Tennessee	0.187	1627
Texas	0.490	24490
Virginia	0.000	0

Table 6. Cotton losses to thrips in the US - 1998

Area	Percent reductn	Bales lost
US	0.352	77560
Alabama	0.951	9469
Arizona	0.300	2250
Arkansas	0.605	12068
California	0.150	3906
Florida	0.000	0
Georgia	0.000	0
Louisiana	0.138	1383
Mississippi	0.123	2541
Missouri	0.011	78
New Mexico	0.000	0
North Carolina	0.010	198
Oklahoma	0.250	375
South Carolina	0.000	0
Tennessee	0.608	5290
Texas	0.801	39994
Virginia	0.005	9

Table 7. Cotton losses to beet and fall armyworms in the US - 1998

Area	Beet	Fall Aworm	Beet
	% reduction	% reduction	Fall Aworm Bales lost
US	0.281	0.221	110536
Alabama	0.000	1.088	20871
Arizona	0.380	0.000	2850
Arkansas	0.058	0.009	1336
California	0.102	0.000	2658
Florida	0.024	0.781	1342
Georgia	0.154	0.615	29834
Louisiana	0.237	0.011	2478
Mississippi	0.116	0.239	7354
Missouri	0.000	0.475	3290
New Mexico	0.880	0.000	1012
North Carolina	0.001	0.010	226
Oklahoma	1.875	0.000	2813
South Carolina	0.179	0.134	1764
Tennessee	0.006	0.050	487
Texas	0.827	0.000	41311
Virginia	0.000	0.000	0

Table 8. Cotton losses to Spider Mites in the US - 1998

Area	Percent reductn	Bales lost
US	0.241	53157
Alabama	0.025	250
Arizona	0.120	900
Arkansas	0.018	350
California	1.624	42323
Florida	0.000	0
Georgia	0.000	0
Louisiana	0.004	43
Mississippi	0.076	1579
Missouri	0.012	83
New Mexico	0.000	0
North Carolina	0.000	0
Oklahoma	0.000	0
South Carolina	0.000	0
Tennessee	0.029	253
Texas	0.148	7376
Virginia	0.000	0

Table 9. Cotton losses to stink bugs in the US - 1998

Area	Percent reductn	Bales lost
US	0.151	33353
Alabama	0.993	9888
Arizona	0.020	150
Arkansas	0.000	0
California	0.000	0
Florida	0.206	344
Georgia	0.538	14583
Louisiana	0.000	0
Mississippi	0.027	554
Missouri	0.000	0
New Mexico	0.000	0
North Carolina	0.005	95
Oklahoma	0.000	0
South Carolina	0.000	0
Tennessee	0.170	1479
Texas	0.004	211
Virginia	0.000	0