COTTON INSECT LOSS ESTIMATES - 2007

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Abstract

Cotton losses to arthropod pests reduced yields by 3.62% in 2007. Pest losses were higher in the southeast states where drought also caused heavy losses. The bollworm/budworm complex remained the top ranked pest, reducing yields by 0.913%, a slight increase over 2006. *Lygus* were number two at 0.683%, Thrips were third at 0.578%, cotton fleahoppers were fourth at 0.477% and Aphids were fifth at 0.320%. Total cost and loss for arthropods in 2007 was $877 million. Direct management costs for arthropods were $57.23 per acre.

Introduction

Once again weather was the major factor in cotton production. It affects all systems, including arthropod populations. We continue to see some changes in the pest complex with one pest or another being favored in a given year. But, Bollworms and budworms continue to lead the way in inflicting damage to the crop. Overall losses at 3.62% were up from the 2006 low of 2.96%. Florida reported 8.69% loss to arthropod pests in 2007 (Table 1). Management of the bollworm/budworm complex, primarily by transgenic cotton, continues to be our main defense, yet they remain the number one pest for 2007 at 0.913% reduction in yield. Heliothines infested about 62% of the US cotton crop in 2007, falling behind Thrips which were found in 89% and aphids in 64% of the US crop (Table 2). Boll weevils infested only 6% of the crop (Table 2), and are reported as pests in Arkansas, Louisiana, Oklahoma, and Texas (Table 8). Total arthropod losses across the US (Table 1) of 3.62% translates to 908,436 bales of cotton. Florida's 8.69% loss represented 11,342 bales and Alabama was second at 7.2% and 68,121 bales. South Carolina (3rd) reported losses of 5.94%, Missouri (4th) had 5.13%, Louisiana (5th) had 4.25%, Tennessee (6th) 4.06%, Texas (7th) 3.62%, Arkansas (8th) 3.45%, Georgia (9th) 3.43%, California (10th) 3.19%, North Carolina (11th) 2.83%, Mississippi (12th) 2.63%.

All other states reported 2% or less in losses. In descending order Virginia (2.0%), Arizona (1.54%), Kansas (1.46%), Oklahoma (1.35%), and New Mexico (0.34%) reported lower losses than usual. Texas reported 352,985 bales lost, Arkansas lost 91,750 and Arizona lost 9,742 to arthropod pests.

Pest status continues to change and once minor pests now cause losses. Current technologies are helping to maintain losses below 5%. Bugs continue to increase in importance and overall rank among pests of cotton. *Lygus* spp. And cotton fleahoppers rank 2nd and 4th respectively among most injurious pests again in 2007. As in 2006, no pest exceeded 1% in losses and only four pests: Thrips (89%), aphids (64%), bollworm/budworm (62%), and Lygus (50%) infested more than half of the US crop (Table 2).

Discussion

Heliothines: US top arthropod pest complex

Bollworms and budworms are the undisputed top cotton pests again for 2007, and once more, bollworms (*H. zea*) were the dominant species at more than 92%. There was 0.913% loss to heliothines which infest about 62% of the US crop. Heliothine damages resulted in the loss of 229,186 bales of cotton (Table 3). South Carolina (4.5%) reported the highest loss to Heliothines and Alabama (2.88%) was second. Georgia (1.58%), Florida (1.28%), and North Carolina (1.04%) rounded out the top 5 states which reported losses to Heliothines. Texas (0.81%) losses amounted to 78,826 bales. No other state lost more than 50,000 bales to this pest complex. Only California and Virginia reported no losses to heliothines.

Bt cotton acreage decreased in 2007 to 7.11 million acres in 2007 (Table 4). This is more reflective of an overall decrease in cotton acreage as the percentage of *Bt* cotton acres was 66%. Heliothines were sprayed on 2.211million Bt cotton acres in 2007. The cost of *Bt* is estimated at $10.41 per acre of the US crop. This represents about 18% of the cost of arthropod management and is second only to foliar application (47%) costs. (Williams, 2008).

***Lygus*: second most damaging pest in US cotton**

In 2003 combined losses in the US to bugs were 1.96%, in 2004 combined losses were 1.84%, in 2005 combined losses were 1.78%, in 2006 the combined losses were 1.14% and in 2007 combined losses were 1.43%. *Lygus* (0.68%) infest about 50% of the US crop. Cotton fleahoppers (0.48%) infest 48% and stink bugs (0.27%) infest 45% (Table 2).

This report combines the western species, *Lygus hesperus*, and the eastern species, *Lygus lineolaris*. Louisiana (3.61%) and Missouri (1.93%) reported greatest loss to *Lygus*. Arkansas (1.69%), Mississippi (1.01%) and California (1.0%) reported 1% or higher losses. All other state losses were less than 1%: Alabama (0.73%), Tennessee (0.60%), Arizona (0.55%), Florida (0.45%), Georgia(0.40%), Kansas (0.27%), Texas (0.11%), North Carolina (0.10%), and New Mexico (0.08%). Oklahoma, South Carolina, and Virginia reported no loss to *Lygus*. These pests combined to reduce yields by 0.683%, for a loss of 171,478 bales of US cotton while infesting 5.429 million acres (Table 5).

Early season Thrips reduce US crop by 0.577%

Early season Thrips infested 89% of the US acreage in 2007 and cost US farmers $7.54 per acre in management (Williams, 2008). There were 145,040 bales of US cotton lost to this complex of pests in 2007. Alabama (2.47%) reported the highest losses from Thrips. Virginia (2.0%), Florida (1.68%), North Carolina (1.5%), and Tennessee (1.2%) also reported more than 1% loss. All other states reported l% or less in losses: Missouri (0.76%), Texas (0.67%), South Carolina (0.30%), Oklahoma (0.28%), California (0.24%), New Mexico (0.21%), Arkansas (0.20%), Mississippi (0.10%), Louisiana (0.09%), Georgia (0.08%), Arizona (0.05%) and Kansas (0.001%)(Table 6).

Cotton fleahoppers ranks 4th in damage at 0.477%

Cotton fleahoppers (0.48%) infested 5.210 million acres of cotton in 2007 (Table 6). Texas (1.11%), Kansas (0.82%), Oklahoma (0.32%), Missouri (0.25%), Arizona (0.014%) and Mississippi (0.004%) reported losses to cotton fleahoppers. All other states reported no loss. Fleahoppers destroyed 119,745 bales of cotton.

Aphids: fifth most damaging pest of US cotton

Aphids infested 64% of US cotton, and yield losses were 0.32%. California (0.84%), Texas (0.63%), Florida (0.22%) and Mississippi (0.10%) reported heaviest losses to aphids. Tennessee (0.07%), Georgia (0.06%), Alabama (0.05%) Louisiana (0.04%) and Oklahoma (0.02%), Arizona (0.001%) also reported losses to aphids. Six states: Arkansas, Missouri, New Mexico, North Carolina, South Carolina and Virginia reported no losses to aphids; only Kansas reported no acres infested (Table 7). Aphids reduced yields by 80,418 bales of US cotton.

Stink bugs: sixth most damaging pests

Stink bugs reduced the US crop by 0.274% in 2007. Florida (3.22%) reported major problems with this pest. South Carolina (1.0%), Alabama (1.0%), Georgia (0.84%), Tennessee (0.62%) Mississippi (0.21%), North Carolina (0.2%), Missouri (0.101%), Texas (0.14%) Arkansas (0.12%) Louisiana (0.12%), Arizona (0.035%) Oklahoma (0.02%) and New Mexico (0.002%) reported loss to stink bugs. The stink bug complex infested 4.833 million acres of cotton in 2007 and destroyed 68,823 bales of cotton (Table 5). California, Kansas, and Virginia reported no losses to stink bugs.

Spider mites rank seventh at 0.242%

Spider mites continued to be a resurgent pest in 2007. Mites infested 3.3 million acres of cotton in 2007. Missouri (1.09%) reported greater than 1% losses to spider mites. California (0.9%) and Tennessee (0.76%) reported greater than 0.5% loss. Eight other states reported losses to these pests. 60,720 bales of US cotton were lost to spider mites in 2007 (Table 7).

Silverleaf whitefly *(Bemisia* sp) rank 8th

Six states reported infestations of silverleaf whiteflies (*Bemisia* sp) in 2007. The 0.059% reduction in yield places it as the 8th most damaging pest in US cotton. Georgia (0.198%) lost 4,167 bales, Texas (0.04%) lost 3,926 bales, California (0.158%) lost 2,472 bales, Arizona (0541%) lost 3,418 bales, and Florida (0.638%) lost 833 bales. South Carolina reported infestations, but no loss. *Bemisia* sp were reported in 691,388 acres (Table 11).

Fall armyworm: 9th at 0.048%

Fall armyworm (0.048%) infested about 1.764 million acres of cotton and reduced yields by 12,071 bales of cotton. Seven states reported losses to this pest: Florida (0.814%), South Carolina (0.139%), Georgia (0.119%), Mississippi (0.116%), Texas (0.0558%), Tennessee (0.009%), Oklahoma (0.002%) and Arizona (0.002%). Five states reported infestations but no losses to these pests, four states reported no acres infested (Table 9).

Other pests of cotton

Boll weevils infested 2.221 million acres of cotton in 2002 and slightly less at 2.097 million acres in 2003, dropped to 1.572 million acres in 2004, saw resurgence to 1.828 million acres in 2005, infested 1.199 million acres in 2006 and infested 612,393 acres in 2007. Boll weevils were the number ten ranked pest in the US in 2007. Only Texas (0.033%) lost cotton to weevils. Arkansas, Louisiana, Oklahoma and Texas reported infested acres. Eradication costs for boll weevil amounted to $7.66 (Table 8).

Losses from all remaining pests of cotton were almost negligible. Other insects, which included darkling beetles, yellowstriped armyworms, clouded plant bugs, western flower Thrips, and green mirids (Table 13) combined to reduce cotton yields by 0.003% in 2007. Averaged across the cotton belt, all other pests of cotton reduced yields by less than 0.05% in 2007. European cornborers (Table 8), beet armyworms (Table 9), cutworms and loopers (Table 10), bandedwinged whiteflies (Table 11), cotton leafperforator (Table 12), grasshoppers (Table 13), saltmarsh caterpillars and southern armyworms (Table 14) contributed to the losses from arthropod pests in 2007.

Pink bollworm (0.002%) infested 94,369 acres of US cotton. Arizona (0.022%) lost 141 bales of cotton to pink bollworm in 2007. Texas (0.0003%) lost 28 bales and California (0.002%) had infested acres, but no losses. Pink bollworm eradication cost US producers about $0.35 per acre in eradication costs (Table 12).

Conclusion

Total losses from insect pests in US cotton in 2007 were 3.62%, another year with low percent losses (Table 2). Losses below 5% continue to reflect the outstanding contribution technology has made to managing pest complexes which long have plagued cotton growers. The boll weevil and tobacco budworm remain a threat, but are no longer the major factors in production they once were. The emergence of new pest complexes has been much slower than many anticipated. The bugs continue to be a concern in much of the cotton belt and as the older insecticide chemistries drop from usage, spider mites, aphids and Thrips will continue to make comebacks. The costs of insect management were $57.23 per acre in 2007; costs plus loss were $81.56 per acre (Williams 2008).

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Table 1. Number of acres, percent reduction in yield by arthropods, cost plus loss and bales lost by state in 2007

	Acres cotton	% Reduction	Cost plus loss	Bales lost
US	10,750,975	3.62	$876,425,104	908,436
Florida	58,044	8.69	$5,862,764	11,342
Alabama	399,209	7.20	$39,945,539	68,121
South Carolina	180,000	5.94	$20,303,130	22,271
Missouri	377,000	5.13	$46,428,650	44,331
Louisiana	325,000	4.25	$36,493,490	38,379
Tennessee	500,000	4.06	$45,015,102	46,518
Texas	4,832,924	3.62	$285,500,018	352,985
Arkansas	850,000	3.45	$111,067,625	91,750
Georgia	1,010,000	3.43	$70,870,000	72,240
California	428,725	3.19	$48,532,997	49,850
North Carolina	495,000	2.83	$29,879,610	29,173
Mississippi	666,000	2.63	$94,661,534	56,170
Virginia	59,000	2.00	$3,493,056	1,880
Arizona	176,689	1.54	$16,510,884	9,742
Kansas	55,000	1.46	$699,317	1,126
Oklahoma	185,000	1.35	$7,603,927	4,419
New Mexico	47,784	0.34	$1,633,986	393

Table 2. Percent lost, acres infested, rank, and percent of US cotton infested by insect pests in 2007

pest	% Reduction	acres infested	Rank by % loss	% infested
Bollworm/Budworm	0.913	6,704,830	1	62.4
Lygus	0.683	5,429,167	2	50.5
Thrips	0.578	9,595,718	4	89.3
Cotton Fleahopper	0.477	5,258,805	8	48.9
Aphids	0.320	6,806,780	6	63.3
Stink Bugs	0.274	4,833,869	3	45.0
Spider Mites	0.242	3,293,087	5	30.6
Silverleaf Whitefly (*Bemisia*)	0.059	691,388	9	6.4
Fall Armyworm	0.048	1,764,045	7	16.4
Boll Weevil	0.013	612,393	12	5.7
Beet Armyworm	0.004	10,000	13	0.1
Saltmarsh Caterpillars	0.0009	706,734	16	6.6
Other Insects	0.003	46,138	10	0.4
Cutworms	0.0019	662,695	17	6.2
Pink Bollworm	0.001	94,369	11	0.9
Loopers	0.0005	804,017	14	7.5
Grasshoppers	0.0005	850,452	15	7.9
Southern Armyworms	0.0001	3,150	20	0.0
Cotton Leaf Perforator	0.0000	54,852	18	0.5
European Cornborer	0.0000	10,000	19	0.1
Banded Winged Whitefly	0.0000	370,537	21	3.4

*Other Insects include yellowstriped armyworms, western flower Thrips, darkling beetles, striped flea beetles, green mirids and clouded plant bugs.

Table 3. Bollworm and budworm: percent of population, yield reduction, acres infested, bales lost and *Bt* acres by state in 2007

States	% yield Reduction	% crop infested	% bollworm	Acres infested	bales lost	% *Bt* Ac
US	0.913	62	92	6,704,830	229,186	66
Alabama	2.883	100	68	399,209	27,282	86
Arizona	0.047	20	90	36,132	299	91
Arkansas	1.000	100	90	850,000	26,563	85
California	0.000	5	100	21,436	0	14
Florida	1.283	18	75	10,460	1,675	35
Georgia	1.584	79	80	800,000	33,333	94
Kansas	0.364	36	100	20,000	281	0
Louisiana	0.352	88	100	286,000	3,179	95
Mississippi	0.635	78	95	516,900	13,549	87
Missouri	1.001	78	81	293,000	8,647	90
New Mexico	0.042	10	100	5,000	48	48
North Carolina	1.035	100	90	495,000	10,648	27
Oklahoma	0.662	38	90	70,000	2,169	71
South Carolina	4.500	100	99	180,000	16,875	95
Tennessee	0.800	80	75	400,000	9,167	95
Texas	0.809	49	88	2,383,693	78,826	48
Virginia	0.000	100	100	59,000	0	90

Table 4. *Bt* cotton acreage, acres sprayed for caterpillars, average number of applications and percent of population which was bollworm from 1995 to 2007

Year	*Bt* cotton acreage	Acres Bt sprayed	Avg. # applications	% Population bollworm
1995	<15,000	nr	nr	30%*
1996	1,851,094	nr	nr	40%*
1997	2,271,824	nr	nr	50%*
1998	2,731,827	nr	nr	60%*
1999	4,234,785	1,055,331	0.290	76%
2000	5,220,392	1,455,084	0.330	79%
2001	5,717,747	2,727,821	0.400	74%
2002	4,893,810	3,091,586	0.520	83%
2003	6,040,529	3,151,114	0.551	86%
2004	6,591,338	2,909,459	0.466	94%
2005	7,395,393	3,050,093	0.541	95%
2006	8,495,822	3,961,194	0.590	92%
2007	7,106,473	2,211,222	0.503	92%

nr – not reported * polled entomologists for estimates

Table 5. *Lygus* and stink bugs: percent yield reduction, acres infested and bales lost by state in 2007

	Lygus			stink bugs		
States	**% Reduction**	**Acres infested**	**Bales lost**	**% Reduction**	**Acres infested**	**Bales lost**
US	0.683	5,429,167	171,478	0.274	4,833,869	68,823
Alabama	0.73	380,209	6,915	0.995	334,000	9,413
Arizona	0.77	136,894	4,900	0.035	64,871	222
Arkansas	1.69	850,000	44,844	0.124	850,000	3,281
California	1.00	429,405	15,655	0.000	0	0
Florida	0.45	5,960	586	3.223	32,300	4,206
Georgia	0.40	400,000	8,333	0.842	850,000	17,708
Kansas	0.27	30,000	211	0.000	0	0
Louisiana	3.61	308,753	32,607	0.120	195,000	1,084
Mississippi	1.01	614,500	21,458	0.212	447,500	4,518
Missouri	1.93	377,000	16,642	0.101	104,500	870
New Mexico	0.08	8,000	96	0.002	950	2
North Carolina	0.10	495,000	1,029	0.200	495,000	2,058
Oklahoma	0.00	25,000	4	0.023	42,000	74
South Carolina	0.00	175,000	0	1.000	180,000	3,750
Tennessee	0.60	500,000	6,875	0.616	460,000	7,063
Texas	0.11	676,446	10,314	0.135	680,248	13,186
Virginia	0.00	10,000	0	0.000	30,000	0

Table 6 Thrips and cotton fleahoppers: percent yield reduction, acres infested and bales lost by state in 2007

	Thrips			cotton fleahopper		
States	**% Reduction**	**Acres infested**	**Bales lost**	**% Reduction**	**Acres infested**	**Bales lost**
US	0.578	9,595,718	145,040	0.477	5,258,805	119,745
Alabama	2.466	399,209	23,336	0.000	12,000	0
Arizona	0.050	176,689	316	0.014	138,799	88
Arkansas	0.200	850,000	5,313	0.000	595,000	0
California	0.237	406,805	3,708	0.000	0	0
Florida	1.676	28,300	2,187	0.000	1,100	0
Georgia	0.084	850,000	1,771	0.000	0	0
Kansas	0.001	40	1	0.818	30,000	633
Louisiana	0.092	299,000	831	0.000	17,908	0
Mississippi	0.100	665,500	2,130	0.004	26,500	83
Missouri	0.764	270,250	6,600	0.246	176,000	2,127
New Mexico	0.214	4,256	245	0.000	0	0
North Carolina	1.500	495,000	15,438	0.000	495,000	0
Oklahoma	0.284	105,000	930	0.324	80,000	1,063
South Carolina	0.300	180,000	1,125	0.000	175,000	0
Tennessee	1.200	500,000	13,750	0.000	0	0
Texas	0.668	4,201,069	65,062	1.109	3,405,898	108,057
Virginia	1.999	59,000	1,880	0.000	0	0

Table 7. Spider mites and aphids: percent yield reduction, acres infested and bales lost by state in 2007

	spider mites			aphids		
States	**% Reduction**	**Acres infested**	**Bales lost**	**% Reduction**	**Acres infested**	**Bales lost**
US	0.242	3,293,087	60,720	0.320	6,806,780	80,418
Alabama	0.073	105,000	691	0.051	374,209	485
Arizona	0.011	32,904	70	0.001	25,494	8
Arkansas	0.426	725,000	11,328	0.000	850,000	0
California	0.896	384,204	14,007	0.843	361,604	13,183
Florida	0.29	1,650	375	0.223	21,500	291
Georgia	0.149	300,000	3,125	0.062	625,000	1,302
Kansas	0.000	0	0	0.000	0	0
Louisiana	0.035	113,750	316	0.040	130,023	361
Mississippi	0.451	388,500	9,608	0.102	335,000	2,183
Missouri	1.091	263,900	9,428	0.000	1,800	0
New Mexico	0.000	0	0	0.000	2,800	0
North Carolina	0.000	105,000	0	0.000	495,000	0
Oklahoma	0.024	9,000	80	0.023	42,000	74
South Carolina	0.000	160,000	0	0.000	180,000	0
Tennessee	0.760	200,000	8,708	0.074	370,000	848
Texas	0.030	470,679	2,917	0.628	2,884,850	61,162
Virginia	0.000	25,000	0	0.000	20,000	0

Table 8. Boll weevil and European cornborers: percent yield reduction, acres infested and bales lost by state in 2007

	boll weevil				European cornborers		
States	% Reduction	Acres infested	Bales lost	Eradication costs per acre	% Reduction	Acres infested	Bales lost
US	0.013	612,393	3,190	$7.66	0.000	10000	0
Alabama	0.000	0	0	$3.75	0.000	0	0
Arizona	0.000	0	0	$8.55	0.000	0	0
Arkansas	0.000	175,000	0	$12.00	0.000	0	0
California	0.000	0	0	$0.00	0.000	0	0
Florida	0.000	0	0	$1.19	0.000	0	0
Georgia	0.000	0	0	$2.75	0.000	0	0
Kansas	0.000	0	0	$0.00	0.000	0	0
Louisiana	0.000	32500	0	$6.00	0.000	0	0
Mississippi	0.000	0	0	$12.00	0.000	0	0
Missouri	0.000	0	0	$12.50	0.000	9000	0
New Mexico	0.000	0	0	$11.63	0.000	0	0
North Carolina	0.000	0	0	$2.50	0.000	1000	0
Oklahoma	0.000	193	0	$7.07	0.000	0	0
South Carolina	0.000	0	0	$3.00	0.000	0	0
Tennessee	0.000	0	0	$9.50	0.000	0	0
Texas	0.033	339,700	3,190	$8.83	0.000	0	0
Virginia	0.000	0	0	$3.25	0.000	0	0

Table 9. Beet and fall armyworms: percent yield reduction, acres infested and bales lost by state in 2007

	beet armyworm			fall armyworm		
States	**% Reduction**	**Acres infested**	**Bales lost**	**% Reduction**	**Acres infested**	**Bales lost**
US	0.004	731,852	1,104	0.048	1,764,045	12,071
Alabama	0.000	0	0	0.000	50,000	0
Arizona	0.007	35,967	46	0.002	9,124	11
Arkansas	0.000	172,500	0	0.000	345,000	0
California	0.053	226,003	824	0.000	0	0
Florida	0.000	300	0	0.814	6,700	1,063
Georgia	0.000	20,000	0	0.119	120,000	2,500
Kansas	0.000	0	0	0.000	0	0
Louisiana	0.000	9,749	0	0.000	71,624	0
Mississippi	0.000	12,000	0	0.116	135,750	2,466
Missouri	0.000	0	0	0.000	9,500	0
New Mexico	0.000	0	0	0.000	0	0
North Carolina	0.000	79,000	0	0.000	42,000	0
Oklahoma	0.002	3,000	5	0.002	4,500	8
South Carolina	0.000	18,000	0	0.139	125,000	521
Tennessee	0.000	20,000	0	0.009	43,000	99
Texas	0.002	134,833	229	0.055	801,847	5,404
Virginia	0.000	500	0	0.000	0	0

Table 10. Cutworms and loopers: percent yield reduction, acres infested and bales lost by state in 2007

	cutworms			Loopers		
States	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.002	662,695	468	0.001	804,017	131
Alabama	0.000	63,000	0	0.000	2,000	0
Arizona	0.000	8,565	0	0.000	25,859	0
Arkansas	0.016	255,000	422	0.000	255,000	0
California	0.000	0	0	0.000	45,201	0
Florida	0.016	500	21	0.080	1,250	104
Georgia	0.000	0	0	0.000	50,000	0
Kansas	0.000	0	0	0.000	0	0
Louisiana	0.000	39,130	0	0.000	81,314	0
Mississippi	0.001	52,000	16	0.001	83,100	26
Missouri	0.000	0	0	0.000	0	0
New Mexico	0.000	0	0	0.000	0	0
North Carolina	0.000	51,500	0	0.000	5,000	0
Oklahoma	0.001	15,000	3	0.000	5,000	1
South Carolina	0.000	100,000	0	0.000	100,000	0
Tennessee	0.000	25,000	0	0.000	40,000	0
Texas	0.000	50,000	0	0.000	110,293	0
Virginia	0.000	0	0	0.000	0	0

Table 11. Whiteflies: percent yield reduction, acres infested and bales lost by state in 2007

	bandedwing whitefly			silverleaf whitefly		
States	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.0000	370,537	0	0.059	691,388	14,817
Alabama	0.0000	10,000	0	0.000	0	0
Arizona	0.0000	52,784	0	0.541	150,185	3,419
Arkansas	0.0000	212,500	0	0.000	0	0
California	0.0000	0	0	0.158	271,203	2,472
Florida	0.0000	0	0	0.638	20,000	833
Georgia	0.0000	0	0	0.198	100,000	4,167
Kansas	0.0000	0	0	0.000	0	0
Louisiana	0.0000	48,753	0	0.000	0	0
Mississippi	0.0000	25,000	0	0.000	0	0
Missouri	0.0000	1,500	0	0.000	0	0
New Mexico	0.0000	0	0	0.000	0	0
North Carolina	0.0000	0	0	0.000	0	0
Oklahoma	0.0000	0	0	0.000	0	0
South Carolina	0.0000	0	0	0.000	90,000	0
Tennessee	0.0000	1,000	0	0.000	0	0
Texas	0.0000	19,000	0	0.040	60,000	3,926
Virginia	0.0000	0	0	0.000	0	0

Table 12. Cotton leaf perforator and pink bollworm: percent yield reduction, acres infested and bales lost by state in 2007

	cotton leaf perforator			pink bollworm			
States	% Reduction	Acres infested	Bales lost	Eradication costs per acre	% Reduction	Acres infested	Bales lost
US	0.0000	54,852	0	$0.35	0.001	94,369	169
Alabama	0.0000	0	0	$0.00	0.000	0	0
Arizona	0.0000	3,512	0	$17.02	0.022	32,909	141
Arkansas	0.0000	0	0	$0.00	0.000	0	0
California	0.0000	18,840	0	$5.71	0.000	18,840	0
Florida	0.0000	0	0	$0.00	0.000	0	0
Georgia	0.0000	0	0	$0.00	0.000	0	0
Kansas	0.0000	0	0	$0.00	0.000	0	0
Louisiana	0.0000	0	0	$0.00	0.000	0	0
Mississippi	0.0000	0	0	$0.00	0.000	0	0
Missouri	0.0000	0	0	$0.00	0.000	0	0
New Mexico	0.0000	0	0	$6.98	0.000	0	0
North Carolina	0.0000	0	0	$0.00	0.000	0	0
Oklahoma	0.0000	0	0	$0.00	0.000	0	0
South Carolina	0.0000	0	0	$0.00	0.000	0	0
Tennessee	0.0000	0	0	$0.00	0.000	0	0
Texas	0.0000	32,500	0	$8.25	0.000	42,620	28
Virginia	0.0000	0	0	$0.00	0.000	0	0

Table 13. Grasshoppers and others: percent yield reduction, acres infested and bales lost by state in 2007

	grasshoppers			others*		
States	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.0005	850,452	127	0.003	46,138	694
Alabama	0.0000	22,000	0	0.000	0	0
Arizona	0.0000	25,513	0	0.000	0	0
Arkansas	0.0000	195,000	0	0.000	0	0
California	0.0000	0	0	0.000	0	0
Florida	0.0000	200	0	0.001	200	1
Georgia	0.0000	10,000	0	0.000	0	0
Kansas	0.0000	0	0	0.000	0	0
Louisiana	0.0000	6,500	0	0.000	0	0
Mississippi	0.0059	81,250	125	0.000	0	0
Missouri	0.0000	6,000	0	0.000	80	0
New Mexico	0.0017	834	2	0.000	0	0
North Carolina	0.0000	93,000	0	0.000	0	0
Oklahoma	0.0001	1,000	0	0.000	0	0
South Carolina	0.0000	150,000	0	0.000	0	0
Tennessee	0.0000	20,000	0	0.001	13,000	9
Texas	0.0000	342,056	0	0.007	32,858	685
Virginia	0.0000	0	0	0.000	0	0

*Others include Western flower Thrips, yellowstriped armyworms, darkling beetles, striped flea beetles, green mirids, clouded plant bug and some states reported slug damage

Table 14. Saltmarsh caterpillars and southern armyworms: percent yield reduction, acres infested and bales lost by state in 2007

	saltmarsh caterpillars			southern armyworms		
States	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.0009	706,734	237	0.000	3,150	17
Alabama	0.0000	0	0	0.000	1,000	0
Arizona	0.0348	78,577	220	0.000	0	0
Arkansas	0.0000	195,000	0	0.000	0	0
California	0.0000	0	0	0.000	0	0
Florida	0.0000	0	0	0.000	0	0
Georgia	0.0000	0	0	0.000	0	0
Kansas	0.0000	0	0	0.000	0	0
Louisiana	0.0000	3,253	0	0.000	0	0
Mississippi	0.0004	6,750	8	0.000	1,400	0
Missouri	0.0000	6,000	0	0.002	750	17
New Mexico	0.0000	0	0	0.000	0	0
North Carolina	0.0000	0	0	0.000	0	0
Oklahoma	0.0024	45,000	8	0.000	0	0
South Carolina	0.0000	18,000	0	0.000	0	0
Tennessee	0.0000	11,000	0	0.000	0	0
Texas	0.0000	343,154	0	0.000	0	0
Virginia	0.0000	0	0	0.000	0	0