COTTON INSECT LOSS ESTIMATES - 2011 Michael R. Williams Entomology and Plant Pathology Department Mississippi State University Extension Service Mississippi State, MS

Abstract

Cotton losses to arthropod pests reduced yields by 3.03% in 2011. Once again, inclement weather was the biggest deterrent to yields. *Lygus* took top ranking at 1.03% loss. Thrips were second at 0.695% and stink bugs were third, reducing yields by 0.509%. Bollworm/budworm were number four at 0.383%, spider mites were fifth at 0.167%, cotton fleahoppers were sixth at 0.085% and clouded plant bugs were seventh at 0.0319%. Aphids were eighth at 0.0316% and silverleaf whiteflies were ninth at 0.026%. Total cost and loss for arthropods in 2011 was \$1.022 billion. Direct management costs for arthropods were \$62.34 per acre.

Introduction

Cotton acreage continued to resurge in 2011 with more than 15 million acres being planted. Weather, flooding early and then severe drought, was again the major factor impacting cotton production. Overall losses to arthropod pests are still very low at 3.03% that translates to 857,265 bales of cotton. *Lygus* were the top pest at 1.03% (Table 2) and Tennessee reported the highest percent loss at 9.4% (125,136 bales) in 2011 (Table 1). *Lygus* infested 49.6% of the crop in 2011 and were responsible for more than 1/3 of the losses. Thrips (ranked 2^{th}) were found on 84% of the US cotton crop and cost of management, (which includes in-furrow, seed treatments, as well as sprays) amounts to \$15.40 per US acre. *Bt* technology now dominates with nearly 9 million acres (Table 4). The bollworm/budworm complex infested 55.5% of the crop in 2011 with bollworms making up 76% of the population. Stink bugs (0.509%) and cotton fleahoppers (0.085%) were ranked 3rd, and 6th respectively. Spider mites were ranked 5th at 0.167% and infested 41.7% of the US crop. Boll weevils infested acres. Tennessee lost 9.4% (125,136 bales), Louisiana lost 7.12% (55,183bales); Mississippi lost 7.06% (139,957 bales). Arkansas (103,698 bales) lost 6.42% and Florida lost 5.5% rounded out the top five states with losses.

All the other states reported losses less than 5%. Kansas was 6th at 4.9% loss; California (3.97%) lost 60,387 bales; Arizona (37,187 bales) was 8th; Alabama (37,712 bales) was 9th and North Carolina (36,888 bales) was 10th at 2.95%. South Carolina (2.78%) lost 17,155 bales, Virginia at 2.0% loss was 12th. Texas reported 1.95% loss (130,564 bales); Georgia lost 1.87% and 75,248 bales; Missouri (1.14%) lost 10,292 bales; Oklahoma lost 0.22% and New Mexico reported a .02% loss translating into25 bales.

Discussion

Lygus: most damaging pest in US cotton at 1.03%

This report combines the western species, *Lygus hesperus*, and the eastern species, *Lygus lineolaris*. Damage from these pests has increased in those states in which it is reported. Six states reported greater than 1% loss to *Lygus*: Louisiana (4.76%), Mississippi (4.35%), Arizona (1.87%), Arkansas (3.42%), California (3.80%), and Tennessee (3.0%),. Lygus infested 5.1 million acres of the crop and caused the loss of 313,941 bales for a 1.03% reduction (Table 5). Virginia, Oklahoma, and New Mexico reported no losses to *Lygus*. Only Oklahoma reported no infestations of this pest.

Thrips: ranked 2nd at 0.695%

Early season Thrips infested 83.5% of the US acreage in 2011 and cost US farmers \$15.40 per acre in management (Williams, 2012). There were 167,445 bales of US cotton lost to this complex of pests in 2011. Kansas (3.2%), Tennessee (3.2%), Virginia (2.0%), North Carolina (1%) South Carolina (1%), and Florida (1%) reported 1% or more loss. All other states losses: Georgia (0. 9%), Arkansas (0.5%), Louisiana (0.496%), Texas (0.450%), New Mexico (0.435%), Mississippi (0.198%), Alabama (0.19%), Arizona (0.131%), Oklahoma (0.1%), and Missouri (0.07%). California reported no losses from early-season Thrips (Table 6).

Stink bugs: 3rd most damaging pest at 0.509%

Stink bugs reduced the US crop by 0.509% in 2011. Florida (2.5%), North Carolina (1.6%) and Alabama (1.97%) reported losses greater than 1% with this pest. The stink bug complex infested 4.776 million acres of cotton in 2011 and destroyed 108,438 bales of cotton (Table 5). California, Kansas, New Mexico, Arkansas and Virginia reported no losses to stink bugs, only California reported no infested acres.

Bollworm/budworm complex (4th) reduces US crop by 0.383%

Bollworms and budworms infested 5.7 million acres in 2011 and are ranked 4th at 0.383%. This is the lowest this complex has ranked in recent years. Bollworms (*H. zea*) were the dominant species at 76%. Heliothines damages resulted in the loss of 103,781 bales of cotton (Table 3). Arkansas (2.355%) reported the highest loss to Heliothines, Louisiana at 1.22% and Tennessee (1.52%) were second and third. Florida (1.0%), and South Carolina (0.9%) rounded out the top 5 states that reported losses to Heliothines. Mississippi (0.66%) lost 17,099 bales, and Alabama (0.467%) lost 3278 bales. North Carolina (0.1%) lost 1250 bales, Texas (0.069%) lost 4573 bales, Georgia (0.05%) lost 2008 bales, Arizona (0.003%) lost 32 bales, and New Mexico (0.001% lost 2 bales. California, Kansas, Missouri, Oklahoma and Virginia reported no losses to heliothines.

Bt cotton acreage was 5.8 million acres in 2009 but increased to 8.3 million acres in 2010 and continued to increase to 8.9 million in 2011 (Table 4). Heliothines were sprayed on 2.213 million *Bt* cotton acres in 2011. The cost of *Bt* is estimated at \$16.34 per acre of the US crop. This represents about 26% of the cost of arthropod management (Williams, 2012).

Spider mites rank fifth at 0.167%

Mites infested 4.29 million acres of cotton in 2011. Mite damage was highest in the Midsouth states: Mississippi (0.96%) (reported highest losses to spider mites), Missouri (0.2%), Tennessee (0.66%), Louisiana (0.55%), Arkansas (0.15%) and Arizona (0.59%). Three states reported no infestations of mites and five states reported no losses to spider mites. 57,441 bales of US cotton were lost to spider mites in 2011 (Table 7).

Cotton fleahoppers ranks 6th at 0.085% and Clouded plant bug is 7th at 0.032%

Cotton fleahoppers (0.085%) infested 2.66 million acres of cotton in 2011 (Table 6). Oklahoma (0.098%), Kansas (1.50%), Texas (0.208%), Mississippi (0.016%) and Arizona (0.042%) reported losses to cotton fleahoppers. All other states reported no loss; seven states reported no infestation. Fleahoppers destroyed 16,200 bales of cotton.

Clouded plant bug (0.032%) infested 615,905 acres of cotton in 2011 (Table 15). Losses came from Mississippi with 8,921 bales and from Tennessee with 1597 bales. Alabama, Arkansas, Florida, Louisiana, Missouri and South Carolina also reported infestations but no losses. While cotton flea hopper is mostly a Midwestern pest, clouded plant bugs are decidedly a Midsouth pest.

Aphids: 8th most damaging pest of US cotton

Aphids infested 59.3% of US cotton, and yield losses were 0.032%. Florida (0.950%), Tennessee (0.09%), Alabama (0.074%), Louisiana (0.073%), Mississippi (0.068%), Arkansas (0.045%), Texas (0.014%), Georgia (0.004%), Missouri (0.002%), North Carolina (0.001%) reported heaviest losses to aphids. All states but Kansas, Oklahoma, and Virginia reported infestations and indicated light losses to this pest (Table 7). Aphids reduced yields by 8581 bales of US cotton.

Silverleaf Whitefly (Bemisia sp) .026% loss

Five states reported infestations of silverleaf whiteflies (*Bemisia* sp) in 2011. The 0.026% reduction in yield places it as the 9th most damaging pest in US cotton. Arizona (0.874%) lost 8880 bales, California (0.03%) lost 457 bales, Georgia (0.02%) lost 803 bales, and Texas (0.0002%) lost 17 bales. *Bemisia* sp were reported in 616,184 acres (Table 11).

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; infested 612,393 acres in 2007; were pests in 224,428 acres in 2008; dropped to 116,247 acres in 2009 and were pests in 115,470 acres in 2010. In 2011 only Texas reported infestations of weevils on 185,353 acres but no bales of cotton were lost to boll weevils. Eradication costs for boll weevil were \$4.59 per US acre (Table 8).

In recent years, new pests have appeared in various regions of the cotton belt. These 'Other' insects include the Pale-sided Flea Beetles, Bagarda bugs, darkling beetles, mealy bugs and bean Thrips in Arizona and *Crenotiades* green mirids, striped flea beetles, false chinch bugs, and cotton *Kurtomathrips morrelli* in Texas, combined to reduce cotton yields by 0.022% in 2011. Other pests infested 602,363 acres and took 54,877 bales of US cotton.(Table 13). The predominant 'new pest' is the *Kurtomathrips morrelli* which infested 333,117 acres and took 54,324 bales of Texas cotton. (Williams 2012)

Fall armyworms infested 1.012 million acres and reduced yield by 0.014% (3244 bales). Only five states reported lost bales to this pest. (Table 9). Losses from all remaining pests of cotton were almost negligible. Averaged across the cotton belt, all other pests of cotton reduced yields by less than 0.01% in 2011. Cutworms were reported on 585,598 acres and took 566 bales (Table 10); grasshoppers infested 889,911 acres and reduced yields by 1482 bales (Table 13). Beet armyworms (Table 9), loopers (Table 10), bandedwinged whiteflies (Table 11), cotton leaf perforator (Table 12), saltmarsh caterpillars and southern armyworms (Table 14) contributed to the losses from arthropod pests in 2011.

Pink bollworm infested 18,310 acres of US cotton. California and Arizona had infested acres, but no losses. Pink bollworm eradication cost US producers about \$0.52 per acre in eradication costs (Table 12).

Conclusion

Total losses from insect pests in US cotton in 2011 were 3.03%, another year with low percent losses (Table 1). Losses below 5% continue to reflect the outstanding contribution technology has made to managing pest complexes which have plagued cotton growers. The boll weevil, while still a threat for resurgence, no longer impacts management decisions in any part of the belt. Budworm is also still a serious threat and continues to drive decisions, but we have adapted to dealing with Lepidoptera pests in a different manner than 10 years ago. The bug complexes continue to increase in importance and in difficulty to manage. Resistance and the incursion of pests into new areas present new challenges each year. Regional differences in pest complexes also present additional problems to be solved. The loss of `old standby' insecticide chemistries will also complicate and stimulate new approaches to successful management. Costs for management are up slightly from 2010 but remain fairly stable. The costs of insect management were \$62.34 per acre in 2011; costs plus loss were \$99.50 per acre (Williams 2012).

Acknowledgments

The Cotton Losses Coordinators from each of the cotton states are to be commended for their work in collecting and submitting the estimates. Thanks are also extended to Debbie Richter, Don Parker, and John Adamczyk for their assistance and patience. The Cotton Foundation supports this project.

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	Acres	% reduction	$\cos t + \log s$	bales lost
US	10,272,288	3.03%	\$1,022,087,301	857,265
Tennessee	480,000	9.40%	\$87,552,589	125,136
Louisiana	285,000	7.12%	\$58,726,313	55,183
Mississippi	600,000	7.06%	\$168,817,006	139,957
Arkansas	620,000	6.42%	\$105,707,140	103,698
Florida	120,000	5.50%	\$15,783,060	16,253
Kansas	78,000	4.90%	\$3,338,305	7,629
California	454,595	3.97%	\$86,266,665	60,387
Arizona	256,845	3.66%	\$41,323,436	37,187
Alabama	450,999	2.60%	\$40,480,176	37,712
North Carolina	800,000	2.95%	\$71,257,420	36,888
South Carolina	303,000	2.78%	\$24,715,526	17,155
Virginia	85,000	2.00%	\$5,105,016	2,625
Texas	3,372,074	1.95%	\$155,711,881	130,564
Georgia	1,520,000	1.87%	\$119,286,190	75,248
Missouri	375,000	1.14%	\$25,665,392	10,292
Oklahoma	403,779	0.22%	\$8,022,049	1,324
New Mexico	67,996	0.02%	\$1,795,812	25

Table 1. Number of acres, percent reduction in yield by arthropods, cost plus loss and bales lost by state in 2011

	%	acres		%	2011	
pest	Reduction	infested	rank	infested	Cost/acre	Bales lost
Lygus	1.030%	5,098,902	1	49.64%	\$12.63	313,696
Thrips	0.695%	8,574,843	2	83.48%	\$2.43	167,428
Stink Bugs	0.509%	4,775,848	3	46.49%	\$2.05	108,419
Bollworm/Budworm	0.383%	5,702,269	4	55.51%	\$2.04	103,781
Spider Mites	0.167%	4,290,794	5	41.77%	\$2.60	57,364
Cotton Fleahopper	0.085%	2,658,864	6	25.88%	\$0.93	16,194
Clouded Plant bugs	0.0319%	615,905	7	6.00%	\$0.08	10,519
Aphids	0.0316%	6,093,761	8	59.32%	\$0.81	8,581
Silverleaf Whitefly (Bemesia)	0.026%	616,184	9	6.00%	\$0.56	10,042
Other Insects*	0.022%	602,363	10	5.86%	\$0.03	54,876
Fall Armyworm	0.014%	1,012,570	11	9.86%	\$0.03	3,244
Grasshoppers	0.008%	889,911	12	8.66%	\$0.08	1,482
Cutworms	0.003%	585,598	13	5.70%	\$0.29	566
Loopers	0.001%	517,856	14	5.04%	\$0.01	397
Banded Winged Whitefly	0.001%	537,126	15	5.23%	\$0.01	173
Saltmarsh Caterpillars	0.00004%	255,801	16	2.49%	\$0.00	16
Beet Armyworm	0.00002%	966,329	17	9.41%	\$0.02	6
Boll Weevil	0.000%	185,353	19	1.80%	\$0.01	0
Cotton Leaf Perforator	0.000%	18,310	21	0.18%	\$0.00	0
Pink Bollworm	0.000%	18,184	20	0.18%	\$0.00	0
Southern Armyworms	0.000%	16,651	18	0.16%	\$0.00	0
European Cornborer	0.000%	0	22	0.00%	\$0.00	0

Table 2. Percent lost, acres infested, rank, and percent of US cotton infested by insect pests in 2011

*others: Pale-sided flea beetle, bagarda stink bug, leaf-footed bug, Creontiades (Green mirids), cotton square borers,

Crickets, seed-corn maggots, darkling beetles, Kurtomathrips morrilli (Thrips), striped flea beetle, false chinch bug

	%			acres		% Bt
States	Reduction	% infested	% bollworm	infested	bales lost	acres
US	0.383%	55.5	76.3%	5,702,269	103,781	87
Alabama	0.467%	93.3	91.2%	420,999	3,278	99
Arizona	0.003%	15.5	88.1%	39,730	32	98
Arkansas	2.355%	100.0	96.1%	620,000	32,090	99
California	0.000%	50.0	0.0%	227,298	0	5
Florida	1.000%	100.0	50.0%	120,000	2,955	99
Georgia	0.050%	50.0	0.0%	760,000	2,008	99
Kansas	0.000%	0.0	0.0%	0	0	0
Louisiana	1.215%	99.6	79.7%	283,860	9,416	98
Mississippi	0.863%	86.3	99.1%	517,500	17,099	97
Missouri	0.060%	15.0	91.9%	56,250	543	99
New Mexico	0.304	9.5	100.0%	6,460	2	81
North Carolina	0.100%	100.0	75.0%	800,000	1,250	100
Oklahoma	0.000%	0.0	69.6%	0	0	100
South Carolina	0.900%	100.0	100.0%	303,000	5,554	99
Tennessee	1.520%	95.0	99.6%	456,000	20,234	99
Texas	0.069%	30.6	97.0%	1,031,673	4,573	78
Virginia	0.000%	70.0	100.0%	59,500	0	98

Table 3. Bollworm and budworm: percent of population, yield reduction, acres infested, bales lost and % Bt acres by state in 2011

Table 4.	Bt cotton acreage,	acres sprayed for	caterpillars,	average number	of applications	and percent of
populatio	on that was bollwor	rm from 1995 to 2	2011			

	Bt cotton	Acres Bt	Avg. #	% Population	Avr. # apps all	Avr. # apps all
Year	acreage	sprayed	applications	bollworm	acres by air	acres by grnd
1995	<15,000	nr	nr	30*		
1996	1,851,094	nr	nr	40*		
1997	2,271,824	nr	nr	50*	1.62	1.54
1998	2,731,827	nr	nr	60*	2.30	2.56
1999	4,234,785	1,055,331	0.290	76	2.41	2.43
2000	5,220,392	1,455,084	0.330	79	1.85	1.35
2001	5,717,747	2,727,821	0.400	74	1.73	1.73
2002	4,893,810	3,091,586	0.520	83	1.88	1.87
2003	6,040,529	3,151,114	0.551	86	0.97	0.95
2004	6,591,338	2,909,459	0.466	94	1.02	1.13
2005	7,395,393	3,050,093	0.541	95	0.90	1.41
2006	8,495,822	3,961,194	0.590	92	0.79	1.36
2007	7,106,473	2,211,222	0.503	92%	0.94	1.46
2008	6,237,969	1,713,418	0.626	78%	1.99	1.55
2009	5,841,945	1,368,256	0.747	79%	2.30	1.84
2010	8,336,277	1,773,474	1.063	76%	1.98	1.72
2011	8,930,070	2,213,337	0.823	76%	2.18	2.16

		Lygus		stink bugs			
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost	
US	1.030%	5,098,902	313,941	0.509%	4,775,848	108,438	
Alabama	0.342%	271,000	7,078	1.968%	375,999	6,525	
Arizona	1.866%	242,586	18,955	0.146%	111,784	1,477	
Arkansas	3.419%	620,000	55,208	0.000%	507,000	0	
California	3.800%	431,865	57,874	0.000%	0	0	
Florida	0.050%	6,000	148	2.500%	120,000	7,388	
Georgia	0.020%	304,000	803	0.850%	1,292,000	34,135	
Kansas	0.200%	7,800	311	0.000%	1,560	0	
Louisiana	4.760%	285,000	36,886	0.012%	65,550	89	
Mississippi	4.350%	573,000	86,240	0.125%	150,000	2,478	
Missouri	0.80%	375,000	7,242	0.005%	18,750	45	
New Mexico	0.000%	6,120	0	0.000%	1,360	0	
North Carolina	0.200%	800,000	2,500	1.600%	800,000	20,000	
Oklahoma	0.000%	0	0	0.015%	48,270	92	
South Carolina	0.100%	303,000	617	0.500%	303,000	3,085	
Tennessee	3.000%	480,000	39,935	0.800%	480,000	10,649	
Texas	0.001%	392,682	143	0.399%	493,807	22,473	
Virginia	0.000%	850	0	0.000%	51,000	0	

Table 5. Lygus and stink bugs: percent yield reduction, acres infested and bales lost by state in 2011

Table	6 Thrips and	cotton fleal	hoppers: %	yield reduction,	, acres infested	l and bales los	st by state	in 2011
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		Thrips	cotton fleahoppers			
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.695%	8,574,843	167,445	0.085%	2,658,864	16,200
Alabama	0.190%	450,999	12,814	0.000%	3,000	0
Arizona	0.131%	230,662	1,333	0.042%	170,332	428
Arkansas	0.500%	620,000	8,073	0.000%	474,000	0
California	0.000%	431,865	0	0.000%	0	0
Florida	1.000%	120,000	2,955	0.000%	0	0
Georgia	0.900%	1,368,000	36,143	0.000%	0	0
Kansas	3.200%	31,200	4,982	1.500%	23,400	2,335
Louisiana	0.496%	282,435	3,840	0.000%	74,100	0
Mississippi	0.198%	594,000	3,925	0.016%	97,500	322
Missouri	0.070%	37,500	634	0.000%	37,500	0
New Mexico	0.435%	10,879	6	0.000%	0	0
North Carolina	1.000%	800,000	12,500	0.000%	0	0
Oklahoma	0.100%	80756	616	0.098%	26,246	601
South Carolina	1.000%	303,000	6,171	0.000%	303,000	0
Tennessee	3.200%	480,000	42,598	0.000%	0	0
Texas	0.450%	2,648,547	28,230	0.208%	1,449,786	12,513
Virginia	2.000%	85,000	2,625	0.000%	0	0

		spider mites	aphids			
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.167%	4,290,794	57,441	0.032%	6,093,761	8,581
Alabama	0.041%	106,000	8,258	0.074%	301,000	630
Arizona	0.587%	117,927	5,963	0.000%	31,780	3
Arkansas	0.148%	368,000	2,396	0.000%	558,000	290
California	0.090%	409,136	1,371	0.045%	409,136	685
Florida	0.000%	0	0	0.950%	114,000	2,807
Georgia	0.020%	608,000	803	0.004%	1,140,000	151
Kansas	0.000%	3,900	0	0.000%	0	0
Louisiana	0.545%	206,910	4,219	0.073%	207,195	563
Mississippi	0.956%	382,500	18,958	0.068%	405,000	1,338
Missouri	0.200%	375,000	1,810	0.002%	75,000	18
New Mexico	0.000%	0	0	0.000%	2,720	0
North Carolina	0.050%	400,000	625	0.001%	800,000	13
Oklahoma	0.000%	0	0	0.000%	0	0
South Carolina	0.100%	303,000	617	0.000%	303,000	0
Tennessee	0.660%	288,000	8,786	0.090%	432,000	1,198
Texas	0.054%	721,571	3,635	0.014%	1,314,931	861
Virginia	0.000%	850	0	0.000%	0	0

Table 7. Spider mites and aphids: percent yield reduction, acres infested and bales lost by state in 2011

Table 8. Boll weevil and European	cornborer: percent	yield reduction, acres infested	and bales lost by state in 2011
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		Boll weevil		Eradication	European Cornborers		
	% Reduction	Acres infested	Bales lost	costs/acre	% Reduction	Acres infested	Bales lost
US	0.000%	185,353	0	\$4.59	0.000%	0	0
Alabama	0.000%	0	0	\$3.17	0.000%	0	0
Arizona	0.000%	0	0	\$209	0.000%	0	0
Arkansas	0.000%	0	0	\$13.29	0.000%	0	0
California	0.000%	0	0	\$0.00	0.000%	0	0
Florida	0.000%	0	0	\$1.00	0.000%	0	0
Georgia	0.000%	0	0	\$0.85	0.000%	0	0
Kansas	0.000%	0	0	\$0.00	0.000%	0	0
Louisiana	0.000%	0	0	\$5.00	0.000%	0	0
Mississippi	0.000%	0	0	\$4.50	0.000%	0	0
Missouri	0.000%	0	0	\$1.00	0.000%	0	0
New Mexico	0.000%	0	0	\$5.95	0.000%	0	0
North Carolina	0.000%	0	0	\$1.10	0.000%	0	0
Oklahoma	0.000%	0	0	\$2.00	0.000%	0	0
South Carolina	0.000%	0	0	\$1.25	0.000%	0	0
Tennessee	0.000%	0	0	\$1.50	0.000%	0	0
Texas	0.000%	185,353	0	\$8.16	0.000%	0	0
Virginia	0.000%	0	0	\$3.25	0.000%	0	0

	be	eet armyworms	5	fall armyworms			
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost	
US	0.000	966,329	6	0.014%	1,012,570	3,244	
Alabama	0.000	0	0	0.000%	7,500	0	
Arizona	0.000	13,727	4	0.000%	4,602	0	
Arkansas	0.000	57,600	0	0.000%	290,000	0	
California	0.000	363,676	0	0.000%	0	0	
Florida	0.000	0	0	0.000%	0	0	
Georgia	0.000	0	0	0.010%	152,000	402	
Kansas	0.000	0	0	0.000%	0	0	
Louisiana	0.000	4,560	0	0.022%	62,415	170	
Mississippi	0.000	6,000	0	0.000%	6,000	0	
Missouri	0.000	1,125	0	0.000%	3,750	0	
New Mexico	0.000	7,480	2	0.000%	0	0	
North Carolina	0.000	30,000	0	0.000%	20,000	0	
Oklahoma	0.000	0	0	0.000%	0	0	
South Carolina	0.000	15,150	0	0.090%	272,700	555	
Tennessee	0.000	9,600	0	0.010%	48,000	133	
Texas	0.000	457,412	0	0.028%	145,603	1,984	
Virginia	0.000	0	0	0.000%	0	0	

Table 9. Beet and fall armyworms: percent yield reduction, acres infested and bales lost by state in 2011

Table 10.	Cutworms and loo	pers: percent	yield reduction,	acres infested	and bales lost b	y state in 2011
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		cutworms			loopers	
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.003%	585,598	566	0.001%	517,857	397
Alabama	0.000%	45,300	0	0.000%	3,000	0
Arizona	0.000%	0	0	0.000%	0	0
Arkansas	0.000%	93,000	238	0.000%	19,600	0
California	0.000%	0	0	0.000%	45,460	0
Florida	0.000%	0	0	0.000%	0	0
Georgia	0.000%	0	0	0.000%	0	0
Kansas	0.000%	0	0	0.000%	0	0
Louisiana	0.000%	22,800	0	0.000%	51,870	0
Mississippi	0.000%	16,500	5	0.020%	120,000	397
Missouri	0.000%	0	0	0.000%	18,750	0
New Mexico	0.000%	0	0	0.000%	0	0
North Carolina	0.000%	80,000	0	0.000%	0	0
Oklahoma	0.000%	0	0	0.000%	0	0
South Carolina	0.090%	272,700	555	0.000%	30,300	0
Tennessee	0.000%	19,200	5	0.000%	4,800	0
Texas	0.000%	36,098	0	0.000%	224,077	0
Virginia	0.000%	0	0	0.000%	0	0

	bandedwinged whiteflies			<i>Bemisia</i> spp		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.001%	537,126	173	0.026%	616,184	10,158
Alabama	0.000%	3,000	0	0.000%	0	0
Arizona	0.000%	48,762	0	0.874%	225,347	8880
Arkansas	0.000%	31,000	0	0.000%	0	0
California	0.000%	0	0	0.030%	272,757	457
Florida	0.000%	2,400	0	0.000%	0	0
Georgia	0.000%	0	0	0.020%	30,400	803
Kansas	0.000%	0	0	0.000%	0	0
Louisiana	0.000%	10,260	0	0.000%	0	0
Mississippi	0.009%	52,500	173	0.000%	0	0
Missouri	0.000%	0	0	0.000%	0	0
New Mexico	0.000%	2,720	0	0.000%	0	0
North Carolina	0.000%	0	0	0.000%	0	0
Oklahoma	0.000%	0	0	0.000%	0	0
South Carolina	0.000%	151,500	0	0.000%	60,600	0
Tennessee	0.000%	24,000	0	0.000%	0	0
Texas	0.000%	210,984	0	0.0002%	27,076	17
Virginia	0.000%	0	0	0.000%	0	0

Table 11. Whiteflies: percent yield reduction, acres infested and bales lost by state in 2011

Table 12. Cotton leaf perforator :	d pink bollworm: %	yield reduction, acres infested an	nd bales lost by state in 2011
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	cotton leaf perforator			PBW erad	pink bollworms		
	% Reduction	Acres infested	Bales lost	costs per acre	% Reduction	Acres infested	Bales lost
US	0.000%	18,310	0	\$0.52	0.000%	18,184	0
Alabama	0.000%	0	0	\$0.00	0.000%	0	0
Arizona	0.000%	124	0	\$7.95	0.000%	0	0
Arkansas	0.000%	0	0	\$0.00	0.000%	0	0
California	0.000%	18,184	0	\$5.67	0.000%	18,184	0
Florida	0.000%	0	0	\$0.00	0.000%	0	0
Georgia	0.000%	0	0	\$0.00	0.000%	0	0
Kansas	0.000%	0	0	\$0.00	0.000%	0	0
Louisiana	0.000%	0	0	\$0.00	0.000%	0	0
Mississippi	0.000%	0	0	\$0.00	0.000%	0	0
Missouri	0.000%	0	0	\$0.00	0.000%	0	0
New Mexico	0.000%	0	0	\$1.86	0.000%	0	0
North Carolina	0.000%	0	0	\$0.00	0.000%	0	0
Oklahoma	0.000%	0	0	\$0.00	0.000%	0	0
South Carolina	0.000%	0	0	\$0.00	0.000%	0	0
Tennessee	0.000%	0	0	\$0.00	0.000%	0	0
Texas	0.000%	3	0	\$0.19	0.000%	0	0
Virginia	0.000%	0	0	\$0.00	0.000%	0	0

		grasshoppers			others*	
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.008%	889,911	1482	0.022%	602,363	54,877
Alabama	0.000	94,530	0	0.000	0	0
Arizona	0.000	2,976	0	0.0001	111,531	96
Arkansas	0.000	372,000	0	0.000	0	0
California	0.000	0	0	0.000	0	0
Florida	0.000	0	0	0.000	0	0
Georgia	0.000	0	0	0.000	0	0
Kansas	0.000	1,560	0	0.000	0	0
Louisiana	0.000	143	0	0.000	0	0
Mississippi	0.0001	30,000	99	0.000	0	0
Missouri	0.000	375	0	0.000	0	0
New Mexico	0.0001	10,879	13	0.000	0	0
North Carolina	0.000	80	0	0.000	0	0
Oklahoma	0.00003	1,009	15	0.000	0	0
South Carolina	0.000	272,700	0	0.000	0	0
Tennessee	0.000	4,800	0	0.000	0	0
Texas	0.000	98,838	1,354	0.007	490,832	54,781
Virginia	0.000	9	0	0.000	0	0

Table 13. Grasshoppers and others: percent yield reduction, acres infested and bales lost by state in 2011

*Others - Pale-sided flea beetles, Bagarda stink bugs, crickets, darkling beetles, seed corn maggot (Arizona) Leaffooted bug, Creontiades (green mirids) (Texas), striped flea beetles, false chinch bugs, Kurtomathrips morrilli

Table 14.	Saltmarsh	caterpillars and	southern a	armyworms:	percent y	yield reduction,	acres in	nfested and	1 bales	lost by
state in 20	11									

	sal	tmarsh caterpi	llar	southern armyworms		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.000%	255,801	17	0.000%	16,651	0
Alabama	0.000%	0	0	0.000%	0	0
Arizona	0.002%	31,748	17	0.000%	0	0
Arkansas	0.000%	124,000	0	0.000%	0	0
California	0.000%	68,189	0	0.000%	0	0
Florida	0.000%	0	0	0.000%	0	0
Georgia	0.000%	0	0	0.000%	0	0
Kansas	0.000%	0	0	0.000%	0	0
Louisiana	0.000%	428	0	0.000%	0	0
Mississippi	0.000%	6,000	0	0.000%	1,500	0
Missouri	0.000%	0	0	0.000%	0	0
New Mexico	0.000%	340	0	0.000%	0	0
North Carolina	0.000%	0	0	0.000%	0	0
Oklahoma	0.000%	0	0	0.000%	0	0
South Carolina	0.000%	15,150	0	0.000%	15,150	0
Tennessee	0.000%	0	0	0.000%	0	0
Texas	0.000%	9,946	0	0.000%	0	0
Virginia	0.000%	0	0	0.000%	0	0

	Cl	Clouded Plant Bugs				
	% Reduction	Acres infested	Bales lost			
US	0.03%	615,905	10,519			
Alabama	0.00%	9,000	0			
Arizona	0.00%	0	0			
Arkansas	0.00%	182,000	0			
California	0.00%	0	0			
Florida	0.00%	3,600	0			
Georgia	0.00%	0	0			
Kansas	0.00%	0	0			
Louisiana	0.00%	9,405	0			
Mississippi	0.45%	90,000	8,921			
Missouri	0.00%	18,750	0			
New Mexico	0.00%	0	0			
North Carolina	0.00%	0	0			
Oklahoma	0.00%	0	0			
South Carolina	0.00%	15,150	0			
Tennessee	0.12%	288,000	1,597			
Texas	0.00%	0	0			
Virginia	0.00%	0	0			

Table 15. Clouded plant bug, percent yield reduction, acres intested, and bales lost by state in 20	Table 15.	Clouded plant bug:	percent yield reduction,	acres infested, and	bales lost by state in 20
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