COTTON INSECT LOSS ESTIMATES - 2015

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Abstract

Cotton losses to arthropod pests across the US were 2.83% in 2015. MidSouth states were the biggest losers and Thrips were the number one pest at 0.831%. *Lygus* were ranked second at 0.787%. Bollworm/budworm were third (0.462%), stink bugs were 4th (0.436%) and cotton fleahoppers were 5th (0.353%). Missouri at 20.7% insect loss was followed by Mississippi (9.98%), Louisiana (9.1%), Tennessee (5.13%) and Arkansas (4.75%) for the 5 states with highest losses. 631.162 bales of cotton were lost to arthropod pests with an associated cost of $27.87 per acre in management. Total cost plus loss was $405.5 million.

Introduction

Over 10 million acres of cotton were grown in the US in 2014, acres dropped to 8.2 million acres in 2015. Texas alone planted more than 50% of the acres (4.48 million); as a result national averages reflect the trends with that acreage. National trends for losses have not exceeded 10% in a number of years. This year's 2.83% loss is reflective of that trend. Individual pest losses are also reflective of those trends. The bug complex, predominantly *Lygus* at 0.787% show lowered national losses. These numbers remain important and will be maintained and reported. A look at regional summaries may provide a better picture of how damaging arthropod pests are to the crop. The tables included in this paper will summarize each of the pests reported for 2015 on a state by state basis (Tables 1-17).

Thrips were our most prolific pest infesting 6.6 million acres at 0.831% loss. Thrips management costs are also reflected in the $9.16 per acre of seed and in-furrow treatments (Williams 2015). All `bugs' combined amount to 1.616% loss, nationally. Stink bugs infested 4.7 million acres *and Lygus* infested 3.4 million acres in the US (Table 2, 6). The bollworm/ budworm complex ranked at number 3 in 2015 at 0.462% loss are still a problem on 47% of the US acres even though more than 70% of the acres are planted to GM cottons (Table 5). Aphids, spider mites and other miscellaneous pests continue to cause losses in outbreak areas. Boll weevils are still a pest in the southern border area of Texas.

Discussion

Southeastern Area states losses at 2.576%

The Southeastern Area is made up of the states of Virginia, North and South Carolina, Georgia, Florida and Alabama. This area represents about 2.24 million acres of cotton. Georgia reported 2.57% loss on 1.11 million acres, North Carolina had 2.68% loss on 593,750 acres, and Virginia had 3.4% loss. South Carolina had 2.7% loss, Florida reported 2.14% loss and Alabama had 2.31% loss (Table 1). When losses from these states are summarized, stink bugs are identified as the predominant pest at 1.216% loss. Virginia reported 1.4% loss, Georgia 1.35% loss, North Carolina 1.90% loss, South Carolina 1.00% loss, Florida 0.500% loss and Alabama 0.303% loss to stink bugs (Table 6).

Thrips had the 2nd highest losses in this area at 0.672% on 2.18 million acres (Table 3). Alabama 1.1% loss, Florida 0.3% loss, and Georgia 0.475% loss to Thrips (Table 7). *Lygus* losses were 0.315% on 1.41 million acres, bollworm/budworms losses were 0.184% on 1.17 million acres, and spider mite losses were 0.151% on 992,200 acres. 144,809 bales were lost to insect pests in this area (Williams 2015).

MidSouth area states losses at 10.12%

MidSouth states are Missouri, Tennessee, Arkansas, Mississippi and Louisiana. There are 985,000 acres of cotton grown in this area. Missouri reported 20.74% overall loss on 185,000 acres, Louisiana had 9.10% loss on 140,000 acres, Mississippi 9.98% loss on 320,000 acres, Tennessee had 5.13% loss on 135,000 acres, and Arkansas had 4.75% loss on 205,000 acres. Summary of losses from these states show *Lygus* at 5.34% loss. Missouri reported 10.0% loss, Louisiana had 5.0% loss, Mississippi had 4.98% loss, Arkansas had 3.92% and Tennessee had 2.3% loss to *Lygus*. Bollworm/budworm complex were 2nd in losses at 1.38% (Table 3). Louisiana lost 24,387 bales to Heliothine pests, Missouri lost 14,668 bales to these pests, Mississippi lost 10,301 bales, Tennessee lost 3476 bales and Arkansas lost 5339 bales. Thrips (0.978%), spider mites (0.699%), cotton fleahopper (0.529%), clouded plant bugs (0.246%), stink bugs (0.537%), fall armyworm (0.272%), and aphids (0.10%) caused losses in MidSouth cotton. Other bugs, including

banded-winged whitefly, loopers and cutworms, also contributed to the losses in the MidSouth area. (Table 3). 378,838 bales of cotton were lost to insect pests at a cost of $124.09 in management (Williams 2015)

Central area state losses at 2.271%

Texas, Oklahoma and Kansas make up the Central Area. This area comprises about 4.69 million acres of cotton. Oklahoma reported 1.48% loss on 195,000 acres, Texas had 2.31% loss on 4.48 million acres and Kansas had 0.35% loss on 15,000 acres. Thrips infested 3.2 million acres and caused a loss of 0.917%. Cotton fleahoppers at 0.506% loss were the 2nd largest pest in this area. The Heliothine complex infested 1.8 million acres and had losses of 0.425% (Table 3). Other bugs were pests of the central area states with stink bug infesting 2.1 million acres, *Lygus* were found in 790,000 acres and verde plant bugs in 79,000 acres. Aphids, spider mites and grasshoppes were also pests in this area. This area lost 189,212 bales to pests at a cost of $17.74 in management. Boll weevils are still a problem in southern Texas, infesting about 25,000 acres but causing no reduction in yields. Boll weevil eradication for this area is $2.56 per acre.

Western area states losses at 2.12%

California, Arizona and New Mexico make up the Western Area. This represents about 293,000 acres of cotton. California had 1.53% loss on 162,000 acres, Arizona had 3.58% loss on 88,382 acres and New Mexico had 1.34% loss on 42,207 acres. *Lygus* were the top pests for this area at 1.4%. Arizona lost 2.666% on 84,572 acres, California lost 0.972% on 157,464 acres and New Mexico lost 0.42% on 10,974 acres to *Lygus*. Silver-leaf whitefly were the 2nd most damaging pest at 0.22% loss on 168,430 acres and Arizona reported an additional 0.06% loss on 25,440 acres to brown stink bug. Spider mites (0.0.17%) were pests of cotton in the Western area infesting almost 180,000 acres of cotton. Spider mites were responsible for loss of 1753 bales of cotton in this area. Thrips were also a pest causing 0.10% loss on 274,125 acres. Bagrada bug, darkling beetles, pale-striped flea beetle, cotton leaf-perforators, and grasshoppers were also miscellaneous pests in the Western Area (Table 3). Management costs for this area were $92.27 and 23,272 bales of cotton were lost to pests.

Eradication

While boll weevils remain a pest on less than 25,000 acres of Texas cotton, eradication is still an active part of pest management programs. Nationally, farmers assess themselves $2.57 per acre to pay for eradication and maintenance programs. From assessments as low as $0.50 per acre in eastern states to as high $12.64 per acre, weevil free status has helped to keep cotton farming profitable. Pink bollworm eradication programs in Arizona ($5.50 per acre), California ($6.64 per acre), and New Mexico ($6.98 per acre) have reduced pink bollworm to non-pest status. Pink bollworm eradication costs about $0.20 per acre, nationally.

Conclusions

Total losses to pests in 2015 were 2.83%. The use of modern technology has modified the pest complex and continues to shift it toward the `bugs.' *Lygus* management seems to be the biggest problems left to solve in MidSouth and Western areas. Stinkbugs have also begun to fill a pest gap especially in the Southeast states. Those areas where there is not a tremendous pest problem from the bugs are keeping cotton profitable. While there seems to be some slippage in total management of lepidopterous pests, the GMs are holding their own and keeping these pests low. Costs of management were $27.87 and cost plus loss $49.45, nationally for 2015 (Williams 2015).

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References

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Table 1. Number of acres, percent reduction in yield by arthropods, cost plus loss and bales lost by state in 2015

	Acres	% reduction	cost + loss	bales lost
US	8,201,089	2.83%	$405,507,335	631,162
Missouri	185,000	20.74%	$75,610,192	135,205
Mississippi	320,000	9.98%	$65,649,966	95,967
Louisiana	140,000	9.10%	$41,459,317	88,768
Arkansas	205,000	4.75%	$34,329,257	40,603
Tennessee	135,000	5.13%	$17,345,382	18,294
Arizona	88,382	3.58%	$12,508,812	13,489
Virginia	85,000	3.40%	$5,525,622	6,122
South Carolina	235,000	2.71%	$14,469,862	14,303
North Carolina	593,750	2.68%	$35,237,371	25,720
Georgia	1,110,000	2.57%	$76,592,642	74,299
Texas	4,477,000	2.31%	$131,756,318	183,724
Alabama	341,500	2.31%	$25,673,947	19,554
Florida	85,000	2.14%	$7,911,128	4,811
Oklahoma	195,000	1.48%	$7,149,515	5,375
California	162,000	1.53%	$20,992,822	8,534
New Mexico	42,207	1.34%	$1,996,198	1,264
Kansas	15,000	0.35%	$621,198	113

Table 2. Percent lost, acres infested, rank, and percent of US cotton infested by insect pests in 2015

Pest	% Reduction	acres infested	rank	% infested	Cost/acre	Bales lost
Thrips	0.831%	6,625,190	1	80.784%	$1.41	147,602
Lygus	0.787%	3,435,570	2	41.892%	$6.75	238,507
Bollworm/Budworm	0.462%	3,879,473	3	47.304%	$1.17	104,983
Stink Bugs	0.436%	4,693,564	4	57.231%	$3.15	92,481
Cotton Fleahopper	0.353%	2,134,131	5	26.023%	$1.28	59,937
Aphids	0.180%	3,112,998	6	37.958%	$0.63	26,316
Spider Mites	0.143%	1,705,143	7	20.792%	$1.29	42,013
Fall Armyworm	0.033%	538,083	8	6.561%	$0.07	9,230
Clouded Plant bugs	0.031%	327,213	9	3.990%	$0.08	7,499
Grasshoppers	0.012%	2,626,738	10	32.029%	$0.19	1,813
Silverleaf Whitefly	0.008%	264,430	11	3.224%	$0.55	2,501
Verde Plant Bugs	0.006%	79,170	12	0.965%	$0.04	914
Cutworms	0.005%	208,628	13	2.544%	$0.29	1,334
Brown Stink bug	0.002%	26,540	14	0.324%	$0.01	701
Leaf footed bugs	0.001%	45,275	15	0.552%	$0.01	232
Pale-striped Flea Beetles	0.000%	31,220	16	0.381%	$0.00	56
Crickets	0.000%	4,548	17	0.055%	$0.00	15
Darkling Beetle	0.000%	14,399	18	0.176%	$0.00	11
Beet Armyworm	0.000%	670,536	19	8.176%	$0.00	0
Loopers	0.000%	72,288	20	0.881%	$0.00	0
Cotton Leafperforator	0.000%	608	21	0.007%	$0.00	0
Saltmarsh Caterpillar	0.000%	2,446	22	0.030%	$0.00	0
Bagrada Bugs	0.000%	2,248	23	0.027%	$0.00	0
Banded Winged Whitefly	0.000%	654,650	24	7.982%	$0.01	0
Mealybugs	0.000%	0	25	0.000%	$0.00	0
Boll Weevils	0.000%	24,995	26	0.305%	$0.00	0

Table 3: Percent Reduction and Infested Acres by pest by Area in 2015

	Southeast		MidSouth		Central		West	
	% reduction	Acres Infested	% reduction	Acres Infested	% reduction	Acres Infested	% reduction	Acres Infested
Bollworm/Budworm	0.184%	1,169,700	1.380%	821,750	0.425%	1,845,800	0.09%	42223
Beet Armyworm	0.000%	59,220	0.000%	14,800	0.000%	582,156	0.00%	14360
Fall Armyworm	0.000%	153,100	0.272%	350,763	0.000%	31,550	0.00%	2671
Loopers	0.000%	0	0.006%	36,613	0.000%	31,400	0.00%	4275
Cutworms	0.001%	72,758	0.038%	132,688	0.000%	3,140	0.00%	42
Cotton Leafperforator	0.000%	0	0.000%	0	0.000%	0	0.00%	608
Saltmarsh Caterpillar	0.000%	0	0.000%	0	0.000%	0	0.00%	2446
Verde Plant Bugs	0.000%	0	0.000%	0	0.010%	79,170	0.00%	0
Cotton Fleahopper	0.000%	260,000	0.529%	249,750	0.506%	1,597,520	0.01%	26861
Lygus	0.315%	1,408,450	5.339%	983,900	0.017%	790,210	1.40%	253010
Stink Bugs	1.216%	2,048,400	0.537%	544,813	0.067%	2,069,750	0.04%	30601
Clouded Plant bugs	0.005%	133,900	0.246%	193,313	0.000%	0	0.00%	0
Brown Stink bug	0.000%	0	0.000%	0	0.000%	0	0.06%	26540
Bagrada Bugs	0.000%	0	0.000%	0	0.000%	0	0.00%	2248
Leaf footed bugs	0.004%	29,900	0.000%	15,375	0.000%	0	0.00%	0
Spider Mites	0.151%	992,200	0.699%	382,375	0.020%	84,398	0.17%	179545
Thrips	0.672%	2,181,000	0.978%	862,000	0.917%	3,220,940	0.10%	274125
Aphids	0.027%	1,156,250	0.100%	513,425	0.288%	1,422,900	0.01%	140861
Grasshoppers	0.000%	260,800	0.000%	65,338	0.019%	2,322,900	0.03%	13576
Banded Winged Whitefly	0.000%	176,250	0.000%	30,675	0.000%	441,400	0.00%	6325
Silverleaf Whitefly	0.000%	0	0.000%	0	0.000%	96,000	0.22%	168430
Darkling Beetle	0.000%	0	0.000%	0	0.000%	0	0.00%	14399
Pale-striped Flea Beetles	0.000%	0	0.000%	0	0.000%	0	0.00%	31220
Mealybugs	0.000%	0	0.000%	0	0.000%	0	0.00%	0
Crickets	0.000%	0	0.000%	0	0.000%	0	0.00%	4548
Boll Weevils	0.000%	0	0.000%	0	0.000%	24,995	0.00%	0
Total	**2.576%**		**10.12%**		**2.27%**		**2.12%**	

Table 4. Bollworm and budworm: percent of population, yield reduction, acres infested, bales lost and % Bt acres by state in 2015

States	% Reduction	% infested	% bollworm	acres infested	bales lost	% bt acres
US	0.46%	47%	60%	3879473	104983	73
Alabama	0.02%	27%	99%	93700	181	100
Arizona	0.00%	3%	0%	2762	6	97
Arkansas	0.63%	100%	100%	205000	5339	100
California	0.00%	6%	0%	9072	0	6
Florida	0.00%	10%	0%	8500	0	100
Georgia	0.20%	40%	0%	444000	5793	48
Kansas	0.01%	70%	0%	10500	2	100
Louisiana	2.50%	100%	3%	140000	24387	100
Mississippi	1.04%	70%	100%	222500	10301	99
Missouri	2.25%	90%	2%	166500	14668	100
New Mexico	0.65%	72%	0%	30389	613	82
North Carolina	0.17%	100%	0%	380000	1633	100
Oklahoma	0.00%	0%	0%	0	0	96
South Carolina	0.50%	100%	100%	235000	2639	100
Tennessee	0.98%	65%	100%	87750	3476	100
Texas	0.45%	41%	0%	1835300	35946	64
Virginia	0.00%	10%	0%	8500	0	100

Table 5. *Bt* cotton acreage, acres sprayed for caterpillars, average number of applications and percent of population that was bollworm from 1995 to 2015

Year	acreage	sprayed	applications	bollworm	apps by air	apps by ground	acres by air	acres by ground
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	95%	1.98	1.72	3,884,793	6,673,437
2011	8,406,380	4,990,255	0.712	76%	1.61	1.95	2,814,615	7,435,650
2012	11,163,956	1,362,208	0.949	88%	1.97	1.82	4,885,844	7,980,331
2013	6,507,127	916,144	0.338	65%	2.84	2.05	1,969,612	4,075,299
2014	8,406,380	4,990,255	0.712	75%	1.61	1.95	2,814,615	7,435,650
2015	6,040,949	477,179	0.750	60%	2.18	2.40	1,532,150	3,664,459

NR – not reported * Polled entomologists for estimates

Table 6. *Lygus* and stink bugs: percent yield reduction, acres infested and bales lost by state in 2015

	Lygus			**stink bugs**		
	% Reduction	**Acres infested**	**Bales lost**	**% Reduction**	**Acres infested**	**Bales lost**
US	0.787%	3,435,570	238,507	0.436%	4,693,564	92,481
Alabama	0.522%	315,700	4,387	0.303%	289,900	2,563
Arizona	2.666%	84,572	10,061	0.040%	22,689	145
Arkansas	3.920%	205,000	33,483	0.000%	64,063	0
California	0.972%	157,464	5,415	0.009%	4,536	50
Florida	0.450%	76,500	1,014	0.500%	85,000	1,127
Georgia	0.350%	388,500	10,138	1.350%	999,000	39,104
Kansas	0.190%	2,850	62	0.150%	2,250	49
Louisiana	5.000%	140,000	48,774	0.000%	105,000	0
Mississippi	4.983%	318,900	47,599	0.469%	150,000	4,374
Missouri	10.000%	185,000	65,191	1.800%	111,000	11,734
New Mexico	0.416%	10,974	394	0.152%	3,377	144
North Carolina	0.200%	380,000	1,921	1.900%	380,000	18,248
Oklahoma	0.000%	0	0	0.050%	9,750	182
South Carolina	0.100%	235,000	528	1.000%	235,000	5,278
Tennessee	2.300%	135,000	8,199	0.340%	114,750	1,212
Texas	0.017%	787,360	1,342	0.067%	2,057,750	5,750
Virginia	0.000%	12,750	0	1.400%	59,500	2,521

Table 7. Thrips and cotton fleahoppers: % yield reduction, acres infested and bales lost by state in 2015

	Thrips			cotton fleahoppers		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.831%	6,625,190	147,602	0.353%	2,134,131	59,937
Alabama	1.104%	341,500	9,376	0.000%	25,000	0
Arizona	0.049%	88,382	185	0.025%	24,328	94
Arkansas	0.150%	169,125	1,281	0.000%	71,750	0
California	0.146%	157,464	812	0.000%	0	0
Florida	0.300%	85,000	676	0.000%	0	0
Georgia	0.475%	1,054,500	13,759	0.000%	0	0
Kansas	0.000%	5,000	0	0.000%	4,500	0
Louisiana	0.000%	140,000	0	0.000%	14,000	0
Mississippi	1.000%	320,000	9,547	0.010%	16,000	95
Missouri	2.500%	185,000	16,298	2.800%	148,000	18,253
New Mexico	0.000%	28,279	0	0.000%	2,532	0
North Carolina	0.400%	380,000	3,842	0.000%	0	0
Oklahoma	0.300%	29,250	1,093	0.800%	156,000	2,915
South Carolina	1.000%	235,000	5,278	0.000%	235,000	0
Tennessee	1.300%	135,000	4,634	0.000%	0	0
Texas	0.947%	3,191,690	76,768	0.495%	1,437,020	38,579
Virginia	2.000%	85,000	3,601	0.000%	0	0

Table 8. Spider mites and aphids: percent yield reduction, acres infested and bales lost by state in 2015

	spider mites			Aphids		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.143%	1,705,143	42,013	0.180%	3,112,998	26,316
Alabama	0.349%	297,200	2,976	0.007%	127,500	60
Arizona	0.105%	22,081	399	0.027%	14,108	103
Arkansas	0.025%	82,000	214	0.000%	48,688	0
California	0.243%	157,464	1,354	0.008%	125,064	43
Florida	0.100%	51,000	225	0.500%	80,750	1,127
Georgia	0.150%	333,000	4,345	0.030%	333,000	869
Kansas	0.000%	4,998	0	0.000%	0	0
Louisiana	1.600%	112,000	15,608	0.000%	140,000	0
Mississippi	1.343%	191,000	13,165	0.164%	149,000	1,694
Missouri	0.100%	37,000	652	0.080%	14,800	522
New Mexico	0.000%	0	0	0.000%	1,688	0
North Carolina	0.008%	76,000	77	0.000%	380,000	0
Oklahoma	0.000%	0	0	0.025%	9,750	91
South Carolina	0.100%	235,000	528	0.000%	235,000	0
Tennessee	0.120%	27,000	428	0.000%	40,500	0
Texas	0.021%	79,400	1,592	0.300%	1,413,150	22,292
Virginia	0.000%	0	0	0.000%	0	0

Table 9. Boll weevil and brown stink bug: percent yield reduction, acres infested and bales lost by state in 2015

	Boll weevil			Eradication	Brown Stink Bugs		
	% Reduction	Acres infested	Bales lost	costs/acre	% Reduction	Acres infested	Bales Lost
US	0.000%	24,995	0	$2.72	0.000%	608	0
Alabama	0.000%	0	0	$2.77	0.000%	0	0
Arizona	0	0	0	$1.22	0.000%	608	0
Arkansas	0.000%	0	0	$8.00	0.000%	0	0
California	0.000%	0	0	$0.00	0.000%	0	0
Florida	0.000%	0	0	$1.10	0.000%	0	0
Georgia	0.000%	0	0	$1.50	0.000%	0	0
Kansas	0.000%	0	0	$0.50	0.000%	0	0
Louisiana	0.000%	0	0	$6.00	0.000%	0	0
Mississippi	0.000%	0	0	$4.00	0.000%	0	0
Missouri	0.000%	0	0	$5.00	0.000%	0	0
New Mexico	0.000%	0	0	$5.95	0.000%	0	0
North Carolina	0.000%	0	0	$0.90	0.000%	0	0
Oklahoma	0.000%	0	0	$4.50	0.000%	0	0
South Carolina	0.000%	0	0	$1.40	0.000%	0	0
Tennessee	0.000%	0	0	$1.50	0.000%	0	0
Texas	0.000%	24,995	0	$2.49	0.000%	0	0
Virginia	0.000%	0	0	$0.50	0.000%	0	0

Table 10. Beet and fall armyworms: percent yield reduction, acres infested and bales lost by state in 2015

	beet armyworms			fall armyworms		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.000%	670,536	0	0.033%	538,083	9,230
Alabama	0.000%	0	0	0.000%	0	0
Arizona	0.000%	6,384	0	0.000%	2,248	0
Arkansas	0.000%	0	0	0.000%	84,563	256
California	0.000%	5,022	0	0.000%	0	0
Florida	0.000%	0	0	0.000%	0	0
Georgia	0.000%	2,220	0	0.000%	11,100	0
Kansas	0.000%	0	0	0.000%	150	0
Louisiana	0.000%	0	0	0.000%	77,000	0
Mississippi	0.000%	0	0	0.301%	128,300	2,959
Missouri	0.000%	14,800	0	0.900%	55,500	5,867
New Mexico	0.000%	2,954	0	0.000%	422	0
North Carolina	0.000%	57,000	0	0.000%	95,000	0
Oklahoma	0.000%	0	0	0.000%	0	0
South Carolina	0.000%	0	0	0.000%	47,000	0
Tennessee	0.000%	0	0	0.040%	5,400	143
Texas	0.000%	582,156	0	0.000%	31,400	6
Virginia	0.000%	0	0	0.000%	0	0

Table 11. Cutworms and loopers: percent yield reduction, acres infested and bales lost by state in 2015

	cutworms			Loopers		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.005%	208,628	1,334	0.000%	72,288	0
Alabama	0.001%	30,258	7	0.000%	0	0
Arizona	0.000%	0	0	0.000%	3,853	0
Arkansas	0.000%	15,888	4	0.030%	23,063	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%	0	0	0.000%	0	0
Louisiana	0.000%	0	0	0.000%	0	0
Mississippi	0.023%	75,000	219	0.000%	4,300	0
Missouri	0.160%	14,800	1,043	0.000%	9,250	0
New Mexico	0.000%	42	0	0.000%	422	0
North Carolina	0.000%	19,000	0	0.000%	0	0
Oklahoma	0.000%	0	0	0.000%	0	0
South Carolina	0.010%	23,500	53	0.000%	0	0
Tennessee	0.002%	27,000	7	0.000%	0	0
Texas	0.000%	3,140	1	0.000%	31,400	0
Virginia	0.000%	0	0	0.000%	0	0

Table 12. Whiteflies: percent yield reduction, acres infested and bales lost by state in 2015

	bandedwinged whiteflies			*Bemisia* spp		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.000%	654,650	0	0.008%	264,430	2,501
Alabama	0.000%	0	0	0.000%	0	0
Arizona	0.000%	6,325	0	0.433%	68,403	1,641
Arkansas	0.000%	15,375	0	0.000%	0	0
California	0.000%	0	0	0.154%	100,027	860
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%	0	0	0.000%	0	0
Mississippi	0.000%	11,600	0	0.000%	0	0
Missouri	0.000%	3,700	0	0.000%	0	0
New Mexico	0.000%	0	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%	176,250	0	0.000%	0	0
Tennessee	0.000%	0	0	0.000%	0	0
Texas	0.000%	441,400	0	0.000%	96,000	0
Virginia	0.000%	0	0	0.000%	0	0

Table 13. Darkling Beetle and Pale-striped Flea beetle: percent yield reduction, acres infested and bales lost and Pink Bollworm eradication cost by state in 2015

	Darkling Beetles			PBW erad	Pale-striped Flea Beetles		
	% Reduction	Acres infested	Bales lost	costs per acre	% Reduction	Acres infested	Bales lost
US	0.000%	14,399	11	$6.26	0.000%	31,220	56
Alabama	0.000%	0	0	$0.00	0.000%	0	0
Arizona	0.003%	14,399	11	$5.50	0.015%	31,220	56
Arkansas	0.000%	0	0	$0.00	0.000%	0	0
California	0.000%	0	0	$6.64	0.000%	0	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	$6.98	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%	0	0	$0.00	0.000%	0	0
Virginia	0.000%	0	0	$0.00	0.000%	0	0

Table 14. Grasshoppers and Clouded plant bugs: percent yield reduction, acres infested and bales lost by state in 2015

	grasshoppers			clouded plant bugs		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.012%	2,626,738	1,813	0.031%	327,213	7,499
Alabama	0.000%	25,800	0	0.000%	103,200	3
Arizona	0.029%	11,043	72	0.000%	0	0
Arkansas	0.000%	12,813	0	0.002%	53,813	20
California	0.000%	0	0	0.000%	0	0
Florida	0.000%	0	0	0.000%	8,500	0
Georgia	0.000%	0	0	0.010%	22,200	290
Kansas	0.000%	0	0	0.000%	0	0
Louisiana	0.000%	0	0	0.000%	0	0
Mississippi	0.000%	7,400	0	0.645%	37,500	6,014
Missouri	0.000%	9,250	0	0.150%	27,750	978
New Mexico	0.120%	2,532	114	0.000%	0	0
North Carolina	0.000%	0	0	0.000%	0	0
Oklahoma	0.300%	58,500	1,093	0.000%	0	0
South Carolina	0.000%	235,000	0	0.000%	0	0
Tennessee	0.000%	0	0	0.055%	74,250	196
Texas	0.007%	2,264,400	535	0.000%	0	0
Virginia	0.000%	0	0	0.000%	0	0

Table 15. Saltmarsh caterpillars and Verde plant bug: percent yield reduction, acres infested and bales lost by state in 2015

	saltmarsh caterpillar			Verde Plant Bug		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.000%	2,446	0	0.006%	79,170	914
Alabama	0.000%	0	0	0.000%	0	0
Arizona	0.000%	2,446	0	0.000%	0	0
Arkansas	0.000%	0	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%	0	0	0.000%	0	0
Louisiana	0.000%	0	0	0.000%	0	0
Mississippi	0.000%	0	0	0.000%	0	0
Missouri	0.000%	0	0	0.000%	0	0
New Mexico	0.000%	0	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%	0	0	0.000%	0	0
Tennessee	0.000%	0	0	0.000%	0	0
Texas	0.000%	0	0	0.011%	79,170	914
Virginia	0.000%	0	0	0.000%	0	0

Table 16. Bagrada Bug and Leaf-footed bug: percent yield reduction, acres infested and bales lost by state in 2015

	Bagrada Bug			Leaf-footed Bug		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.000%	2,248	0	0.001%	45,275	232
Alabama	0.000%	0	0	0.000%	12,900	0
Arizona	0.000%	2,248	0	0.000%	0	0
Arkansas	0.000%	0	0	0.001%	15,375	6
California	0.000%	0	0	0.000%	0	0
Florida	0.000%	0	0	0.000%	17,000	0
Georgia	0.000%	0	0	0.000%	0	0
Kansas	0.000%	0	0	0.000%	0	0
Louisiana	0.000%	0	0	0.000%	0	0
Mississippi	0.000%	0	0	0.000%	0	0
Missouri	0.000%	0	0	0.000%	0	0
New Mexico	0.000%	0	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%	0	0	0.000%	0	0
Tennessee	0.000%	0	0	0.000%	0	0
Texas	0.000%	0	0	0.000%	0	0
Virginia	0.000%	0	0	0.000%	0	0

Table 17. Cotton Leaf-perforators and Mealybugs: percent yield reduction, acres infested and bales lost by state in 2015

	Cotton Leaf-perforator			Mealybugs		
	% Reduction	Acres infested	Bales lost	% Reduction	Acres infested	Bales lost
US	0.000%	608	0	0.000%	0	0
Alabama	0.000%	0	0	0.000%	0	0
Arizona	0.000%	2,446	0	0.000%	0	0
Arkansas	0.000%	0	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%	0	0	0.000%	0	0
Louisiana	0.000%	0	0	0.000%	0	0
Mississippi	0.000%	0	0	0.000%	0	0
Missouri	0.000%	0	0	0.000%	0	0
New Mexico	0.000%	0	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%	0	0	0.000%	0	0
Tennessee	0.000%	0	0	0.000%	0	0
Texas	0.000%	0	0	0.000%	0	0
Virginia	0.000%	0	0	0.000%	0	0