

Report

2014 Soybean Insect Losses in the Southern US

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Abstract: Survey-based soybean insect losses were collected following the 2014 growing season to provide a record of insect pressure and soybean management practices for the year. This survey has been done annually in all participating states for at least the last 4 years and since 2004 in Mississippi. The 2014 survey represents more than 11 million soybean acres across the southern United States. Overall, the 2014 survey showed corn earworm to be the most costly insect pest in the region for the fourth consecutive year, but stink bug was the most expensive insect pest in five of the seven surveyed states. The stink bug and armyworm complexes were the second and third most costly insect pests overall, respectively, followed by bean leaf beetle and soybean looper. The proportion of soybean fields scouted increased to 65% while the proportion of soybeans planted with insecticide seed treatments decreased slightly to 64%. The number of foliar insecticide applications continued a decreasing trend to an average of 1.38 applications during 2014. Estimated yield losses from insects during 2014 were 4.09%, or \$20.47/acre. An additional \$23.78/acre was spent on insect monitoring and protection, giving a total insect losses plus costs of \$44.25/acre during 2014, lower than the impact of insects during each of the previous 4 years.

Key Words: soybean, yield loss, pest management

Introduction

Soybean losses have been compiled annually since 2004 in Mississippi (MS) (Musser and Catchot 2008), 2008 in Tennessee (TN) (Musser et al. 2009), 2009 in Arkansas (AR) (Musser et al. 2010), and 2011 in Alabama (AL), Louisiana (LA), North Carolina (NC) and Virginia (VA) (Musser et al. 2012). These survey-based losses provide an annual record of insect pressure and management decisions. While the costs and losses estimated for a pest in any given year are somewhat subjective, these losses provide an historical record of pest pressure and management practices and provide an estimate of the economic impact of the various soybean pests. Over time, the changes in estimated losses and insecticide applications provide a reliable record of shifts in pest spectrums and grower management.

Materials and Methods

An informal telephone or written survey was conducted with numerous crop consultants and extension personnel in the fall of the year. Surveyed people were those who actively scouted soybean fields and those who assisted growers in making soybean pest management decisions. These surveys were compiled and then combined with the author's own experience to estimate the various fields in the table. Acreage, yield and price data were drawn from Agricultural Statistics Service publications (USDA NASS) before final estimates were published, so values in the tables may differ from final NASS values. The estimates were placed in an Excel spreadsheet (Microsoft Office 2013, Microsoft Corp.) to make the various calculations. Actual formulas used in the spreadsheet were published by Musser and Catchot (2008). Additional columns added in 2013 were columns for acres above economic threshold (ET) and % acres above ET and these are defined in Musser et al. (2014).

Results and Discussion

Planted acreage and yields in the surveyed states were the highest recorded by this survey, but prices were lower, so total value of soybeans harvested was less than in 2013. Overall yield losses plus control costs due to insects were relatively low in 2014, averaging \$32.89/acre. Scouting continued to increase across the region, and 65% of all soybean acres in the surveyed states were scouted by a paid consultant during 2014. This ranged from 90% of acres in Mississippi to 15% in North Carolina. The use of seed treatments in soybeans failed to increase for the first time since they were first reported in 2006, dropping from 66% during 2013 to 64% during 2014. The highest insect yield losses were reported from AR (6.83%) and the lowest losses were reported from VA (1.25%). The most pesticide applications were made in LA (2.34 applications) while the fewest were made in VA (0.08 applications) (Table 1). This was the fourth consecutive year that the number of foliar insecticide applications has decreased, going from 1.707 applications in 2011 to 1.382 applications in 2014.

As in every year since 2011, the first year this survey included the current seven states, corn earworm, *Helicoverpa zea* (Lepidoptera: Noctuidae), was the most expensive insect pest of soybean overall in terms of lost yield and control costs. However, corn earworm was the most expensive pest only in NC, while stink bugs (Hemiptera: Pentatomidae), which were second most expensive overall, were the most expensive pest in five of the seven states (all except NC and AR). Estimated losses and costs from corn earworm continued a decline that has been observed since 2011 and fell below \$10/acre for the first time during this period during 2014, compared to a peak estimate of \$22.58/acre in 2011. Stink bugs were the most frequently sprayed insect during 2014, receiving 0.42 applications per acre. Green stink bug, *Acrosternum hilare*, was the dominant stink bug species overall, and green and brown, *Euschistus servus*, stink bugs were the dominant species in all states. The armyworm complex, *Spodoptera* spp. (Lepidoptera: Noctuidae), was the third most expensive insect during 2014, sharply higher than in any of the previous three years. Bean leaf beetle, *Cerotoma trifurcata* (Coleoptera: Chrysomelidae) and soybean looper, *Chrysodeixis includens* (Lepidoptera: Noctuidae), were the fourth and fifth most expensive pests, respectively, in 2014.

The kudzu bug, *Megacopta cribraria* (Hemiptera: Plataspidae), was surprisingly rare during 2014. As in previous years, it continued to spread into more regions during 2014, being found at levels above economic threshold in all surveyed states except Arkansas. However, it was only above economic threshold on 0.6% of all acreage throughout the region.

Table 1. Soybean management and losses in surveyed states, 2004-2014.

Year	% soybeans scouted	% soybeans with insect. seed treatment	No. foliar insecticide applications	% yield loss to insects	\$ loss + cost/acre ¹
Combined States					
2011-13	59	57	1.60	5.67	43.42
2014	65	64	1.38	4.09	32.89
Alabama					
2011-13	41	20	0.46	3.46	27.12
2014	60	30	0.18	1.83	7.69
Arkansas					
2009-10	63	46	1.36	8.97	46.33
2011-13	72	70	1.41	8.61	63.29
2014	80	70	1.45	6.83	55.44
Louisiana					
2011-13	75	87	3.93	3.04	55.88
2014	85	90	2.34	2.59	37.52
Mississippi					
2004-07	15	1	1.19	6.74	26.16
2008-10	68	62	2.29	4.69	39.79
2011-13	83	83	1.65	4.35	42.88
2014	90	90	1.21	2.77	28.08
North Carolina					
2011-13	14	11	1.50	5.53	39.87
2014	15	31	1.25	5.15	34.65
Tennessee					
2008-10	33	47	0.75	5.40	27.09
2011-13	43	50	0.91	3.88	27.48
2014	45	52	1.05	2.05	16.10
Virginia					
2011-13	46	13	0.30	4.16	23.63
2014	30	25	0.08	1.25	7.21

¹ 1 acre = 0.405 ha

State Highlights

Alabama. Insect pressure was light for the second consecutive year, with only 0.18 insecticide applications made, primarily for stink bugs and threecornered alfalfa hoppers.

Arkansas. Armyworm and bean leaf beetle pressure was high compared to previous years, but this was offset by lower pressure from other pests, so overall insect costs and losses were similar to their historic average.

Louisiana. Insect costs plus losses were lower than during all three previous surveys, primarily from a sharp reduction in applications for stink bug and soybean looper.

Mississippi. Overall insect costs plus losses were the lowest reported since 2006, and percent yield loss to insects was the lowest reported since the survey began in 2004. Stink bug, soybean looper and corn earworm were the most costly insects,

North Carolina. Corn earworm remained the primary pest in 2014, but it was not as damaging as it was in 2013. All other pest pressure was also lower than 2013, leading to a reduction in the number of insecticide applications from 2.3 to 1.2.

Tennessee. Insect losses were comparable to 2013. One notable trend was that automatic insecticide applications made when few insects were in the field was the second most common use of insecticides. Only stink bugs received more insecticides.

Virginia. Stink bugs caused most of the damage for the second consecutive year. Even this species was not very damaging as only 8% of the acreage was sprayed.

The complete data for each state and all states combined are in the appendices following this report.

Acknowledgements

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Appendix 1. Overall soybean insect losses from seven surveyed southern states, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	Overall % reduction	bushel lost		Loss +		% Total		
												per pest	Loss + Cost	Cost/acre	Loss + Cost			
Armyworm complex	4,206,931	37.4%	1,650,289	14.7%	2,185,289	19.4%	1.02	\$8.96	1.922	0.198	\$1.77	0.72%	3,954,298	\$60,442,020	\$5.37	16.3%		
Banded Cucumber Beetle	1,775,000	15.8%	0	0.0%	0	0.0%	0.00	\$0.00	0.001	0.000	\$0.00	0.00%	1,223	\$12,516	\$0.00	0.0%		
Bean Leaf Beetle	7,452,952	66.2%	1,692,445	15.0%	2,217,500	19.7%	1.10	\$8.14	0.572	0.218	\$1.77	0.38%	2,085,055	\$41,274,345	\$3.67	11.2%		
Blister Beetle	570,036	5.1%	33,500	0.3%	50,000	0.4%	1.00	\$3.00	0.000	0.004	\$0.01	0.00%	1	\$150,013	\$0.01	0.0%		
Corn Earworm	3,921,827	34.9%	1,377,533	12.2%	2,075,250	18.4%	1.00	\$12.58	3.412	0.184	\$2.32	1.19%	6,545,064	\$93,107,107	\$8.28	25.2%		
Cutworms	482,000	4.3%	10,000	0.1%	20,400	0.2%	1.00	\$3.08	0.000	0.002	\$0.01	0.00%	39	\$63,301	\$0.01	0.0%		
Dectes Stem Borer	6,062,500	53.9%	0	0.0%	338,000	3.0%	1.00	\$3.04	0.518	0.030	\$0.09	0.28%	1,537,266	\$16,763,639	\$1.49	4.5%		
Garden Webworms	936,007	8.3%	83,700	0.7%	83,700	0.7%	1.00	\$3.00	0.014	0.007	\$0.02	0.00%	6,603	\$318,688	\$0.03	0.1%		
Grape Colaspis	4,221,141	37.5%	0	0.0%	1,500	0.0%	1.00	\$9.00	0.005	0.000	\$0.00	0.00%	11,323	\$129,400	\$0.01	0.0%		
Grasshopper	5,605,160	49.8%	148,381	1.3%	138,500	1.2%	1.00	\$7.12	0.096	0.012	\$0.09	0.05%	262,903	\$3,677,067	\$0.33	1.0%		
Green Cloverworm	9,119,092	81.1%	358,736	3.2%	368,222	3.3%	1.00	\$8.86	0.249	0.033	\$0.29	0.20%	1,108,499	\$14,608,574	\$1.30	3.9%		
Kudzu Bug	889,171	7.9%	65,388	0.6%	49,460	0.4%	1.00	\$7.98	0.222	0.004	\$0.04	0.02%	96,558	\$1,383,221	\$0.12	0.4%		
Lesser Cornstalk Borer	378,500	3.4%	0	0.0%	0	0.0%	0.00	\$0.00	0.046	0.000	\$0.00	0.00%	8,559	\$87,614	\$0.01	0.0%		
Mexican Bean Beetle	332,588	3.0%	0	0.0%	0	0.0%	0.00	\$0.00	0.000	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Potato Leafhopper	4,218,195	37.5%	0	0.0%	25,000	0.2%	1.00	\$8.00	0.000	0.002	\$0.02	0.00%	0	\$200,000	\$0.02	0.1%		
Saltmarsh Caterpillar	3,294,368	29.3%	55,000	0.5%	55,000	0.5%	1.00	\$12.09	0.065	0.005	\$0.06	0.02%	103,935	\$1,728,878	\$0.15	0.5%		
Soybean Aphid	289,500	2.6%	1,000	0.0%	350	0.0%	1.00	\$7.64	0.007	0.000	\$0.00	0.00%	978	\$12,688	\$0.00	0.0%		
Soybean Looper	4,659,988	41.4%	1,047,581	9.3%	1,084,073	9.6%	1.00	\$13.77	0.956	0.096	\$1.33	0.40%	2,178,964	\$37,229,155	\$3.31	10.1%		
Spider Mites	342,933	3.0%	2,500	0.0%	2,500	0.0%	1.00	\$0.00	0.003	0.000	\$0.00	0.00%	489	\$5,006	\$0.00	0.0%		
Spotted Cucumber Beetle	6,333,032	56.3%	0	0.0%	4,500	0.0%	1.00	\$9.00	0.015	0.000	\$0.00	0.01%	46,465	\$516,116	\$0.05	0.1%		
Stink Bugs (see box below)	9,041,692	80.4%	3,115,618	27.7%	3,648,764	32.4%	1.30	\$8.34	0.788	0.421	\$3.51	0.63%	3,486,531	\$75,171,442	\$6.68	20.3%		
Threecornered Alfalfa Hopper	8,440,478	75.0%	947,000	8.4%	880,000	7.8%	1.00	\$8.93	0.139	0.078	\$0.70	0.10%	575,552	\$13,748,829	\$1.22	3.7%		
Thrips	8,899,088	79.1%	0	0.0%	52,500	0.5%	1.00	\$7.31	0.017	0.005	\$0.03	0.01%	73,366	\$1,134,723	\$0.10	0.3%		
Trochanter Mealybug	400	0.0%	0	0.0%	0	0.0%	0.00	\$0.00	0.300	0.000	\$0.00	0.00%	59	\$601	\$0.00	0.0%		
Velvetbean Caterpillar	1,405,970	12.5%	315,000	2.8%	312,000	2.8%	1.00	\$7.14	0.600	0.028	\$0.20	0.08%	412,685	\$6,450,723	\$0.57	1.7%		
Other	700	0.0%	0	0.0%	600,000	5.3%	1.00	\$3.00	0.000	0.053	\$0.16	0.00%	0	\$1,800,000	\$0.16	0.5%		
												1.382	\$12.42	4.09%	22,496,417	\$370,015,665	\$32.89	100.0%

SUMMARY DATA

Data Input	
State	Combined
Year	2014
Total Acres	11,250,000
Yield/acre	46.91
Price/Bushel	\$10.24
% Acres Scouted	65
Scouting Fee/scouted acre	\$6.95
% Acres Insect Seed Trt.	64
Seed Trt Cost/treated ac	\$10.71

Yield & Management Results	
Total Bushels Harvested	527,750,000
Total Bushels Lost to Insects	22,496,417
Percent Yield Loss	4.09%
Yield w/o Insects	48.91
Ave. # Spray Applications	1.382
Seed Treated Acres	7,203,700
Scouted Acres	7,279,500

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$139,743,335	\$12.42
Seed Treatment Costs	\$77,185,244	\$6.86
Scouting costs	\$50,590,907	\$4.50
Total Costs	\$267,519,487	\$23.78
Yield Lost to insects	\$230,272,330	\$20.47
Total Losses + Costs	\$497,791,816	\$44.25

Stink Bug Composition	
Species	% of SB
Brown	29.5
Brown Marmorated	0.7
Green	56.8
Redbanded	3.3
Redshouldered	0.9
Southern Green	8.7
Total	100

Appendix 2. Alabama soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost per pest	Loss + Cost	Cost/acre	Loss + Cost	% Total
Armyw orm complex	200,000	39.2%	20,000	3.9%	15,000	2.9%	1	\$8.50	0.25	0.029	\$0.25	0.10%	16,808	\$295,577	\$0.58	\$0.58	7.5%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Bean Leaf Beetle	400,000	78.4%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Blister Beetle	200,000	39.2%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Corn Earw orm	50,000	9.8%	500	0.1%	250	0.0%	1	\$8.50	0.00	0.000	\$0.00	0.00%	0	\$2,125	\$0.00	\$0.00	0.1%
Cutw orms	25,000	4.9%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Dectes Stem Borer	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Garden Webw orms	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Grasshopper	510,000	100.0%	4,000	0.8%	6,000	1.2%	1	\$8.50	0.20	0.012	\$0.10	0.20%	34,288	\$393,878	\$0.77	\$0.77	10.0%
Green Cloverw orm	510,000	100.0%	0	0.0%	2,500	0.5%	1	\$8.50	0.00	0.005	\$0.04	0.00%	171	\$22,964	\$0.05	\$0.05	0.6%
Kudzu Bug	200,000	39.2%	5,000	1.0%	6,000	1.2%	1	\$8.50	0.50	0.012	\$0.10	0.20%	33,615	\$387,155	\$0.76	\$0.76	9.9%
Lesser Cornstalk Borer	30,000	5.9%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Potato Leafhopper	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Soybean Looper	100,000	19.6%	5,000	1.0%	5,000	1.0%	1	\$12.50	0.25	0.010	\$0.12	0.05%	8,404	\$146,539	\$0.29	\$0.29	3.7%
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Stink Bugs (see box below)	510,000	100.0%	25,000	4.9%	25,000	4.9%	1	\$8.50	0.75	0.049	\$0.42	0.75%	128,579	\$1,498,292	\$2.94	\$2.94	38.2%
Threecornered Alfalfa Hopper	510,000	100.0%	100,000	19.6%	25,000	4.9%	1	\$8.50	0.50	0.049	\$0.42	0.50%	85,719	\$1,069,694	\$2.10	\$2.10	27.3%
Thrips	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
Velvetbean Caterpillar	75,000	14.7%	5,000	1.0%	5,000	1.0%	1	\$8.50	0.25	0.010	\$0.08	0.04%	6,303	\$105,529	\$0.21	\$0.21	2.7%
Other	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	\$0.00	0.0%
							0.176	\$1.54	1.83%	313,888	\$3,921,753	\$7.69	100.0%				

SUMMARY DATA

Data Input	
State	AL
Year	2014
Total Acres	510,000
Yield/acre	33
Price/Bushel	\$10.00
% Acres Scouted	60
Scouting Fee/scouted acre	\$6.00
% Acres Insect Seed Trt.	30
Seed Trt Cost/treated ac	\$10.00

Yield & Management Results	
Total Bushels Harvested	16,830,000
Total Bushels Lost to Insects	313,888
Percent Yield Loss	1.83%
Yield w/o Insects	33.62
Ave. # Spray Applications	0.176
Seed Treated Acres	153,000
Scouted Acres	306,000

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$782,875	\$1.54
Seed Treatment Costs	\$1,530,000	\$3.00
Scouting costs	\$1,836,000	\$3.60
Total Costs	\$4,148,875	\$8.14
Yield Lost to insects	\$3,138,878	\$6.15
Total Losses + Costs	\$7,287,753	\$14.29

Stink Bug Composition	
Species	% of SB
Brow n	20
Brow n Marmorated	1
Green	45
Redbanded	0
Redshouldered	0
Southern Green	34
Total	100

Appendix 3. Arkansas soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost per pest	Loss + Cost	Loss + Cost Cost/acre	% Total Loss + Cost
Armyworm complex	2,512,500	75.0%	1,000,000	29.9%	1,500,000	44.8%	1	\$9.00	3.00	0.448	\$4.03	2.25%	3,883,094	\$53,301,709	\$15.91	31.8%
Banded Cucumber Beetle	125,000	3.7%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	3,350,000	100.0%	900,000	26.9%	1,250,000	37.3%	1.1	\$7.00	1.00	0.410	\$2.87	1.00%	1,725,819	\$27,314,649	\$8.15	16.3%
Blister Beetle	335,000	10.0%	33,500	1.0%	50,000	1.5%	1	\$3.00	0.00	0.015	\$0.04	0.00%	0	\$150,000	\$0.04	0.1%
Corn Earworm	2,345,000	70.0%	469,000	14.0%	900,000	26.9%	1	\$12.00	3.00	0.269	\$3.22	2.10%	3,624,221	\$47,948,262	\$14.31	28.6%
Cutworms	335,000	10.0%	10,000	0.3%	20,000	0.6%	1	\$3.00	0.00	0.006	\$0.02	0.00%	0	\$60,000	\$0.02	0.0%
Dectes Stem Borer	2,512,500	75.0%	0	0.0%	335,000	10.0%	1	\$3.00	1.00	0.100	\$0.30	0.75%	1,294,365	\$14,272,236	\$4.26	8.5%
Garden Webworms	837,500	25.0%	83,700	2.5%	83,700	2.5%	1	\$3.00	0.00	0.025	\$0.07	0.00%	0	\$251,100	\$0.07	0.1%
Grape Colaspis	2,345,000	70.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grasshopper	3,350,000	100.0%	125,000	3.7%	125,000	3.7%	1	\$7.00	0.10	0.037	\$0.26	0.10%	172,582	\$2,643,965	\$0.79	1.6%
Green Cloverworm	3,350,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Lesser Cornstalk Borer	335,000	10.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	2,010,000	60.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Saltmarsh Caterpillar	2,512,500	75.0%	10,000	0.3%	10,000	0.3%	1	\$8.00	0.00	0.003	\$0.02	0.00%	0	\$80,000	\$0.02	0.0%
Soybean Aphid	167,500	5.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	1,700,000	50.7%	85,000	2.5%	150,000	4.5%	1	\$12.00	0.25	0.045	\$0.54	0.13%	218,947	\$4,044,209	\$1.21	2.4%
Spider Mites	167,500	5.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Spotted Cucumber Beetle	3,350,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Stink Bugs (see box below)	3,350,000	100.0%	1,000,000	29.9%	1,250,000	37.3%	1	\$7.00	0.50	0.373	\$2.61	0.50%	862,910	\$17,594,824	\$5.25	10.5%
Threecornered Alfalfa Hopper	3,350,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Thrips	3,350,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Velvetbean Caterpillar	335,000	10.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Other	700	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
							1.731				\$14.00	6.83%	11,781,937	\$167,660,954	\$50.05	100.0%

SUMMARY DATA

Data Input	
State	AR
Year	2014
Total Acres	3,350,000
Yield/acre	48
Price/Bushel	\$10.25
% Acres Scouted	80
Scouting Fee/scouted acre	\$8.00
% Acres Insect Seed Trt.	70
Seed Trt Cost/treated ac	\$12.00

Yield & Management Results	
Total Bushels Harvested	160,800,000
Total Bushels Lost to Insects	11,781,937
Percent Yield Loss	6.83%
Yield w/o Insects	51.52
Ave. # Spray Applications	1.731
Seed Treated Acres	2,345,000
Scouted Acres	2,680,000

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$46,896,100	\$14.00
Seed Treatment Costs	\$28,140,000	\$8.40
Scouting costs	\$21,440,000	\$6.40
Total Costs	\$96,476,100	\$28.80
Yield Lost to insects	\$120,764,854	\$36.05
Total Losses + Costs	\$217,240,954	\$64.85

Stink Bug Composition	
Species	% of SB
Brown	30
Brown Marmorated	0
Green	68
Redbanded	1
Redshouldered	1
Southern Green	1
Total	100

Appendix 4. Louisiana soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost per pest	Loss + Cost	Loss + Cost Cost/acre	% Total Loss + Cost
Armyworm complex	300,000	21.4%	75,000	5.4%	75,000	5.4%	1	\$8.00	0.00	0.054	\$0.43	0.00%	0	\$600,000	\$0.43	1.1%
Banded Cucumber Beetle	1,400,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	14,000	1.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Blister Beetle	10,000	0.7%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Corn Earworm	140,000	10.0%	70,000	5.0%	70,000	5.0%	1	\$13.50	0.50	0.050	\$0.68	0.05%	38,803	\$1,333,033	\$0.95	2.5%
Cutworms	8,000	0.6%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Dectes Stem Borer	1,000,000	71.4%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Garden Webworms	7,000	0.5%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grape Colaspis	1,400,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grasshopper	700,000	50.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Green Cloverworm	1,400,000	100.0%	50,000	3.6%	50,000	3.6%	1	\$12.00	0.50	0.036	\$0.43	0.50%	388,033	\$4,480,334	\$3.20	8.5%
Kudzu Bug	10,000	0.7%	2,500	0.2%	2,500	0.2%	1	\$5.00	0.00	0.002	\$0.01	0.00%	0	\$12,500	\$0.01	0.0%
Lesser Cornstalk Borer	10,000	0.7%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	1,400,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Saltmarsh Caterpillar	280,000	20.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	800,000	57.1%	300,000	21.4%	300,000	21.4%	1	\$14.00	1.00	0.214	\$3.00	0.57%	443,467	\$8,634,668	\$6.17	16.4%
Spider Mites	10,000	0.7%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Spotted Cucumber Beetle	1,400,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Stink Bugs (see box below)	1,400,000	100.0%	840,000	60.0%	840,000	60.0%	2	\$10.00	1.00	1.200	\$12.00	1.00%	776,067	\$24,560,669	\$17.54	46.8%
Threecornered Alfalfa Hopper	1,400,000	100.0%	800,000	57.1%	800,000	57.1%	1	\$9.00	0.25	0.571	\$5.14	0.25%	194,017	\$9,140,167	\$6.53	17.4%
Thrips	1,400,000	100.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Velvetbean Caterpillar	600,000	42.9%	300,000	21.4%	300,000	21.4%	1	\$7.00	0.50	0.214	\$1.50	0.21%	166,300	\$3,763,000	\$2.69	7.2%
Other	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
							2.341	\$23.18	2.59%	2,006,687	\$52,524,372	\$37.52	100.0%			

SUMMARY DATA

Data Input	
State	LA
Year	2014
Total Acres	1,400,000
Yield/acre	54
Price/Bushel	\$10.00
% Acres Scouted	85
Scouting Fee/scouted acre	\$7.50
% Acres Insect Seed Trt.	90
Seed Trt Cost/treated ac	\$11.00

Yield & Management Results	
Total Bushels Harvested	75,600,000
Total Bushels Lost to Insects	2,006,687
Percent Yield Loss	2.59%
Yield w/o Insects	55.43
Ave. # Spray Applications	2.341
Seed Treated Acres	1,260,000
Scouted Acres	1,190,000

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$32,457,500	\$23.18
Seed Treatment Costs	\$13,860,000	\$9.90
Scouting costs	\$8,925,000	\$6.38
Total Costs	\$55,242,500	\$39.46
Yield Lost to insects	\$20,066,872	\$14.33
Total Losses + Costs	\$75,309,372	\$53.79

Stink Bug Composition	
Species	% of SB
Brown	36
Brown Marmorated	0
Green	40
Redbanded	10
Redshouldered	0
Southern Green	14
Total	100

Appendix 5. Mississippi soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost per pest	Loss + Cost	Loss + Cost Cost/acre	% Total Loss + Cost
Armyworm complex	650,000	29.3%	425,000	19.1%	425,000	19.1%	1.1	\$9.00	0.40	0.211	\$1.90	0.12%	136,380	\$5,571,296	\$2.51	8.9%
Banded Cucumber Beetle	250,000	11.3%	0	0.0%	0	0.0%	1	\$9.00	0.01	0.000	\$0.00	0.00%	1,311	\$13,113	\$0.01	0.0%
Bean Leaf Beetle	1,100,000	49.5%	525,000	23.6%	525,000	23.6%	1.2	\$11.00	0.20	0.284	\$3.12	0.10%	115,398	\$8,083,981	\$3.64	13.0%
Blister Beetle	2,500	0.1%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	1	\$13	\$0.00	0.0%
Corn Earworm	375,000	16.9%	250,000	11.3%	250,000	11.3%	1	\$16.50	3.50	0.113	\$1.86	0.59%	688,455	\$11,009,548	\$4.96	17.7%
Cutworms	110,000	5.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Dectes Stem Borer	1,200,000	54.1%	0	0.0%	0	0.0%	0	\$0.00	0.20	0.000	\$0.00	0.11%	125,889	\$1,258,889	\$0.57	2.0%
Garden Webworms	90,000	4.1%	0	0.0%	0	0.0%	0	\$0.00	0.15	0.000	\$0.00	0.01%	7,081	\$70,812	\$0.03	0.1%
Grape Colaspis	225,000	10.1%	0	0.0%	1,500	0.1%	1	\$9.00	0.10	0.001	\$0.01	0.01%	11,802	\$131,521	\$0.06	0.2%
Grasshopper	650,000	29.3%	2,500	0.1%	7,500	0.3%	1	\$8.00	0.10	0.003	\$0.03	0.03%	34,095	\$400,949	\$0.18	0.6%
Green Cloverworm	1,500,000	67.6%	125,000	5.6%	125,000	5.6%	1	\$9.00	0.70	0.056	\$0.51	0.47%	550,764	\$6,632,639	\$2.99	10.6%
Kudzu Bug	150,000	6.8%	4,500	0.2%	4,500	0.2%	1	\$9.00	0.00	0.002	\$0.02	0.00%	0	\$40,500	\$0.02	0.1%
Lesser Cornstalk Borer	3,500	0.2%	0	0.0%	0	0.0%	0	\$0.00	5.00	0.000	\$0.00	0.01%	9,179	\$91,794	\$0.04	0.1%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	350,000	15.8%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Saltmarsh Caterpillar	425,000	19.1%	45,000	2.0%	45,000	2.0%	1	\$13.00	0.50	0.020	\$0.26	0.10%	111,464	\$1,699,641	\$0.77	2.7%
Soybean Aphid	1,500	0.1%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	750,000	33.8%	325,000	14.6%	325,000	14.6%	1	\$16.00	1.50	0.146	\$2.34	0.51%	590,104	\$11,101,041	\$5.00	17.8%
Spider Mites	55,000	2.5%	2,500	0.1%	2,500	0.1%	1	\$0.00	0.00	0.001	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Spotted Cucumber Beetle	950,000	42.8%	0	0.0%	4,500	0.2%	1	\$9.00	0.10	0.002	\$0.02	0.04%	49,831	\$538,810	\$0.24	0.9%
Stink Bugs (see box below)	1,300,000	58.6%	500,000	22.5%	650,000	29.3%	1.2	\$9.50	0.75	0.351	\$3.34	0.44%	511,424	\$12,524,236	\$5.64	20.1%
Threecornered Alfalfa Hopper	1,650,000	74.3%	15,000	0.7%	25,000	1.1%	1	\$8.50	0.01	0.011	\$0.10	0.01%	8,655	\$299,049	\$0.13	0.5%
Thrips	1,900,000	85.6%	0	0.0%	2,500	0.1%	1	\$8.50	0.00	0.001	\$0.01	0.00%	0	\$21,250	\$0.01	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Velvetbean Caterpillar	350,000	15.8%	10,000	0.5%	7,000	0.3%	1	\$12.00	1.50	0.003	\$0.04	0.24%	275,382	\$2,837,819	\$1.28	4.6%
Other	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
							1.206	\$13.54			2.77%	3,227,215	\$62,326,902	\$28.08	100.0%	

SUMMARY DATA

Data Input	
State	MS
Year	2014
Total Acres	2,220,000
Yield/acre	51
Price/Bushel	\$10.00
% Acres Scouted	90
Scouting Fee/scouted acre	\$6.00
% Acres Insect Seed Trt.	90
Seed Trt Cost/treated ac	\$12.00

Yield & Management Results	
Total Bushels Harvested	113,220,000
Total Bushels Lost to Insects	3,227,215
Percent Yield Loss	2.77%
Yield w/o Insects	52.45
Ave. # Spray Applications	1.206
Seed Treated Acres	1,998,000
Scouted Acres	1,998,000

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$30,054,750	\$13.54
Seed Treatment Costs	\$23,976,000	\$10.80
Scouting costs	\$11,988,000	\$5.40
Total Costs	\$66,018,750	\$29.74
Yield Lost to insects	\$32,272,152	\$14.54
Total Losses + Costs	\$98,290,902	\$44.28

Stink Bug Composition	
Species	% of SB
Brown	30
Brown Marmorated	0
Green	30
Redbanded	11
Redshouldered	2
Southern Green	27
Total	100

Appendix 6. North Carolina soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	Overall % reduction	bushel lost per pest	Loss + Cost	Loss + Cost	% Total	
Armyworm complex	194,431	11.6%	60,289	3.6%	60,289	3.6%	1	\$9.00	0.50	0.036	\$0.32	0.06%	40,996	\$956,664	\$0.57	1.7%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	1,085,952	65.0%	249,445	14.9%	417,500	25.0%	1	\$8.00	0.50	0.250	\$2.00	0.33%	228,976	\$5,652,658	\$3.38	9.8%
Blister Beetle	7,536	0.5%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Corn Earworm	965,827	57.8%	581,033	34.8%	835,000	50.0%	1	\$12.00	5.00	0.500	\$6.00	2.89%	2,036,474	\$30,588,383	\$18.32	52.9%
Cutworms	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Dectes Stem Borer	50,000	3.0%	0	0.0%	0	0.0%	0	\$0.00	0.01	0.000	\$0.00	0.00%	211	\$2,130	\$0.00	0.0%
Garden Webworms	1,507	0.1%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grape Colaspis	238,141	14.3%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grasshopper	315,160	18.9%	16,681	1.0%	0	0.0%	0	\$0.00	0.10	0.000	\$0.00	0.02%	13,290	\$134,234	\$0.08	0.2%
Green Cloverworm	958,592	57.4%	153,736	9.2%	150,722	9.0%	1	\$8.00	0.10	0.090	\$0.72	0.06%	40,424	\$1,614,062	\$0.97	2.8%
Kudzu Bug	474,171	28.4%	49,738	3.0%	33,310	2.0%	1	\$8.00	0.10	0.020	\$0.16	0.03%	19,996	\$468,440	\$0.28	0.8%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Mexican Bean Beetle	331,588	19.9%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	458,195	27.4%	0	0.0%	25,000	1.5%	1	\$8.00	0.00	0.015	\$0.12	0.00%	0	\$200,000	\$0.12	0.3%
Saltmarsh Caterpillar	76,868	4.6%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Aphid	100,000	6.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	1,009,988	60.5%	330,081	19.8%	297,073	17.8%	1	\$12.00	2.00	0.178	\$2.13	1.21%	851,835	\$12,168,413	\$7.29	21.0%
Spider Mites	90,433	5.4%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Spotted Cucumber Beetle	633,032	37.9%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Stink Bugs (see box below)	1,031,692	61.8%	285,618	17.1%	263,764	15.8%	1	\$8.00	0.50	0.158	\$1.26	0.31%	217,535	\$4,307,217	\$2.58	7.4%
Threecornered Alfalfa Hopper	830,478	49.7%	0	0.0%	0	0.0%	0	\$0.00	0.50	0.000	\$0.00	0.25%	175,109	\$1,768,597	\$1.06	3.1%
Thrips	749,088	44.9%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Velvetbean Caterpillar	45,970	2.8%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
										1.247	\$12.72	5.15%	3,624,847	\$57,860,799	\$34.65	100.0%

SUMMARY DATA

Data Input	
State	NC
Year	2014
Total Acres	1,670,000
Yield/acre	40
Price/Bushel	\$10.10
% Acres Scouted	15
Scouting Fee/scouted acre	\$6.50
% Acres Insect Seed Trt.	31
Seed Trt Cost/treated ac	\$10.00

Yield & Management Results	
Total Bushels Harvested	66,800,000
Total Bushels Lost to Insects	3,624,847
Percent Yield Loss	5.15%
Yield w/o Insects	42.17
Ave. # Spray Applications	1.247
Seed Treated Acres	517,700
Scouted Acres	250,500

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$21,249,845	\$12.72
Seed Treatment Costs	\$5,177,000	\$3.10
Scouting costs	\$1,628,250	\$0.98
Total Costs	\$28,055,095	\$16.80
Yield Lost to insects	\$36,610,954	\$21.92
Total Losses + Costs	\$64,666,049	\$38.72

Stink Bug Composition	
Species	% of SB
Brown	50
Brown Marmorated	3
Green	41
Redbanded	0
Redshouldered	1
Southern Green	5
Total	100

Appendix 7. Tennessee soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost per pest	Loss + Cost	Loss + Cost	% Total
Armyworm complex	350,000	23.3%	70,000	4.7%	110,000	7.3%	1	\$9.00	0.40	0.073	\$0.66	0.09%	67,176	\$1,655,044	\$1.10	6.9%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	1,500,000	100.0%	18,000	1.2%	25,000	1.7%	1	\$7.75	0.10	0.017	\$0.13	0.10%	71,974	\$906,297	\$0.60	3.8%
Blister Beetle	15,000	1.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Corn Earworm	45,000	3.0%	7,000	0.5%	20,000	1.3%	1	\$11.00	3.00	0.013	\$0.15	0.09%	64,777	\$861,292	\$0.57	3.6%
Cutworms	4,000	0.3%	0	0.0%	400	0.0%	1	\$7.25	0.02	0.000	\$0.00	0.00%	38	\$3,280	\$0.00	0.0%
Dectes Stem Borer	1,300,000	86.7%	0	0.0%	3,000	0.2%	1	\$7.75	0.30	0.002	\$0.02	0.26%	187,134	\$1,875,872	\$1.25	7.8%
Garden Webworms	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grape Colaspis	13,000	0.9%	0	0.0%	0	0.0%	0	\$0.00	0.05	0.000	\$0.00	0.00%	312	\$3,088	\$0.00	0.0%
Grasshopper	80,000	5.3%	200	0.0%	0	0.0%	0	\$0.00	0.05	0.000	\$0.00	0.00%	1,919	\$19,001	\$0.01	0.1%
Green Cloverworm	1,400,000	93.3%	30,000	2.0%	40,000	2.7%	1	\$7.75	0.30	0.027	\$0.21	0.28%	201,528	\$2,305,132	\$1.54	9.5%
Kudzu Bug	50,000	3.3%	3,500	0.2%	3,000	0.2%	1	\$7.75	1.00	0.002	\$0.02	0.03%	23,991	\$260,766	\$0.17	1.1%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Mexican Bean Beetle	1,000	0.1%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Aphid	20,000	1.3%	800	0.1%	200	0.0%	1	\$7.75	0.10	0.000	\$0.00	0.00%	960	\$11,051	\$0.01	0.0%
Soybean Looper	300,000	20.0%	2,500	0.2%	7,000	0.5%	1	\$14.00	0.20	0.005	\$0.07	0.04%	28,790	\$383,019	\$0.26	1.6%
Spider Mites	20,000	1.3%	0	0.0%	0	0.0%	0	\$0.00	0.05	0.000	\$0.00	0.00%	480	\$4,750	\$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Stink Bugs (see box below)	1,300,000	86.7%	440,000	29.3%	570,000	38.0%	1.2	\$7.75	1.10	0.456	\$3.53	0.95%	686,156	\$12,093,948	\$8.06	50.1%
Threecornered Alfalfa Hopper	700,000	46.7%	32,000	2.1%	30,000	2.0%	1	\$7.75	0.20	0.020	\$0.16	0.09%	67,176	\$897,544	\$0.60	3.7%
Thrips	1,500,000	100.0%	0	0.0%	50,000	3.3%	1	\$7.25	0.10	0.033	\$0.24	0.10%	71,974	\$1,075,047	\$0.72	4.5%
Trochanter Mealybug	400	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.30	0.000	\$0.00	0.00%	58	\$570	\$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0	\$7.25	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Other	0	0.0%	0	0.0%	600,000	40.0%	1	\$3.00	0.00	0.400	\$1.20	0.00%	0	\$1,800,000	\$1.20	7.5%
							1.048				\$6.37	2.05%	1,474,444	\$24,155,700	\$16.10	100.0%

SUMMARY DATA

Data Input		Yield & Management Results		Economic Results		Stink Bug Composition		
State	TN	Total Bushels Harvested	70,500,000	Foliar Insecticides Costs	Total \$9,558,700	Per Acre \$6.37	Species	% of SB
Year	2014	Total Bushels Lost to Insects	1,474,444	Seed Treatment Costs	\$5,460,000	\$3.64	Brown	10
Total Acres	1,500,000	Percent Yield Loss	2.05%	Scouting costs	\$4,387,500	\$2.93	Brown Marmorated	2
Yield/acre	47	Yield w/o Insects	47.98	Total Costs	\$19,406,200	\$12.94	Green	87
Price/Bushel	\$9.90	Ave. # Spray Applications	1.048	Yield Lost to insects	\$14,597,000	\$9.73	Redbanded	0
% Acres Scouted	45	Seed Treated Acres	780,000	Total Losses + Costs	\$34,003,200	\$22.67	Redshouldered	1
Scouting Fee/scouted acre	\$6.50	Scouted Acres	675,000				Southern Green	0
% Acres Insect Seed Trt.	52						Total	100
Seed Trt Cost/treated ac	\$7.00							

Appendix 8. Virginia soybean insect losses, 2014.

Pest	Acres Infested	% Acres Infested	Acres above ET	% Acres above ET	Acres Treated	% Acres Treated	# of apps/acres treated	Cost of 1 Insecticide	% loss per acre infested	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost per pest	Loss + Cost	Loss + Cost Cost/acre	% Total Loss + Cost		
Army worm complex	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Bean Leaf Beetle	3,000	0.5%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Blister Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Corn Earw orm	1,000	0.2%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Cutw orms	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Dectes Stem Borer	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Garden Webw orms	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Grasshopper	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Green Cloverw orm	500	0.1%	0	0.0%	0	0.0%	1	\$7.50	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Kudzu Bug	5,000	0.8%	150	0.0%	150	0.0%	1	\$7.50	0.00	0.000	\$0.00	0.00%	0	\$1,125	\$0.00	0.0%		
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Potato Leafhopper	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Soybean Aphid	500	0.1%	200	0.0%	150	0.0%	1	\$7.50	0.00	0.000	\$0.00	0.00%	0	\$1,125	\$0.00	0.0%		
Soybean Looper	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Stink Bugs (see box below)	150,000	25.0%	25,000	4.2%	50,000	8.3%	1	\$7.50	5.00	0.083	\$0.63	1.25%	303,797	\$4,324,367	\$7.21	99.9%		
Threecornered Alfalfa Hopper	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Thrips	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
Other	0	0.0%	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%		
												0.084	\$0.63	1.25%	303,797	\$4,326,617	\$7.21	100.0%

SUMMARY DATA

Data Input	
State	VA
Year	2014
Total Acres	600,000
Yield/acre	40
Price/Bushel	\$13.00
% Acres Scouted	30
Scouting Fee/scouted acre	\$6.50
% Acres Insect Seed Trt.	25
Seed Trt Cost/treated ac	\$10.00

Yield & Management Results	
Total Bushels Harvested	24,000,000
Total Bushels Lost to Insects	303,797
Percent Yield Loss	1.25%
Yield w/o Insects	40.51
Ave. # Spray Applications	0.084
Seed Treated Acres	150,000
Scouted Acres	180,000

Economic Results		
	Total	Per Acre
Foliar Insecticides Costs	\$377,250	\$0.63
Seed Treatment Costs	\$1,500,000	\$2.50
Scouting costs	\$1,170,000	\$1.95
Total Costs	\$3,047,250	\$5.08
Yield Lost to insects	\$3,949,367	\$6.58
Total Losses + Costs	\$6,996,617	\$11.66

Stink Bug Composition	
Species	% of SB
Brow n	15
Brow n Marmorated	2
Green	83
Redbanded	0
Redshouldered	0
Southern Green	0
Total	100