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Report

2019 Soybean Insect Losses in the United States

Musser, F. R.*[1], A. L. Catchot, Jr.[1], S. P. Conley[2], J. A. Davis[3], C. DiFonzo[4], J. K. Greene[5], G. M. Lorenz[6], D. Owens[7], D. D. Reisig[8], P. Roberts[9], T. Royer[10], N. J. Seiter[11], R. Smith[12], S. D. Stewart[13], S. Taylor[14], K. Tilmon[15], R. T. Villanueva[16], and M. O. Way[17]

[1] Mississippi State University, Department of Biochem., Mol. Biol., Entomol. and Plant Pathol., Box 9775, Mississippi State, MS 39762

[2] University of Wisconsin, Department of Agronomy, [3] Louisiana State University Agricultural Center, Department of Entomology, [4] Michigan State University, Department of Entomology, [5] Clemson University, Edisto REC, [6] University of Arkansas CES, Lonoke Extension Center, [7] University of Delaware, Carvel REC, [8] North Carolina State University, The Vernon James REC, [9] University of Georgia, Department of Entomology, [10] Oklahoma State University, Department of Entomol. and Plant Pathol., [11] University of Illinois, Department of Crop Sciences, [12] Auburn University, [13] University of Tennessee, WTREC, [14] Virginia Tech, Tidewater Agricultural REC, [15] Ohio State University, OARDC, [16] University of Kentucky REC, [17] Texas A&M University, Beaumont Center

*corresponding author email: fm61@msstate.edu

Abstract Estimated insect management costs and losses due to insects in soybean during the 2019 growing season were collected and compiled from 17 states to provide a record of insect pressure and management practices for the year. These annual estimates provide an historical record of pest pressure and insect management and have been compiled in some states since 2004. Participating states represented 39% of soybean acreage grown in the United States, with near 100% participation in southern states. Overall, the stink bug complex was the costliest insect pest in soybean followed by corn earworm. Total insect management costs were $15.48 per acre, with estimated crop losses to insects at $9.61 per acre, making the 2019 total costs plus losses $25.09 per acre. State estimates varied widely, with insect management costs plus losses in four states averaging less than $10/ac while averaging more than $50/ac in five states. Similarly, the average number of insecticide applications per crop ranged from ≤0.1 in three states to 2.4 in Louisiana.

Key Words: soybean, yield loss, pest management

Introduction

Numerous insects cause injury to soybeans every year, often reducing yield and quality. To obtain an estimate of the impact of these insects at a state and national scale, an effort was started to annually compile the opinions of entomologists from each state regarding pest pressure and management strategy adoption. Soybean insect loss estimates have been compiled annually since 2004 in Mississippi (Musser and Catchot 2008), with 16 other states beginning to make estimates between 2008 and 2018. These estimates are “best guesses” by university personnel, primarily entomologists, who have been involved in state-wide monitoring of soybean throughout the year. While the costs and losses estimated for an insect pest in any given year are somewhat subjective, these losses provide an historical record of pest pressure and management practices and an estimate of the economic impact of the various soybean

pests. Over time, the changes in estimated losses and insecticide applications provide a record of shifts in insect pests and management practices.

Materials and Methods

Statewide estimates were made based on informal communication of an author from each state with university faculty, Extension personnel, private crop consultants and/or industry professionals who were actively engaged in soybean production in that state (see appendices for submitted data from each state). 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 a spreadsheet to make the various calculations. Actual formulas used in the spreadsheet were published by Musser and Catchot (2008). Additional columns were added for the 2013 losses and these are defined in Musser et al (2014).

Results and Discussion

Harvested acreage in the reporting states was 29.5 million acres (1 acre= 0.405 hectare), which represents 39% of the 75.0 million acres of soybean harvested in the United States during 2019 (USDA NASS). Nearly all southern soybean-producing states participated, while participation in the midwestern and northern states was less than 50%. As a result, the overall averages of insect costs and losses in this report are likely greater than the true national averages since insect management costs and losses in the southern states are typically greater than in the northern states. Average combined management costs and yield losses attributed to insects were estimated at $25.09/ac for 2019, but this varied widely among states, ranging from $5.67/ac in Wisconsin to $85.72/ac in Texas. Average yield losses from insects were estimated at 2.3% (1.1 bu/ac or 75 kg/ha), but this also varied from 0.03% in Wisconsin to 11.8% in Texas. The adoption of insect management strategies also varied among states (Table 1).

As in most preceding years, the seed-feeding complex of stink bugs (Hemiptera: Pentatomidae) was the most costly insect pest of soybean overall during 2019 in terms of lost yield (0.87%) and management costs ($2.78/ac), comprising 36% of all combined insect costs + losses. This complex was considered the most economically damaging pest in 11 of the 17 reporting states. The primary species in the complex during 2019 were brown (*Euschistus* spp.) and green (*Chinavia hilaris*) stink bugs. Brown marmorated (*Halyomorpha halys*) and southern green (*Nezara viridula*) stink bugs were tied as the third most prominent stink bug species overall. Green, brown, southern green, redbanded (*Piezodorus guildinii*), and brown marmorated stink bugs were each the primary species in the stink bug complex in at least one state.

Corn earworm, *Helicoverpa zea* (Lepidoptera: Noctuidae), was the second most damaging pest during 2019, like previous years. As in 2018 (Musser et al 2019), corn earworm was considered the costliest insect pest in Arkansas, Delaware, and North Carolina. Overall, it was responsible for 22.3% of all insect costs and losses.

Soybean looper, *Chrysodeixis includens* (Lepidoptera: Noctuidae) was the only other insect responsible for >10% of overall costs + losses. It was not the most expensive insect in any state but was prominent in most southern states. The next most costly insects in terms of percent of total insect losses + control costs were bean leaf beetle, *Ceratoma trifurcata* (Coleoptera: Chrysomelidae) (7.3%), velvetbean caterpillar, *Anticarsia gemmatalis* (Lepidoptera: Noctuidae) (3.2%), Dectes stem borer, *Dectes texanus* (Coleoptera: Cerambycidae) (2.4%), and green cloverworm, *Hypena scabra* (Lepidoptera: Erebidae) (2.3%). Japanese beetle, *Popillia japonica* (Coleoptera: Scarabaeidae), which was the 5th most damaging insect during 2018 (Musser et al 2019), was only responsible for 0.3% of all insect losses + costs in 2019.

Painted lady, *Vanessa cardui* (Lepidoptera: Nymphalidae), was found commonly in Illinois at non-economic levels during 2019, and is the primary insect recorded in the “Other” category.

State Highlights

Alabama. The stink bug complex, primarily southern green stink bug, was the primary pest, accounting for 76% of insecticide applications and costing growers $19.77/acre. All other insect-related costs + losses combined were $12.31/acre. Total insect-related yield losses more than doubled from 2018 (Musser et al 2019), increasing from $9.91/ac in 2018 to $21.10/ac in 2019.

Arkansas. Corn earworm and stink bugs were the primary pests during 2019, combined accounting for 72% of all insect costs + losses. Total insect-related expenses were similar to 2018 (Musser et al 2019), but yield losses from insects decreased from $41.50/ac in 2018 to $28.69/ac in 2019.

Delaware. Corn earworm was the primary pest in 2019, responsible for 50% of insect costs + losses. Grasshoppers and stink bugs were the only other substantial pests during 2019.

Georgia. Stink bugs and velvetbean caterpillar were the primary pests during 2019. Estimated costs + losses to insects decreased from $28.49/ac in 2018 (Musser et al 2019) to $17.29/ac in 2019.

Illinois. Continuing a trend observed in 2018 (Musser et al 2019), the percentage of soybeans receiving automatic insecticide applications decreased during 2019, but they still accounted for nearly all foliar insecticide applications. Slugs were the most damaging “insect”, but they only contributed $0.35/ac to total insect costs + losses of $7.73/ac. The largest single insect-related expense during 2019 was insecticide seed treatments.

Kentucky. As in 2018, stink bug and bean leaf beetle were the primary pests. However, foliar applications to control Dectes stem borer was also common in 2019, rising from 10% of acres in 2018 (Musser et al 2019) to 30% of acres in 2019.

Louisiana. As observed in 2017 and 2018 (Musser et al 2018, 2019), stink bugs and soybean looper were the primary pests. Total costs + losses were similar to 2018 (Musser et al 2019).

Michigan. Slugs were the only “insect” reported to be present at economically damaging levels. The primary insect cost was for insecticide seed treatments, which were used on 75% of acreage.

Mississippi. Stink bug was the primary pest. Overall the number of foliar insecticide applications rose from 1.4 in 2018 (Musser et al 2019) to 2.1 in 2019, primarily due to increased applications targeting corn earworm, soybean looper, and velvetbean caterpillar.

North Carolina. Corn earworm remained the primary pest, accounting for 52% of insect costs + losses. Soybean looper and stink bugs were the other substantial pests. Garden fleahopper, *Microtechnites bractatus* (Hemiptera: Miridae), was the pest reported in the “Other” category.

Ohio. The stink bug complex, dominated by brown marmorated stink bug, accounted for 73% of insect costs + losses. However, overall estimated costs + losses from insects decreased from $33.72/ac in 2018 (Musser et al 2019) to $16.85 in 2019.

Oklahoma. Almost all insect-related losses were from stink bug in 2019. However, overall costs + losses were less than $10.00/acre.

South Carolina. Stink bugs and kudzu bug were the primary pests during 2019. Overall costs + losses increased from $33.28/ac in 2018 (Musser et al 2019) to $43.01/ac in 2019.

Tennessee. Stink bugs and corn earworm were the primary pests. While the number of foliar applications increased from 0.66/ac in 2018 (Musser et al 2019) to 1.07 in 2019, the overall costs + losses remained similar in 2018 and 2019.

Texas. As in previous years stink bug, mainly redbanded stink bug, was the primary pest in the state with the greatest estimated total insect costs + losses. No other insect caused more than $5/ac in costs plus losses.

Virginia. For the second consecutive year (Musser et al 2019), stink bug was the primary insect pest during 2019 followed by corn earworm.

Wisconsin. Japanese beetle and seedcorn maggot were the primary pests. Overall costs + losses to insects were minimal in 2019, like 2018 (Musser et al 2019) with costs + losses estimated between $5/ac and $6/ac during both years.

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

Table 1. Soybean insect management practices by state, 2019.

State	Soybean Acres[1] (x1000)	% soybean acres[1]			Average Number of Foliar Applications
		Scouted	Insecticide Seed Treatment	Foliar Insecticide w/o known target (automatic)	
Alabama	280	35	35	0	0.99
Arkansas	2,650	80	75	29	2.15
Delaware	153	70	25	49	0.90
Georgia	95	40	20	0	0.82
Illinois	9,940	10	50	50	0.51
Kentucky	1,650	55	80	0	1.37
Louisiana	1,000	90	95	0	2.36
Michigan	1,720	5	75	5	0.05
Mississippi	1,650	93	80	0	2.07
North Carolina	1,530	25	33	0	1.31
Ohio	4,300	20	80	0	0.15
Oklahoma	440	15	30	0	0.10
South Carolina	350	30	30	0	1.94
Tennessee	1,380	43	70	20	1.07
Texas	60	20	80	0	1.35
Virginia	600	10	10	0	0.81
Wisconsin	1,730	70	40	0	0.02
Average (weighted by acres)		34	61	21	0.84

[1] 1 acre = 0.405 ha

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USDA NASS. United States Department of Agriculture National Agricultural Statistics Service, Data and Statistics, https://quickstats.nass.usda.gov/.

List of Appendices

Appendix 1. Overall soybean insect losses from 17 reporting states, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	3,206,816	10.9%	397,970	1.3%	431,490	1.5%	0.92	$10.42	0.143	0.014	$0.14	0.02%	221,497	$6,098,519	$0.21	1.2%
Banded Cucumber Beetle	1,916,494	6.5%	0	0.0%	0	0.0%	0.00	$0.00	0.002	0.000	$0.00	0.00%	1,598	$14,009	$0.00	0.0%
Bean Leaf Beetle	17,495,462	59.3%	986,394	3.3%	1,195,565	4.0%	1.07	$10.51	0.339	0.043	$0.46	0.20%	2,870,922	$38,600,877	$1.31	7.3%
Blister Beetle	1,615,002	5.5%	102,150	0.3%	104,800	0.4%	1.00	$10.28	0.204	0.004	$0.04	0.01%	159,862	$2,478,273	$0.08	0.5%
Corn Earworm	5,252,975	17.8%	2,219,970	7.5%	2,870,170	9.7%	1.12	$12.12	3.519	0.109	$1.32	0.63%	8,953,694	$117,427,742	$3.98	22.3%
Cutworms	1,227,740	4.2%	172,130	0.6%	232,882	0.8%	1.00	$9.06	0.010	0.008	$0.07	0.00%	5,903	$2,162,065	$0.07	0.4%
Dectes Stem Borer	8,260,050	28.0%	495,100	1.7%	546,620	1.9%	1.00	$8.13	0.234	0.019	$0.15	0.07%	934,286	$12,633,547	$0.43	2.4%
Garden Webworms	506,944	1.7%	0	0.0%	0	0.0%	0.00	$0.00	0.015	0.000	$0.00	0.00%	3,596	$31,521	$0.00	0.0%
Grape Colaspis	5,052,450	17.1%	0	0.0%	0	0.0%	0.00	$0.00	0.009	0.000	$0.00	0.00%	22,385	$196,216	$0.01	0.0%
Grasshopper	14,742,350	49.9%	162,895	0.6%	128,740	0.4%	1.09	$8.71	0.028	0.005	$0.04	0.01%	198,446	$2,961,179	$0.10	0.6%
Green Cloverworm	18,793,725	63.6%	958,620	3.2%	795,800	2.7%	0.77	$9.42	0.082	0.021	$0.20	0.05%	742,155	$12,281,598	$0.42	2.3%
Japanese Beetle	14,514,300	49.2%	117,100	0.4%	136,520	0.5%	1.00	$7.84	0.012	0.005	$0.04	0.01%	87,157	$1,834,970	$0.06	0.3%
Kudzu Bug	3,246,500	11.0%	998,600	3.4%	604,450	2.0%	1.01	$8.54	0.387	0.021	$0.18	0.04%	608,827	$10,533,136	$0.36	2.0%
Lesser Cornstalk Borer	224,905	0.8%	18,000	0.1%	11,150	0.0%	1.00	$10.74	0.114	0.000	$0.00	0.00%	12,471	$229,115	$0.01	0.0%
Mexican Bean Beetle	224,210	0.8%	0	0.0%	0	0.0%	0.00	$0.00	0.478	0.000	$0.00	0.00%	51,870	$454,667	$0.02	0.1%
Potato Leafhopper	6,875,700	23.3%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	799	$7,005	$0.00	0.0%
Saltmarsh Caterpillar	4,297,450	14.6%	16,776	0.1%	28,150	0.1%	1.00	$10.23	0.058	0.001	$0.01	0.01%	121,308	$1,351,430	$0.05	0.3%
Seedcorn Maggot	311,813	1.1%	34,800	0.1%	0	0.0%	0.00	$0.00	0.122	0.000	$0.00	0.00%	18,452	$161,744	$0.01	0.0%
Slugs	4,936,750	16.7%	95,200	0.3%	53,760	0.2%	1.00	$40.53	0.256	0.002	$0.07	0.04%	612,124	$7,544,626	$0.26	1.4%
Soybean Aphid	3,435,150	11.6%	8,650	0.0%	8,650	0.0%	1.00	$8.50	0.000	0.000	$0.00	0.00%	628	$79,033	$0.00	0.0%
Soybean Looper	6,135,300	20.8%	2,154,020	7.3%	2,163,700	7.3%	0.97	$15.96	0.892	0.071	$1.14	0.19%	2,651,615	$56,817,449	$1.92	10.8%
Spider Mites	1,336,600	4.5%	66,320	0.2%	90,820	0.3%	1.08	$9.57	0.223	0.003	$0.03	0.01%	144,231	$2,204,614	$0.07	0.4%
Spotted Cucumber Beetle	12,155,800	41.2%	3,060	0.0%	3,060	0.0%	1.00	$8.00	0.015	0.000	$0.00	0.01%	90,896	$821,229	$0.03	0.2%
Stink Bugs (see box below)	21,910,650	74.2%	5,469,270	18.5%	5,961,980	20.2%	1.34	$10.29	1.173	0.270	$2.78	0.87%	12,445,100	$191,148,549	$6.47	36.3%
Threecornered Alfalfa Hopper	8,618,700	29.2%	340,700	1.2%	252,850	0.9%	0.68	$8.04	0.102	0.006	$0.05	0.03%	426,522	$5,119,928	$0.17	1.0%
Thrips	11,669,000	39.5%	82,500	0.3%	16,680	0.1%	1.00	$7.98	0.002	0.001	$0.00	0.00%	13,367	$250,264	$0.01	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	4,013,200	13.6%	1,041,330	3.5%	1,017,000	3.4%	0.85	$9.99	0.492	0.029	$0.29	0.07%	956,343	$17,044,918	$0.58	3.2%
Other	6,318,440	21.4%	994	0.0%	3,022	0.0%	1.00	$7.24	0.002	0.000	$0.00	0.00%	7,410	$86,826	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	6,175,500	20.9%	1.01	$5.80	0.000	0.211	$1.22	0.00%	0	$36,122,522	$1.22	6.9%
										0.841	**$8.23**	**2.26%**	**32,363,463**	**$526,697,570**	**$17.84**	**100.0%**

SUMMARY DATA

Data Input

State	Combined
Year	2019
Total Acres	29,528,000
Yield/acre	47.34
Price/Bushel	$8.77
% Acres Scouted	34
Scouting Fee/scouted acre	$7.27
% Acres Insect Seed Trt.	61
Seed Trt Cost/treated ac	$7.85

Yield & Management Results

Total Bushels Harvested	1,397,714,000
Total Bushels Lost to Insects	32,363,463
Percent Yield Loss	2.26%
Yield w/o Insects	48.43
Ave. # Spray Applications	0.841
Seed Treated Acres	17,946,770
Scouted Acres	10,075,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$243,014,755	$8.23
Seed Treatment Costs	$140,837,594	$4.77
Scouting costs	$73,280,510	$2.48
Total Costs	$457,132,858	$15.48
Yield Lost to insects	$283,682,815	$9.61
Total Losses + Costs	$740,815,673	$25.09

Stink Bug Composition

Species	% of SB
Brown	39.9
Brown Marmorated	8.6
Green	36.1
Redbanded	4.4
Redshouldered	2.4
Southern Green	8.6
Total	100.0

Appendix 2. Alabama soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	5,600	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	56,000	20.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	70,000	25.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	28,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earworm	28,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Cutworms	8,400	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%
Dectes Stem Borer	14,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webworms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	266,000	95.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverworm	280,000	100.0%	8,400	3.0%	2,800	1.0%	1.00	$7.00	0.000	0.010	$0.07	0.00%	0	$19,600	$0.07	0.2%
Japanese Beetle	2,800	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	196,000	70.0%	33,600	12.0%	28,000	10.0%	1.00	$7.00	1.000	0.100	$0.70	0.70%	79,074	$907,668	$3.24	11.5%
Lesser Cornstalk Borer	8,400	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%
Mexican Bean Beetle	5,600	2.0%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	2,800	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	56,000	20.0%	28,000	10.0%	14,000	5.0%	1.00	$11.00	3.000	0.050	$0.55	0.60%	67,778	$764,001	$2.73	9.7%
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	84,000	30.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	280,000	100.0%	238,000	85.0%	210,000	75.0%	1.00	$7.00	4.000	0.750	$5.25	4.00%	451,853	$5,536,674	$19.77	70.1%
Threecornered Alfalfa Hopper	280,000	100.0%	5,600	2.0%	0	0.0%	0.00	$0.00	0.010	0.000	$0.00	0.01%	1,130	$10,167	$0.04	0.1%
Thrips	280,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	70,000	25.0%	42,000	15.0%	22,400	8.0%	1.00	$7.00	2.000	0.080	$0.56	0.50%	56,482	$665,134	$2.38	8.4%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**0.990**	**$7.13**	**5.81%**	**656,316**	**$7,903,244**	**$28.23**	**100.0%**

SUMMARY DATA

Data Input

State	AL
Year	2019
Total Acres	280,000
Yield/acre	38
Price/Bushel	$9.00
% Acres Scouted	35
Scouting Fee/scouted acre	$6.00
% Acres Insect Seed Trt.	35
Seed Trt Cost/treated ac	$5.00

Yield & Management Results

Total Bushels Harvested	10,640,000
Total Bushels Lost to Insects	656,316
Percent Yield Loss	5.81%
Yield w/o Insects	40.34
Ave. # Spray Applications	0.990
Seed Treated Acres	98,000
Scouted Acres	98,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$1,996,400	$7.13
Seed Treatment Costs	$490,000	$1.75
Scouting costs	$588,000	$2.10
Total Costs	$3,074,400	$10.98
Yield Lost to insects	$5,906,844	$21.10
Total Losses + Costs	$8,981,244	$32.08

Stink Bug Composition

Species	% of SB
Brown	22
Brown Marmorated	3
Green	15
Redbanded	0
Redshouldered	0
Southern Green	60
Total (make it 100%)	100

Appendix 3. Arkansas soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	1,722,500	65.0%	238,500	9.0%	251,750	9.5%	1.00	$12.00	0.050	0.095	$1.14	0.03%	45,820	$3,431,549	$1.29	2.4%
Banded Cucumber Beetle	79,500	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%
Bean Leaf Beetle	2,650,000	100.0%	185,500	7.0%	212,000	8.0%	1.00	$12.00	0.050	0.080	$0.96	0.05%	70,493	$3,175,613	$1.20	2.2%
Blister Beetle	212,000	8.0%	92,750	3.5%	95,400	3.6%	1.00	$10.50	0.000	0.036	$0.38	0.00%	0	$1,001,700	$0.38	0.7%
Corn Earw orm	2,286,950	86.3%	795,000	30.0%	1,060,000	40.0%	1.25	$12.00	4.000	0.500	$6.00	3.45%	4,866,806	$59,506,584	$22.46	41.4%
Cutw orms	397,500	15.0%	132,500	5.0%	145,750	5.5%	1.00	$10.00	0.020	0.055	$0.55	0.00%	4,230	$1,495,397	$0.56	1.0%
Dectes Stem Borer	1,828,500	69.0%	0	0.0%	39,750	1.5%	1.00	$10.00	0.000	0.015	$0.15	0.00%	0	$397,500	$0.15	0.3%
Garden Webw orms	185,500	7.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	2,650,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	2,650,000	100.0%	42,400	1.6%	26,500	1.0%	1.00	$12.00	0.050	0.010	$0.12	0.05%	70,493	$949,613	$0.36	0.7%
Green Cloverw orm	2,650,000	100.0%	0	0.0%	53,000	2.0%	1.00	$10.00	0.000	0.020	$0.20	0.00%	0	$530,000	$0.20	0.4%
Japanese Beetle	26,500	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	795,000	30.0%	0	0.0%	13,250	0.5%	1.00	$10.00	0.000	0.005	$0.05	0.00%	0	$132,500	$0.05	0.1%
Lesser Cornstalk Borer	6,805	0.3%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Potato Leafhopper	2,650,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	2,517,500	95.0%	0	0.0%	26,500	1.0%	1.00	$10.00	0.070	0.010	$0.10	0.07%	93,755	$1,105,046	$0.42	0.8%
Seedcorn maggot	188,813	7.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	384,250	14.5%	53,000	2.0%	26,500	1.0%	1.00	$28.00	0.010	0.010	$0.28	0.00%	2,044	$760,317	$0.29	0.5%
Soybean Aphid	185,500	7.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	1,722,500	65.0%	636,000	24.0%	530,000	20.0%	1.00	$17.50	0.500	0.200	$3.50	0.33%	458,202	$13,380,487	$5.05	9.3%
Spider Mites	53,000	2.0%	13,250	0.5%	47,700	1.8%	1.00	$10.00	0.000	0.018	$0.18	0.00%	0	$477,000	$0.18	0.3%
Spotted Cucumber Beetle	2,650,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	2,650,000	100.0%	1,356,800	51.2%	1,484,000	56.0%	1.20	$10.50	2.000	0.672	$7.06	2.00%	2,819,702	$43,962,933	$16.59	30.6%
Threecornered Alfalfa Hopper	2,650,000	100.0%	0	0.0%	31,800	1.2%	1.00	$10.00	0.000	0.012	$0.12	0.00%	0	$318,000	$0.12	0.2%
Thrips	2,650,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	2,014,000	76.0%	357,750	13.5%	318,000	12.0%	1.00	$10.50	0.050	0.120	$1.26	0.04%	53,574	$3,819,026	$1.44	2.7%
Other	1,431,000	54.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	768,500	29.0%	1.00	$12.00	0.000	0.290	$3.48	0.00%	0	$9,222,000	$3.48	6.4%
									TOTAL	**2.148**	**$25.52**	**6.02%**	**8,485,119**	**$143,665,265**	**$54.21**	**100.0%**

SUMMARY DATA

Data Input

State	AR
Year	2019
Total Acres	2,650,000
Yield/acre	50
Price/Bushel	$8.96
% Acres Scouted	80
Scouting Fee/scouted acre	$7.50
% Acres Insect Seed Trt.	75
Seed Trt Cost/treated ac	$8.00

Yield & Management Results

Total Bushels Harvested	132,500,000
Total Bushels Lost to Insects	8,485,119
Percent Yield Loss	6.02%
Yield w/o Insects	53.20
Ave. # Spray Applications	2.148
Seed Treated Acres	1,987,500
Scouted Acres	2,120,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$67,638,600	$25.52
Seed Treatment Costs	$15,900,000	$6.00
Scouting costs	$15,900,000	$6.00
Total Costs	$99,438,600	$37.52
Yield Lost to insects	$76,026,665	$28.69
Total Losses + Costs	$175,465,265	$66.21

Stink Bug Composition

Species	% of SB
Brown	25
Brown Marmorated	0
Green	40
Redbanded	2
Redshouldered	8
Southern Green	25
Total (make it 100%)	100

Appendix 4. Delaware soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	13,714	9.0%	3,170	2.1%	440	0.3%	1.00	$8.50	0.250	0.003	$0.02	0.02%	1,352	$15,407	$0.10	0.5%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	54,762	35.8%	10,600	6.9%	1,725	1.1%	1.00	$8.50	0.750	0.011	$0.10	0.27%	16,196	$154,432	$1.01	5.4%
Blister Beetle	50,000	32.7%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	89,775	58.7%	45,770	29.9%	40,770	26.6%	1.10	$15.00	2.500	0.293	$4.40	1.47%	88,502	$1,436,481	$9.39	49.9%
Cutw orms	240	0.2%	10	0.0%	0	0.0%	0.00	$0.00	2.500	0.000	$0.00	0.00%	237	$2,042	$0.01	0.1%
Dectes Stem Borer	18,850	12.3%	0	0.0%	0	0.0%	0.00	$0.00	0.750	0.000	$0.00	0.09%	5,575	$48,111	$0.31	1.7%
Garden Webw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	750	0.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	71,750	46.9%	2,145	1.4%	4,590	3.0%	1.00	$8.50	1.250	0.030	$0.26	0.59%	35,366	$344,227	$2.25	11.9%
Green Cloverw orm	151,225	98.8%	5,870	3.8%	4,100	2.7%	1.00	$8.50	0.250	0.027	$0.23	0.25%	14,908	$163,507	$1.07	5.7%
Japanese Beetle	81,800	53.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	65,000	42.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	5,000	3.3%	1,000	0.7%	0	0.0%	0.00	$0.00	0.700	0.000	$0.00	0.02%	1,380	$11,911	$0.08	0.4%
Slugs	20,000	13.1%	0	0.0%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.07%	3,943	$34,031	$0.22	1.2%
Soybean Aphid	39,750	26.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	12,200	8.0%	1,500	1.0%	1,300	0.8%	1.00	$13.50	1.000	0.008	$0.11	0.08%	4,811	$59,067	$0.39	2.1%
Spider Mites	24,550	16.0%	7,700	5.0%	4,650	3.0%	1.00	$9.75	1.000	0.030	$0.30	0.16%	9,681	$128,883	$0.84	4.5%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	63,050	41.2%	2,100	1.4%	1,200	0.8%	1.00	$8.50	1.500	0.008	$0.07	0.62%	37,294	$332,045	$2.17	11.5%
Threecornered Alfalfa Hopper	10,000	6.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	153,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	40	0.0%	0	0.0%	40	0.0%	1.00	$25.00	0.000	0.000	$0.01	0.00%	0	$1,000	$0.01	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	75,000	49.0%	1.00	$2.00	0.000	0.490	$0.98	0.00%	0	$150,000	$0.98	5.2%
									TOTAL	**0.901**	**$6.46**	**3.63%**	**219,245**	**$2,881,143**	**$18.83**	**100.0%**

SUMMARY DATA

Data Input

State	DE
Year	2019
Total Acres	153,000
Yield/acre	38
Price/Bushel	$8.63
% Acres Scouted	70
Scouting Fee/scouted acre	$7.50
% Acres Insect Seed Trt.	25
Seed Trt Cost/treated ac	$5.50

Yield & Management Results

Total Bushels Harvested	5,814,000
Total Bushels Lost to Insects	219,245
Percent Yield Loss	3.63%
Yield w /o Insects	39.43
Ave. # Spray Applications	0.901
Seed Treated Acres	38,250
Scouted Acres	107,100

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$989,060	$6.46
Seed Treatment Costs	$210,375	$1.38
Scouting costs	$803,250	$5.25
Total Costs	$2,002,685	$13.09
Yield Lost to insects	$1,892,083	$12.37
Total Losses + Costs	$3,894,768	$25.46

Stink Bug Composition

Species	% of SB
Brow n	46
Brow n Marmorated	12
Green	42
Redbanded	0
Redshouldered	0
Southern Green	0
Total (make it 100%)	100

Appendix 5. Georgia soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	2	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	2,500	2.6%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	1,000	1.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Cutw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	3,000	3.2%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverw orm	50,000	52.6%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Japanese Beetle	2,000	2.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	45,000	47.4%	2,000	2.1%	1,500	1.6%	1.00	$6.00	1.000	0.016	$0.09	0.47%	12,023	$117,204	$1.23	9.4%
Lesser Cornstalk Borer	7,500	7.9%	500	0.5%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Potato Leafhopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	50,000	52.6%	5,000	5.3%	6,500	6.8%	1.00	$14.00	1.000	0.068	$0.96	0.53%	13,359	$211,227	$2.22	17.0%
Spider Mites	1,000	1.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	80,000	84.2%	20,000	21.1%	15,000	15.8%	1.00	$6.00	2.000	0.158	$0.95	1.68%	42,747	$474,727	$5.00	38.2%
Threecornered Alfalfa Hopper	1,000	1.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	50,000	52.6%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	80,000	84.2%	5,000	5.3%	55,000	57.9%	1.00	$8.00	0.000	0.579	$4.63	0.00%	0	$440,000	$4.63	35.4%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**0.821**	**$6.63**	**2.68%**	**68,129**	**$1,243,158**	**$13.09**	**100.0%**

SUMMARY DATA

Data Input

State	GA
Year	2019
Total Acres	95,000
Yield/acre	26
Price/Bushel	$9.00
% Acres Scouted	40
Scouting Fee/scouted acre	$6.00
% Acres Insect Seed Trt.	20
Seed Trt Cost/treated ac	$9.00

Yield & Management Results

Total Bushels Harvested	2,470,000
Total Bushels Lost to Insects	68,129
Percent Yield Loss	2.68%
Yield w /o Insects	26.72
Ave. # Spray Applications	0.821
Seed Treated Acres	19,000
Scouted Acres	38,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$630,000	$6.63
Seed Treatment Costs	$171,000	$1.80
Scouting costs	$228,000	$2.40
Total Costs	$1,029,000	$10.83
Yield Lost to insects	$613,158	$6.45
Total Losses + Costs	$1,642,158	$17.29

Stink Bug Composition

Species	% of SB
Brow n	15
Brow n Marmorated	2
Green	10
Redbanded	5
Redshouldered	1
Southern Green	67
Total (make it 100%)	100

Appendix 6. Illinois soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	99,400	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	994	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	6,461,000	65.0%	994	0.0%	9,940	0.1%	1.00	$7.00	0.001	0.001	$0.01	0.00%	3,297	$98,136	$0.01	0.3%
Blister Beetle	497,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earworm	99,400	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Cutworms	198,800	2.0%	4,970	0.1%	2,982	0.0%	1.00	$7.00	0.010	0.000	$0.00	0.00%	1,015	$29,661	$0.00	0.1%
Dectes Stem Borer	1,988,000	20.0%	0	0.0%	4,970	0.1%	1.00	$7.00	0.030	0.001	$0.00	0.01%	30,438	$298,386	$0.03	1.0%
Garden Webworms	994	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	49,700	0.5%	0	0.0%	0	0.0%	0.00	$0.00	0.100	0.000	$0.00	0.00%	2,537	$21,966	$0.00	0.1%
Grasshopper	6,958,000	70.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverworm	9,641,800	97.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Japanese Beetle	8,946,000	90.0%	0	0.0%	29,820	0.3%	1.00	$7.00	0.001	0.003	$0.02	0.00%	4,566	$248,279	$0.02	0.8%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	994,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	994,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	49,700	0.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	994,000	10.0%	0	0.0%	19,880	0.2%	1.00	$65.00	0.500	0.002	$0.13	0.05%	253,653	$3,488,837	$0.35	11.6%
Soybean Aphid	497,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	198,800	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spider Mites	497,000	5.0%	29,820	0.3%	29,820	0.3%	1.25	$8.00	0.200	0.004	$0.03	0.01%	50,731	$737,527	$0.07	2.4%
Spotted Cucumber Beetle	5,964,000	60.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	7,952,000	80.0%	4,970	0.1%	19,880	0.2%	1.00	$7.00	0.005	0.002	$0.01	0.00%	20,292	$314,891	$0.03	1.0%
Threecornered Alfalfa Hopper	198,800	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	994,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	2,982,000	30.0%	994	0.0%	2,982	0.0%	1.00	$7.00	0.000	0.000	$0.00	0.00%	0	$20,874	$0.00	0.1%
Automatic (no insects)	0	0.0%	0	0.0%	4,970,000	50.0%	1.00	$5.00	0.000	0.500	$2.50	0.00%	0	$24,850,000	$2.50	82.5%
									TOTAL	**0.513**	**$2.71**	**0.07%**	**366,529**	**$30,108,559**	**$3.03**	**100.0%**

SUMMARY DATA

Data Input

State	IL
Year	2019
Total Acres	9,940,000
Yield/acre	51
Price/Bushel	$8.66
% Acres Scouted	10
Scouting Fee/scouted acre	$7.00
% Acres Insect Seed Trt.	50
Seed Trt Cost/treated ac	$8.00

Yield & Management Results

Total Bushels Harvested	506,940,000
Total Bushels Lost to Insects	366,529
Percent Yield Loss	0.07%
Yield w/o Insects	51.04
Ave. # Spray Applications	0.513
Seed Treated Acres	4,970,000
Scouted Acres	994,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$26,934,418	$2.71
Seed Treatment Costs	$39,760,000	$4.00
Scouting costs	$6,958,000	$0.70
Total Costs	$73,652,418	$7.41
Yield Lost to insects	$3,174,141	$0.32
Total Losses + Costs	$76,826,559	$7.73

Stink Bug Composition

Species	% of SB
Brown	50
Brown Marmorated	5
Green	44
Redbanded	0
Redshouldered	1
Southern Green	0
Total (make it 100%)	100

Appendix 7. Kentucky soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	49,500	3.0%	33,000	2.0%	82,500	5.0%	1.00	$7.50	0.040	0.050	$0.38	0.00%	1,062	$628,310	$0.38	1.1%
Banded Cucumber Beetle	49,500	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%
Bean Leaf Beetle	1,485,000	90.0%	99,000	6.0%	165,000	10.0%	1.50	$7.50	2.000	0.150	$1.13	1.80%	1,593,267	$16,195,655	$9.82	28.6%
Blister Beetle	2	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	41,250	2.5%	16,500	1.0%	82,500	5.0%	1.00	$7.00	1.000	0.050	$0.35	0.03%	22,129	$776,658	$0.47	1.4%
Cutw orms	33,000	2.0%	33,000	2.0%	82,500	5.0%	1.00	$7.50	0.000	0.050	$0.38	0.00%	0	$618,750	$0.38	1.1%
Dectes Stem Borer	660,000	40.0%	495,000	30.0%	495,000	30.0%	1.00	$8.00	2.000	0.300	$2.40	0.80%	708,119	$10,333,069	$6.26	18.3%
Garden Webw orms	1,650	0.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	16,500	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	49,500	3.0%	24,750	1.5%	33,000	2.0%	1.00	$7.50	0.500	0.020	$0.15	0.02%	13,277	$366,995	$0.22	0.6%
Green Cloverw orm	132,000	8.0%	82,500	5.0%	165,000	10.0%	0.50	$8.00	0.500	0.050	$0.40	0.04%	35,406	$978,653	$0.59	1.7%
Japanese Beetle	165,000	10.0%	82,500	5.0%	82,500	5.0%	1.00	$8.00	1.000	0.050	$0.40	0.10%	88,515	$1,456,634	$0.88	2.6%
Kudzu Bug	16,500	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	1,650	0.1%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	1,650	0.1%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	4,950	0.3%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	16,500	1.0%	16,500	1.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	165,000	10.0%	82,500	5.0%	165,000	10.0%	0.50	$8.00	0.500	0.050	$0.40	0.05%	44,257	$1,058,317	$0.64	1.9%
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	33,000	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	1,650,000	100.0%	198,000	12.0%	495,000	30.0%	2.00	$7.50	2.000	0.600	$4.50	2.00%	1,770,297	$23,357,672	$14.16	41.3%
Threecornered Alfalfa Hopper	330,000	20.0%	33,000	2.0%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.10%	88,515	$796,634	$0.48	1.4%
Thrips	1,485,000	90.0%	82,500	5.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**1.370**	**$10.48**	**4.93%**	**4,364,844**	**$56,567,346**	**$34.28**	**100.0%**

SUMMARY DATA

Data Input

State	KY
Year	2019
Total Acres	1,650,000
Yield/acre	51
Price/Bushel	$9.00
% Acres Scouted	55
Scouting Fee/scouted acre	$7.00
% Acres Insect Seed Trt.	80
Seed Trt Cost/treated ac	$6.00

Yield & Management Results

Total Bushels Harvested	84,150,000
Total Bushels Lost to Insects	4,364,844
Percent Yield Loss	4.93%
Yield w /o Insects	53.65
Ave. # Spray Applications	1.370
Seed Treated Acres	1,320,000
Scouted Acres	907,500

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$17,283,750	$10.48
Seed Treatment Costs	$7,920,000	$4.80
Scouting costs	$6,352,500	$3.85
Total Costs	$31,556,250	$19.13
Yield Lost to insects	$39,283,596	$23.81
Total Losses + Costs	$70,839,846	$42.93

Stink Bug Composition

Species	% of SB
Brow n	35
Brow n Marmorated	20
Green	35
Redbanded	0
Redshouldered	4
Southern Green	6
Total (make it 100%)	100

Appendix 8. Louisiana soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	400,000	40.0%	75,000	7.5%	65,000	6.5%	0.50	$8.00	0.500	0.033	$0.26	0.20%	99,948	$1,109,558	$1.11	2.4%
Banded Cucumber Beetle	1,000,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	10,000	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	5,000	0.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earworm	200,000	20.0%	100,000	10.0%	100,000	10.0%	0.50	$15.00	0.500	0.050	$0.75	0.10%	49,974	$1,174,779	$1.17	2.5%
Cutworms	8,000	0.8%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	660,000	66.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webworms	4,000	0.4%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	1,000,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	330,000	33.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverworm	1,000,000	100.0%	450,000	45.0%	200,000	20.0%	0.50	$8.00	0.500	0.100	$0.80	0.50%	249,870	$2,923,894	$2.92	6.2%
Japanese Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	80,000	8.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	8,000	0.8%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Potato Leafhopper	1,000,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	100,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	1,000,000	100.0%	800,000	80.0%	750,000	75.0%	1.00	$18.00	1.250	0.750	$13.50	1.25%	624,675	$18,809,735	$18.81	39.9%
Spider Mites	2,000	0.2%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	1,000,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	1,000,000	100.0%	800,000	80.0%	800,000	80.0%	1.50	$11.00	1.500	1.200	$13.20	1.50%	749,610	$19,571,681	$19.57	41.6%
Threecornered Alfalfa Hopper	1,000,000	100.0%	150,000	15.0%	150,000	15.0%	0.50	$8.00	0.100	0.075	$0.60	0.10%	49,974	$1,024,779	$1.02	2.2%
Thrips	1,000,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	600,000	60.0%	300,000	30.0%	300,000	30.0%	0.50	$8.00	0.500	0.150	$1.20	0.30%	149,922	$2,474,336	$2.47	5.3%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**2.358**	**$30.31**	**3.95%**	**1,973,972**	**$47,088,761**	**$47.09**	**100.0%**

SUMMARY DATA

Data Input

State	LA
Year	2019
Total Acres	1,000,000
Yield/acre	48
Price/Bushel	$8.50
% Acres Scouted	90
Scouting Fee/scouted acre	$10.00
% Acres Insect Seed Trt.	95
Seed Trt Cost/treated ac	$8.50

Yield & Management Results

Total Bushels Harvested	48,000,000
Total Bushels Lost to Insects	1,973,972
Percent Yield Loss	3.95%
Yield w/o Insects	49.97
Ave. # Spray Applications	2.358
Seed Treated Acres	950,000
Scouted Acres	900,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$30,310,000	$30.31
Seed Treatment Costs	$8,075,000	$8.08
Scouting costs	$9,000,000	$9.00
Total Costs	$47,385,000	$47.39
Yield Lost to insects	$16,778,761	$16.78
Total Losses + Costs	$64,163,761	$64.16

Stink Bug Composition

Species	% of SB
Brown	5
Brown Marmorated	0
Green	14
Redbanded	60
Redshouldered	1
Southern Green	20
Total (make it 100%)	100

Appendix 9. Michigan soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	1,290,000	75.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Cutw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webw orms	86,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	1,290,000	75.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverw orm	567,600	33.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Japanese Beetle	1,290,000	75.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	860,000	50.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	17,200	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	567,600	33.0%	8,600	0.5%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.17%	119,393	$1,048,271	$0.61	58.2%
Soybean Aphid	1,290,000	75.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	567,600	33.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spider Mites	43,000	2.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	1,290,000	75.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Threecornered Alfalfa Hopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	584,800	34.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	86,000	5.0%	1.00	$8.75	0.000	0.050	$0.44	0.00%	0	$752,500	$0.44	41.8%
									TOTAL	**0.050**	**$0.44**	**0.17%**	**119,393**	**$1,800,771**	**$1.05**	**100.0%**

SUMMARY DATA

Data Input

State	MI
Year	2019
Total Acres	1,720,000
Yield/acre	42
Price/Bushel	$8.78
% Acres Scouted	5
Scouting Fee/scouted acre	$4.93
% Acres Insect Seed Trt.	75
Seed Trt Cost/treated ac	$8.00

Yield & Management Results

Total Bushels Harvested	72,240,000
Total Bushels Lost to Insects	119,393
Percent Yield Loss	0.17%
Yield w /o Insects	42.07
Ave. # Spray Applications	0.050
Seed Treated Acres	1,290,000
Scouted Acres	86,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$752,500	$0.44
Seed Treatment Costs	$10,320,000	$6.00
Scouting costs	$423,980	$0.25
Total Costs	$11,496,480	$6.68
Yield Lost to insects	$1,048,271	$0.61
Total Losses + Costs	$12,544,751	$7.29

Stink Bug Composition

Species	% of SB
Brow n	93
Brow n Marmorated	5
Green	2
Redbanded	0
Redshouldered	0
Southern Green	0
Total (make it 100%)	100

Appendix 10. Mississippi soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	82,500	5.0%	33,000	2.0%	16,500	1.0%	1.00	$9.00	0.300	0.010	$0.09	0.02%	13,154	$262,678	$0.16	0.3%
Banded Cucumber Beetle	330,000	20.0%	0	0.0%	0	0.0%	0.00	$9.00	0.010	0.000	$0.00	0.00%	1,754	$15,224	$0.01	0.0%
Bean Leaf Beetle	1,155,000	70.0%	247,500	15.0%	247,500	15.0%	1.00	$11.00	0.200	0.150	$1.65	0.14%	122,772	$3,788,162	$2.30	4.4%
Blister Beetle	33,000	2.0%	1,650	0.1%	1,650	0.1%	1.00	$8.00	0.010	0.001	$0.01	0.00%	175	$14,722	$0.01	0.0%
Corn Earworm	577,500	35.0%	330,000	20.0%	495,000	30.0%	1.10	$12.00	3.500	0.330	$3.96	1.23%	1,074,256	$15,858,546	$9.61	18.2%
Cutworms	16,500	1.0%	1,650	0.1%	1,650	0.1%	1.00	$8.00	0.100	0.001	$0.01	0.00%	877	$20,812	$0.01	0.0%
Dectes Stem Borer	990,000	60.0%	0	0.0%	0	0.0%	0.00	$0.00	0.200	0.000	$0.00	0.12%	105,233	$913,425	$0.55	1.0%
Garden Webworms	49,500	3.0%	0	0.0%	0	0.0%	0.00	$0.00	0.150	0.000	$0.00	0.00%	3,946	$34,253	$0.02	0.0%
Grape Colaspis	412,500	25.0%	0	0.0%	0	0.0%	0.00	$0.00	0.100	0.000	$0.00	0.03%	21,924	$190,297	$0.12	0.2%
Grasshopper	495,000	30.0%	3,300	0.2%	4,950	0.3%	1.00	$8.00	0.100	0.003	$0.02	0.03%	26,308	$267,956	$0.16	0.3%
Green Cloverworm	1,353,000	82.0%	247,500	15.0%	247,500	15.0%	1.00	$12.00	0.500	0.150	$1.80	0.41%	359,547	$6,090,868	$3.69	7.0%
Japanese Beetle	82,500	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.010	0.000	$0.00	0.00%	438	$3,806	$0.00	0.0%
Kudzu Bug	742,500	45.0%	577,500	35.0%	330,000	20.0%	1.00	$9.00	0.010	0.200	$1.80	0.00%	3,946	$3,004,253	$1.82	3.5%
Lesser Cornstalk Borer	1,650	0.1%	0	0.0%	0	0.0%	0.00	$0.00	5.000	0.000	$0.00	0.01%	4,385	$38,059	$0.02	0.0%
Mexican Bean Beetle	0	0.0%	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	165,000	10.0%	0	0.0%	0	0.0%	1.00	$8.00	0.010	0.000	$0.00	0.00%	877	$7,612	$0.00	0.0%
Saltmarsh Caterpillar	148,500	9.0%	16,500	1.0%	1,650	0.1%	1.00	$14.00	0.500	0.001	$0.01	0.05%	39,462	$365,634	$0.22	0.4%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	247,500	15.0%	0	0.0%	0	0.0%	1.00	$20.00	1.000	0.000	$0.00	0.15%	131,542	$1,141,781	$0.69	1.3%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	660,000	40.0%	330,000	20.0%	412,500	25.0%	1.00	$16.00	1.500	0.250	$4.00	0.60%	526,166	$11,167,124	$6.77	12.8%
Spider Mites	1,650	0.1%	0	0.0%	0	0.0%	0.00	$0.00	0.100	0.000	$0.00	0.00%	88	$761	$0.00	0.0%
Spotted Cucumber Beetle	1,402,500	85.0%	0	0.0%	0	0.0%	0.00	$0.00	0.100	0.000	$0.00	0.09%	74,540	$647,009	$0.39	0.7%
Stink Bugs (see box below)	1,617,000	98.0%	990,000	60.0%	825,000	50.0%	1.60	$12.50	2.500	0.800	$10.00	2.45%	2,148,513	$35,149,092	$21.30	40.4%
Threecornered Alfalfa Hopper	1,567,500	95.0%	3,300	0.2%	8,250	0.5%	1.00	$8.50	0.010	0.005	$0.04	0.01%	8,331	$142,438	$0.09	0.2%
Thrips	1,485,000	90.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	660,000	40.0%	247,500	15.0%	280,500	17.0%	1.00	$12.00	1.500	0.170	$2.04	0.60%	526,166	$7,933,124	$4.81	9.1%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**2.071**	**$25.44**	**5.92%**	**5,194,403**	**$87,057,639**	**$52.76**	**100.0%**

SUMMARY DATA

Data Input

State	MS
Year	2019
Total Acres	1,650,000
Yield/acre	50
Price/Bushel	$8.68
% Acres Scouted	93
Scouting Fee/scouted acre	$6.50
% Acres Insect Seed Trt.	80
Seed Trt Cost/treated ac	$9.00

Yield & Management Results

Total Bushels Harvested	82,500,000
Total Bushels Lost to Insects	5,194,403
Percent Yield Loss	5.92%
Yield w/o Insects	53.15
Ave. # Spray Applications	2.071
Seed Treated Acres	1,320,000
Scouted Acres	1,534,500

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$41,970,225	$25.44
Seed Treatment Costs	$11,880,000	$7.20
Scouting costs	$9,974,250	$6.05
Total Costs	$63,824,475	$38.68
Yield Lost to insects	$45,087,414	$27.33
Total Losses + Costs	$108,911,889	$66.01

Stink Bug Composition

Species	% of SB
Brown	38
Brown Marmorated	0
Green	35
Redbanded	12
Redshouldered	0
Southern Green	15
Total (make it 100%)	100

Appendix 11. North Carolina soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	275,400	18.0%	15,300	1.0%	15,300	1.0%	1.00	$12.00	0.500	0.010	$0.12	0.09%	53,471	$638,104	$0.42	1.1%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	1,101,600	72.0%	244,800	16.0%	275,400	18.0%	1.00	$8.00	0.500	0.180	$1.44	0.36%	213,884	$4,021,218	$2.63	7.0%
Blister Beetle	657,900	43.0%	7,650	0.5%	7,650	0.5%	1.00	$8.00	0.500	0.005	$0.04	0.22%	127,737	$1,146,961	$0.75	2.0%
Corn Earworm	1,208,700	79.0%	627,300	41.0%	734,400	48.0%	1.10	$12.00	5.000	0.528	$6.34	3.95%	2,346,788	$29,641,776	$19.37	51.8%
Cutworms	76,500	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	612,000	40.0%	0	0.0%	0	0.0%	0.00	$0.00	0.010	0.000	$0.00	0.00%	2,376	$20,200	$0.01	0.0%
Garden Webworms	91,800	6.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	612,000	40.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	719,100	47.0%	76,500	5.0%	45,900	3.0%	1.25	$8.00	0.100	0.038	$0.30	0.05%	27,924	$696,352	$0.46	1.2%
Green Cloverworm	719,100	47.0%	76,500	5.0%	61,200	4.0%	1.00	$8.00	0.100	0.040	$0.32	0.05%	27,924	$726,952	$0.48	1.3%
Japanese Beetle	290,700	19.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	657,900	43.0%	15,300	1.0%	15,300	1.0%	1.00	$8.00	0.100	0.010	$0.08	0.04%	25,547	$339,552	$0.22	0.6%
Lesser Cornstalk Borer	15,300	1.0%	0	0.0%	7,650	0.5%	1.00	$12.00	0.000	0.005	$0.06	0.00%	0	$91,800	$0.06	0.2%
Mexican Bean Beetle	214,200	14.0%	0	0.0%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.07%	41,589	$353,503	$0.23	0.6%
Potato Leafhopper	443,700	29.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	428,400	28.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	1,224,000	80.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	91,800	6.0%	0	0.0%	0	0.0%	0.00	$8.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	948,600	62.0%	153,000	10.0%	229,500	15.0%	1.10	$12.00	2.000	0.165	$1.98	1.24%	736,713	$9,291,462	$6.07	16.2%
Spider Mites	290,700	19.0%	0	0.0%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.10%	56,442	$479,755	$0.31	0.8%
Spotted Cucumber Beetle	474,300	31.0%	3,060	0.2%	3,060	0.2%	1.00	$8.00	0.100	0.002	$0.02	0.03%	18,418	$181,032	$0.12	0.3%
Stink Bugs (see box below)	1,254,600	82.0%	397,800	26.0%	428,400	28.0%	1.10	$8.00	1.000	0.308	$2.46	0.82%	487,181	$7,910,961	$5.17	13.8%
Threecornered Alfalfa Hopper	734,400	48.0%	45,900	3.0%	15,300	1.0%	1.00	$8.00	0.500	0.010	$0.08	0.24%	142,590	$1,334,412	$0.87	2.3%
Thrips	1,530,000	100.0%	0	0.0%	15,300	1.0%	1.00	$8.00	0.000	0.010	$0.08	0.00%	0	$122,400	$0.08	0.2%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	91,800	6.0%	0	0.0%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.03%	17,824	$151,501	$0.10	0.3%
Other	30,600	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.500	0.000	$0.00	0.01%	5,941	$50,500	$0.03	0.1%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**1.311**	**$13.32**	**7.29%**	**4,332,348**	**$57,198,442**	**$37.38**	**100.0%**

SUMMARY DATA

Data Input

State	NC
Year	2019
Total Acres	1,530,000
Yield/acre	36
Price/Bushel	$8.50
% Acres Scouted	25
Scouting Fee/scouted acre	$6.50
% Acres Insect Seed Trt.	33.4
Seed Trt Cost/treated ac	$10.00

Yield & Management Results

Total Bushels Harvested	55,080,000
Total Bushels Lost to Insects	4,332,348
Percent Yield Loss	7.29%
Yield w/o Insects	38.83
Ave. # Spray Applications	1.311
Seed Treated Acres	511,020
Scouted Acres	382,500

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$20,373,480	$13.32
Seed Treatment Costs	$5,110,200	$3.34
Scouting costs	$2,486,250	$1.63
Total Costs	$27,969,930	$18.28
Yield Lost to insects	$36,824,962	$24.07
Total Losses + Costs	$64,794,892	$42.35

Stink Bug Composition

Species	% of SB
Brown	57
Brown Marmorated	3
Green	27
Redbanded	0
Redshouldered	2
Southern Green	11
Total (make it 100%)	100

Appendix 12. Ohio soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	1,720,000	40.0%	129,000	3.0%	215,000	5.0%	1.00	$15.00	1.000	0.050	$0.75	0.40%	839,024	$10,751,049	$2.50	27.0%
Blister Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Cutw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	645,000	15.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverw orm	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Japanese Beetle	2,150,000	50.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	1,290,000	30.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	1,720,000	40.0%	645,000	15.0%	430,000	10.0%	1.00	$15.00	3.000	0.100	$1.50	1.20%	2,517,073	$29,028,146	$6.75	73.0%
Threecornered Alfalfa Hopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	1,290,000	30.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**0.150**	**$2.25**	**1.60%**	**3,356,098**	**$39,779,195**	**$9.25**	**100.0%**

SUMMARY DATA

Data Input

State	OH
Year	2019
Total Acres	4,300,000
Yield/acre	48
Price/Bushel	$8.97
% Acres Scouted	20
Scouting Fee/scouted acre	$10.00
% Acres Insect Seed Trt.	80
Seed Trt Cost/treated ac	$7.00

Yield & Management Results

Total Bushels Harvested	206,400,000
Total Bushels Lost to Insects	3,356,098
Percent Yield Loss	1.60%
Yield w /o Insects	48.78
Ave. # Spray Applications	0.150
Seed Treated Acres	3,440,000
Scouted Acres	860,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$9,675,000	$2.25
Seed Treatment Costs	$24,080,000	$5.60
Scouting costs	$8,600,000	$2.00
Total Costs	$42,355,000	$9.85
Yield Lost to insects	$30,104,195	$7.00
Total Losses + Costs	$72,459,195	$16.85

Stink Bug Composition

Species	% of SB
Brow n	20
Brow n Marmorated	50
Green	25
Redbanded	0
Redshouldered	5
Southern Green	0
Total (make it 100%)	100

Appendix 13. Oklahoma soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	0	0.0%	0	0.0%	0	0.0%	0.00	$9.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	800	0.2%	100	0.0%	100	0.0%	1.00	$9.00	1.000	0.000	$0.00	0.00%	212	$2,720	$0.01	0.1%
Corn Earworm	5,000	1.1%	2,000	0.5%	1,500	0.3%	1.00	$9.00	1.500	0.003	$0.03	0.02%	1,984	$30,560	$0.07	1.5%
Cutworms	200	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	200	0.0%	100	0.0%	0	0.0%	0.00	$9.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webworms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverworm	10,000	2.3%	6,000	1.4%	1,000	0.2%	1.00	$9.00	0.600	0.002	$0.02	0.01%	1,587	$22,648	$0.05	1.1%
Japanese Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	5,000	1.1%	100	0.0%	100	0.0%	1.00	$9.00	2.000	0.000	$0.00	0.02%	2,645	$23,647	$0.05	1.1%
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	120,000	27.3%	80,000	18.2%	40,000	9.1%	1.00	$9.00	6.000	0.091	$0.82	1.64%	190,439	$1,997,773	$4.54	95.7%
Threecornered Alfalfa Hopper	3,000	0.7%	200	0.0%	100	0.0%	1.00	$9.00	1.000	0.000	$0.00	0.01%	793	$7,724	$0.02	0.4%
Thrips	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	1,000	0.2%	200	0.0%	100	0.0%	1.00	$9.00	1.000	0.000	$0.00	0.00%	264	$3,175	$0.01	0.2%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)		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%
									TOTAL	**0.098**	**$0.88**	**1.70%**	**197,924**	**$2,088,247**	**$4.75**	**100.0%**

SUMMARY DATA

Data Input

State	OK
Year	2019
Total Acres	440,000
Yield/acre	26
Price/Bushel	$8.60
% Acres Scouted	15
Scouting Fee/scouted acre	$3.92
% Acres Insect Seed Trt.	30
Seed Trt Cost/treated ac	$15.00

Yield & Management Results

Total Bushels Harvested	11,440,000
Total Bushels Lost to Insects	197,924
Percent Yield Loss	1.70%
Yield w/o Insects	26.45
Ave. # Spray Applications	0.098
Seed Treated Acres	132,000
Scouted Acres	66,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$386,100	$0.88
Seed Treatment Costs	$1,980,000	$4.50
Scouting costs	$258,720	$0.59
Total Costs	$2,624,820	$5.97
Yield Lost to insects	$1,702,147	$3.87
Total Losses + Costs	$4,326,967	$9.83

Stink Bug Composition

Species	% of SB
Brown	15
Brown Marmorated	0
Green	15
Redbanded	0
Redshouldered	0
Southern Green	70
Total (make it 100%)	100

Appendix 14. South Carolina soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	87,500	25.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	87,500	25.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	350,000	100.0%	70,000	20.0%	35,000	10.0%	1.00	$10.00	0.250	0.100	$1.00	0.25%	27,970	$612,920	$1.75	4.7%
Cutw orms	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webw orms	87,500	25.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	35,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverw orm	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Japanese Beetle	70,000	20.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	350,000	100.0%	315,000	90.0%	175,000	50.0%	1.00	$8.00	2.000	0.500	$4.00	2.00%	223,761	$3,503,356	$10.01	26.8%
Lesser Cornstalk Borer	175,000	50.0%	17,500	5.0%	3,500	1.0%	1.00	$8.00	0.100	0.010	$0.08	0.05%	5,594	$80,584	$0.23	0.6%
Mexican Bean Beetle	0	0.0%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	87,500	25.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	350,000	100.0%	87,500	25.0%	35,000	10.0%	1.00	$15.00	0.250	0.100	$1.50	0.25%	27,970	$787,920	$2.25	6.0%
Spider Mites	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	350,000	100.0%	280,000	80.0%	262,500	75.0%	1.50	$10.00	2.500	1.125	$11.25	2.50%	279,702	$6,566,696	$18.76	50.3%
Threecornered Alfalfa Hopper	350,000	100.0%	17,500	5.0%	0	0.0%	1.00	$0.00	0.100	0.000	$0.00	0.10%	11,188	$105,168	$0.30	0.8%
Thrips	350,000	100.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	350,000	100.0%	87,500	25.0%	35,000	10.0%	1.00	$10.00	1.000	0.100	$1.00	1.00%	111,881	$1,401,678	$4.00	10.7%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**1.935**	**$18.83**	**6.15%**	**688,066**	**$13,058,321**	**$37.31**	**100.0%**

SUMMARY DATA

Data Input

State	SC
Year	2019
Total Acres	350,000
Yield/acre	30
Price/Bushel	$9.40
% Acres Scouted	30
Scouting Fee/scouted acre	$7.00
% Acres Insect Seed Trt.	30
Seed Trt Cost/treated ac	$12.00

Yield & Management Results

Total Bushels Harvested	10,500,000
Total Bushels Lost to Insects	688,066
Percent Yield Loss	6.15%
Yield w /o Insects	31.97
Ave. # Spray Applications	1.935
Seed Treated Acres	105,000
Scouted Acres	105,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$6,590,500	$18.83
Seed Treatment Costs	$1,260,000	$3.60
Scouting costs	$735,000	$2.10
Total Costs	$8,585,500	$24.53
Yield Lost to insects	$6,467,821	$18.48
Total Losses + Costs	$15,053,321	$43.01

Stink Bug Composition

Species	% of SB
Brow n	25
Brow n Marmorated	0
Green	5
Redbanded	20
Redshouldered	0
Southern Green	50
Total (make it 100%)	100

Appendix 15. Tennessee soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	27,600	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.100	0.000	$0.00	0.00%	1,322	$12,357	$0.01	0.1%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	1,380,000	100.0%	69,000	5.0%	69,000	5.0%	1.00	$8.00	0.200	0.050	$0.40	0.20%	132,162	$1,787,718	$1.30	8.2%
Blister Beetle	13,800	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earworm	179,400	13.0%	110,400	8.0%	138,000	10.0%	1.00	$11.00	3.000	0.100	$1.10	0.39%	257,717	$3,927,650	$2.85	18.0%
Cutworms	138,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	1,104,000	80.0%	0	0.0%	6,900	0.5%	1.00	$7.50	0.300	0.005	$0.04	0.24%	158,595	$1,534,612	$1.11	7.0%
Garden Webworms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	276,000	20.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	828,000	60.0%	13,800	1.0%	13,800	1.0%	1.00	$8.00	0.050	0.010	$0.08	0.03%	19,824	$295,758	$0.21	1.4%
Green Cloverworm	1,380,000	100.0%	55,200	4.0%	55,200	4.0%	1.00	$7.50	0.100	0.040	$0.30	0.10%	66,081	$1,031,859	$0.75	4.7%
Japanese Beetle	828,000	60.0%	0	0.0%	6,900	0.5%	1.00	$8.00	0.000	0.005	$0.04	0.00%	0	$55,200	$0.04	0.3%
Kudzu Bug	303,600	22.0%	55,200	4.0%	41,400	3.0%	1.10	$8.00	0.800	0.033	$0.26	0.18%	116,303	$1,451,752	$1.05	6.7%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	2,760	0.2%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	13,800	1.0%	276	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	179,400	13.0%	27,600	2.0%	1,380	0.1%	1.00	$18.00	0.400	0.001	$0.02	0.05%	34,362	$346,127	$0.25	1.6%
Soybean Aphid	27,600	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	303,600	22.0%	12,420	0.9%	13,800	1.0%	1.00	$13.00	0.100	0.010	$0.13	0.02%	14,538	$315,329	$0.23	1.4%
Spider Mites	55,200	4.0%	6,900	0.5%	0	0.0%	0.00	$8.50	0.200	0.000	$0.00	0.01%	5,286	$49,429	$0.04	0.2%
Spotted Cucumber Beetle	138,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	1,380,000	100.0%	234,600	17.0%	621,000	45.0%	1.20	$7.75	0.500	0.540	$4.19	0.50%	330,406	$8,864,595	$6.42	40.7%
Threecornered Alfalfa Hopper	1,380,000	100.0%	55,200	4.0%	41,400	3.0%	1.00	$7.75	0.100	0.030	$0.23	0.10%	66,081	$938,709	$0.68	4.3%
Thrips	1,380,000	100.0%	0	0.0%	1,380	0.1%	1.00	$7.75	0.020	0.001	$0.01	0.02%	13,216	$134,267	$0.10	0.6%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	110,400	8.0%	1,380	0.1%	0	0.0%	0.00	$0.00	0.100	0.000	$0.00	0.01%	5,286	$49,429	$0.04	0.2%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	276,000	20.0%	1.20	$3.00	0.000	0.240	$0.72	0.00%	0	$993,600	$0.72	4.6%
									TOTAL	**1.065**	**$7.51**	**1.85%**	**1,221,180**	**$21,788,390**	**$15.79**	**100.0%**

SUMMARY DATA

Data Input

State	TN
Year	2019
Total Acres	1,380,000
Yield/acre	47
Price/Bushel	$9.35
% Acres Scouted	43
Scouting Fee/scouted acre	$7.00
% Acres Insect Seed Trt.	70
Seed Trt Cost/treated ac	$7.00

Yield & Management Results

Total Bushels Harvested	64,860,000
Total Bushels Lost to Insects	1,221,180
Percent Yield Loss	1.85%
Yield w/o Insects	47.88
Ave. # Spray Applications	1.065
Seed Treated Acres	966,000
Scouted Acres	593,400

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$10,370,355	$7.51
Seed Treatment Costs	$6,762,000	$4.90
Scouting costs	$4,153,800	$3.01
Total Costs	$21,286,155	$15.42
Yield Lost to insects	$11,418,035	$8.27
Total Losses + Costs	$32,704,190	$23.70

Stink Bug Composition

Species	% of SB
Brown	15
Brown Marmorated	8
Green	70
Redbanded	1
Redshouldered	2
Southern Green	4
Total (make it 100%)	100

Appendix 16. Texas soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	600	1.0%	0	0.0%	0	0.0%	0.00	$0.00	1.000	0.000	$0.00	0.01%	272	$2,531	$0.04	0.1%
Banded Cucumber Beetle	48,000	80.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	600	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earworm	6,000	10.0%	3,000	5.0%	3,000	5.0%	1.00	$18.00	1.000	0.050	$0.90	0.10%	2,721	$79,309	$1.32	1.8%
Cutworms	600	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	1,500	2.5%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webworms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	30,000	50.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverworm	36,000	60.0%	18,000	30.0%	6,000	10.0%	1.00	$18.00	1.000	0.100	$1.80	0.60%	16,328	$259,854	$4.33	5.8%
Japanese Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	600	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn Maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	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%
Soybean Aphid	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	36,000	60.0%	18,000	30.0%	6,000	10.0%	1.00	$18.00	1.000	0.100	$1.80	0.60%	16,328	$259,854	$4.33	5.8%
Spider Mites	1,200	2.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	54,000	90.0%	42,000	70.0%	30,000	50.0%	2.00	$18.00	10.000	1.000	$18.00	9.00%	244,926	$3,357,809	$55.96	75.5%
Threecornered Alfalfa Hopper	54,000	90.0%	24,000	40.0%	6,000	10.0%	0.00	$0.00	1.000	0.000	$0.00	0.90%	24,493	$227,781	$3.80	5.1%
Thrips	12,000	20.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	36,000	60.0%	0	0.0%	6,000	10.0%	1.00	$18.00	1.000	0.100	$1.80	0.60%	16,328	$259,854	$4.33	5.8%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**1.350**	**$24.30**	**11.81%**	**321,397**	**$4,446,992**	**$74.12**	**100.0%**

SUMMARY DATA

Data Input

State	TX
Year	2019
Total Acres	60,000
Yield/acre	40
Price/Bushel	$9.30
% Acres Scouted	20
Scouting Fee/scouted acre	$10.00
% Acres Insect Seed Trt.	80
Seed Trt Cost/treated ac	$12.00

Yield & Management Results

Total Bushels Harvested	2,400,000
Total Bushels Lost to Insects	321,397
Percent Yield Loss	11.81%
Yield w/o Insects	45.36
Ave. # Spray Applications	1.350
Seed Treated Acres	48,000
Scouted Acres	12,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$1,458,000	$24.30
Seed Treatment Costs	$576,000	$9.60
Scouting costs	$120,000	$2.00
Total Costs	$2,154,000	$35.90
Yield Lost to insects	$2,988,992	$49.82
Total Losses + Costs	$5,142,992	$85.72

Stink Bug Composition

Species	% of SB
Brown	10
Brown Marmorated	0
Green	10
Redbanded	70
Redshouldered	0
Southern Green	10
Total (make it 100%)	100

Appendix 17. Virginia soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyw orm complex	180,000	30.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	30,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	30,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earw orm	180,000	30.0%	120,000	20.0%	180,000	30.0%	1.00	$15.00	1.500	0.300	$4.50	0.45%	102,147	$3,596,853	$5.99	35.2%
Cutw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	30,000	5.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webw orms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	60,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverw orm	300,000	50.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Japanese Beetle	60,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Kudzu Bug	60,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	6,000	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Slugs	30,000	5.0%	6,000	1.0%	6,000	1.0%	1.00	$20.00	5.000	0.010	$0.20	0.25%	56,748	$618,252	$1.03	6.1%
Soybean Aphid	6,000	1.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Looper	60,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spider Mites	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spotted Cucumber Beetle	60,000	10.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	450,000	75.0%	180,000	30.0%	300,000	50.0%	1.00	$10.00	2.000	0.500	$5.00	1.50%	340,491	$5,989,509	$9.98	58.7%
Threecornered Alfalfa Hopper	60,000	10.0%	6,000	1.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	300,000	50.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**0.810**	**$9.70**	**2.20%**	**499,387**	**$10,204,613**	**$17.01**	**100.0%**

SUMMARY DATA

Data Input

State	VA
Year	2019
Total Acres	600,000
Yield/acre	37
Price/Bushel	$8.78
% Acres Scouted	10
Scouting Fee/scouted acre	$10.00
% Acres Insect Seed Trt.	10
Seed Trt Cost/treated ac	$8.00

Yield & Management Results

Total Bushels Harvested	22,200,000
Total Bushels Lost to Insects	499,387
Percent Yield Loss	2.20%
Yield w /o Insects	37.83
Ave. # Spray Applications	0.810
Seed Treated Acres	60,000
Scouted Acres	60,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$5,820,000	$9.70
Seed Treatment Costs	$480,000	$0.80
Scouting costs	$600,000	$1.00
Total Costs	$6,900,000	$11.50
Yield Lost to insects	$4,384,613	$7.31
Total Losses + Costs	$11,284,613	$18.81

Stink Bug Composition

Species	% of SB
Brow n	40
Brow n Marmorated	15
Green	40
Redbanded	0
Redshouldered	5
Southern Green	0
Total (make it 100%)	100

Appendix 18. Wisconsin soybean insect losses, 2019.

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/acre	% Total Loss + Cost
Armyworm complex	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Banded Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Bean Leaf Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Blister Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Corn Earworm	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Cutworms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Dectes Stem Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Garden Webworms	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grape Colaspis	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Grasshopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Green Cloverworm	173,000	10.0%	8,650	0.5%	0	0.0%	0.00	$0.00	0.001	0.000	$0.00	0.00%	80	$650	$0.00	0.1%
Japanese Beetle	519,000	30.0%	34,600	2.0%	17,300	1.0%	1.00	$8.50	0.010	0.010	$0.09	0.00%	2,388	$166,562	$0.10	30.3%
Kudzu Bug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Lesser Cornstalk Borer	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Mexican Bean Beetle	0	0.0%	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	692,000	40.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Saltmarsh Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Seedcorn maggot	34,600	2.0%	17,300	1.0%	0	0.0%	0.00	$0.00	1.000	0.000	$0.00	0.02%	15,921	$130,078	$0.08	23.7%
Slugs	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Soybean Aphid	1,297,500	75.0%	8,650	0.5%	8,650	0.5%	1.00	$8.50	0.001	0.005	$0.04	0.00%	597	$78,403	$0.05	14.3%
Soybean Looper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Spider Mites	17,300	1.0%	8,650	0.5%	8,650	0.5%	1.00	$12.50	1.000	0.005	$0.06	0.01%	7,961	$173,164	$0.10	31.5%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Stink Bugs (see box below)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Threecornered Alfalfa Hopper	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Thrips	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Trochanter Mealybug	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Velvetbean Caterpillar	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
Automatic (no insects)	0	0.0%	0	0.0%	0	0.0%	0.00	$0.00	0.000	0.000	$0.00	0.00%	0	$0	$0.00	0.0%
									TOTAL	**0.020**	**$0.19**	**0.03%**	**26,947**	**$548,857**	**$0.32**	**100.0%**

SUMMARY DATA

Data Input

State	WI
Year	2019
Total Acres	1,730,000
Yield/acre	46
Price/Bushel	$8.17
% Acres Scouted	70
Scouting Fee/scouted acre	$4.50
% Acres Insect Seed Trt.	40
Seed Trt Cost/treated ac	$5.50

Yield & Management Results

Total Bushels Harvested	79,580,000
Total Bushels Lost to Insects	26,947
Percent Yield Loss	0.03%
Yield w/o Insects	46.02
Ave. # Spray Applications	0.020
Seed Treated Acres	692,000
Scouted Acres	1,211,000

Economic Results

	Total	Per Acre
Foliar Insecticides Costs	$328,700	$0.19
Seed Treatment Costs	$3,806,000	$2.20
Scouting costs	$5,449,500	$3.15
Total Costs	$9,584,200	$5.54
Yield Lost to insects	$220,157	$0.13
Total Losses + Costs	$9,804,357	$5.67

Stink Bug Composition

Species	% of SB
Brown	0
Brown Marmorated	0
Green	0
Redbanded	0
Redshouldered	0
Southern Green	0
Total (make it 100%)	0