

## Report

# Mississippi Soybean Insect Losses

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**Abstract:** Insects normally cause economic losses in soybean production. The level of infestation and the management practices used to minimize these losses vary annually. Since personal and institutional memories tend to be short in these times when management practices change rapidly and people move constantly, it is beneficial to record the events of each year. The survey-based soybean insect losses described here provide a glimpse of current soybean management practices and allow one to see evolving trends. During 2003-2007, scouting became more common and insecticide seed treatments began to be used. Stink bugs (Hemiptera: Pentatomidae), bean leaf beetles (Coleoptera: Chrysomelidae) and three-cornered alfalfa hoppers (Hemiptera: Membracidae) were the major pests in all four years of losses. It is our hope that these insect loss estimates will encourage improved insect pest management by focusing research and extension efforts where it can have the largest benefit.

**Key Words:** soybean, yield loss, pest management

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## Introduction

Mississippi soybean production has been gaining prominence in recent years with increasing yields and prices (USDA NASS 2007). A major reason for increased yield has been a shift from a late-season production system to an early-season production system (Heatherly and Hodges 1999). As productivity and profits have increased, the need for improved pest management has increased. In 2004 we began to annually estimate insect losses from the various pests with the goal of monitoring and improving insect pest management. These estimates are based on surveys of consultants and extension personnel, similar to those used to estimate insect losses in cotton (Williams 2006). While the costs and losses estimated for a pest in any given year is subjective, these losses provide an historical record of pest pressure and management practices as well as providing an estimate of the economic impact of the various soybean pests. It is our intention to continue to compile these losses to soybean yields in the future. We also encourage entomologists in other states to estimate losses so that we may gain a better regional or national picture of the impact of insect pests on soybean production.

## Materials and Methods

A survey was sent to crop consultants and extension personnel in the fall of each 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 our own experience to estimate the various fields in the table. Acreage, yield and price data were drawn from Mississippi Agricultural Statistics Service publications (USDA NASS 2007). The estimates were placed in an Excel spreadsheet (Microsoft Office 2003, Microsoft Corp.) to make the various calculations. The actual formulas used in the spreadsheet are in Appendix 1.

## Results and Discussion

Soybean insect pest management intensity increased over the last four years, with scouted acreage more than doubling and the average number of insecticide applications doubling (Table 1). Given the high yield and price of soybeans in 2007, this increased protection was likely economical in most cases. Insecticide seed treatments have just begun to be used in Mississippi, so the impact of this technology has not been realized yet.

**Table 1.** Overall Mississippi average soybean management and performance, 2004-2007.

Year	Acres (million) <sup>1</sup>	Yield (bu/ac) <sup>2</sup>	Price (\$/bu)	% acres scouted	% acres with insect seed trt.	No. foliar insecticide applications	% yield loss to insects	\$ loss + cost/ac
2004	1.67	37.5	6.20	10	0	0.89	8.09	25.46
2005	1.61	36.5	5.92	11	0	0.71	5.89	17.61
2006	1.67	26.0	6.23	15	0.01	1.04	6.12	19.12
2007	1.43	41.0	7.70 <sup>3</sup>	25	2	2.11	6.87	41.22

<sup>1</sup>1 acre = 0.405 ha

<sup>2</sup>1 bu/ac = 67.2 kg/ha

<sup>3</sup> estimate. Final price not available from NASS at submission time.

Table 2 highlights management and losses from those pests causing the largest economic losses in MS soybeans from 2004-2007. Stink bug (Hemiptera: Pentatomidae), a complex of southern green (*Nezara viridula*), green (*Acrosternum hilare*), brown (*Euschistus servus*), red-shouldered (*Thyanta* spp.) and red-banded (*Piezodorus guildinii*) stink bugs is the major pest of soybeans each year, infesting every acre, causing both yield and quality losses. Bean leaf beetle, *Ceratoma trifurcata*, (Coleoptera: Chrysomelidae) and three-cornered alfalfa hopper, *Spissistilus festinus*, (Hemiptera: Membracidae) cause different types of damage but caused about the same amount of loss each year. The soybean looper, *Pseudoplusia includens*, (Lepidoptera: Noctuidae) caused more damage in 2007 than in previous years. Yield losses and insecticide applications were relatively rare for all other pests (Appendices 2-5).

**Table 2.** Losses and management of major soybean pests in Mississippi, 2004-2007.

Pest	% acres treated with foliar insecticides				\$ loss + cost/ac			
	2004	2005	2006	2007	2004	2005	2006	2007
Stink bug	35.0	35.7	45.5	57.7	15.54	10.39	11.45	19.71
Bean leaf beetle	12.0	9.3	19.8	52.4	3.63	1.85	2.26	6.64
TCAH <sup>1</sup>	20.0	13.7	15.0	31.5	3.52	2.47	2.34	6.44
Soybean looper	0.4	1.3	2.8	14.7	1.04	1.04	1.28	3.99

<sup>1</sup>Three-cornered alfalfa hopper

One factor that has not been broken out in these soybean losses is the impact of double-cropped soybeans following wheat. Double-cropped acreage in Mississippi has traditionally been very small, but

with wheat acreage increasing in Mississippi, double-cropped soybeans were more common in 2007. These acres tended to receive more foliar applications for soybean loopers and stink bugs and had lower yields than full-season soybeans, accounting for much of the increase in the number of foliar applications in 2007. The complete soybean loss tables are found in Appendices 2-5.

### Acknowledgements

These losses could not be calculated without the assistance of numerous crop consultants and extension personnel who willingly completed this survey each year. We also acknowledge Michael Williams who has compiled insect losses in cotton for many years which gave us the idea to start a similar program in soybeans.

### References

**Heatherly, L. G. and H. F. Hodges [eds.]. 1999.** Soybean Production in the Midsouth. CRC Press, Boca Raton, FL.

**USDA NASS. 2007.** NASS-Mississippi Reports and Statistics,  
[http://www.nass.usda.gov/Statistics\\_by\\_State/Mississippi/index.asp](http://www.nass.usda.gov/Statistics_by_State/Mississippi/index.asp).

**Williams, M. R. 2006.** Cotton insect losses, <http://www.msstate.edu/Entomology/Cotton.html>.



**Appendix 1.** Definitions and formulas used in soybean loss estimate spreadsheet**Data Entry Fields**

Acres Infested (B)

Acres treated (D)

# applications / acre treated (F)

Cost of 1 insecticide (G)

% loss per acre infested (H)

**Definition**

Number of acres where pest was observed

Number of acres where an insecticide was targeted at this pest

Number of times an application was made on acres that were treated at least once

Cost of a single insecticide application (\$ per acre including material plus application cost)

Estimate of yield loss (as percent) from this pest on all acres where pest was present

**Calculated Fields**

% Acres Infested (C)

% Acres Treated (E)

# of apps per total ... (I)

cost / acre (J)

Overall reduction (K)

bushel lost per pest (L)

loss + cost (M)

loss + cost/acre (N)

% Total loss + cost (O)

**Formula**

Acres Infested (B) / Total Acres

Acres Treated (D) / Total Acres

% acres treated (E) x number of applications per treated acre (F)

# of apps per total ... (I) x cost of insecticide (G)

Acres infested (B) x % loss per acre infested (H) / Total acres

Total acres (B32) x Overall reduction (K) x yield

(bushels lost (L) x price (B34)) + (cost/acre (J) x total acres)

loss + cost (M) / total acres

loss + cost (M) / total loss + cost for all insects

**Appendix 2. Soybean insect losses, 2004.**

Pest	Acres Infested	% Acres Infested	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	80,000	4.8%	800	0.0%	1	\$7.00	0.50	0.000	\$0.00	0.02%	16,321	\$106,787	\$0.06	0.3%
Banded Cucumber Beetle	33,400	2.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	1,002,000	60.0%	200,400	12.0%	1.1	\$4.50	2.00	0.132	\$0.59	1.20%	817,660	\$6,061,472	\$3.63	14.5%
Blister Beetle	16,700	1.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Corn Earworm	83,500	5.0%	1,800	0.1%	1	\$7.25	0.10	0.001	\$0.01	0.01%	3,407	\$34,173	\$0.02	0.1%
Cutworms	16,700	1.0%	3,340	0.2%	1	\$1.50	0.00	0.002	\$0.00	0.00%	0	\$5,010	\$0.00	0.0%
Decetes Stem Borer	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	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	167,000	10.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grasshopper	500,000	29.9%	8,000	0.5%	1	\$2.60	0.50	0.005	\$0.01	0.15%	102,003	\$653,222	\$0.39	1.6%
Green Cloverworm	417,500	25.0%	0	0.0%	0	\$0.00	0.50	0.000	\$0.00	0.13%	85,173	\$528,072	\$0.32	1.3%
Lesser Cornstalk Borer	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	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	334,000	20.0%	1,670	0.1%	1	\$4.50	0.25	0.001	\$0.00	0.05%	34,069	\$218,744	\$0.13	0.5%
Saltmarsh Caterpillar	85,000	5.1%	1,700	0.1%	1	\$6.00	0.25	0.001	\$0.01	0.01%	8,670	\$63,956	\$0.04	0.2%
Soybean Aphid	83,500	5.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	334,000	20.0%	6,680	0.4%	1	\$6.00	2.00	0.004	\$0.02	0.40%	272,553	\$1,729,911	\$1.04	4.1%
Spider Mites	8,350	0.5%	0	0.0%	1	\$7.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Spotted Cucumber Beetle	0	0.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Stink Bugs	1,670,000	100.0%	584,500	35.0%	1.5	\$5.50	5.00	0.525	\$2.89	5.00%	3,406,916	\$25,945,007	\$15.54	62.1%
Threecornered Alfalfa Hopper	1,670,000	100.0%	334,000	20.0%	1.1	\$4.50	1.00	0.220	\$0.99	1.00%	681,383	\$5,877,876	\$3.52	14.1%
Thrips	1,002,000	60.0%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Velvetbean Caterpillar	417,500	25.0%	4,175	0.3%	1	\$4.50	0.50	0.003	\$0.01	0.13%	85,173	\$546,860	\$0.33	1.3%
								<b>0.894</b>	<b>\$4.54</b>	<b>8.09%</b>	<b>5,513,329</b>	<b>\$41,771,089</b>	<b>\$25.01</b>	<b>100.0%</b>

Total Acres	1,670,000
Yield/acre	37.5
Price/Bushel	\$6.20
% Acres Scouted	10
Scouting Fee/scouted acre	\$4.50
% Acres Insect Seed Trt.	0
Seed Trt Cost/treated ac	\$8.00

Total Bushels Harvested	62,625,000
Total Bushels Lost to Insects	5,513,329
Percent Yield Loss	8.09%
Yield w/o Insects	40.80
Ave. # Spray Applications	0.894
Seed Treated Acres	0
Scouted Acres	167,000

	Total	Per Acre
Foliar Insecticides Costs	\$7,588,448	\$4.54
Seed Treatment Costs	\$0	\$0.00
Scouting costs	\$751,500	\$0.45
<b>Total Costs</b>	<b>\$8,339,948</b>	<b>\$4.99</b>
Yield Lost to insects	\$34,182,641	\$20.47
<b>Total Losses + Costs</b>	<b>\$42,522,589</b>	<b>\$25.46</b>

**Appendix 3. Soybean insect losses, 2005.**

Pest	Acres Infested	% Acres Infested	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	250,000	15.5%	3,500	0.2%	1	\$7.00	0.30	0.002	\$0.02	0.05%	29,087	\$196,696	\$0.12	0.7%
Banded Cucumber Beetle	28,000	1.7%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	1,000,000	62.1%	150,000	9.3%	1	\$4.50	1.00	0.093	\$0.42	0.62%	387,829	\$2,970,945	\$1.85	10.8%
Blister Beetle	12,000	0.7%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Corn Earworm	60,000	3.7%	1,800	0.1%	1	\$7.25	0.01	0.001	\$0.01	0.00%	233	\$14,428	\$0.01	0.1%
Cutworms	30,000	1.9%	6,000	0.4%	1	\$1.50	0.00	0.004	\$0.01	0.00%	0	\$9,000	\$0.01	0.0%
Decetes Stem Borer	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	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	50,000	3.1%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grasshopper	800,000	49.7%	25,000	1.6%	1	\$2.60	0.50	0.016	\$0.04	0.25%	155,131	\$983,378	\$0.61	3.6%
Green Cloverworm	600,000	37.3%	0	0.0%	0	\$0.00	0.20	0.000	\$0.00	0.07%	46,539	\$275,513	\$0.17	1.0%
Lesser Cornstalk Borer	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	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	600,000	37.3%	25,000	1.6%	1	\$3.00	0.40	0.016	\$0.05	0.15%	93,079	\$626,027	\$0.39	2.3%
Saltmarsh Caterpillar	75,000	4.7%	3,500	0.2%	1	\$6.00	0.15	0.002	\$0.01	0.01%	4,363	\$46,829	\$0.03	0.2%
Soybean Aphid	90,000	5.6%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	450,000	28.0%	21,000	1.3%	1	\$6.00	1.50	0.013	\$0.08	0.42%	261,784	\$1,675,763	\$1.04	6.1%
Spider Mites	25,000	1.6%	500	0.0%	1	\$7.00	0.00	0.000	\$0.00	0.00%	0	\$3,500	\$0.00	0.0%
Spotted Cucumber Beetle	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	1,610,000	100.0%	575,000	35.7%	1.2	\$5.50	3.50	0.429	\$2.36	3.50%	2,185,414	\$16,732,649	\$10.39	60.7%
Threecornered Alfalfa Hopper	1,300,000	80.7%	220,000	13.7%	1	\$4.50	1.00	0.137	\$0.61	0.81%	504,177	\$3,974,728	\$2.47	14.4%
Thrips	1,200,000	74.5%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Velvetbean Caterpillar	100,000	6.2%	750	0.0%	1	\$4.50	0.20	0.000	\$0.00	0.01%	7,757	\$49,294	\$0.03	0.2%
						<b>0.712</b>			<b>\$3.60</b>	<b>5.89%</b>	<b>3,675,393</b>	<b>\$27,558,750</b>	<b>\$17.12</b>	<b>100.0%</b>

Total Acres	1,610,000
Yield/acre	36.5
Price/Bushel	\$5.92
% Acres Scouted	11
Scouting Fee/scouted acre	\$4.50
% Acres Insect Seed Trt.	0
Seed Trt Cost/treated ac	\$8.00

Total Bushels Harvested	58,765,000
Total Bushels Lost to Insects	3,675,393
Percent Yield Loss	5.89%
Yield w/o Insects	38.78
Ave. # Spray Applications	0.712
Seed Treated Acres	0
Scouted Acres	177,100

	Total	Per Acre
Foliar Insecticides Costs	\$5,800,425	\$3.60
Seed Treatment Costs	\$0	\$0.00
Scouting costs	\$796,950	\$0.50
<b>Total Costs</b>	<b>\$6,597,375</b>	<b>\$4.10</b>
Yield Lost to insects	\$21,758,325	\$13.51
<b>Total Losses + Costs</b>	<b>\$28,355,700</b>	<b>\$17.61</b>

**Appendix 4. Soybean insect losses, 2006.**

Pest	Acres Infested	% Acres Infested	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	365,000	21.9%	1,200	0.1%	1	\$7.00	0.30	0.001	\$0.01	0.07%	30,327	\$197,336	\$0.12	0.6%
Banded Cucumber Beetle	35,000	2.1%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Bean Leaf Beetle	1,300,000	77.8%	330,000	19.8%	1	\$6.00	0.80	0.198	\$1.19	0.62%	288,036	\$3,774,461	\$2.26	12.3%
Blister Beetle	9,000	0.5%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Corn Earworm	85,000	5.1%	1,800	0.1%	1	\$7.25	0.50	0.001	\$0.01	0.03%	11,771	\$86,381	\$0.05	0.3%
Cutworms	33,000	2.0%	1,750	0.1%	1	\$1.50	0.00	0.001	\$0.00	0.00%	0	\$2,625	\$0.00	0.0%
Decetes Stem Borer	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	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	43,000	2.6%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Grasshopper	950,000	56.9%	31,000	1.9%	1	\$5.10	0.50	0.019	\$0.09	0.28%	131,555	\$977,686	\$0.59	3.2%
Green Cloverworm	725,000	43.4%	0	0.0%	0	\$0.00	0.20	0.000	\$0.00	0.09%	40,159	\$250,189	\$0.15	0.8%
Lesser Cornstalk Borer	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	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Potato Leafhopper	450,000	26.9%	1,400	0.1%	1	\$6.00	0.20	0.001	\$0.01	0.05%	24,926	\$163,690	\$0.10	0.5%
Saltmarsh Caterpillar	46,000	2.8%	2,100	0.1%	1	\$9.00	0.15	0.001	\$0.01	0.00%	1,911	\$30,806	\$0.02	0.1%
Soybean Aphid	85,000	5.1%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%
Soybean Looper	666,000	39.9%	46,000	2.8%	1	\$9.00	1.50	0.028	\$0.25	0.60%	276,680	\$2,137,718	\$1.28	6.9%
Spider Mites	25,000	1.5%	90	0.0%	1	\$7.00	0.00	0.000	\$0.00	0.00%	0	\$630	\$0.00	0.0%
Spotted Cucumber Beetle	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	1,670,000	100.0%	760,000	45.5%	1.4	\$8.50	3.50	0.637	\$5.42	3.50%	1,618,815	\$19,129,218	\$11.45	62.1%
Threecornered Alfalfa Hopper	1,400,000	83.8%	250,000	15.0%	1	\$6.00	1.00	0.150	\$0.90	0.84%	387,740	\$3,915,621	\$2.34	12.7%
Thrips	1,600,000	95.8%	0	0.0%	0	\$0.00	0.01	0.000	\$0.00	0.01%	4,431	\$27,607	\$0.02	0.1%
Velvetbean Caterpillar	280,000	16.8%	1,200	0.1%	1	\$7.50	0.20	0.001	\$0.01	0.03%	15,510	\$105,625	\$0.06	0.3%
								<b>1.036</b>	<b>\$7.88</b>	<b>6.12%</b>	<b>2,831,860</b>	<b>\$30,799,594</b>	<b>\$18.44</b>	<b>100.0%</b>

State	MS
Year	2006
Total Acres	1,670,000
Yield/acre	26
Price/Bushel	\$6.23
% Acres Scouted	15
Scouting Fee/scouted acre	\$4.50
% Acres Insect Seed Trt.	0.01
Seed Trt Cost/treated ac	\$8.00

Total Bushels Harvested	43,420,000
Total Bushels Lost to Insects	2,831,860
Percent Yield Loss	6.12%
Yield w/o Insects	27.70
Ave. # Spray Applications	1.036
Seed Treated Acres	167
Scouted Acres	250,500

	Total	Per Acre
Foliar Insecticides Costs	\$13,157,105	\$7.88
Seed Treatment Costs	\$1,336	\$0.00
Scouting costs	\$1,127,250	\$0.68
Total Costs	\$14,285,691	\$8.55
Yield Lost to insects	\$17,642,489	\$10.56
Total Losses + Costs	\$31,928,180	\$19.12

Appendix 5. Soybean insect losses, 2007.

Pest	Acres	% Acres	Acres Treated	% Acres	# of apps/acres treated	Cost of 1	% loss per	# of apps per total soy acres	cost/acre	Overall % reduction	bushel lost		Loss + Cost	Loss +	% Total
	Infested	Infested		Treated		infested	per pest				Cost/acre	Cost			
Armyworm complex	75,000	5.2%	1,300	0.1%	1	\$7.00	0.30	0.001	\$0.01	0.02%	9,906	\$85,373	\$0.06	0.1%	
Banded Cucumber Beetle	75,000	5.2%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Bean Leaf Beetle	1,150,000	80.4%	750,000	52.4%	1.1	\$7.25	0.90	0.577	\$4.18	0.72%	455,657	\$9,489,808	\$6.64	16.6%	
Blister Beetle	2,500	0.2%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Corn Earworm	235,000	16.4%	125,000	8.7%	1	\$7.25	0.80	0.087	\$0.63	0.13%	82,767	\$1,543,553	\$1.08	2.7%	
Cutworms	17,500	1.2%	1,750	0.1%	1	\$1.50	0.00	0.001	\$0.00	0.00%	0	\$2,625	\$0.00	0.0%	
Decates Stem Borer	75,000	5.2%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Garden Webworms	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	32,500	2.3%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Grasshopper	810,000	56.6%	28,500	2.0%	1	\$5.10	0.50	0.020	\$0.10	0.28%	178,301	\$1,518,264	\$1.06	2.7%	
Green Cloverworm	910,000	63.6%	24,000	1.7%	1	\$6.00	0.20	0.017	\$0.10	0.13%	80,125	\$760,964	\$0.53	1.3%	
Lesser Cornstalk Borer	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	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Potato Leafhopper	325,000	22.7%	1,100	0.1%	1	\$6.00	0.20	0.001	\$0.00	0.05%	28,616	\$226,944	\$0.16	0.4%	
Saltmarsh Caterpillar	32,500	2.3%	24,000	1.7%	1	\$9.00	0.15	0.017	\$0.15	0.00%	2,146	\$232,526	\$0.16	0.4%	
Soybean Aphid	91,000	6.4%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Soybean Looper	750,000	52.4%	210,000	14.7%	1	\$9.00	1.50	0.147	\$1.32	0.79%	495,279	\$5,703,650	\$3.99	10.0%	
Spider Mites	25,000	1.7%	125	0.0%	1	\$7.00	0.00	0.000	\$0.00	0.00%	0	\$875	\$0.00	0.0%	
Spotted Cucumber Beetle	225,000	15.7%	0	0.0%	0	\$0.00	0.00	0.000	\$0.00	0.00%	0	\$0	\$0.00	0.0%	
Stink Bugs	1,430,000	100.0%	825,000	57.7%	1.6	\$8.50	3.50	0.923	\$7.85	3.50%	2,203,442	\$28,186,506	\$19.71	49.4%	
Threecornered Alfalfa Hopper	1,400,000	97.9%	451,000	31.5%	1	\$7.25	1.25	0.315	\$2.29	1.22%	770,434	\$9,202,095	\$6.44	16.1%	
Thrips	875,000	61.2%	21,500	1.5%	0	\$6.00	0.01	0.000	\$0.00	0.01%	3,852	\$29,662	\$0.02	0.1%	
Velvetbean Caterpillar	170,000	11.9%	1,150	0.1%	1	\$7.50	0.20	0.001	\$0.01	0.02%	14,968	\$123,882	\$0.09	0.2%	
								<b>2.107</b>	<b>\$16.64</b>	<b>6.87%</b>	<b>4,325,494</b>	<b>\$57,106,726</b>	<b>\$39.93</b>	<b>100.0%</b>	

State	MS
Year	2007
Total Acres	1,430,000
Yield/acre	41
Price/Bushel	\$7.70
% Acres Scouted	25
Scouting Fee/scouted acre	\$4.50
% Acres Insect Seed Trt.	2
Seed Trt Cost/treated ac	\$8.00

Total Bushels Harvested	58,630,000
Total Bushels Lost to Insects	4,325,494
Percent Yield Loss	6.87%
Yield w/o Insects	44.02
Ave. # Spray Applications	2.107
Seed Treated Acres	28,600
Scouted Acres	357,500

	Total	Per Acre
Foliar Insecticides Costs	\$23,800,425	\$16.64
Seed Treatment Costs	\$228,800	\$0.16
Scouting costs	\$1,608,750	\$1.13
Total Costs	\$25,637,975	\$17.93
Yield Lost to insects	\$33,306,301	\$23.29
Total Losses + Costs	\$58,944,276	\$41.22