

Supplemental Table 1. Percent of National Acres Planted to All Herbicide-Tolerant (HT) and <i>Bt</i> Crop Varieties, 1996 - 2008. [Combines percent acres planted to single- and multiple-trait varieties]													
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*
	----- All herbicide-tolerant varieties -----												
Corn	3%	4.3%	9%	8%	7%	8%	11%	15%	20%	26%	36%	52%	63%
Soybeans	7.4%	17%	44.2%	55.8%	54%	68%	75%	81%	85%	87%	89%	91%	92%
Cotton	0.2%	5%	26%	44%	61%	74%	74%	74%	77%	81%	86%	92%	93%
	----- All <i>Bt</i> crop varieties -----												
Corn	0.0%	2.9%	14.3%	19.9%	19%	19%	24%	29%	33%	35%	40%	49%	57%
Cotton	12%	18.5%	22.3%	31.0%	38.9%	41.0%	38.6%	48.7%	52.5%	60.3%	65.0%	72.1%	73.0%
* Percent of Acres planted in 2008 are preliminary projections based on recent trends.													
Data Source: Economic Research Service data. See Supplemental Table 1 (corn) and 2 (soybeans) for complete sources. Supplemental Table 3 provides sources of cotton data.													

Supplemental Table 2. Genetically engineered (GE) corn varieties by State and United States, 2000-2009. [from the USDA Economic Research Service]

State	Insect-resistant (<i>Bt</i>) only										Herbicide-tolerant only									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	<i>Percent of all corn planted</i>										<i>Percent of all corn planted</i>									
Illinois	13	12	18	23	26	25	24	19	13	10	3	3	3	4	5	6	12	15	15	15
Indiana	7	6	7	8	11	11	13	12	7	7	4	6	6	7	8	11	15	17	16	17
Iowa	23	25	31	33	36	35	32	22	16	14	5	6	7	8	10	14	14	19	15	15
Kansas	25	26	25	25	25	23	23	25	25	24	7	11	15	17	24	30	33	36	30	29
Michigan	8	8	12	18	15	15	16	19	15	13	4	7	8	14	14	20	18	22	24	20
Minnesota	28	25	29	31	35	33	28	26	19	23	7	7	11	15	17	22	29	32	29	24
Missouri	20	23	27	32	32	37	38	30	27	23	6	8	6	9	13	12	14	19	21	17
Nebraska	24	24	34	36	41	39	37	31	27	26	8	8	9	11	13	18	24	23	24	23
North Dakota2/						21	29	29	24	22						39	34	37	34	30
Ohio	6	7	6	6	8	9	8	9	12	15	3	4	3	3	4	7	13	12	17	17
South Dakota	35	30	33	34	28	30	20	16	7	6	11	14	23	24	30	31	32	34	30	25
Texas2/						21	27	22	20	21						42	37	37	31	30
Wisconsin	13	11	15	21	22	22	22	19	14	13	4	6	9	9	14	18	18	23	26	27
Other States 1/	10	11	14	17	19	19	20	20	20	20	6	8	12	17	21	19	25	33	32	30
U.S.	18	18	22	25	27	26	25	21	17	17	6	7	9	11	14	17	21	24	23	22

State	Stacked gene varieties										All GE varieties									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	<i>Percent of all corn planted</i>										<i>Percent of all corn planted</i>									
Illinois	1	1	1	1	2	5	19	40	52	59	17	16	22	28	33	36	55	74	80	84
Indiana	*	*	*	1	2	4	12	30	55	55	11	12	13	16	21	26	40	59	78	79
Iowa	2	1	3	4	8	11	18	37	53	57	30	32	41	45	54	60	64	78	84	86
Kansas	1	1	2	5	5	10	12	21	35	38	33	38	43	47	54	63	68	82	90	91
Michigan	*	2	2	3	4	5	10	19	33	42	12	17	22	35	33	40	44	60	72	75
Minnesota	2	4	4	7	11	11	16	28	40	41	37	36	44	53	63	66	73	86	88	88
Missouri	2	1	2	1	4	6	7	13	22	37	28	32	34	42	49	55	59	62	70	77
Nebraska	2	2	4	5	6	12	15	25	35	42	34	34	46	52	60	69	76	79	86	91
North Dakota2/						15	20	22	31	41						75	83	88	89	93
Ohio	*	*	*	*	1	2	5	20	37	35	9	11	9	9	13	18	26	41	66	67
South Dakota	2	3	10	17	21	22	34	43	58	65	48	47	66	75	79	83	86	93	95	96
Texas2/						9	13	20	27	33						72	77	79	78	84
Wisconsin	1	1	2	2	2	6	10	22	35	37	18	18	26	32	38	46	50	64	75	77
Other States 1/	1	1	2	2	6	6	10	14	22	28	17	20	27	36	46	44	55	67	74	78
U.S.	1	1	2	4	6	9	15	28	40	46	25	26	34	40	47	52	61	73	80	85

* Less than 1 percent.

1/ Includes all other States in the corn estimating program

2/Estimates published individually beginning in 2005.

SOURCES

2000-2001: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 29, 2001. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2001/Acre-06-29-2001.pdf>

2001-2002: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 28, 2002. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2002/Acre-06-28-2002.pdf>

2002-2003: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 30, 2003. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2003/Acre-06-30-2003.pdf>

2003-2004: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 30, 2004. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2004/Acre-06-30-2004.pdf>

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2006-2007: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 29, 2007. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2007/Acre-06-29-2007.pdf>

2007-2008: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 30, 2008. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2008/Acre-06-30-2008.pdf>

2008-2009: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Average*. June 30, 2009. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2009/Acre-06-30-2009.pdf>

Supplemental Table 3. Genetically Engineered (GE) Soybean Varieties by State and United States, 2000-2009. [from the USDA's Economic Research Service]

State	Herbicide-tolerant only										All GE varieties									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	<i>Percent of all soybeans planted</i>										<i>Percent of all soybeans planted</i>									
Arkansas	43	60	68	84	92	92	92	92	94	94	43	60	68	84	92	92	92	92	94	94
Illinois	44	64	71	77	81	81	87	88	87	90	44	64	71	77	81	81	87	88	87	90
Indiana	63	78	83	88	87	89	92	94	96	94	63	78	83	88	87	89	92	94	96	94
Iowa	59	73	75	84	89	91	91	94	95	94	59	73	75	84	89	91	91	94	95	94
Kansas	66	80	83	87	87	90	85	92	95	94	66	80	83	87	87	90	85	92	95	94
Michigan	50	59	72	73	75	76	81	87	84	83	50	59	72	73	75	76	81	87	84	83
Minnesota	46	63	71	79	82	83	88	92	91	92	46	63	71	79	82	83	88	92	91	92
Mississippi	48	63	80	89	93	96	96	96	97	94	48	63	80	89	93	96	96	96	97	94
Missouri	62	69	72	83	87	89	93	91	92	89	62	69	72	83	87	89	93	91	92	89
Nebraska	72	76	85	86	92	91	90	96	97	96	72	76	85	86	92	91	90	96	97	96
North Dakota	22	49	61	74	82	89	90	92	94	94	22	49	61	74	82	89	90	92	94	94
Ohio	48	64	73	74	76	77	82	87	89	83	48	64	73	74	76	77	82	87	89	83
South Dakota	68	80	89	91	95	95	93	97	97	98	68	80	89	84	95	95	93	97	97	98
Wisconsin	51	63	78	84	82	84	85	88	90	85	51	63	78	84	82	84	85	88	90	85
Other States 1/	54	64	70	76	82	84	86	86	87	87	54	64	70	76	82	84	86	86	87	87
U.S.	54	68	75	81	85	87	89	91	92	91	54	68	75	81	85	87	89	91	92	91

1/ Includes all other States in the soybean estimating program.

2/ Estimates published individually beginning in 2005.

SOURCES

2000-2001: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 29, 2001. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2001/Acre-06-29-2001.p>

2001-2002: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 28, 2002. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2002/Acre-06-28-2002.p>

2002-2003: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 30, 2003. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2003/Acre-06-30-2003.p>

2003-2004: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 30, 2004. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2004/Acre-06-30-2004.p>

2004-2005: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 30, 2005. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2005/Acre-06-30-2005.p>

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2007-2008: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 30, 2008. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2008/Acre-06-30-2008.p>

2008-2009: U.S. Dept of Agriculture, National Agricultural Statistics Service (NASS). *Acreage*. June 30, 2009. <http://usda.mannlib.cornell.edu/usda/nass/Acre//2000s/2009/Acre-06-30-2009.p>

Supplemental Table 4. National Upland Cotton Acres Planted to Genetically Engineered (GE) Varieties Based on Data Provided by the Agricultural Marketing Service ["HT" is "Herbicide-Tolerant"; "RR" is Roundup Ready"; "LL" is "Liberty Link"; "BXN" is "Bromoxynil-Tolerant"; "Bt" is " <i>Bacillus thuringiensis</i> "]														
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Acres Planted	16,716,800	14,375,500	13,648,000	13,064,300	14,584,000	15,347,000	15,498,500	13,714,000	13,301,000	13,409,000	13,975,000	14,948,000	10,535,000	9,296,000
HT Percent Acres														
Planted														
RR alone/stacked	-	-	3.65	20.60	35.90	54.00	70.40	71.90	73.36	74.26	78.73	82.12	89.42	89.90
LL alone/stacked	-	-	-	-	-	-	-	-	-	1.09	2.24	3.54	2.47	2.72
BXN alone/stacked	0.07	0.16	1.20	5.80	7.80	7.20	3.65	2.20	0.46	1.22	-	-	-	-
HT alone & stacked	0.07	0.16	4.85	26.40	43.70	61.20	74.05	74.10	73.82	76.57	80.97	85.66	91.89	92.62
HT Acres Planted														
RR alone/stacked	-	-	498,152	2,691,246	5,235,656	8,287,380	10,910,944	9,860,366	9,757,614	9,957,523	11,002,518	12,275,298	9,420,397	8,357,104
LL alone/stacked	-	-	-	-	-	-	-	-	-	146,158	313,040	529,159	260,215	252,851
BXN alone/stacked	11,702	23,001	163,776	757,729	1,137,552	1,104,984	565,695	301,708	61,185	163,590	-	-	-	-
HT alone & stacked	11,702	23,001	661,928	3,448,975	6,373,208	9,392,364	11,476,639	10,162,074	9,818,798	10,267,271	11,315,558	12,804,457	9,680,612	8,609,955
Bt Percent Acres														
Planted														
Bt	0.08	12.00	18.00	18.70	15.60	10.80	3.80	2.30	2.24	0.62	0.96	0.87	0.34	0.82
Bt plus HT	-	-	0.45	3.60	15.40	28.10	37.15	36.30	46.47	51.83	59.32	64.12	71.75	72.20
Total Bt	0.08	12.00	18.45	22.30	31.00	38.90	40.95	38.60	48.71	52.45	60.28	64.99	72.09	73.02
Bt Acres Planted														
Bt	13,373	1,725,060	2,456,640	2,443,024	2,275,104	1,657,476	588,943	315,422	297,942	83,136	134,160	130,048	35,819	76,227
Bt plus HT	-	-	61,416	470,315	2,245,936	4,312,507	5,757,693	4,978,182	6,180,975	6,949,885	8,289,970	9,584,658	7,558,863	6,711,712
Total Bt	13,373	1,725,060	2,518,056	2,913,339	4,521,040	5,969,983	6,346,636	5,293,604	6,478,917	7,033,021	8,424,130	9,714,705	7,594,682	6,787,939
Percent Acres Planted														
Individual Varieties														
RR	-	-	3.20	17.00	20.50	25.90	33.30	36.20	27.17	23.51	19.41	18.34	18.11	19.10
BXN	0.07	0.16	1.20	5.80	7.80	7.20	3.60	1.60	0.18	0.14	-	-	-	-
LL	-	-	-	-	-	-	-	-	-	1.09	2.24	3.20	2.03	1.32
BXN + Bt	-	-	-	-	-	-	0.05	0.60	0.28	1.08	-	-	-	-
RR + Bt	-	-	0.45	3.60	15.40	28.10	37.10	35.70	46.19	50.75	59.32	63.78	71.31	70.80
LL + Bt	-	-	-	-	-	-	-	-	-	-	-	0.34	0.44	1.40
Total HT Alone	0.07	0.16	4.40	22.80	28.30	33.10	36.90	37.80	27.35	24.74	21.65	21.54	20.14	20.42
Total Stacked	-	-	0.45	3.60	15.40	28.10	37.15	36.30	46.47	51.83	59.32	64.12	71.75	72.20
Total Transgenic	0.15	12.16	22.85	45.10	59.30	72.00	77.85	76.40	76.06	77.19	81.93	86.53	92.23	93.44
Conventional	99.80	87.80	77.20	54.90	40.70	28.00	22.30	23.00	23.78	18.69	17.42	12.36	7.29	5.36

Source: Percent acres planted to individual varieties came from the AMS. National acres planted to each crop came from NASS Crop Production Annual Summary Report.

Supplemental Table 5. Herbicide-Tolerant (HT) Varieties of Corn, Soybean, and Cotton: Acres Planted, 1996 - 2008.														
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total 1996-2008
HT Corn	2,385,210	3,420,091	7,214,850	6,190,880	5,568,570	6,060,160	8,695,940	11,790,450	16,185,800	21,262,540	28,197,720	48,634,040	54,168,660	219,774,911
HT Soybeans	4,751,170	11,900,850	31,835,050	41,141,340	40,103,640	50,371,000	55,442,250	59,457,240	63,926,800	62,667,840	67,214,580	58,914,310	69,660,560	617,386,630
HT Cotton	23,001	661,928	3,448,975	6,373,208	9,392,364	11,476,639	10,162,074	9,818,798	10,267,271	11,315,558	12,804,457	9,680,612	8,609,955	104,034,840
All HT Crops	7,159,381	15,982,869	42,498,875	53,705,428	55,064,574	67,907,799	74,300,264	81,066,488	90,379,871	95,245,938	108,216,757	117,228,962	132,439,175	941,196,381
Percent of Total Acres Planted to Three Crops	4.5%	9.8%	25.7%	32.4%	32.6%	41.1%	44.6%	49.0%	53.3%	56.8%	64.1%	69.4%	77.5%	43.5%

Supplemental Table 6. <i>Bt</i> Varieties of Corn and Cotton: Acres Planted, 1996 - 2008.														
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total 1996-2008
<i>Bt</i> Corn	-	2,300,868	11,490,011	15,400,000	15,114,690	14,392,880	18,972,960	22,794,870	26,706,570	28,622,650	31,330,800	45,828,230	49,009,740	281,964,269
<i>Bt</i> Cotton	1,725,060	2,518,056	2,913,339	4,521,040	5,969,983	6,346,636	5,293,604	6,478,917	7,033,021	8,424,130	9,714,705	7,594,682	6,787,939	75,321,111
Total	1,725,060	4,818,924	14,403,350	19,921,040	21,084,673	20,739,516	24,266,564	29,273,787	33,739,591	37,046,780	41,045,505	53,422,912	55,797,679	357,285,380
Percent of Total Acres Planted to Two Crops	1.8%	5.2%	15.4%	21.7%	22.2%	22.7%	26.2%	31.9%	35.8%	38.7%	44.0%	51.3%	58.6%	29.1%

Supplemental Table 7. Average Pesticide Pounds Applied per Acre of Conventional, Herbicide-Tolerant (HT), and *Bt* Varieties and Estimated Differences in Pesticides Applied per Acre, 1996 - 2008.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	<i>Conventional Corn (pounds active ingredient [a.i.]</i>												
Herbicides Applied per Acre	2.67	2.67	2.54	2.46	2.14	2.28	1.92	2.06	2.06	2.06	2.07	2.05	2.02
Insecticides per Acre for ECB Control	0.20	0.25	0.22	0.19	0.18	0.14	0.12	0.17	0.16	0.15	0.15	0.15	0.15
Insecticides per Acre for CRW Control	0.68	0.69	0.56	0.51	0.46	0.35	0.26	0.29	0.24	0.19	0.19	0.19	0.19
	<i>HT Corn (pounds a.i.)</i>												
Herbicides Applied per Acre	1.88	1.72	1.74	1.81	1.75	1.83	1.70	1.93	2.00	2.05	2.15	2.22	2.27
	<i>Change in Pesticide Use per Acre of GE Corn (pounds a.i.)</i>												
Herbicides Applied per Acre	-0.79	-0.95	-0.80	-0.65	-0.39	-0.45	-0.22	-0.13	-0.06	-0.01	0.08	0.18	0.25
Insecticide per Acre <i>Bt</i> Corn for ECB	-	-0.23	-0.16	-0.12	-0.11	-0.09	-0.07	-0.09	-0.08	-0.07	-0.07	-0.07	-0.07
Insecticide per Acre <i>Bt</i> Corn for CRW	-	-	-	-	-	-	-	-0.28	-0.22	-0.15	-0.14	-0.12	-0.11
	<i>Conventional Soybeans (pounds a.i.)</i>												
Herbicides Applied per Acre	1.19	1.22	1.13	0.84	0.90	0.73	0.88	0.97	0.80	0.59	0.70	0.52	0.49
	<i>HT Soybeans (pounds a.i.)</i>												
Herbicides Applied per Acre	0.89	0.99	1.20	1.20	1.18	1.07	1.31	1.32	1.22	1.25	1.50	1.58	1.65
	<i>Change in Herbicide Use per HT Soybean Acre (pounds a.i.)</i>												
Herbicides Applied per Acre	-0.30	-0.23	0.07	0.36	0.28	0.34	0.42	0.34	0.41	0.66	0.80	1.06	1.16
	<i>Conventional Cotton (pounds a.i.)</i>												
Herbicides Applied per Acre	1.88	2.13	1.97	2.03	1.92	1.45	1.67	1.74	1.71	1.63	1.87	2.06	2.07
Insecticides Applied per Acre	0.33	0.42	0.38	0.45	0.43	0.38	0.39	0.40	0.42	0.40	0.43	0.47	0.47
	<i>HT Cotton (pounds a.i.)</i>												
Herbicides Applied per Acre	1.13	1.34	1.62	1.69	1.79	1.72	1.90	2.08	2.12	2.17	2.38	2.59	2.72
	<i>Change in Pesticide Use per Acre of GE Cotton (pounds a.i.)</i>												
Herbicides Applied per Acre	-0.75	-0.79	-0.35	-0.34	-0.13	0.27	0.23	0.34	0.41	0.54	0.50	0.53	0.65
Insecticides Applied per Acre	-0.33	-0.42	-0.38	-0.45	-0.43	-0.38	-0.39	-0.40	-0.42	-0.40	-0.43	-0.47	-0.47

Source: All estimates based on pesticide use data reported by the National Agricultural Statistics Service (NASS).

Supplemental Table 8. Differences in the Pounds of Pesticides Applied as a Result of GE Corn, Soybean, and Cotton: Acres Planted, 1996 - 2008.														
	1996	1997	1998	1999	2000	2001	2002	2003*	2004	2005	2006	2007	2008	Totals 1996-2008
Corn														
Herbicides	-1,893,414	-3,252,124	-5,787,737	-4,037,530	-2,155,575	-2,700,723	-1,954,144	-1,525,823	-954,323	-265,402	2,288,045	8,575,878	13,760,705	97,832
Insecticides	-	-520,789	-1,791,623	-1,869,531	-1,683,680	-1,387,367	-1,455,758	-2,398,098	-3,041,706	-2,999,287	-3,809,463	-5,378,731	-6,294,465	-32,630,496
Herbicides plus Insecticides (H+I)	-1,893,414	-3,772,913	-7,579,360	-5,907,061	-3,839,255	-4,088,090	-3,409,902	-3,923,921	-3,996,029	-3,264,690	-1,521,418	3,197,147	7,466,240	-32,532,664
H+I as % of Total Pesticides Applied	-0.8%	-1.7%	-3.6%	-3.0%	-2.1%	-2.3%	-2.2%	-2.3%	-2.3%	-1.9%	-0.9%	1.6%	3.9%	-1.3%
Soybeans														
Herbicides (H)	-1,436,639	-2,724,291	2,228,454	14,892,793	11,333,637	17,315,031	23,507,514	20,497,101	26,469,038	41,510,749	53,995,126	62,700,531	81,044,133	351,333,176
H as % of Total Pesticides Applied	-1.9%	-3.3%	2.9%	19.4%	14.5%	24.3%	26.5%	22.3%	30.5%	49.4%	50.5%	65.2%	68.6%	31.0%
Cotton														
Herbicides	-17,278	-521,751	-1,218,388	-2,150,816	-1,210,356	3,095,818	2,354,148	3,375,446	4,203,237	6,055,366	6,464,714	5,128,353	5,586,822	31,145,316
Insecticides	-572,203	-1,048,686	-1,100,219	-2,054,531	-2,572,161	-2,387,893	-2,063,171	-2,616,735	-2,924,356	-3,397,429	-4,173,137	-3,535,969	-3,160,362	-31,606,852
Herbicides plus Insecticides (H+I)	-589,481	-1,570,437	-2,318,607	-4,205,347	-3,782,517	707,924	290,978	758,711	1,278,881	2,657,937	2,291,577	1,592,384	2,426,460	-461,537
H+I as % of Total Pesticides Applied	-1.3%	-3.3%	-5.6%	-6.0%	-5.3%	1.3%	0.6%	1.9%	3.0%	5.9%	4.7%	4.6%	7.6%	-0.1%
Three Crops														
Herbicides	-3,347,331	-6,498,166	-4,777,671	8,704,446	7,967,706	17,710,126	23,907,519	22,346,725	29,717,952	47,300,713	62,747,885	76,404,762	100,391,660	382,576,324
Insecticides	-572,203	-1,569,475	-2,891,842	-3,924,062	-4,255,841	-3,775,260	-3,518,929	-5,014,833	-5,966,062	-6,396,716	-7,982,600	-8,914,699	-9,454,827	-64,237,349
Herbicides plus Insecticides (H+I)	-3,919,534	-8,067,641	-7,669,513	4,780,384	3,711,865	13,934,866	20,388,590	17,331,892	23,751,891	40,903,997	54,765,285	67,490,062	90,936,833	318,338,975
H+I as % of Total Pesticides Applied	-1.1%	-2.3%	-2.3%	1.4%	1.1%	4.6%	6.9%	5.8%	7.9%	13.4%	16.7%	19.9%	26.3%	7.5%

Supplemental Table 9. Insecticide Use to Control the European Corn Borer (ECB) and Southwestern Corn Borer (SWCB) on Conventional Varieties of Corn, 1996- 2008. [See notes: "AT" is "Acres Treated"]

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*	2007	2008*
Percent Acres Treated for ECB/SWCB													
Lambda-cyhalothrin (80% of total)	1.6%	0.8%	1.6%	2.4%	1.6%	1.6%	1.6%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
Permethrin	4.0%	5.0%	2.0%	3.0%	3.0%	3.0%	2.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Chlorpyrifos (10% of total)	0.8%	0.7%	0.6%	0.5%	0.6%	0.4%	0.3%	0.4%	0.3%	0.2%	0.2%	0.2%	0.2%
Bifenthrin (50% of total)	0.5%	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.5%	1.3%	1.0%	1.0%	1.0%	1.0%
Esfenvalerate (75% of total)	0.8%	0.0%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%
Dimethoate (75% of total)	0.3%	0.0%	0.8%	0.4%	0.2%	0.0%	0.4%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Methyl parathion (25% of total)	0.5%	1.0%	0.3%	0.3%	0.2%	0.3%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%
Cyfluthrin (25% of total)	0.3%	0.3%	0.8%	0.5%	0.5%	1.0%	1.0%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Propargite	0.0%	0.0%	0.2%	0.5%	0.1%	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Zeta-cypermethrin	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	1.0%	0.8%	0.5%	0.5%	0.5%	0.5%
Total Percent Acres Treated	8.7%	7.8%	7.2%	8.9%	7.6%	7.3%	6.9%	7.0%	6.4%	5.8%	5.8%	5.8%	5.8%
Percent Not Treated	91.3%	92.3%	92.8%	91.1%	92.4%	92.7%	93.1%	93.0%	93.6%	94.2%	94.2%	94.2%	94.2%
Acres Treated per Crop Year for ECB/SWCB													
Lambda-cyhalothrin	1,272,112	636,296	1,282,640	1,857,264	1,272,816	1,212,032	1,264,864	628,824	679,804	719,655	689,278	823,038	756,642
Permethrin	3,180,280	3,976,850	1,603,300	2,553,738	2,386,530	2,272,560	1,581,080	786,030	809,290	817,790	783,270	935,270	859,820
Chlorpyrifos	636,056	612,435	480,990	386,930	477,306	333,309	237,162	314,412	242,787	163,558	156,654	187,054	171,964
Bifenthrin	397,535	0	801,650	773,860	795,510	757,520	790,540	1,179,045	1,011,613	817,790	783,270	935,270	859,820
Esfenvalerate	596,303	0	0	290,198	340,081	3,977	0	0	77,407	156,440	149,836	178,913	164,480
Dimethoate	233,751	0	661,361	290,198	178,990	28,407	343,885	147,381	169,472	124,758	119,492	142,680	131,170
Methyl parathion	477,042	1,033,981	200,413	193,465	161,886	246,194	71,149	151,311	116,210	77,437	74,168	88,561	81,417
Cyfluthrin	198,768	198,843	601,238	386,930	397,755	757,520	790,540	1,375,553	1,416,258	1,431,133	1,370,723	1,636,723	1,504,685
Propargite	0	0	184,380	386,930	47,731	15,150	0	276,683	242,243	175,138	167,745	200,297	184,139
Zeta-cypermethrin	0	0	0	0	0	0	411,081	786,030	699,299	534,503	511,941	611,288	561,974
Total Acres Treated	6,991,846	6,458,404	5,815,971	7,119,512	6,058,604	5,626,669	5,490,300	5,645,267	5,464,382	5,018,202	4,806,377	5,739,094	5,276,110
Weighted Share of Acres Treated													
Lambda-cyhalothrin	0.18	0.10	0.22	0.26	0.21	0.22	0.23	0.11	0.12	0.14	0.14	0.14	0.14
Permethrin	0.45	0.62	0.28	0.36	0.39	0.40	0.29	0.14	0.15	0.16	0.16	0.16	0.16
Chlorpyrifos	0.09	0.09	0.08	0.05	0.08	0.06	0.04	0.06	0.04	0.03	0.03	0.03	0.03
Bifenthrin	0.06	0.00	0.14	0.11	0.13	0.13	0.14	0.21	0.19	0.16	0.16	0.16	0.16
Esfenvalerate	0.09	0.00	0.00	0.04	0.06	0.00	0.00	0.00	0.01	0.03	0.03	0.03	0.03
Dimethoate	0.03	0.00	0.11	0.04	0.03	0.01	0.06	0.03	0.03	0.02	0.02	0.02	0.02
Methyl parathion	0.07	0.16	0.03	0.03	0.03	0.04	0.01	0.03	0.02	0.02	0.02	0.02	0.02
Cyfluthrin	0.03	0.03	0.10	0.05	0.07	0.13	0.14	0.24	0.26	0.29	0.29	0.29	0.29
Propargite	0.00	0.00	0.03	0.05	0.01	0.00	0.00	0.05	0.04	0.03	0.03	0.03	0.03
Zeta-cypermethrin	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.14	0.13	0.11	0.11	0.11	0.11
Average Rate of Application													
Lambda-cyhalothrin	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.023	0.023	0.023
Permethrin	0.12	0.10	0.09	0.08	0.10	0.10	0.10	0.08	0.09	0.11	0.11	0.11	0.11
Chlorpyrifos	1.04	1.12	1.01	1.08	1.05	1.04	0.94	1.00	1.06	1.11	1.11	1.11	1.11
Bifenthrin	0.05	0.00	0.07	0.06	0.07	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Esfenvalerate	0.03	0.00	0.00	0.05	0.13	0.02	0.00	0.00	0.02	0.04	0.04	0.04	0.04
Dimethoate	0.46	0.00	0.47	0.46	0.48	0.51	0.42	0.34	0.39	0.44	0.44	0.44	0.44
Methyl parathion	0.43	0.51	0.41	0.51	0.41	0.40	0.53	0.33	0.31	0.28	0.28	0.28	0.28
Cyfluthrin	0.007	0.006	0.006	0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.007	0.007	0.007
Propargite	0.00	0.00	1.07	0.97	1.00	1.40	0.00	1.24	1.50	1.76	1.76	1.76	1.76
Zeta-cypermethrin	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Conventional Corn													
Weighted Average Rate per Crop Year (ECB & SWCB control)	0.20	0.25	0.22	0.19	0.18	0.14	0.12	0.17	0.16	0.15	0.15	0.15	0.15

* Percent Acres Treated and Rate per Crop Year estimates for 2006-2008 assume no change in percent acres treated or rates from 2005, the last year for which NASS data are available. Percent Acres Treated, Acre Treatments, and Rate per Crop Year were interpolated for years 2004. The number of applications used to calculate the "Acre Treatments per Crop Year" were interpolated for year 2004. Acre Treatments in 2006-2008 rose proportional to the change in Acres Planted.

Supplemental Table 10. Insecticide Use to Control Rootworm (CRW) on Conventional Corn Varieties, 1996- 2008. [See Notes: "AT" is "Acres Treated"]

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Percent Acres Treated for Rootworm													
Lambda-cyhalothrin (20% of total)	0.4%	0.2%	0.4%	0.6%	0.4%	0.4%	0.4%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%
Chlorpyrifos (90% of total)	7.2%	6.3%	5.4%	4.5%	5.4%	3.6%	2.7%	3.6%	2.7%	1.8%	1.4%	0.9%	0.7%
Bifenthrin (50% of total)	0.5%	0.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.5%	1.3%	1.0%	0.8%	0.5%	0.4%
Esfenvalerate (25% of total)	0.3%	0.0%	0.0%	0.1%	0.1%	0.002%	0.0%	0.0%	0.0%	0.1%	0.05%	0.03%	0.03%
Dimethoate (25% of total)	0.1%	0.0%	0.3%	0.1%	0.1%	0.013%	0.1%	0.1%	0.04%	0.02%	0.02%	0.01%	0.01%
Methyl parathion (75% of total)	1.5%	3.0%	0.8%	0.8%	0.6%	0.8%	0.3%	0.5%	0.4%	0.3%	0.2%	0.1%	0.1%
Carbofuran	1.0%	2.0%	1.0%	1.0%	0.6%	0.1%	0.4%	0.6%	0.4%	0.2%	0.2%	0.1%	0.1%
Cyfluthrin (75% of total)	0.8%	0.8%	2.3%	1.5%	1.5%	3.0%	3.0%	5.3%	5.3%	5.3%	3.9%	2.6%	2.1%
Fipronil	0.0%	0.0%	1.0%	1.0%	4.0%	3.0%	3.0%	2.0%	1.5%	1.0%	0.8%	0.5%	0.4%
Tebupirimphos	1.0%	1.0%	3.0%	2.0%	2.0%	4.0%	4.0%	7.0%	6.5%	6.0%	4.5%	3.0%	2.4%
Tefluthrin	5.0%	7.0%	5.0%	7.0%	7.0%	6.0%	6.0%	6.0%	6.5%	7.0%	5.3%	3.5%	2.8%
Terbufos	6.0%	4.0%	6.0%	5.0%	3.0%	3.0%	1.0%	2.0%	1.2%	0.5%	0.4%	0.2%	0.2%
Total Percent Acres Treated	23.7%	24.3%	26.1%	24.6%	25.7%	24.8%	21.9%	28.7%	26.0%	23.3%	17.5%	11.7%	9.3%
Percent Not Treated	76.3%	75.8%	74.0%	75.4%	74.3%	75.2%	78.1%	71.3%	74.0%	76.7%	82.5%	88.3%	90.7%
Acres Treated per Crop Year for CRW													
Lambda-cyhalothrin	318,028	159,074	320,660	557,179	318,204	303,008	316,216	157,206	169,951	179,914	129,240	102,880	75,664
Chlorpyrifos	5,724,504	5,511,914	4,328,910	3,482,370	4,725,329	2,727,072	2,134,458	2,829,708	2,185,083	1,472,022	1,057,415	841,743	619,070
Bifenthrin	397,535	-	801,650	928,632	795,510	757,520	790,540	1,179,045	1,011,613	817,790	587,453	467,635	343,928
Esfenvalerate	198,768	-	-	96,733	113,360	1,326	-	-	-	52,147	37,459	29,819	21,931
Dimethoate	77,917	-	220,454	96,733	59,663	9,469	114,628	49,127	56,491	41,586	29,873	23,780	17,489
Methyl parathion	1,431,126	3,101,943	601,238	580,395	485,659	738,582	213,446	453,932	348,630	232,311	166,878	132,842	97,700
Carbofuran	795,070	1,590,740	801,650	773,860	658,038	60,602	292,500	440,177	327,396	203,706	146,331	116,485	85,670
Cyfluthrin	596,303	596,528	1,803,713	1,160,790	1,193,265	2,272,560	2,371,620	4,126,658	4,248,773	4,293,398	3,084,126	2,455,084	1,805,622
Fipronil	-	-	801,650	773,860	3,182,040	2,272,560	2,371,620	1,572,060	1,213,935	817,790	587,453	467,635	343,928
Tebupirimphos	795,070	795,370	2,404,950	1,547,720	1,591,020	3,030,080	3,162,160	5,502,210	5,260,385	4,906,740	3,524,715	2,805,810	2,063,568
Tefluthrin	3,975,350	5,567,590	4,008,250	5,417,020	5,568,570	4,545,120	4,743,240	4,716,180	5,260,385	5,724,530	4,112,168	3,273,445	2,407,496
Terbufos	4,770,420	3,817,776	4,809,900	3,869,300	2,386,530	2,272,560	790,540	1,572,060	1,010,533	406,714	292,160	232,570	171,047
Total Acres Treated	19,080,090	21,140,935	20,903,024	19,284,591	21,077,189	18,990,458	17,300,968	22,598,363	21,093,174	19,148,647	13,755,268	10,949,727	8,053,114
Weighted Share of Acres Treated for CRW													
Lambda-cyhalothrin	2%	1%	2%	3%	2%	2%	2%	1%	1%	1%	1%	1%	1%
Chlorpyrifos	30%	26%	21%	18%	22%	14%	12%	13%	10%	8%	8%	8%	8%
Bifenthrin	2%	0%	4%	5%	4%	4%	5%	5%	4%	4%	4%	4%	4%
Esfenvalerate	1%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Dimethoate	0%	0%	1%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%
Methyl parathion	8%	15%	3%	3%	2%	4%	1%	2%	2%	1%	1%	1%	1%
Carbofuran	4%	8%	4%	4%	3%	0%	2%	2%	2%	1%	1%	1%	1%
Cyfluthrin	3%	3%	9%	6%	6%	12%	14%	18%	20%	22%	22%	22%	22%
Fipronil	0%	0%	4%	4%	15%	12%	14%	7%	6%	4%	4%	4%	4%
Tebupirimphos	4%	4%	12%	8%	8%	16%	18%	24%	25%	26%	26%	26%	26%
Tefluthrin	21%	26%	19%	28%	26%	24%	27%	21%	25%	30%	30%	30%	30%
Terbufos	25%	18%	23%	20%	11%	12%	5%	7%	5%	2%	2%	2%	2%
Average Rate of Application													
Lambda-cyhalothrin	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Chlorpyrifos	1.04	1.12	1.01	1.08	1.05	1.04	0.94	1.00	1.06	1.11	1.11	1.11	1.11
Bifenthrin	0.05	-	0.07	0.06	0.07	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Esfenvalerate	0.03	-	-	0.05	0.13	0.02	-	-	-	0.04	0.04	0.04	0.04
Dimethoate	0.46	-	0.47	0.46	0.48	0.51	0.42	0.34	0.39	0.44	0.44	0.44	0.44
Methyl parathion	0.43	0.51	0.41	0.51	0.41	0.40	0.53	0.33	0.31	0.28	0.28	0.28	0.28
Carbofuran	0.94	1.03	0.83	0.86	0.95	0.83	0.93	0.79	0.69	0.59	0.59	0.59	0.59
Cyfluthrin	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Fipronil	-	-	0.10	0.11	0.11	0.11	0.11	0.12	0.12	0.11	0.11	0.11	0.11
Tebupirimphos	0.13	0.12	0.12	0.11	0.12	0.12	0.11	0.12	0.12	0.12	0.12	0.12	0.12
Tefluthrin	0.09	0.12	0.10	0.10	0.10	0.12	0.11	0.11	0.11	0.12	0.12	0.12	0.12
Terbufos	1.09	1.14	1.13	1.09	1.14	1.02	1.08	1.11	0.99	0.87	0.87	0.87	0.87
Conventional Corn													
Weighted Average Rate per Crop Year (CRW control)	0.68	0.69	0.56	0.51	0.46	0.35	0.26	0.29	0.24	0.19	0.19	0.19	0.19

* Percent acres treated for each insecticide is assumed to fall 25% from 2005 to 2006, 50% from 2005 to 2007, and 60% from 2005 to 2008, reflecting the growing adoption of *Bt* corn for rootworm control. All Rates per Crop Year and the Number of Applications assumed to remain unchanged from the value in 2005 (last year corn insecticide use was surveyed by NASS). Percent Acres Treated, Acre Treatments, and Rate per Crop Year were interpolated for years 2004. Number of Applications used to calculate the "Acre Treatments per Crop Year" were interpolated for year 2004.

Supplemental Table 11. Insecticides Used to Control the European Corn Borer (ECB), Southwestern Corn Borer (SWCB), and Corn Rootworm (CRW) on Conventional and *Bt* Varieties of Corn, 1996 - 2008. [See Notes]

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*
Acres Planted	79,507,000	79,537,000	80,165,000	77,386,000	79,551,000	75,752,000	79,054,000	78,603,000	80,929,000	81,779,000	78,327,000	93,527,000	85,982,000
<i>Bt</i> Corn for ECB Acres Planted	0	2,300,000	11,400,000	15,400,000	14,700,000	15,500,000	20,400,000	25,100,000	32,200,000	32,100,000	32,300,000	42,400,000	43,300,000
<i>Bt</i> Corn for ECB % Acres Planted	0.0%	2.9%	14.2%	19.9%	18.5%	20.5%	25.8%	31.9%	39.8%	39.3%	41.2%	45.3%	50.4%
<i>Bt</i> Corn for Rootworm Acres Planted	0	0	0	0	0	0	0	400,000	1,800,000	4,100,000	10,000,000	20,800,000	30,100,000
<i>Bt</i> Corn for Rootworm % Acres Planted	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	2.2%	5.0%	12.8%	22.2%	35.0%
Total <i>Bt</i> Trait Acres Planted (ECB & CRW)	-	2,300,000	11,400,000	15,400,000	14,700,000	15,500,000	20,400,000	25,500,000	34,000,000	36,200,000	42,300,000	63,200,000	73,400,000
Total Acres Planted to <i>Bt</i> Corn	-	2,300,868	11,490,011	15,400,000	15,114,690	14,392,880	18,972,960	22,794,870	26,706,570	28,622,650	31,330,800	45,828,230	49,009,740
% Corn Acres Planted to <i>Bt</i> Corn	0.0%	2.9%	14.3%	19.9%	19.0%	19.0%	24.0%	29.0%	33.0%	35.0%	40.0%	49.0%	57.0%
<i>Bt</i> Corn Acres for ECB													
Estimated Acres Planted to <i>Bt</i> - ECB Previously Treated with Insecticide for ECB	-	2,070,000	7,980,000	10,010,000	9,555,000	10,075,000	12,240,000	13,805,000	16,100,000	16,050,000	16,150,000	19,080,000	19,485,000
Percent Acres Planted to <i>Bt</i> - ECB Previously Treated with Insecticide for ECB	0%	90%	70%	65%	65%	65%	60%	55%	50%	50%	50%	45%	45%
Adjusted Volume of Insecticide Displaced by a <i>Bt</i> -ECB Acre	0.00	0.226	0.157	0.121	0.115	0.090	0.071	0.091	0.082	0.074	0.074	0.067	0.067
<i>Bt</i> Corn Acres for Rootworm													
Estimated Acres Planted to <i>Bt</i> - CRW Previously Treated with Insecticide for CRW	-	-	-	-	-	-	-	380,000	1,620,000	3,280,000	7,500,000	13,520,000	18,060,000
Percent Acres Planted to <i>Bt</i> - CRW Previously Treated with Insecticide for CRW	0%	0%	0%	0%	0%	0%	0%	95%	90%	80%	75%	65%	60%
Adjusted Volume of Insecticide Displaced by a <i>Bt</i> -CRW Acre	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.276	0.218	0.151	0.141	0.123	0.113
* Pesticide use estimates for 2008 are projections based on 2007 data and recent trends.													
Notes: Acres planted include single and dual- <i>Bt</i> varieties. Differences in pounds of insecticides applied do not take into account the pounds of <i>Bt</i> produced within the cells of <i>Bt</i> variety corn plants (see text for discussion).													
Source: Number of acres planted to <i>Bt</i> corn for ECB and CRW include single and dual- <i>Bt</i> hybrids and come from Monsanto's <i>Biotechnology Trait Average Report: Fiscal Years 1996-2009F</i> , June 24, 2009.													

Supplemental Table 12. Insecticides Applied to Control the Budworm/Bollworm Complex of Insects on Conventional Varieties of Cotton, 1996 - 2008.

	1996	1997	1998	1999	2000	2001	2002*	2003	2004*	2005	2006*	2007	2008*
Acres Planted	14,375,500	13,648,000	13,064,300	14,584,000	15,347,000	15,498,500	13,714,000	13,301,000	13,409,000	13,975,000	14,948,000	10,535,000	9,296,000
<i>Bt</i> Cotton Acres Planted	1,725,060	2,518,056	2,913,339	4,521,040	5,969,983	6,346,636	5,293,604	6,478,917	7,033,021	8,424,130	9,714,705	7,594,682	6,787,939
% <i>Bt</i> Cotton Acres Planted	12.0%	18.5%	22.3%	31.0%	38.9%	41.0%	38.6%	48.7%	52.5%	60.3%	65.0%	72.1%	73.0%
Percent Acres Treated for Budworm/Bollworm													
Aldicarb	21.0%	27.0%	22.0%	29.0%	26.0%	20.0%	22.5%	25.0%	22.0%	19.0%	18.5%	18.0%	18.0%
<i>Bt</i>	3.0%	2.0%	1.0%	1.0%	1.0%	0.5%	0.5%	0.5%					
Carbofuran	6.0%	3.0%	5.0%	5.0%	5.0%	3.0%	2.0%	1.0%					
Cyfluthrin (30% of total)	3.3%	3.9%	3.6%	2.4%	2.4%	3.3%	3.0%	2.7%	2.6%	2.4%	2.4%	2.4%	2.4%
Cypermethrin (50% of total)	4.5%	4.0%	3.5%	2.5%	4.0%	1.5%	2.8%	4.0%	5.3%	6.5%	5.0%	3.5%	3.5%
Emamectin benoate (50% of total)					1.0%								
Indoxacarb (50% of total)					1.5%	1.7%	1.8%	2.0%	2.0%	2.0%	1.5%	1.0%	1.0%
Parathion-methyl (30% of total)	5.7%	3.9%	2.7%	2.4%	1.5%	0.09%	0.08%	0.06%	0.06%	0.06%	0.04%	0.01%	0.01%
Profenofos (30% of total)	1.5%	1.2%	0.9%	0.9%	0.3%	0.2%	0.14%	0.06%	0.10%	0.15%	0.07%		
Thiodicarb (50% of total)	2.5%	2.0%	1.0%	0.4%	0.1%	0.04%							
Tralomethrin (30% of total)	0.9%	0.6%	0.3%	0.9%	0.6%	0.6%	0.5%	0.3%					
Total Percent Acres Treated	48.4%	47.6%	40.0%	44.5%	43.4%	30.9%	33.2%	35.6%	32.0%	30.1%	27.5%	24.9%	24.9%
Percent Not Treated	51.6%	52.4%	60.0%	55.6%	56.6%	69.1%	66.8%	64.4%	68.0%	69.9%	72.5%	75.1%	75.1%
Acres Treated per Crop Year for Budworm/Bollworm--Percent acres treated X acres planted X number of application													
Aldicarb	3,018,855	3,684,960	2,874,146	4,229,360	3,990,220	3,099,700	3,085,650	3,325,250	2,949,980	2,655,250	2,765,380	1,896,300	1,673,280
<i>Bt</i>	948,783	436,736	222,093	204,176	245,552	123,988	92,570	73,156					
Carbofuran	862,530	409,440	653,215	729,200	767,350	557,946	301,708	133,010					
Cyfluthrin	948,783	904,862	987,661	560,026	478,826	767,176	658,272	610,516	512,894	436,020	466,378	328,692	290,035
Cypermethrin	1,099,726	928,064	1,143,126	364,600	675,268	278,973	471,419	691,652	915,164	1,180,888	971,620	479,343	422,968
Emamectin benoate						184,164							
Indoxacarb					230,205	275,357	284,863	319,224	335,225	363,350	269,064	115,885	102,256
Parathion-methyl	2,622,091	1,437,134	1,199,303	770,035	483,431	19,528	12,857	8,779	10,057	11,739	6,477	1,288	1,136
Profenofos	345,012	262,042	235,157	170,633	55,249	39,757	21,753	8,779	16,172	25,114	13,431		
Thiodicarb	575,020	409,440	209,029	51,044	26,644	6,819							
Tralomethrin	232,883	171,965	66,628	170,633	101,290	120,888	95,655	71,825					
Total Acres Treated	10,653,683	8,644,643	7,590,358	7,249,706	7,238,199	5,290,132	5,024,746	5,242,190	4,739,493	4,672,360	4,492,350	2,821,507	2,489,675
Weighted Share of Acres Treated for Budworm/Bollworm													
Aldicarb	28%	43%	38%	58%	55%	59%	61%	63%	62%	57%	62%	67%	67%
<i>Bt</i>	9%	5%	3%	3%	3%	2.3%	1.8%	1.4%	0%	0%	0%	0%	0%
Carbofuran	8%	5%	9%	10%	11%	11%	6%	3%	0%	0%	0%	0%	0%
Cyfluthrin	9%	10%	13%	8%	7%	15%	13%	12%	11%	9%	10%	12%	12%
Cypermethrin	10%	11%	15%	5%	9%	5%	9%	13%	19%	25%	22%	17%	17%
Emamectin benoate	0%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
Indoxacarb	0%	0%	0%	0%	3%	5%	6%	6%	7%	8%	6%	4%	4%
Parathion-methyl	25%	17%	16%	11%	7%	0.4%	0.3%	0.2%	0.2%	0.3%	0.14%	0.05%	0.05%
Profenofos	3%	3%	3%	2%	1%	1%	0.4%	0.2%	0.3%	1%	0.3%	0%	0%
Thiodicarb	5%	5%	3%	1%	0.4%	0.1%	0%	0%	0%	0%	0%	0%	0%
Tralomethrin	2%	2%	1%	2%	1%	2%	2%	1%	0%	0%	0%	0%	0%
Average Rate of Application for Budworm/Bollworm													
Aldicarb	0.62	0.66	0.63	0.59	0.63	0.57	0.59	0.60	0.63	0.66	0.66	0.67	0.67
<i>Bt</i>	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01					
Carbofuran	0.29	0.31	0.25	0.23	0.24	0.22	0.19	0.16					
Cyfluthrin	0.03	0.03	0.03	0.03	0.08	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Cypermethrin	0.07	0.08	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Emamectin benoate					0.01								
Indoxacarb					0.10	0.10	0.09	0.09	0.09	0.10	0.09	0.09	0.09
Parathion-methyl	0.36	0.45	0.48	0.60	0.58	0.40	0.48	0.56	0.59	0.62	0.68	0.75	0.75
Profenofos	0.46	0.62	0.47	0.60	0.48	0.52	0.55	0.59	0.66	0.73			
Thiodicarb	0.33	0.30	0.50	0.45	0.22	0.25							
Tralomethrin	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02					
Budworm/Bollworm Conventional Rate per Acre Treated													
Weighted Average Rate per Crop Year	0.33	0.42	0.38	0.45	0.43	0.38	0.39	0.40	0.42	0.40	0.43	0.47	0.47

* Insecticide rates for 2008 are estimated projections based on recent trends. There was no cotton pesticide use data collected by USDA in 2002, 2004 or 2006. The Number of Applications used to calculate the "Acres Treated per Crop Year" were interpolated for years 2002, 2004 and 2006. The "Crop Year Rates per Acre" were interpolated for 2002, 2004 and 2006.

Supplemental Table 13. Herbicide Pounds Applied per Acre to Conventional and Herbicide-Tolerant (HT) Corn, 1996 - 2008.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*
Percent Acres HT Corn Planted	3%	4.3%	9%	8%	7%	8%	11%	15%	20%	26%	36%	52%	63%
Crop Year Rates per Acre													
NASS Average Rate	2.65	2.63	2.47	2.41	2.11	2.24	1.9	2.04	2.05	2.05	2.1	2.14	2.18
Glyphosate on HT Acres	0.68	0.52	0.64	0.71	0.65	0.73	0.7	0.83	0.85	0.95	0.99	1.04	1.09
Other Herbicides on HT Acres	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.1	1.15	1.1	1.16	1.18	1.18
Total Herbicides on HT Acres	1.88	1.72	1.74	1.81	1.75	1.83	1.70	1.93	2.0	2.05	2.15	2.22	2.27
Conventional Varieties	2.67	2.67	2.54	2.46	2.14	2.28	1.92	2.06	2.06	2.06	2.07	2.05	2.02
Difference in Rate Between HT and Conventional Varieties	-0.79	-0.95	-0.80	-0.65	-0.39	-0.45	-0.22	-0.13	-0.06	-0.01	0.08	0.18	0.25

* Total "NASS Average Rate" projected to increase by 2% per year post 2005; "Glyphosate on HT Acres" application rates projected to increase 5% per year post 2005, driven by the increasing prevalence of glyphosate tolerant and resistant weeds.

Supplemental Table 14. Herbicide Use in Conventional and Roundup Ready Herbicide-Tolerant (HT) Upland Cotton Varieties, 1996 - 2008.													
	1996	1997	1998	1999	2000	2001	2002*	2003	2004*	2005	2006*	2007	2008*
Acres Planted	14,375,500	13,648,000	13,064,300	14,584,000	15,347,000	15,498,500	13,714,000	13,301,000	#####	13,975,000	14,948,000	10,535,000	9,296,000
Percent Acres Planted													
RR alone/stacked	0%	3.7%	20.6%	35.9%	54.0%	70.4%	71.9%	73.4%	74.3%	78.7%	82.1%	89.4%	89.9%
LL alone/stacked	0%	0%	0%	0%	0%	0%	0%	0%	1.1%	2.2%	3.5%	2.5%	2.7%
BNX alone/stacked	0.2%	1.2%	5.8%	7.8%	7.2%	3.7%	2.2%	0.5%	1.2%	0%	0%	0%	0%
HT alone & stacked	0.2%	4.9%	26.4%	43.7%	61.2%	74.1%	74.1%	73.8%	76.6%	81.0%	85.7%	91.9%	92.6%
Crop Year Rates per Acre													
NASS Average All Herbicides	1.88	2.09	1.88	1.88	1.84	1.65	1.84	1.99	2.03	2.07	2.31	2.55	2.67
Glyphosate on RR acres	0.63	0.79	1.02	1.04	1.14	1.12	1.25	1.38	1.47	1.57	1.73	1.89	2.02
Glufosinate on LL acres	-	-	-	-	-	-	-	-	-	0.62	0.54	0.46	0.50
Bromoxynil on BNX acres		0.43	0.48	0.54	0.56	0.49	0.59	0.68	-	-	-	-	-
Other Herbicides on RR acres	0.50	0.55	0.60	0.65	0.65	0.60	0.65	0.70	0.65	0.60	0.65	0.70	0.70
All Herbicides on RR acres	1.13	1.34	1.62	1.69	1.79	1.72	1.90	2.08	2.12	2.17	2.38	2.59	2.72
Conventional Varieties (based on RR acres)	1.88	2.13	1.97	2.03	1.92	1.45	1.67	1.74	1.71	1.63	1.87	2.06	2.07
Difference in Pounds per Acre Between HT and Conventional Varieties	-0.75	-0.79	-0.35	-0.34	-0.13	0.27	0.23	0.34	0.41	0.54	0.50	0.53	0.65

* Herbicide rates projected to increase 10% from 2007 to 2008, driven upward by the proliferation of weeds resistant or tolerant to glyphosate. There was no cotton pesticide use data collected by USDA in 2002, 2004, 2006. Values in these years were interpolated.

Supplemental Table 15. Herbicide Use on Conventional and Herbicide-Tolerant (HT) Soybeans, 1996 - 2008.													
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*
Acres Planted	64,205,000	70,005,000	72,025,000	73,730,000	74,266,000	74,075,000	73,923,000	73,404,000	75,208,000	72,032,000	75,522,000	64,741,000	75,718,000
HT Acres Planted	4,751,170	12,044,500	32,142,240	42,054,600	40,103,640	50,371,000	55,442,250	59,457,240	63,926,800	62,667,840	67,214,580	58,914,310	69,660,560
Percent Acres Treated													
HT Varieties	7.4%	17.0%	44.2%	55.8%	54.0%	68.0%	75.0%	81.0%	85.0%	87.0%	89.0%	91.0%	92.0%
RR Varieties	7.4%	14.5%	38.8%	50.4%	49.0%	63.0%	70.5%	76.5%	81.0%	83.0%	85.0%	87.0%	88.0%
Non-RR HT varieties	-	2.5%	5.4%	5.4%	5.0%	5.0%	4.5%	4.5%	4.0%	4.0%	4.0%	4.0%	4.0%
Glyphosate, All Soybeans	25.0%	29.0%	47.0%	62.8%	66.0%	76.0%	84.0%	87.5%	91.0%	93.0%	97.2%	98.0%	98.5%
Glyphosate, Non-RR Acres	17.6%	14.5%	8.2%	12.4%	17.0%	13.0%	13.5%	11.0%	10.0%	10.0%	12.2%	11.0%	10.5%
Crop Year Rates per Acre													
NASS Average All Herbicides	1.17	1.18	1.08	1.04	1.05	0.96	1.20	1.25	1.15	1.17	1.42	1.49	1.56
Glyphosate on RR Acres	0.69	0.79	0.90	0.90	0.88	0.85	1.04	1.07	1.10	1.13	1.36	1.43	1.50
Other Herbicides on RR Acres	0.20	0.20	0.30	0.30	0.30	0.22	0.27	0.25	0.12	0.12	0.14	0.15	0.15
All Herbicides on RR Acres	0.89	0.99	1.20	1.20	1.18	1.07	1.31	1.32	1.22	1.25	1.50	1.58	1.65
Conventional Varieties	1.19	1.22	1.13	0.84	0.90	0.73	0.88	0.97	0.80	0.59	0.70	0.52	0.49
Difference in Pounds per Acre Between RR and Conventional Varieties	-0.30	-0.23	0.07	0.36	0.28	0.34	0.42	0.34	0.41	0.66	0.80	1.06	1.16
*Total herbicide use and glyphosate use per acre on RR acres assumed to rise 5% from 2006 to 2007, and then again 5% from 2007 to 2008 due to the recent trends in the prevalence of glyphosate tolerant and resistant weeds (see Table 4.3). Crop Year Rates per Acre on conventional varieties for 2003 were from a special tabulation report from USDA's Economic Research Service.													

Supplemental Table 16. Changes in the Application of Gyphosate on Corn, Cotton, and Soybeans, 1996-2007												
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Corn												
NASS Glyphosate Rate of Application	0.68	0.52	0.64	0.59	0.59	0.66	0.64	0.69		0.727		
NASS Glyphosate Number of Applications	1	1	1	1.2	1.1	1.1	1.1	1.2		1.3		
NASS Glyphosate Rate per Crop Year	0.68	0.52	0.64	0.71	0.65	0.73	0.70	0.83		0.95		
% Change in Rate per Crop Year		-24%	23%	11%	-8%	12%	-3%	18%		7%		
Cotton												
NASS Glyphosate Rate of Application	0.63	0.61	0.68	0.65	0.67	0.62		0.69		0.713		0.787
NASS Glyphosate Number of Applications	1	1.3	1.5	1.6	1.7	1.8		2		2.2		2.4
NASS Glyphosate Rate per Crop Year	0.63	0.79	1.02	1.04	1.14	1.12		1.38		1.57		1.89
% Change in Rate per Crop Year		26%	29%	2%	10%	-2%		12%		7%		10%
Soybeans												
NASS Glyphosate Rate of Application	0.63	0.61	0.69	0.69	0.68	0.65	0.74		0.73	0.755	0.802	
NASS Glyphosate Number of Applications	1.1	1.3	1.3	1.3	1.3	1.3	1.4		1.5	1.5	1.7	
NASS Glyphosate Rate per Crop Year	0.69	0.79	0.90	0.90	0.88	0.85	1.036		1.095	1.133	1.363	
% Change in Rate per Crop Year		14%	13%	0%	-1%	-4%	23%		3%	3%	20%	
Source: National Agricultural Statistic Service (NASS), Agricultural Chemical Usage, Field Crop Summary, multiple years.												

Supplemental Table 17. Corn, Soybean, and Cotton Acres Planted, Average Pesticide Use per Acre, and Total Pounds Applied, 1996 - 2008.														
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008*	Total 1996-2008*
Corn														
Acres Planted	79,507,000	79,537,000	80,165,000	77,386,000	79,551,000	75,752,000	79,054,000	78,603,000	80,929,000	81,779,000	78,327,000	93,527,000	85,982,000	1,050,099,000
Herbicides Pounds per Acre	2.65	2.63	2.47	2.41	2.11	2.24	1.90	2.04	2.05	2.05	2.10	2.14	2.18	
Pounds Herbicides (H)	210,693,550	209,182,310	198,007,550	186,500,260	167,852,610	169,684,480	150,202,600	160,350,120	165,675,291	168,001,609	164,128,239	199,898,250	187,447,522	2,337,624,392
Insecticides per Acre	0.22	0.23	0.18	0.16	0.15	0.14	0.08	0.10	0.08	0.06	0.06	0.06	0.06	
Pounds Insecticides (I)	17,491,540	18,293,510	14,429,700	12,381,760	11,932,650	10,605,280	6,324,320	7,703,094	6,344,728	4,808,391	4,835,694	6,062,805	5,573,707	126,787,180
Total Pounds: H+I	228,185,090	227,475,820	212,437,250	198,882,020	179,785,260	180,289,760	156,526,920	168,053,214	172,020,019	172,810,000	168,963,933	205,961,056	193,021,229	2,464,411,571
Soybeans														
Acres Planted	64,205,000	70,005,000	72,025,000	73,730,000	74,266,000	74,075,000	73,923,000	73,404,000	75,208,000	72,032,000	75,522,000	64,741,000	75,718,000	938,854,000
Herbicides per Acre	1.17	1.18	1.08	1.04	1.05	0.96	1.20	1.25	1.15	1.17	1.42	1.49	1.56	
Pounds Herbicides (H)	75,119,850	82,605,900	77,787,000	76,679,200	77,979,300	71,112,000	88,707,600	91,755,000	86,706,713	84,017,324	106,866,220	96,191,272	118,125,782	1,133,653,162
Insecticides per Acre	0.004	0.006	0.005	0.005	0.003	0.004	0.012	0.010	0.007	0.028	0.036	0.038	0.040	
Pounds Insecticides (I)	241,713	432,508	344,542	346,357	238,488	266,374	915,536	698,035	498,930	2,045,349	2,718,792	2,447,210	3,005,247	14,199,081
Total Pounds: H+I	75,361,563	83,038,408	78,131,542	77,025,557	78,217,788	71,378,374	89,623,136	92,453,035	87,205,643	86,062,673	109,585,012	98,638,482	121,131,030	1,147,852,243
Upland Cotton														
Acres Planted	14,375,500	13,648,000	13,064,300	14,584,000	15,347,000	15,498,500	13,714,000	13,301,000	13,409,000	13,975,000	14,948,000	10,535,000	9,296,000	175,695,300
Herbicides per Acre	1.88	2.09	1.88	1.88	1.84	1.65	1.84	1.99	2.03	2.07	2.31	2.55	2.67	
Pounds Herbicides (H)	27,025,940	28,524,320	24,560,884	27,417,920	28,238,480	25,572,525	25,233,760	26,468,990	27,198,571	28,883,021	34,474,575	26,820,391	24,849,404	355,268,782
Insecticides per Acre	1.25	1.39	1.28	2.96	2.82	1.83	1.83	1.06	1.12	1.18	0.97	0.76	0.76	
Pounds Insecticides (I)	17,969,375	18,970,720	16,722,304	43,168,640	43,278,540	28,362,255	25,096,620	14,053,837	14,982,308	16,463,452	14,464,577	7,977,680	7,039,442	268,549,750
Total Pounds: H+I	44,995,315	47,495,040	41,283,188	70,586,560	71,517,020	53,934,780	50,330,380	40,522,827	42,180,879	45,346,472	48,939,153	34,798,072	31,888,846	623,818,532
Total Three Crops														
Acres Planted	158,087,500	163,190,000	165,254,300	165,700,000	169,164,000	165,325,500	166,691,000	165,308,000	169,546,000	167,786,000	168,797,000	168,803,000	170,996,000	2,164,648,300
Pounds Herbicides (H)	312,839,340	320,312,530	300,355,434	290,597,380	274,070,390	266,369,005	264,143,960	278,574,110	279,580,576	280,901,954	305,469,034	322,909,914	330,422,709	3,826,546,336
Pounds Insecticides (I)	35,702,628	37,696,738	31,496,546	55,896,757	55,449,678	39,233,909	32,336,476	22,454,966	21,825,966	23,317,192	22,019,063	16,487,695	15,618,396	409,536,010
Total Pounds: H+I	348,541,968	358,009,268	331,851,980	346,494,137	329,520,068	305,602,914	296,480,436	301,029,076	301,406,542	304,219,146	327,488,098	339,397,609	346,041,105	4,236,082,346
Pounds H+I per Acre	2.20	2.19	2.01	2.09	1.95	1.85	1.78	1.82	1.78	1.81	1.94	2.01	2.02	1.96

* Pesticide use in 2008 are projections based on crop year 2007 totals and recent trends. (See tables on individual HT crops for explanation of factors contributing to the 2008 projections).

Data on national acres planted to each crop came from NASS Crop Production Annual Summary Report (<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1047>)

Supplemental Table 18. Number of Pesticide and Pest Control Chemicals or Toxins Used to Manage Pests: 1971 through 2010 ("F" = forecast)

	1971	1982	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009F	2010F
Corn																						
Herbicides	1.07	1.77	1.99	2.1	2.29	2.36	2.32	2.45	2.47	2.45	2.71	2.74	2.78	2.53	2.59	2.6	2.61	2.66	2.72	2.85	3	3.2
Insecticides	0.392	0.34	0.34	0.29	0.30	0.28	0.31	0.35	0.36	0.36	0.35	0.34	0.32	0.29	0.36	0.33	0.29	0.33	0.33	0.33	0.30	0.25
<i>Bt</i> Toxins									0.03	0.14	0.20	0.18	0.20	0.26	0.32	0.42	0.44	0.54	0.68	0.85	1.00	1.20
Insecticide Seed Treatments	0.3	0.6	0.8	0.85	0.9	1	1	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2	2	2	2
Fungicide Seed Treatments				0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1	1.1	1.2	1.3	1.4	1.5	1.5	1.5
All Pesticides and Toxins	1.8	2.7	3.1	3.3	3.6	3.8	3.9	4.2	4.5	4.7	5.3	5.5	5.7	5.7	6.0	6.2	6.4	6.8	7.1	7.5	7.8	8.15
Upland Cotton																						
Herbicides	1.05	1.59	2.13	2.34	2.33	2.35	2.54	2.55	2.83	2.62	2.54	2.33	1.97	2.08	2.18	2.17	2.16	2.23	2.29	2.40	2.6	3
Insecticides	1.13	1.285	1.44	2.04	2.02	2.42	2.8	2.14	1.95	1.75	1.92	1.82	1.3	1.46	1.61	1.64	1.67	1.53	1.39	1.39	1.3	1.3
<i>Bt</i> Toxins							0.0	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	1.2	1.6
Insecticide Seed Treatments	0.3	0.6	0.8	0.85	0.9	1	1	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2	2	2	2
Fungicide Seed Treatments				0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	1	1.1	1.2	1.3	1.4	1.5	1.5	1.5
All Pesticides and Toxins	2.48	3.5	4.4	5.3	5.4	6.0	6.6	6.2	6.6	6.4	6.8	6.7	6.1	6.5	7.0	7.2	7.5	7.7	7.8	8.0	8.6	9.4

Notes: Number of herbicides and insecticides applied from NASS pesticide use surveys. Number of active ingredients used as seed treatments are estimated. Number of *Bt* toxins are from Supplemental Tables 4 and 11.

Supplemental Table 19. Number of States with Newly Reported, Documented Cases of Glyphosate Resistant Weeds, 1996 - 2008.														
Weed Species	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total 1996-2008
Palmer Amaranth										2	3	1	3	9
Common Waterhemp										1	2	1		4
Common Ragweed									2			1		3
Giant Ragweed									1	2	2	1		6
Hairy Fleabane												1		1
Horseweed					1	2	5	5		3		2		18
Italian Ryegrass									1	1				2
Rigid Ryegrass			1											1
Johnsongrass												1		1
Total:	0	0	1	0	1	2	5	5	4	9	7	8	3	45

Source: Weed Science Society of America's list of "Glycine Resistant Weeds" accessed 2/4/09 via www.weedscience.org