IV. TRENDS IN USE IN CERTAIN PESTICIDE CATEGORIES

Reported pesticide use in California in 2005 totaled 194 million pounds, an increase of 14 million pounds from 2004. Production agriculture, the major category of use subject to reporting requirements, accounted for most of the overall increase in use. Applications for production agriculture increased by 12 million pounds. Not all of Ventura County 2005 PUR data was available at the time of publication, mostly applications made in November and December. Based on reported use in Ventura County during November and December from 2002 to 2004, the current total pounds is probably short by 0.5 million pounds. The AIs most affected are captan and petroleum oil.

The active ingredients (AI) with the largest uses by pounds were sulfur, petroleum oils, metam-sodium, 1,3-dichloropropene (1,3-D), and mineral oil. Sulfur use increased by 7.3 million pounds (13 percent) and was the most highly used pesticide in 2005, both in pounds applied and acres treated. By pounds, sulfur accounted for 32 percent of all reported pesticide use. Sulfur is a natural fungicide favored by both conventional and organic farmers. Petroleum oil use increased by 182,000 pounds (1.1 percent), metam-sodium use decreased by 1.6 million pounds (-11 percent), 1,3-D use increased by 375,000 pounds (4.2 percent), and mineral oil use increased by 51,000 pounds (0.6 percent).

Major crops or sites that showed an overall increase in pesticide pounds applied from 2004 to 2005 included wine grapes (6.0 million pounds increase), oranges (2.7 million pounds), raisin and table grapes (1.8 million pounds), walnuts (1.2 million pounds), and almonds (1.0 million pounds). Major crops or sites with decreased pounds applied included rice (1.5 million pounds decrease), fresh tomatoes (0.70 million pounds), rights of way (0.42 million pounds), strawberries (0.42 million pounds), and lemons (0.37 million pounds).

DPR data analyses have shown that pesticide use varies from year to year depending upon pest problems, weather, acreage and types of crops planted, economics, and other factors. In general, spring 2005 was cool and rainy so diseases of many crops were worse than the previous year and therefore fungicide use was greater and accounted for most of the increased pesticide use in 2005. Pounds applied and acres treated of most of the other major pesticide types increased as well, except for herbicides and fumigants. A dramatic increase occurred in the use of some newer, reduced-risk pesticides such as boscalid, pyraclostrobin, indoxacarb, and methoxyfenozide. Prices improved in 2005 for most of the 12 crops discussed in Section V of this report, entitled "Trends in Pesticide Use in Certain Commodities", which may have also been an incentive to use more pesticides to protect valuable crops.

Pesticide use is reported as the number of pounds of AI and the total number of acres treated. The data for pounds include both agricultural and nonagricultural applications; the data for acres treated are primarily agricultural applications. The number of acres treated means the cumulative number of acres treated; the acres treated in each application are summed even when the same field is sprayed more than once in a year. (For example, if one acre is treated three times in a season with an individual AI, it is counted as three acres treated in the tables and graphs in Sections IV and V of this report.)

In the past several years, the PUR Annual Reports have included tables of pesticide use in various pesticide categories, including reproductive toxins, carcinogens, organophosphates and carbamates, ground water contaminants, toxic air contaminants, oils, reduced-risk pesticides, and biopesticides. This year we have added tables for fumigants.

Pounds of all the higher risk pesticide categories, except for toxic air contaminants, decreased and use of all the lower risk pesticides increased from 2004 to 2005. However, acres treated with carcinogens and organophosphates increased, mostly because of increased use of the fungicides mancozeb and maneb and the insecticide chlorpyrifos. Fungicide use in general increased as mentioned above because of the cool, wet spring in 2005. Some of the major statistical changes from 2004 to 2005 include:

- Chemicals classified as reproductive toxins decreased in pounds applied from 2004 to 2005 (down 2.1 million pounds or 8.8 percent) and decreased in cumulative acres treated (down 88,000 acres or 4.1 percent). The decrease in pounds was mostly from decreases in the fumigants metam-sodium and methyl bromide.

- The pounds of chemicals classified as carcinogens decreased (down 750,000 pounds or 2.6 percent), but acres treated increased (up 290,000 acres or 7.9 percent). The decrease in pounds was mainly due to a decrease in use of the fumigant metam-sodium and the herbicide diuron, which are used at high rates (pounds per acre treated). For these AIs, pounds decreased by a large amount but acres treated decreased only by a small amount. The increase in acres treated was mostly from increases in mancozeb and maneb, which are used at low rates. For these AIs, pounds increased by a small amount but acres treated increased by a large amount.

- Pounds of insecticide organophosphate and carbamate chemicals, which include compounds of high regulatory concern, continued to decline as they have for nearly every year since 1995. However, acres treated increased from 2004 to 2005. Pounds decreased by 300,000 (3.9 percent) and acres treated increased by 310,000 (5.1 percent). The decrease in pounds was mostly from molinate and phosmet and the increase in acres was mostly from chlorpyrifos and methomyl. Molinate and phosmet are used at higher rates than most other organophosphates and carbamates.

- Use of nearly all chemicals, except bentazon, categorized as ground water contaminants decreased from 2004 to 2005. Use decreased by 620,000 pounds (26 percent) and by 260,000 acres treated (15 percent).

- Chemicals categorized as toxic air contaminants (TACs) remained about the same, as measured by pounds applied, while cumulative acres treated increased by 220,000 (6.1 percent). Fumigants represent the most TAC pounds, because they are applied at high rates. Fungicides – used at lower rates – represent the highest percentage of acres treated. Wet conditions in 2005 prompted more fungicide use, increasing the total acreage of toxic air contaminants.

- Fumigant chemicals decreased in pounds applied from 2004 to 2005 (down 1.0 million pounds or 2.5 percent) and decreased in cumulative acres treated (down 54,000 acres or 14 percent). Use of about half of the major fumigants decreased in pounds but by acres treated nearly all major fumigants decreased except for potassium n-methyldithiocarbamate (metam-potassium). By pounds, metam-sodium, methyl bromide, and chloropicrin use decreased and metam-potassium and 1,3-D increased.

- Pounds of reduced-risk pesticides increased by 630,000 pounds applied (60 percent) by 2.4 million acres treated (39 percent). The biggest increases (with both pounds and acres treated) were in use of potassium bicarbonate, boscalid, methoxyfenozide, pyraclostrobin, and indoxacarb. The biggest decreases were in use of pyriproxyfen, tebufenozide, bispyribac-sodium, and buprofezin.

- Biopesticide use increased by 310,000 pounds (60 percent) and by 91,000 acres treated (3.8 percent). The largest increases in pounds were with potassium bicarbonate and *Bacillus thuringiensis*; by acres treated the major increases were with potassium bicarbonate, gibberellins, and *Bacillus pumilus*.

Since 1992, the reported pounds of pesticides applied have fluctuated from year to year. An increase or decrease in use from one year to the next or in the span of a few years does not necessarily indicate a general trend in use; it simply may reflect normal variations. Short periods of time (three to five years) may suggest trends, such as the increased pesticide use from 2001 to 2005 or the decreased use from 1998 to 2001. However, statistical analyses from 1992 to 2005 do not indicate a significant trend of either increase or decrease in pesticide use.

To improve data quality when calculating the total pounds of pesticides, DPR excluded values that were so large they were probably in error. The procedure to exclude probable errors involved the development of complex error-checking algorithms, a data improvement process that is ongoing.

Over-reporting errors have a much greater impact on the numerical accuracy of the database than under-reporting errors. For example, if a field is treated with 100 pounds of a pesticide AI and the application is erroneously recorded as 100,000 pounds (a decimal point shift of three places to the right), an error of 99,900 pounds is introduced into the database. If the same degree of error is made in shifting the decimal point to the left, the application is recorded as 0.1 pound, and an error of 99.9 pounds is entered into the database

To provide an overview, pesticide use is summarized for nine different categories from 1995 to 2005 (Tables 3–11 and Figures 1–9). These categories classify pesticides according to certain characteristics such as reproductive toxins, carcinogens, or reduced-risk characteristics.

The statistical summaries detailed in these categories are not intended to serve as indicators of pesticide risks to the public or the environment. Rather, the data supports DPR regulatory functions to enhance public safety and environmental protection. (See "How Pesticide Data are Used" on page 2.) The different pesticide categories, described more fully, are:

1. Pesticides listed on the State's Proposition 65 list of chemicals "known to cause reproductive toxicity".
2. Pesticides listed by U.S. EPA as B2 carcinogens or on the State's Proposition 65 list of chemicals "known to cause cancer".
3. Pesticides that are cholinesterase inhibitors, that is, organophosphate and carbamate chemicals.
4. Pesticides on the "a" part of DPR's groundwater protection list (section 6800 (a) of the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1).

5. Pesticides from DPR's toxic air contaminants list (California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, section 6860).
6. Fumigant pesticides are defined by the American Association of Pesticide Control Officials as substances which produce gas, vapor, fume or smoke intended to destroy insects, bacteria or rodents.
7. Oil pesticides, which may include some chemicals on the State's Proposition 65 list of chemicals "known to cause cancer" but which also serve as alternatives to high-toxicity pesticides.
8. AIs contained in pesticide products that have been given reduced-risk status by U.S. EPA.
9. Biopesticides, which include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones).

USE TRENDS OF PESTICIDES ON THE STATE'S PROPOSITION 65 LIST OF CHEMICALS THAT ARE "KNOWN TO CAUSE REPRODUCTIVE TOXICITY"

Table 3A. *The reported pounds of pesticides used which are on the State's Proposition 65 list of chemicals that are "known to cause reproductive toxicity." Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,080	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2,4-DB ACID	0	0	1,697	6,932	12,397	11,453	16,954	9,393	6,408	4,789	7,655
AMITRAZ	75,018	55,459	66,439	13,563	7,558	8,087	263	154	115	0	0
ARSENIC PENTOXIDE	83,814	205,089	64,372	50,899	245,238	91,267	259,386	194,650	165,709	12,705	180,505
ARSENIC TRIOXIDE	<1	<1	<1	1	1	<1	<1	<1	<1	<1	<1
BENOMYL	189,943	148,433	114,406	227,690	133,109	118,601	76,739	28,978	7,094	2,209	883
BROMACIL, LITHIUM SALT	6,517	17,381	9,141	4,686	4,162	4,478	3,217	4,016	3,025	1,801	1,059
BROMOXYNIL OCTANOATE	119,407	148,480	115,368	120,877	120,338	116,125	78,484	72,759	76,927	50,223	34,410
CHLORSULFURON	1,485	1,623	2,218	3,046	1,445	2,590	1,203	2,190	8,690	9,978	3,230
CYANAZINE	641,057	566,632	470,838	277,313	180,487	50,468	17,250	7,178	37	8	7
CYCLOATE	49,138	44,628	55,459	62,753	49,096	37,408	31,785	34,347	30,080	42,563	39,249
DICLOFOP-METHYL	16,540	79,874	41,130	24,783	18,710	21,696	11,765	5,058	9,309	5,988	1,413
EPTC	660,185	703,996	579,245	393,031	448,883	323,254	276,782	253,887	141,756	182,245	181,790
ETHYLENE OXIDE	0	0	0	31	2	6	3	0	0	0	0
FENOXAPROP-ETHYL	3,731	3,974	3,895	1,504	2,048	979	366	106	53	64	161
FLUAZIFOP-BUTYL	2,148	823	2,028	1,211	516	205	149	166	31	34	41
HYDRAMETHYLNON	807	1,741	5,456	3,183	2,267	2,495	2,381	2,741	2,024	1,896	1,368
LINURON	84,937	84,335	84,621	82,170	78,046	65,511	58,173	61,994	60,128	69,289	71,355
METAM-SODIUM	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687	14,683,308	13,035,949
METHYL BROMIDE	17,165,964	16,022,069	15,663,832	13,569,875	15,300,388	10,869,241	6,618,631	6,550,818	7,384,398	7,089,862	6,444,224
METIRAM	0	0	0	<1	0	0	2	0	1	5	0
MYCLOBUTANIL	85,525	89,087	94,375	129,773	94,626	96,175	83,995	76,655	83,465	70,896	79,562
NABAM	1	0	0	50	2	1	8	0	0	10,693	30,440
NICOTINE	228	298	258	83	93	21	17	2	2	4	2
NITRAPYRIN	639	114	49	407	150	192	16	89	117	12	171
OXADIAZON	21,458	25,260	23,196	21,959	19,399	18,256	15,905	16,692	12,550	12,980	13,700
OXYDEMETON-METHYL	120,101	106,612	115,781	89,789	122,912	110,797	99,756	96,357	93,789	102,554	121,500
OXYTHIOQUINOX	7,172	6,204	2,709	1,576	2,705	411	149	117	34	27	8

***Table 3A** (cont.). The reported pounds of pesticides used which are on the State's Proposition 65 list of chemicals that are "known to cause reproductive toxicity."*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
POTASSIUM DIMETHYL DITHIO CARBAMATE	0	0	15	24,795	0	0	0	23	28	293	0
PROPARGITE	1,770,065	1,743,278	1,816,028	1,385,327	1,504,268	1,331,979	1,159,792	972,371	1,054,607	1,010,872	994,557
RESMETHRIN	856	661	594	796	632	712	542	661	1,561	245	958
SODIUM DIMETHYL DITHIO CARBAMATE	1	0	0	8,279	355	1,315	173	0	0	10,693	30,440
STREPTOMYCIN SULFATE	9,619	9,494	9,605	14,950	9,406	10,820	7,554	5,990	8,588	4,702	7,788
TAU-FLUVALINATE	3,787	4,137	3,040	2,827	3,315	2,251	2,228	2,184	1,630	1,581	1,143
THIOPHANATE-METHYL	116,746	122,862	88,640	65,169	76,040	67,779	66,953	71,468	125,925	119,008	157,877
TRIADIMEFON	20,692	17,370	12,204	12,919	4,846	3,114	2,840	1,736	1,770	2,110	1,896
TRIBUTYLTIN METHACRYLATE	278	185	60	113	270	107	106	39	0	0	0
TRIFORINE	39,729	24,877	6,562	2,752	519	365	99	78	88	294	137
VINCLOZOLIN	48,270	60,286	46,908	54,719	52,731	35,658	32,208	22,164	18,568	14,863	3,573
WARFARIN	<1	1	1	1	1	1	1	1	3	3	1
Grand Total	36,321,386	35,549,186	34,469,905	30,389,140	35,271,206	26,622,586	21,471,277	23,632,778	24,114,197	23,518,798	21,447,053

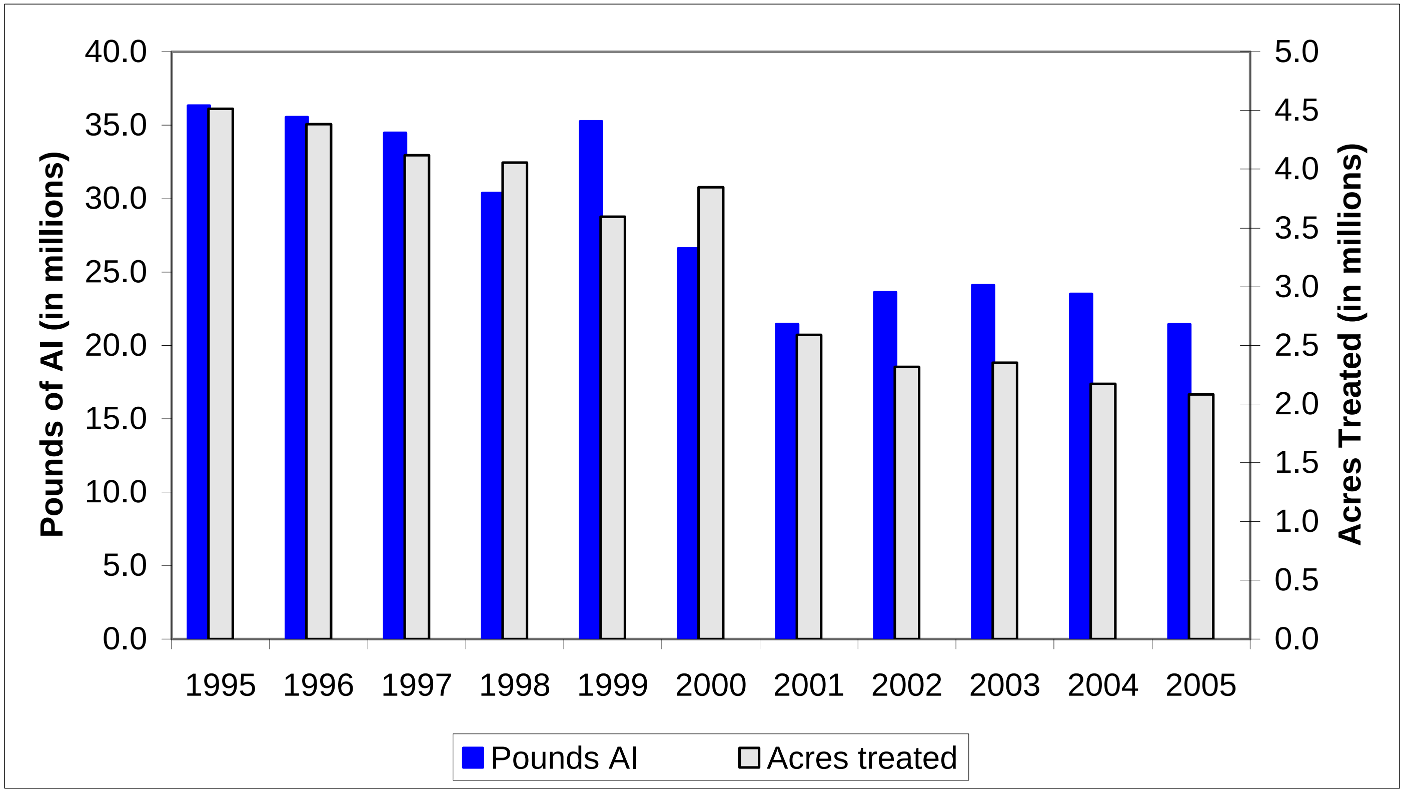
Table 3B. *The reported cumulative acres treated with pesticides that are on the State's Proposition 65 list of chemicals "known to cause reproductive toxicity." Use includes primarily agricultural applications. The grand total for acres treated may be less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,080	32	25	0	0	0	42	30	301	50	0	41
2,4-DB ACID	0	0	2,599	12,167	20,063	19,496	25,843	15,584	10,384	8,873	11,777
AMITRAZ	174,867	129,857	161,651	28,945	14,684	16,011	1,269	605	379	0	0
ARSENIC PENTOXIDE	0	0	0	0	0	709,893	56	0	0	48	0
ARSENIC TRIOXIDE	0	0	0	0	0	0	0	1	<1	0	1
BENOMYL	360,931	310,563	245,687	434,725	242,796	217,611	135,929	47,771	13,360	3,983	2,705
BROMACIL, LITHIUM SALT	0	0	0	40	40	30	0	0	0	0	0
BROMOXYNIL OCTANOATE	224,276	277,062	224,250	240,997	257,417	313,362	251,527	238,713	218,285	162,572	119,982
CHLORSULFURON	39,584	54,360	27,628	39,873	30,691	34,528	29,079	18,836	25,830	25,929	21,844
CYANAZINE	365,520	325,627	288,087	185,082	129,547	56,059	19,708	8,763	25	5	8
CYCLOATE	20,685	19,597	25,986	29,761	24,555	18,487	15,918	17,213	16,721	20,695	19,182
DICLOFOP-METHYL	19,314	89,276	47,217	28,296	21,442	24,470	14,198	6,259	11,257	7,391	729
EPTC	241,587	232,820	208,093	141,511	148,685	107,613	99,953	94,240	56,639	64,049	64,230
ETHYLENE OXIDE	0	0	0	194	31	41	0	0	0	0	0
FENOXAPROP-ETHYL	24,153	25,540	24,439	10,480	13,824	8,847	3,820	1,327	839	1,681	3,247
FLUAZIFOP-BUTYL	2,225	1,513	1,537	3,908	806	137	144	98	0	<1	3
HYDRAMETHYLNON	3	36	35	289	1,615	3,648	2,762	2,148	1,978	1,314	1,990
LINURON	105,284	104,772	110,067	112,122	111,009	86,317	81,801	86,914	85,427	95,565	100,387
METAM-SODIUM	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396	128,427	97,699
METHYL BROMIDE	107,933	96,507	103,068	90,107	102,125	75,741	60,892	53,100	55,251	57,175	45,529
METIRAM	0	0	0	<1	0	0	7	0	<1	2	0
MYCLOBUTANIL	841,178	814,268	866,360	1,225,372	887,981	842,639	737,643	704,231	741,930	655,947	694,179
NABAM	0	0	0	55	20	0	60	0	0	0	0
NICOTINE	237	167	128	57	36	14	31	1	0	2	3
NITRAPYRIN	1,493	147	105	851	329	276	0	169	258	42	143
OXADIAZON	2,400	2,213	1,832	1,933	3,407	2,656	2,637	1,838	1,904	3,121	2,195
OXYDEMETON-METHYL	253,868	220,824	244,056	186,964	253,281	225,984	200,171	193,441	189,047	206,746	172,919
OXYTHIOQUINOX	10,000	8,768	5,896	5,306	2,152	817	250	182	71	137	14

***Table 3B** (cont.)**.** The reported cumulative acres treated with pesticides that are on the State's Proposition 65 list of chemicals "known to cause reproductive toxicity."*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
POTASSIUM DIMETHYL DITHIO CARBAMATE	0	0	0	0	0	0	0	2	6	0	0
PROPARGITE	1,052,358	980,963	989,265	756,098	795,410	704,529	606,737	524,421	558,006	543,728	519,181
RESMETHRIN	222	144	182	160	84,044	33	35	32	66	209	1
SODIUM DIMETHYL DITHIO CARBAMATE	0	0	0	253	20	0	60	0	0	0	0
STREPTOMYCIN SULFATE	84,111	84,999	89,336	131,936	76,414	97,019	62,184	52,180	63,444	37,461	52,055
TAU-FLUVALINATE	19,771	22,156	18,387	14,075	17,343	10,101	10,893	9,024	7,937	7,312	5,699
THIOPHANATE-METHYL	101,694	128,267	89,556	63,842	81,428	68,422	53,990	64,324	121,294	112,500	134,521
TRIADIMEFON	118,746	100,142	59,229	79,968	25,719	11,855	9,501	6,747	7,625	6,751	8,565
TRIBUTYLTIN METHACRYLATE	<1	1	<1	1	1	1	<1	0	0	0	0
TRIFORINE	76,411	53,589	17,455	6,352	1,279	751	244	203	196	61	181
VINCLOZOLIN	66,672	82,968	67,373	69,067	63,931	43,629	38,570	27,786	21,682	18,207	3,892
WARFARIN	151	541	382	310	99	556	101	449	632	1,504	430
Grand Total	4,515,163	4,383,613	4,118,283	4,055,406	3,598,525	3,848,461	2,591,305	2,318,261	2,352,919	2,171,437	2,083,331

Figure 1. *Use trends of pesticides that are on the State's Proposition 65 list of chemicals that are "known to cause reproductive toxicity." Reported pounds of active ingredient (AI) applied include both agricultural and non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF PESTICIDES LISTED BY U.S. EPA AS CARCINOGENS OR BY THE STATE AS "KNOWN TO CAUSE CANCER"

Table 4A. *The reported pounds of pesticides used that are listed by U.S. EPA as B2 carcinogens or that are on the State's Proposition 65 list of chemicals "known to cause cancer." Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,3-DICHLOROPROPENE	409,821	1,956,846	2,400,930	2,911,385	3,122,723	4,442,193	4,135,462	5,359,193	7,009,034	8,945,145	9,319,878
ACIFLUORFEN, SODIUM SALT	6	11	29	<1	10	<1	1	3	<1	18	<1
ALACHLOR	41,119	45,733	51,259	46,264	29,789	36,468	29,431	28,666	24,913	27,229	21,052
ARSENIC ACID	37,206	53,777	59,835	52,558	48,029	11,906	12,023	4,976	318	223	68
ARSENIC PENTOXIDE	83,814	205,089	64,372	50,899	245,238	91,267	259,386	194,650	165,709	12,705	180,505
ARSENIC TRIOXIDE	<1	<1	<1	1	1	<1	<1	<1	<1	<1	<1
CACODYLIC ACID	43,275	31,417	26,060	17,379	15,930	16,093	3,983	1,795	207	115	131
CAPTAN	734,314	918,588	799,878	1,559,136	965,922	642,757	399,263	392,205	499,973	370,418	444,035
CHLOROTHALONIL	1,125,790	1,053,319	779,328	1,181,163	753,840	680,735	522,212	605,016	712,761	571,428	747,841
CHROMIC ACID	117,092	286,521	89,931	71,109	343,543	128,642	363,205	272,300	232,064	17,753	252,176
CREOSOTE	444,461	491,044	259,086	1,752	4,873	9,879	4,700	9,018	3,384	1,092	<1
DAMINOZIDE	6,763	7,944	11,028	10,306	9,411	9,138	11,323	10,048	10,156	9,582	8,683
DDVP	6,063	13,097	13,636	13,998	12,325	12,718	12,837	8,524	3,437	3,807	4,898
DIOCTYL PHTHALATE	<1	1	1	318	1,076	595	640	604	521	397	583
DIPROPYL ISOCINCHOMERONATE	1	3	<1	<1	0	<1	1	0	1	<1	<1
DIURON	1,054,409	1,265,426	1,228,114	1,504,268	1,188,640	1,343,727	1,107,421	1,303,108	1,343,596	1,397,638	948,125
ETHOPROP	51,104	27,955	23,842	27,949	26,196	16,119	19,046	16,531	28,419	23,130	18,896
ETHYLENE OXIDE	0	0	0	31	2	6	3	0	0	0	0
FENOXYCARB	1,673	712	65	552	71	88	86	53	32	34	30
FOLPET	2	<1	<1	<1	<1	<1	0	2	<1	0	<1
FORMALDEHYDE	153,519	334,548	403,824	305,297	111,714	55,300	28,612	14,035	18,690	111,151	48,968
IPRODIONE	564,127	520,763	424,338	572,287	411,548	422,179	305,629	247,365	287,631	261,039	284,388
LINDANE	4,507	4,576	5,388	6,293	4,842	4,738	2,388	1,633	908	775	40
MANCOZEB	659,240	567,866	526,364	987,270	630,968	611,498	430,604	396,672	538,033	379,299	634,911
MANEB	1,257,122	1,328,318	1,081,124	1,596,876	1,045,567	1,203,483	817,059	851,643	1,026,685	953,782	1,119,553
METAM-SODIUM	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687	14,683,308	13,035,949
METIRAM	0	0	0	<1	0	0	2	0	1	5	0
ORTHO-PHENYLPHENOL	14,892	10,349	15,962	11,248	8,600	8,516	4,016	15,205	5,141	21,740	9,453

***Table 4A** (cont.)**.** The reported pounds of pesticides used that are listed by U.S. EPA as B2 carcinogens or that are on the State's Proposition 65 list of chemicals "known to cause cancer."*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ORTHO-PHENYLPHENOL, SODIUM SALT	30,830	33,539	25,389	32,315	29,019	31,681	27,071	25,249	20,857	5,898	4,979
OXADIAZON	21,458	25,260	23,196	21,959	19,399	18,256	15,905	16,692	12,550	12,980	13,700
OXYTHIOQUINOX	7,172	6,204	2,709	1,576	2,705	411	149	117	34	27	8
PARA-DICHLOROBENZENE	2	4	3	219	86	4	11	1	25	10	139
PENTACHLOROPHENOL	3	3	8	33	92	466	14	17	3	2	3
POTASSIUM DICHROMATE	380	41	50	103	319	554	1	<1	11	74	40
PROPARGITE	1,770,065	1,743,278	1,816,028	1,385,327	1,504,268	1,331,979	1,159,792	972,371	1,054,607	1,010,872	994,557
PROPOXUR	3,296	1,341	1,760	1,604	1,735	2,141	611	449	304	223	220
PROPYLENE OXIDE	131,593	224,495	198,559	198,595	172,556	118,381	99,727	99,674	99,396	151,484	147,324
PROPYZAMIDE	113,761	106,811	99,292	104,292	104,484	103,705	108,987	107,531	104,375	119,035	116,204
SODIUM DICHROMATE	0	180,478	182,185	122,647	32,699	122	329	633	217	0	0
TERRAZOLE	254	37	38	21	8	2	28	6	575	1,099	750
THIODICARB	13,679	122,927	156,002	114,785	60,453	36,844	9,360	5,194	8,392	2,236	1,868
VINCLOZOLIN	48,270	60,286	46,908	54,719	52,731	35,658	32,208	22,164	18,568	14,863	3,573
Grand Total	23,926,612	26,882,530	25,786,254	26,695,841	27,735,656	24,647,016	22,468,931	26,121,061	28,047,218	29,110,618	28,363,533

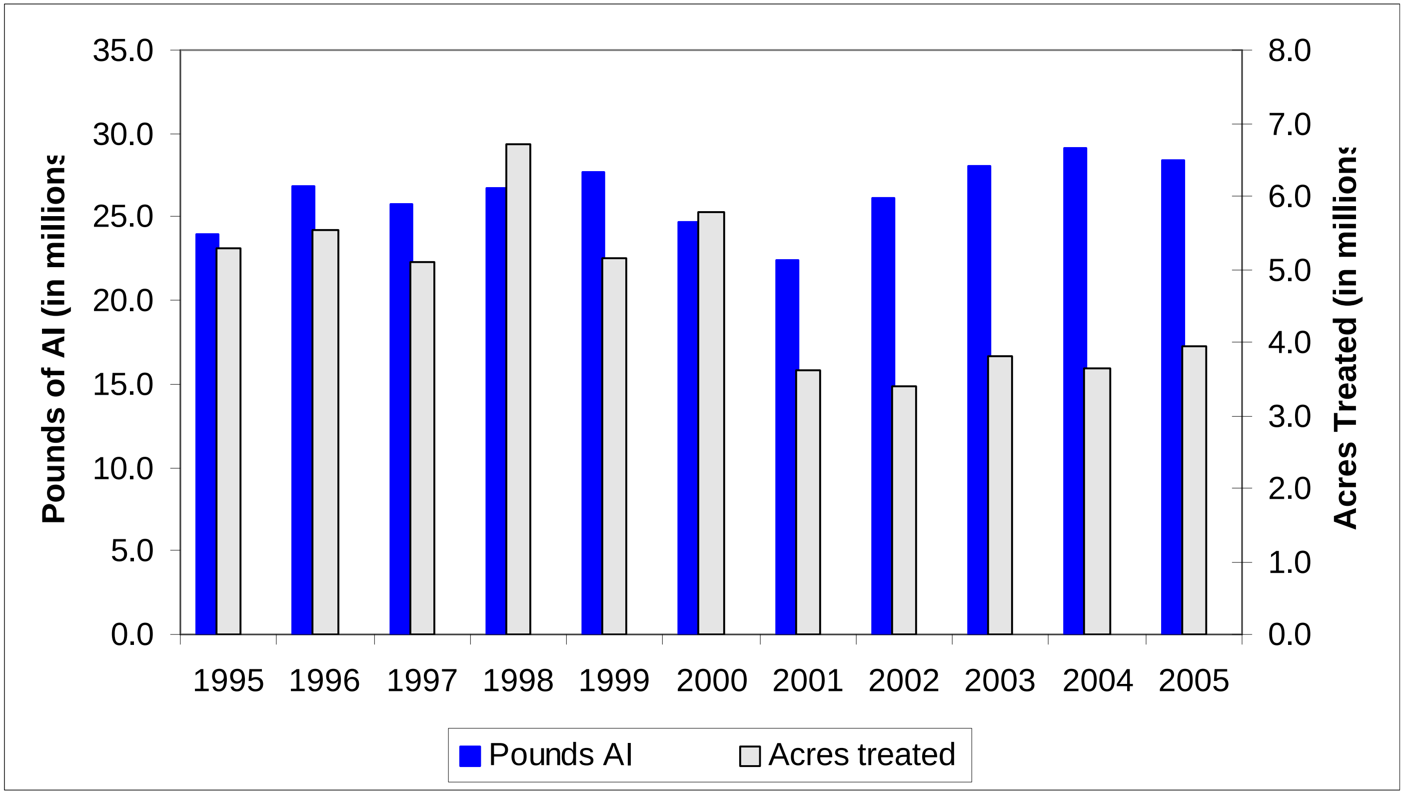
Table 4B. *The reported cumulative acres treated with pesticides listed by U.S. EPA as B2 carcinogens or on the State's Proposition 65 list of chemicals "known to cause cancer." Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,3-DICHLOROPROPENE	4,174	17,223	22,193	27,059	29,430	33,101	30,817	42,064	48,944	56,618	51,284
ACIFLUORFEN, SODIUM SALT	8	<1	0	0	0	0	0	11	0	3	0
ALACHLOR	15,359	18,181	19,059	16,430	11,008	13,302	11,453	14,467	10,004	9,888	7,935
ARSENIC ACID	0	0	0	0	0	0	0	0	0	0	0
ARSENIC PENTOXIDE	0	0	0	0	0	709,893	56	0	0	48	0
ARSENIC TRIOXIDE	0	0	0	0	0	0	0	1	<1	0	1
CACODYLIC ACID	315,336	251,414	192,816	126,912	111,607	117,656	31,283	12,648	757	100	82
CAPTAN	295,860	381,989	347,631	602,684	404,731	309,768	215,969	213,438	271,140	211,028	236,743
CHLOROTHALONIL	674,126	674,086	492,219	796,672	456,007	428,109	312,726	347,725	361,250	331,650	409,069
CHROMIC ACID	0	0	0	0	0	709,893	56	0	0	0	0
CREOSOTE	0	0	0	126	11	45	1	0	0	56	0
DAMINOZIDE	2,659	2,653	3,512	4,510	3,107	3,416	6,146	5,319	3,103	2,664	2,365
DDVP	1,887	1,499	2,596	3,692	2,180	2,336	3,954	4,327	2,576	1,637	7,445
DIOCTYL PHTHALATE	0	55	14	6,250	24,270	11,195	10,776	6,649	3,880	6,249	13,858
DIPROPYL ISOCINCHOMERONATE	10	0	0	0	0	5	0	0	0	0	1
DIURON	507,279	685,352	819,993	865,246	849,482	864,334	788,559	796,903	843,154	971,384	888,222
ETHOPROP	5,470	3,139	3,213	3,784	3,610	3,477	3,542	4,152	6,078	4,917	4,282
ETHYLENE OXIDE	0	0	0	194	31	41	0	0	0	0	0
FENOXYCARB	11	5	<1	210	3,707	3,388	3,241	1,242	811	1,011	1,398
FOLPET	0	1	2	0	0	0	0	0	0	0	0
FORMALDEHYDE	137	234	12	126	123	47	53	33	18	23	2
IPRODIONE	886,077	804,311	666,336	1,348,367	933,982	1,194,377	501,033	364,770	445,383	409,092	449,462
LINDANE	19,380	25,352	36,573	32,650	20,930	14,628	13,832	8,010	8,828	9,437	557
MANCOZEB	405,494	351,801	284,134	682,979	387,300	363,260	228,275	197,055	276,096	194,219	369,184
MANEB	652,122	731,079	624,123	942,083	629,897	611,717	535,105	554,787	659,893	601,360	728,105
METAM-SODIUM	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396	128,427	97,699
METIRAM	0	0	0	<1	0	0	7	0	<1	2	0

***Table 4B** (cont.)**.** The reported cumulative acres treated with pesticides listed by U.S. EPA as B2 carcinogens or on the State's Proposition 65 list of chemicals "known to cause cancer."*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ORTHO-PHENYLPHENOL	8	67	75	645	583	321	59	82	726	272	429
ORTHO-PHENYLPHENOL, SODIUM SALT	47	652	0	20	6,234	18,599	60	40	9	0	0
OXADIAZON	2,400	2,213	1,832	1,933	3,407	2,656	2,637	1,838	1,904	3,121	2,195
OXYTHIOQUINOX	10,000	8,768	5,896	5,306	2,152	817	250	182	71	137	14
PARA-DICHLOROBENZENE	0	0	0	10	0	0	0	0	0	0	0
PENTACHLOROPHENOL	<1	15	4	190	0	59	38	0	0	20	3
POTASSIUM DICHROMATE	0	0	0	40	71	40	0	20	0	56	10
PROPARGITE	1,052,358	980,963	989,265	756,098	795,410	704,529	606,737	524,421	558,006	543,728	519,181
PROPOXUR	5	9	73	45	39	26	4	23	1	7	8
PROPYLENE OXIDE	0	0	<1	0	573	0	0	<1	0	22	185
PROPYZAMIDE	155,773	150,791	140,791	144,864	142,194	137,337	145,325	140,680	132,819	147,600	147,841
SODIUM DICHROMATE	0	0	0	0	0	0	0	0	0	0	0
TERRAZOLE	56	43	40	78	44	126	132	47	266	253	495
THIODICARB	22,785	176,788	223,154	155,440	83,796	50,604	13,382	8,256	12,113	3,684	2,959
VINCLOZOLIN	66,672	82,968	67,373	69,067	63,931	43,629	38,570	27,786	21,682	18,207	3,892
Grand Total	5,294,951	5,567,551	5,141,326	6,748,021	5,156,145	6,499,575	3,629,339	3,418,333	3,811,909	3,656,922	3,944,903

Figure 2. *Use trends of pesticides that are listed by U.S. EPA as B2 carcinogens or that are on the State's Proposition 65 list of chemicals "known to cause cancer." Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF CHOLINESTERASE-INHIBITING PESTICIDES

Table 5A. *The reported pounds of cholinesterase-inhibiting pesticides used. These pesticides are the currently registered organophosphate and carbamate active ingredients. Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
3-IODO-2-PROPYNYL BUTYLCARBAMATE	0	<1	0	1	<1	<1	<1	0	0	0	0
ACEPHATE	458,012	355,350	343,840	384,091	307,272	283,355	240,191	217,383	223,749	204,816	194,365
ALDICARB	354,500	545,117	530,066	534,665	280,755	329,431	297,882	244,786	262,103	231,012	228,761
AZINPHOS-METHYL	406,230	406,099	336,353	193,069	216,624	185,055	159,786	153,200	213,863	50,562	55,147
BENDIOCARB	1,526	1,674	259	125	108	593	62	32	23	9	6
BENSULIDE	69,271	94,587	129,784	192,136	242,460	217,150	189,216	194,687	229,016	236,814	244,996
BUTYLATE	67,179	87,612	84,268	69,805	71,071	31,732	27,640	19,412	26,826	20,323	9,923
CARBARYL	835,811	809,794	753,801	426,893	387,145	365,174	287,802	256,057	205,080	240,071	189,777
CARBOFURAN	242,999	220,622	183,321	161,588	138,665	132,427	95,863	81,486	49,275	30,354	28,093
CHLORPROPHAM	3,230	3,015	2,057	2,321	3,102	3,544	3,504	1,380	6,191	2,861	2,645
CHLORPYRIFOS	3,385,416	2,687,809	3,152,564	2,355,626	2,257,936	2,093,400	1,674,120	1,419,332	1,546,481	1,775,828	1,993,288
COUMAPHOS	0	0	0	0	15	152	97	62	64	63	1
CYCLOATE	49,138	44,628	55,459	62,753	49,096	37,408	31,785	34,347	30,080	42,563	39,249
DDVP	6,063	13,097	13,636	13,998	12,325	12,718	12,837	8,524	3,437	3,807	4,898
DEMETON	775	411	0	3	5	2	3	42	<1	0	1
DESMEDIPHAM	8,465	6,092	6,188	4,737	6,014	6,703	3,750	3,398	3,636	3,747	3,921
DIAZINON	1,216,935	1,093,121	955,108	900,596	979,458	1,057,845	1,001,294	690,590	523,786	492,050	397,076
DICROTOPHOS	113	3	0	11	122	0	2	27	41	0	2
DIMETHOATE	583,498	419,807	515,798	397,847	485,274	397,223	284,751	310,422	294,928	332,043	310,275
DISULFOTON	95,972	142,372	128,335	105,327	95,919	76,164	51,545	54,567	46,996	41,211	31,512
EPTC	660,185	703,996	579,245	393,031	448,883	323,254	276,782	253,887	141,756	182,245	181,790
ETHEPHON	982,776	951,415	882,802	762,217	734,263	734,810	620,075	538,449	574,371	637,205	638,780
ETHION	79	2	3	906	64	0	5	13	13	<1	261
ETHOPROP	51,104	27,955	23,842	27,949	26,196	16,119	19,046	16,531	28,419	23,130	18,896
FENAMIPHOS	187,242	189,379	156,280	125,459	107,745	104,505	74,858	70,939	59,421	58,691	46,263
FENTHION	413	141	176	29	22	33	61	79	3	36	15
FONOFOS	74,936	67,969	50,555	25,349	24,216	4,370	580	465	182	30	15

***Table 5A** (cont.)**.** The reported pounds of cholinesterase-inhibiting pesticides used. These pesticides are the currently registered organophosphate and carbamate active ingredients.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
FORMETANATE HYDROCHLORIDE	104,012	106,168	97,907	77,723	65,030	43,941	45,625	35,844	28,420	30,651	30,597
MALATHION	801,496	673,379	773,782	645,889	678,105	505,970	556,371	636,384	654,151	492,308	420,888
METHAMIDOPHOS	500,055	260,255	312,067	244,269	116,256	76,865	46,615	30,645	36,987	31,332	37,806
METHIDATHION	321,605	328,328	309,154	178,451	177,105	98,129	93,521	68,389	54,398	61,204	48,196
METHIOCARB	2,672	2,120	4,769	5,384	3,314	2,411	2,262	1,852	2,274	2,789	2,308
METHOMYL	807,977	679,383	833,758	666,442	551,181	550,862	378,305	294,491	364,779	262,195	346,489
METHYL PARATHION	140,469	130,614	153,187	158,228	157,594	75,169	59,620	53,644	73,337	71,525	78,821
MOLINATE	1,377,257	1,356,258	1,170,699	1,006,025	911,376	1,025,786	733,534	877,572	539,871	367,155	171,362
NALED	700,676	351,267	615,314	260,048	297,895	255,419	261,882	196,777	186,260	152,479	223,377
OXAMYL	66,179	82,327	119,441	161,042	128,956	137,989	77,121	80,315	93,754	112,603	151,773
OXYDEMETON-METHYL	120,101	106,612	115,781	89,789	122,912	110,797	99,756	96,357	93,789	102,554	121,500
PARATHION	13,642	14,050	5,187	5,766	4,041	3,581	2,589	3,205	621	240	855
PEBULATE	244,181	202,634	184,015	185,696	225,077	160,018	45,619	71,721	35,755	10,118	1,154
PHENMEDIPHAM	8,771	6,612	6,621	5,836	6,735	7,478	4,249	4,351	5,021	4,481	5,171
PHORATE	135,887	160,854	139,725	149,707	93,488	87,974	70,645	76,482	64,947	60,162	48,139
PHOSALONE	52	27	33	11	0	4	0	0	0	0	0
PHOSMET	266,349	395,160	566,484	644,898	638,822	583,116	484,059	404,934	341,642	658,087	546,994
POTASSIUM DIMETHYL DITHIO CARBAMATE	0	0	15	24,795	0	0	0	23	28	293	0
PROFENOFOS	245,420	184,264	150,575	40,433	49,575	43,879	22,011	24,452	12,871	15,620	23,924
PROPAMOCARB HYDROCHLORIDE	0	16,341	10,215	57,121	6,285	4,959	2,288	828	83	5	0
PROPETAMPHOS	77,985	23,249	17,338	9,970	6,074	4,500	3,991	2,463	721	315	148
PROPOXUR	3,296	1,341	1,760	1,604	1,735	2,141	611	449	304	223	220
S,S,S-TRIBUTYL PHOSPHOROTRITHIOATE	866,726	760,809	626,684	440,382	345,842	396,827	257,062	190,149	233,640	179,690	99,020
SODIUM DIMETHYL DITHIO CARBAMATE	1	0	0	8,279	355	1,315	173	0	0	10,693	30,440
SULFOTEP	509	316	355	213	246	215	267	77	8	29	17
SULPROFOS	171	0	119	84	0	0	<1	0	0	0	0
TETRACHLORVINPHOS	7,118	7,056	6,044	5,831	3,975	4,850	4,746	3,285	1,262	722	788
THIOBENCARB	559,610	618,412	894,287	724,926	732,505	1,007,249	644,625	839,962	587,211	521,586	448,208
THIODICARB	13,679	122,927	156,002	114,785	60,453	36,844	9,360	5,194	8,392	2,236	1,868
TRICHLORFON	4,552	3,327	3,843	2,476	2,779	3,992	3,004	1,545	1,068	1,035	1,222
Grand Total	17,132,318	15,466,155	16,158,902	13,056,633	12,262,468	11,645,448	9,263,448	8,571,483	7,891,332	7,761,802	7,461,242

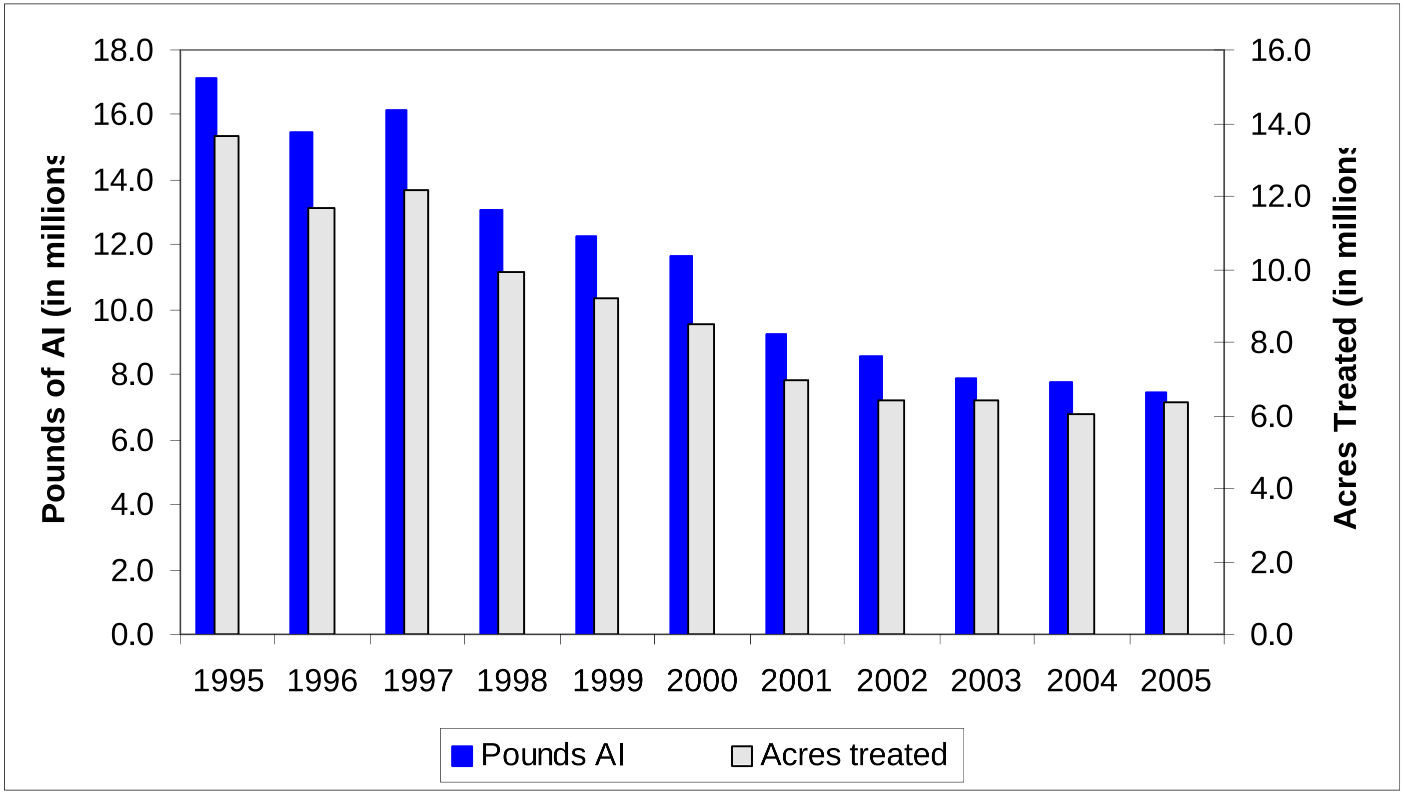
Table 5B. *The reported cumulative acres treated with cholinesterase-inhibiting pesticides. These pesticides are the currently registered organophosphate and carbamate active ingredients. Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
3-IODO-2-PROPYNYL BUTYLCARBAMATE	0	0	0	150	0	0	40	0	0	0	0
ACEPHATE	489,259	406,607	372,566	403,537	370,111	295,298	266,278	232,908	223,396	211,892	197,871
ALDICARB	355,717	490,499	442,029	397,890	266,773	314,440	282,453	225,820	231,090	217,540	213,476
AZINPHOS-METHYL	274,347	277,745	233,406	134,334	140,226	118,805	117,544	94,035	117,001	38,622	37,572
BENDIOCARB	499	188	19	28	11	<1	2	0	9	<1	1
BENSULIDE	22,489	31,916	45,795	61,984	80,873	72,866	62,859	60,883	66,375	70,239	70,329
BUTYLATE	14,864	17,689	17,572	14,259	14,959	6,957	6,270	4,598	5,450	3,940	1,954
CARBARYL	305,452	312,058	292,721	197,664	216,991	196,264	147,612	106,590	97,811	103,261	98,673
CARBOFURAN	449,507	364,150	322,064	303,957	272,441	258,441	246,149	182,567	91,791	50,138	55,488
CHLORPROPHAM	0	4	26	106	151	127	112	80	124	166	88
CHLORPYRIFOS	2,824,142	1,869,874	2,223,551	1,669,859	1,420,414	1,441,819	1,355,172	1,235,180	1,478,761	1,322,839	1,672,923
COUMAPHOS	0	0	0	0	0	1,339	809	733	17	49	<1
CYCLOATE	20,685	19,597	25,986	29,761	24,555	18,487	15,918	17,213	16,721	20,695	19,182
DDVP	1,887	1,499	2,596	3,692	2,180	2,336	3,954	4,327	2,576	1,637	7,445
DEMETON	1,583	1,002	0	18	66	0	56	0	2	0	35
DESMEDIPHAM	71,577	51,183	61,368	56,272	71,977	60,248	34,738	32,344	35,435	35,938	35,795
DIAZINON	752,898	680,947	530,355	477,804	546,577	478,994	437,934	489,149	483,283	509,158	439,614
DICROTOPHOS	76	9	0	16	11	0	0	0	64	0	0
DIMETHOATE	1,193,214	955,445	1,097,751	871,305	1,078,024	874,730	639,271	681,318	621,038	701,470	672,336
DISULFOTON	87,291	147,078	124,319	100,935	86,332	69,018	45,258	48,723	39,182	34,481	25,148
EPTC	241,587	232,820	208,093	141,511	148,685	107,613	99,953	94,240	56,639	64,049	64,230
ETHEPHON	806,425	776,247	700,941	653,817	720,773	697,300	631,330	550,255	601,519	660,356	676,438
ETHION	91	5	2	621	53	0	5	0	1	0	66
ETHOPROP	5,470	3,139	3,213	3,784	3,610	3,477	3,542	4,152	6,078	4,917	4,282
FENAMIPHOS	112,249	111,729	97,013	72,102	66,100	60,340	36,999	38,397	36,293	34,142	29,289
FENTHION	0	0	0	0	0	0	0	0	0	18	0
FONOFOS	59,041	55,207	36,123	16,926	14,146	2,325	497	234	116	20	15

***Table 5B** (cont.). The reported cumulative acres treated with cholinesterase-inhibiting pesticides. These pesticides are the currently registered organophosphate and carbamate active ingredients.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
FORMETANATE HYDROCHLORIDE	100,837	103,521	95,544	77,965	63,047	42,880	45,234	36,131	29,411	33,167	31,700
MALATHION	425,062	363,635	410,658	383,121	403,646	323,737	290,933	314,361	287,445	249,314	225,380
METHAMIDOPHOS	418,703	313,618	263,816	290,061	158,079	101,494	63,046	37,012	41,506	38,874	45,834
METHIDATHION	231,930	245,914	200,528	129,358	115,249	71,992	64,785	48,554	38,516	45,281	37,751
METHIOCARB	2,129	1,511	2,906	3,523	2,369	2,700	1,866	1,997	1,757	3,064	2,494
METHOMYL	1,425,295	1,145,115	1,376,868	1,118,188	880,910	893,424	627,264	509,104	615,609	437,673	611,825
METHYL PARATHION	129,976	125,729	125,638	128,675	119,315	43,773	39,449	37,448	51,192	48,640	49,771
MOLINATE	348,465	357,239	317,680	267,090	246,084	276,315	190,488	222,044	134,120	89,593	40,535
NALED	702,155	338,861	604,615	251,044	279,898	244,617	234,184	154,963	148,781	110,218	191,735
OXAMYL	106,205	122,353	176,793	225,380	177,183	179,048	100,294	98,313	115,250	135,832	176,810
OXYDEMETON-METHYL	253,868	220,824	244,056	186,964	253,281	225,984	200,171	193,441	189,047	206,746	172,919
PARATHION	6,688	5,099	2,071	2,592	1,976	4,025	2,977	7,026	1,016	392	717
PEBULATE	86,494	74,647	69,381	64,501	74,697	51,205	15,122	21,491	10,680	4,319	297
PHENMEDIPHAM	72,060	52,125	62,449	58,649	73,905	61,975	35,477	34,452	38,265	37,750	38,675
PHORATE	111,217	123,789	106,427	109,759	81,724	71,407	63,160	58,391	50,290	47,488	35,394
PHOSALONE	56	18	64	5	0	10	0	0	0	0	0
PHOSMET	172,539	214,416	236,611	312,707	253,234	219,707	189,517	158,970	128,029	209,843	170,380
POTASSIUM DIMETHYL DITHIO CARBAMATE	0	0	0	0	0	0	0	2	6	0	0
PROFENOFOS	296,860	211,769	162,204	44,641	46,250	46,617	23,700	25,997	13,599	11,657	25,096
PROPAMOCARB HYDROCHLORIDE	0	23,793	14,677	81,050	6,851	17,696	2,625	1,041	22	10	0
PROPETAMPHOS	0	0	0	0	0	0	0	0	0	0	0
PROPOXUR	5	9	73	45	39	26	4	23	1	7	8
S,S,S-TRIBUTYL PHOSPHOROTRITHIOATE	604,586	531,052	437,505	305,306	245,470	282,844	187,153	129,570	158,604	133,535	73,737
SODIUM DIMETHYL DITHIO CARBAMATE	0	0	0	253	20	0	60	0	0	0	0
SULFOTEP	537	408	251	241	224	168	314	57	3	8	9
SULPROFOS	299	0	83	80	0	0	0	0	0	0	0
TETRACHLORVINPHOS	519	674	356	3,109	1,543	575	232	125	6	291	1,518
THIOBENCARB	126,745	159,121	227,658	187,295	186,341	252,506	169,056	222,606	154,952	136,132	118,786
THIODICARB	22,785	176,788	223,154	155,440	83,796	50,604	13,382	8,256	12,113	3,684	2,959
TRICHLORFON	1,037	204	149	1,071	97	70	51	19	8	0	0
Grand Total	13,737,403	11,718,867	12,199,724	10,000,445	9,301,269	8,546,622	6,995,300	6,425,140	6,430,998	6,069,085	6,376,577

Figure 3. *Use trends of cholinesterase-inhibiting pesticides, which includes pesticides with organophosphate and carbamate active ingredients. Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF PESTICIDES ON DPR'S GROUND WATER PROTECTION LIST

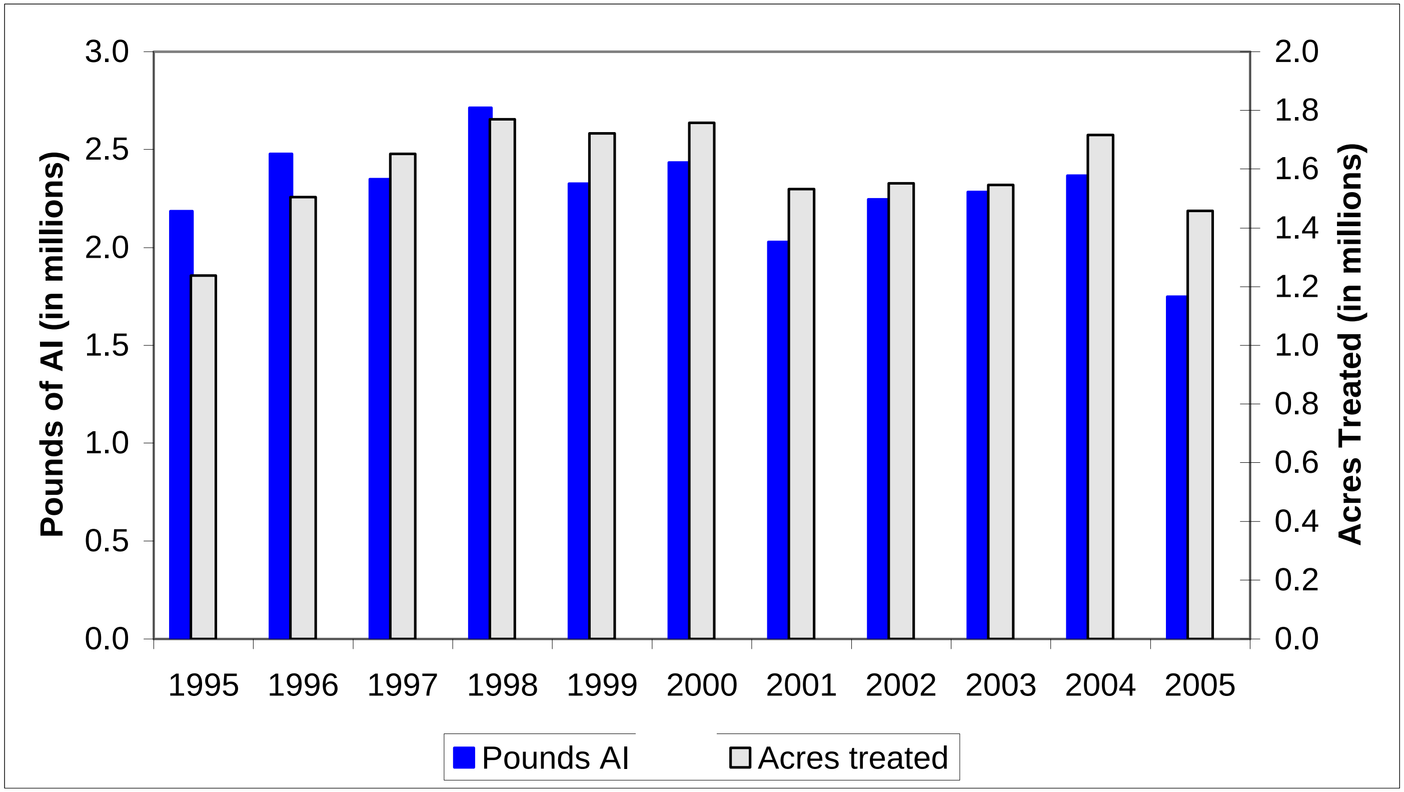
Table 6A. *The reported pounds of pesticides on the "a" part of DPR's groundwater protection list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, Section 6800(a). Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ATRAZINE	36,078	57,018	46,568	54,840	69,549	57,403	62,872	59,292	58,245	38,701	32,882
ATRAZINE, OTHER RELATED	1,932	3,062	2,502	2,943	3,706	1,224	1,321	1,237	1,216	810	693
BENTAZON, SODIUM SALT	655	1,518	1,907	1,757	1,837	1,210	393	1,045	1,216	1,370	2,272
BROMACIL	95,444	98,293	82,424	84,645	75,613	67,753	56,128	55,821	56,417	56,476	48,738
BROMACIL, LITHIUM SALT	6,517	17,381	9,141	4,686	4,162	4,478	3,217	4,016	3,025	1,801	1,059
DIURON	1,054,409	1,265,426	1,228,114	1,504,268	1,188,640	1,343,727	1,107,421	1,303,108	1,343,596	1,397,638	948,125
NORFLURAZON	153,138	196,142	212,621	265,886	286,214	257,651	209,981	188,032	146,815	139,960	93,731
PROMETON	117	68	20	22	4	28	2	21	2	20	3
SIMAZINE	837,366	839,209	764,586	794,758	696,574	700,648	587,000	634,176	674,141	729,349	621,133
Grand Total	2,185,656	2,478,115	2,347,882	2,713,804	2,326,298	2,434,122	2,028,334	2,246,747	2,284,673	2,366,124	1,748,637

Table 6B. *The reported cumulative acres treated with pesticides on the "a" part of DPR's groundwater protection list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, Section 6800(a). Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ATRAZINE	22,234	32,043	27,257	37,556	39,881	34,524	33,376	28,589	29,966	26,911	23,978
ATRAZINE, OTHER RELATED	22,234	32,042	27,257	37,529	39,876	34,524	33,376	28,589	29,966	26,911	23,978
BENTAZON, SODIUM SALT	805	1,460	2,010	1,904	1,968	1,502	432	1,094	987	1,279	2,218
BROMACIL	66,289	62,206	58,722	57,136	53,861	42,458	30,149	29,585	27,974	26,204	21,749
BROMACIL, LITHIUM SALT	0	0	0	40	40	30	0	0	0	0	0
DIURON	507,279	685,352	819,993	865,246	849,482	864,334	788,559	796,903	843,154	971,384	888,222
NORFLURAZON	133,585	179,015	186,991	214,144	217,178	230,836	192,305	161,702	125,619	125,802	81,348
PROMETON	23	27	8	85	18	51	0	174	49	171	6
SIMAZINE	573,735	607,228	613,237	647,072	611,626	619,639	515,419	561,195	546,015	587,663	461,144
Grand Total	1,326,184	1,599,373	1,735,475	1,860,712	1,813,930	1,827,898	1,593,616	1,607,831	1,603,730	1,766,323	1,502,645

Figure 4. *Use trends of pesticides on DPR's groundwater protection list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, Section 6800(a). Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF PESTICIDES ON DPR'S TOXIC AIR CONTAMINATS LIST

Table 7A. *The reported pounds of pesticides on DPR's toxic air contaminants list applied in California. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, Section 6860. Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,3-DICHLOROPROPENE	409,821	1,956,846	2,400,930	2,911,385	3,122,723	4,442,193	4,135,462	5,359,193	7,009,034	8,945,145	9,319,878
2,4-D	23,995	22,089	10,227	3,868	3,060	2,065	1,787	1,691	1,732	1,828	1,552
2,4-D, 2-ETHYLHEXYL ESTER	278	10	1,313	13,750	72,225	12,557	13,706	15,477	19,715	20,816	26,513
2,4-D, ALKANOLAMINE SALTS (ETHANOL AND ISOPROPANOL AMINES)	30,642	27,954	25,684	29,061	15,992	6,737	674	452	1,357	624	458
2,4-D, BUTOXYETHANOL ESTER	31,743	38,567	13,263	12,140	5,628	6,107	5,336	3,482	3,812	4,837	8,189
2,4-D, BUTOXYPROPYL ESTER	224	61	13	569	5	4	3	0	0	0	0
2,4-D, BUTYL ESTER	39	0	0	2,169	8	21	<1	593	2	0	10
2,4-D, DIETHANOLAMINE SALT	1,938	3,003	24,809	14,965	5,843	13,002	6,667	8,080	8,831	5,022	3,961
2,4-D, DIMETHYLAMINE SALT	454,658	468,771	428,874	422,673	355,318	426,211	399,644	425,542	512,828	470,635	454,213
2,4-D, DODECYLAMINE SALT	16	8	58	75	730	0	257	322	0	0	0
2,4-D, HEPTYLAMINE SALT	86	<1	0	0	46	0	0	<1	0	0	0
2,4-D, ISOOCTYL ESTER	13,466	7,822	60,356	46,603	17,387	6,914	15,828	12,343	12,366	10,039	10,314
2,4-D, ISOPROPYL ESTER	5,077	5,090	6,543	7,510	6,879	8,260	6,618	7,843	8,322	9,066	10,750
2,4-D, N-OLEYL-1,3-PROPYLENEDIAMINE SALT	37	35	0	3	7	11	0	0	0	0	0
2,4-D, OCTYL ESTER	15	0	0	0	0	0	0	0	0	0	0
2,4-D, PROPYL ESTER	2,032	1,774	1,575	999	1,822	783	391	634	326	472	382
2,4-D, TETRADECYLAMINE SALT	4	2	13	17	170	0	60	75	0	0	0
2,4-D, TRIETHYLAMINE SALT	105,656	93,876	34,610	5,688	2,344	1,038	634	426	435	386	203
2,4-D, TRIISOPROPYLAMINE SALT	6	2	3	5	6	0	5	9	6	0	0
ACROLEIN	362,773	322,578	341,245	264,207	328,238	290,180	233,928	283,541	272,733	211,014	257,189
ALUMINUM PHOSPHIDE	80,577	103,858	89,198	67,804	123,419	119,545	100,020	169,224	119,500	131,230	133,775

***Table 7A** (cont.)**.** The reported pounds of pesticides on DPR's toxic air contaminants list applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ARSENIC ACID	37,206	53,777	59,835	52,558	48,029	11,906	12,023	4,976	318	223	68
ARSENIC PENTOXIDE	83,814	205,089	64,372	50,899	245,238	91,267	259,386	194,650	165,709	12,705	180,505
ARSENIC TRIOXIDE	<1	<1	<1	1	1	<1	<1	<1	<1	<1	<1
CAPTAN	734,314	918,588	799,878	1,559,136	965,922	642,757	399,263	392,205	499,973	370,418	444,035
CAPTAN, OTHER RELATED	17,831	21,729	19,448	54,940	22,216	14,617	9,017	8,945	11,344	8,271	10,001
CARBARYL	835,811	809,794	753,801	426,893	387,145	365,174	287,802	256,057	205,080	240,071	189,777
CHLORINE	2,815,119	330,017	423,469	422,252	628,546	678,417	297,086	502,944	619,735	516,546	613,737
CHROMIC ACID	117,092	286,521	89,931	71,109	343,543	128,642	363,205	272,300	232,064	17,753	252,176
DAZOMET	5,875	12,851	13,305	12,217	12,409	10,486	44,299	45,020	44,798	58,492	47,926
DDVP	6,063	13,097	13,636	13,998	12,325	12,718	12,837	8,524	3,437	3,807	4,898
ETHYLENE OXIDE	0	0	0	31	2	6	3	0	0	0	0
FORMALDEHYDE	153,519	334,548	403,824	305,297	111,714	55,300	28,612	14,035	18,690	111,151	48,968
HYDROGEN CHLORIDE	224	1,938	129	762	11,067	3,316	4,276	4,256	3,222	2,510	14,766
LINDANE	4,507	4,576	5,388	6,293	4,842	4,738	2,388	1,633	908	775	40
MAGNESIUM PHOSPHIDE	2,703	2,163	2,362	4,132	3,540	3,541	2,492	4,811	2,844	2,621	3,156
MANCOZEB	659,240	567,866	526,364	987,270	630,968	611,498	430,604	396,672	538,033	379,299	634,911
MANEB	1,257,122	1,328,318	1,081,124	1,596,876	1,045,567	1,203,483	817,059	851,643	1,026,685	953,782	1,119,553
META-CRESOL	2	3	6	8	11	14	1	1	1	2	1
METAM-SODIUM	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687	14,683,308	13,035,949
METHANOL	27	0	0	0	3	<1	0	0	0	0	0
METHOXYCHLOR	1,049	484	358	566	16	26	41	144	3	1	13
METHOXYCHLOR, OTHER RELATED	139	62	44	11	<1	0	<1	0	0	<1	<1
METHYL BROMIDE	17,165,964	16,022,069	15,663,832	13,569,875	15,300,388	10,869,241	6,618,631	6,550,818	7,384,398	7,089,862	6,444,224
METHYL ISOTHIOCYANATE	123	0	353	220	616	3,323	2,871	3,512	547	1,357	1,549
METHYL PARATHION	140,469	130,614	153,187	158,228	157,594	75,169	59,620	53,644	73,337	71,525	78,821
NAPHTHALENE	<1	0	1	333	<1	0	0	<1	23	0	<1
PARA-DICHLOROBENZENE	2	4	3	219	86	4	11	1	25	10	139
PARATHION	13,642	14,050	5,187	5,766	4,041	3,581	2,589	3,205	621	240	855

***Table 7A** (cont.)**.** The reported pounds of pesticides on DPR's toxic air contaminants list applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PCNB	109,755	83,087	89,548	88,036	67,424	62,224	50,341	43,387	38,821	34,176	37,777
PCP, OTHER RELATED	<1	<1	1	2	11	54	2	2	<1	<1	<1
PCP, SODIUM SALT	0	0	0	2	0	0	<1	0	0	0	0
PCP, SODIUM SALT, OTHER RELATED	0	0	0	0	0	0	0	0	0	0	0
PENTACHLOROPHENOL	3	3	8	33	92	466	14	17	3	2	3
PHENOL	300	25	8	44	12	20	30	0	<1	9	71
PHOSPHINE	0	0	0	0	0	0	44	901	1,141	1,664	2,688
PHOSPHORUS	34	58	14	12	9	22	3	1	1	1	<1
POTASSIUM N-METHYLDITHIOCARBAMATE	0	0	0	9,143	0	105,364	137,098	449,804	581,840	851,181	1,908,501
POTASSIUM PERMANGANATE	0	0	0	243	0	0	0	0	0	0	0
PROPOXUR	3,296	1,341	1,760	1,604	1,735	2,141	611	449	304	223	220
PROPYLENE OXIDE	131,593	224,495	198,559	198,595	172,556	118,381	99,727	99,674	99,396	151,484	147,324
S,S,S-TRIBUTYL PHOSPHOROTRITHIOATE	866,726	760,809	626,684	440,382	345,842	396,827	257,062	190,149	233,640	179,690	99,020
SODIUM CYANIDE	1,347	1,338	2,197	3,280	1,098	2,178	2,437	2,542	2,808	2,865	3,086
SODIUM DICHROMATE	0	180,478	182,185	122,647	32,699	122	329	633	217	0	0
SODIUM TETRATHIOCARBONATE	226,590	543,229	799,092	898,145	688,701	596,028	375,487	352,342	212,308	259,542	330,886
TRIFLURALIN	1,380,785	1,143,695	1,191,780	1,219,810	1,260,536	1,162,359	934,584	1,093,884	1,062,581	1,023,127	1,023,199
XYLENE	17,944	12,619	8,511	5,366	4,847	4,292	9,544	2,680	4,360	2,109	1,598
ZINC PHOSPHIDE	1,610	1,217	2,326	1,200	5,447	1,607	1,120	980	1,252	1,924	2,368
Grand Total	43,290,450	42,316,825	41,590,956	39,821,232	43,352,935	35,795,701	28,988,970	33,234,086	35,857,153	36,843,842	36,910,200

Table 7B. *The reported cumulative acres treated in California with pesticides on DPR's toxic air contaminants list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, Section 6860. Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres treated for all active ingredients because some products contain more than one active ingredient. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,3-DICHLOROPROPENE	4,174	17,223	22,193	27,059	29,430	33,101	30,817	42,064	48,944	56,618	51,284
2,4-D	151,453	137,230	50,709	11,649	7,791	5,054	3,952	2,295	2,562	3,577	1,466
2,4-D, 2-ETHYLHEXYL ESTER	385	160	729	6,867	7,624	7,833	6,919	9,906	22,426	20,362	21,192
2,4-D, ALKANOLAMINE SALTS (ETHANOL AND ISOPROPANOL AMINES)	22,298	21,872	20,055	22,117	11,843	5,711	359	264	630	1,475	403
2,4-D, BUTOXYETHANOL ESTER	29,933	35,599	13,504	13,798	7,198	7,013	5,633	2,565	2,539	4,035	2,951
2,4-D, BUTOXYPROPYL ESTER	5	2	51	105	37	5	9	0	0	0	0
2,4-D, BUTYL ESTER	0	0	0	307	37	24	1	101	0	0	8
2,4-D, DIETHANOLAMINE SALT	4,683	8,721	88,149	58,239	23,884	49,357	27,705	36,290	39,046	22,729	18,739
2,4-D, DIMETHYLAMINE SALT	524,146	540,728	527,870	477,967	411,858	495,513	475,796	491,048	595,257	553,037	566,217
2,4-D, DODECYLAMINE SALT	0	0	76	82	1,481	0	262	276	0	0	0
2,4-D, HEPTYLAMINE SALT	18	<1	0	0	29	0	0	0	0	0	0
2,4-D, ISOOCTYL ESTER	3,497	5,163	35,045	29,179	14,449	3,970	16,375	6,925	9,476	7,502	6,532
2,4-D, ISOPROPYL ESTER	72,878	69,081	87,492	101,141	100,837	103,938	88,849	108,908	116,859	117,870	144,097
2,4-D, N-OLEYL-1,3-PROPYLENEDIAMINE SALT	36	26	0	2	3	0	0	0	0	0	0
2,4-D, OCTYL ESTER	0	0	0	0	0	0	0	0	0	0	0
2,4-D, PROPYL ESTER	22,655	23,846	21,479	14,356	15,542	11,278	5,200	7,468	5,509	8,680	5,261
2,4-D, TETRADECYLAMINE SALT	0	0	76	82	1,481	0	262	276	0	0	0
2,4-D, TRIETHYLAMINE SALT	146,454	131,679	46,600	7,381	2,638	1,311	1,257	688	1,035	677	243
2,4-D, TRIISOPROPYLAMINE SALT	0	0	0	0	0	0	0	0	0	0	0
ACROLEIN	3,190	2,462	1,514	292	3,981	873	1,409	2,206	642	575	73
ALUMINUM PHOSPHIDE	92,977	80,217	66,017	74,441	1,034,732	1,271,629	67,422	70,176	73,864	74,762	63,163

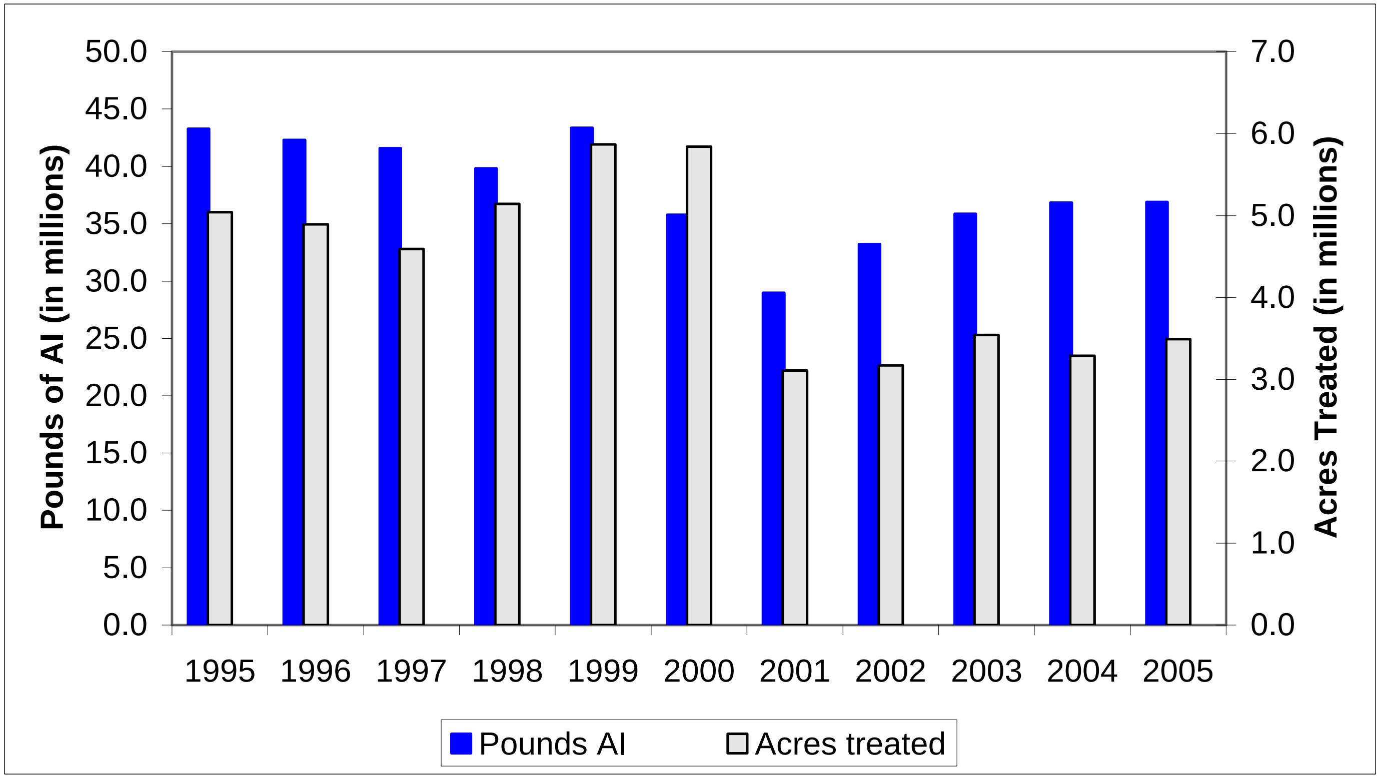
***Table 7B** (cont.)**.** The reported cumulative acres treated in California with pesticides on DPR's toxic air contaminants list.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
ARSENIC ACID	0	0	0	0	0	0	0	0	0	0	0
ARSENIC PENTOXIDE	0	0	0	0	0	709,893	56	0	0	48	0
ARSENIC TRIOXIDE	0	0	0	0	0	0	0	1	<1	0	1
CAPTAN	295,860	381,989	347,631	602,684	404,731	309,768	215,969	213,438	271,140	211,028	236,743
CAPTAN, OTHER RELATED	295,831	381,989	347,235	602,585	404,511	309,116	215,958	213,388	270,968	209,571	236,549
CARBARYL	305,452	312,058	292,721	197,664	216,991	196,264	147,612	106,590	97,811	103,261	98,673
CHLORINE	290	0	1,005	1,329	46,611	37,220	95	150	650	2,137	0
CHROMIC ACID	0	0	0	0	0	709,893	56	0	0	0	0
DAZOMET	384	863	1,099	3,589	243	222	224	136	326	298	113
DDVP	1,887	1,499	2,596	3,692	2,180	2,336	3,954	4,327	2,576	1,637	7,445
ETHYLENE OXIDE	0	0	0	194	31	41	0	0	0	0	0
FORMALDEHYDE	137	234	12	126	123	47	53	33	18	23	2
HYDROGEN CHLORIDE	0	1	0	16	0	0	27	590	273	1	23
LINDANE	19,380	25,352	36,573	32,650	20,930	14,628	13,832	8,010	8,828	9,437	557
MAGNESIUM PHOSPHIDE	23	19	26	184	616,017	46	373	7	167	1	23
MANCOZEB	405,494	351,801	284,134	682,979	387,300	363,260	228,275	197,055	276,096	194,219	369,184
MANEB	652,122	731,079	624,123	942,083	629,897	611,717	535,105	554,787	659,893	601,360	728,105
META-CRESOL	1,279	1,309	3,488	1,407	657	3,142	517	267	244	288	164
METAM-SODIUM	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396	128,427	97,699
METHANOL	0	0	0	0	0	14	0	0	0	0	0
METHOXYCHLOR	30	19	131	194	140	197	88	24	0	44	26
METHOXYCHLOR, OTHER RELATED	5	9	52	5	0	0	0	0	0	<1	0
METHYL BROMIDE	107,933	96,507	103,068	90,107	102,125	75,741	60,892	53,100	55,251	57,175	45,529
METHYL ISOTHIOCYANATE	0	0	0	47	100	0	0	0	0	0	0
METHYL PARATHION	129,976	125,729	125,638	128,675	119,315	43,773	39,449	37,448	51,192	48,640	49,771
NAPHTHALENE	0	0	0	0	0	0	0	20	0	0	2
PARA-DICHLOROBENZENE	0	0	0	10	0	0	0	0	0	0	0
PARATHION	6,688	5,099	2,071	2,592	1,976	4,025	2,977	7,026	1,016	392	717

Table 7B (cont.). The reported cumulative acres treated in California with pesticides on DPR's toxic air contaminants list.

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
PCNB	53,079	44,187	29,169	39,090	28,324	28,628	25,832	9,533	7,759	3,817	3,000
PCP, OTHER RELATED	<1	15	4	15	0	59	38	0	0	20	3
PCP, SODIUM SALT	0	0	0	20	0	0	0	0	0	0	0
PCP, SODIUM SALT, OTHER RELATED	0	0	0	0	0	0	0	0	0	0	0
PENTACHLOROPHENOL	<1	15	4	190	0	59	38	0	0	20	3
PHENOL	7,947	718	37	275	459	5	501	0	25	310	239
PHOSPHINE	0	0	0	0	0	0	0	0	0	349	22
PHOSPHORUS	1,908	69	790	965	5,701	2,847	252	0	0	0	23
POTASSIUM N-METHYLDITHIOCARBAMATE	0	0	21	50	0	534	2,321	9,073	12,887	10,229	19,285
POTASSIUM PERMANGANATE	0	0	0	20	0	0	0	0	0	0	0
PROPOXUR	5	9	73	45	39	26	4	23	1	7	8
PROPYLENE OXIDE	0	0	<1	0	573	0	0	<1	0	22	185
S,S,S-TRIBUTYL PHOSPHOROTRITHIOATE	604,586	531,052	437,505	305,306	245,470	282,844	187,153	129,570	158,604	133,535	73,737
SODIUM CYANIDE	6,040	3,020	84,800	53,285	0	0	0	0	0	0	0
SODIUM DICHROMATE	0	0	0	0	0	0	0	0	0	0	0
SODIUM TETRATHIOCARBONATE	12,997	27,736	35,473	34,488	24,947	21,002	13,574	11,559	6,832	8,497	7,977
TRIFLURALIN	1,282,997	1,086,892	1,131,033	1,083,219	1,159,648	1,038,856	800,893	944,334	903,654	920,528	882,179
XYLENE	28,870	24,221	13,568	11,327	3,325	6,208	9,665	4,533	7,512	3,375	2,722
ZINC PHOSPHIDE	16,101	22,801	26,756	18,833	38,101	16,349	11,069	7,049	8,387	14,150	9,038
Grand Total	5,515,543	5,446,199	5,110,787	5,839,311	6,321,640	6,932,215	3,374,342	3,434,883	3,863,293	3,534,745	3,751,376

Figure 5. *Use trends of pesticides on DPR's toxic air contaminants list. These pesticides are the currently registered active ingredients listed in the California Code of Regulations, Title 3, Division 6, Chapter 4, Subchapter 1, Article 1, Section 6860. Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF FUMIGANT PESTICIDES

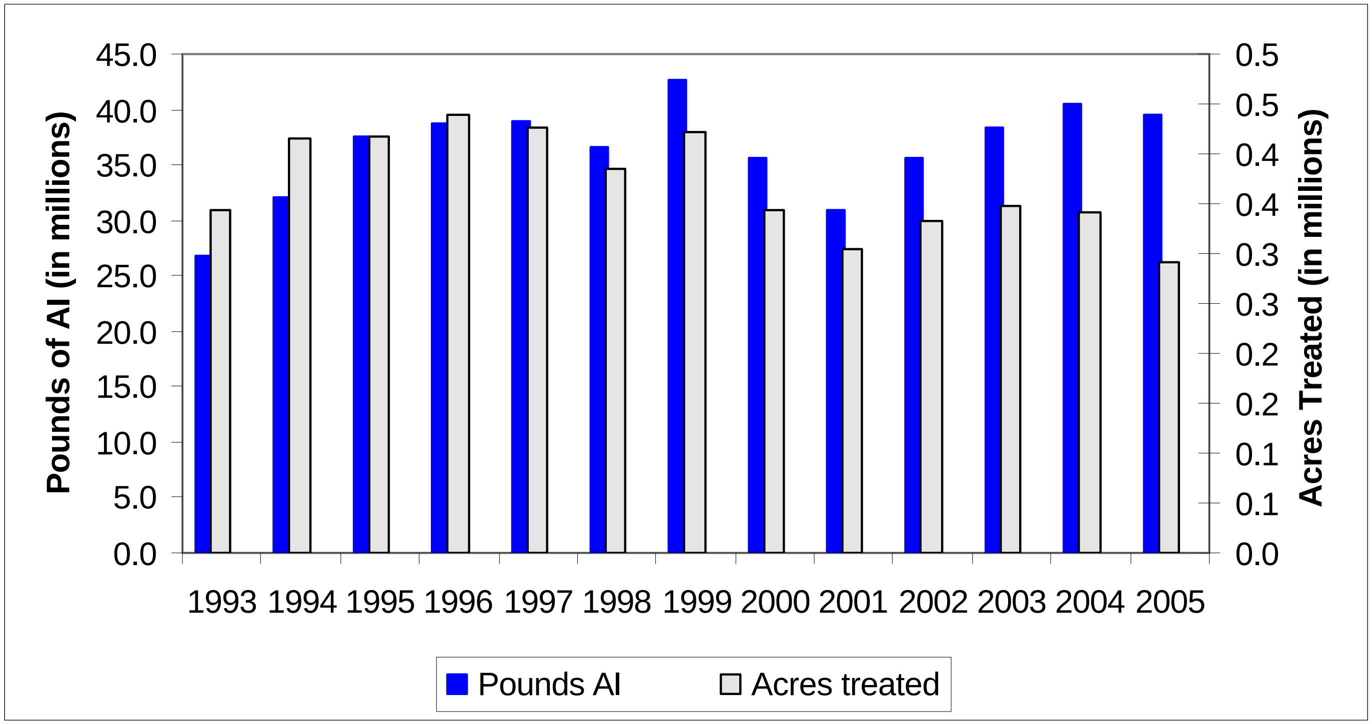
Table 8A. *The reported pounds of fumigant pesticides used. Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,2-DICHLOROPROPANE, 1,3-DICHLOROPROPENE AND RELATED C3 COMPOUNDS	7	104	12,375	243	927	87	110	331	393	22	0
1,3-DICHLOROPROPENE	409,821	1,956,846	2,400,930	2,911,385	3,122,723	4,442,193	4,135,462	5,359,193	7,009,034	8,945,145	9,319,878
ALUMINUM PHOSPHIDE	80,577	103,858	89,198	67,804	123,419	119,545	100,020	169,224	119,500	131,230	133,775
CARBON TETRACHLORIDE	0	10	3	38	<1	111	2	5	1	<1	0
CHLOROPICRIN	2,791,092	2,811,609	2,773,562	2,981,108	3,656,799	3,792,528	4,272,712	4,340,221	4,927,125	5,135,387	4,864,930
DAZOMET	5,875	12,851	13,305	12,217	12,409	10,486	44,299	45,020	44,798	58,492	47,926
ETHYLENE DIBROMIDE	90	<1	1	5	<1	2	2,593	<1	<1	3	0
ETHYLENE DICHLORIDE	<1	25	8	1	<1	3	4	11	0	1	0
METAM-SODIUM	14,975,528	15,253,924	14,969,732	13,729,306	16,774,246	13,218,764	12,545,403	15,137,719	14,815,687	14,683,308	13,035,949
METHYL BROMIDE	17,165,964	16,022,069	15,663,832	13,569,875	15,300,388	10,869,241	6,618,631	6,550,818	7,384,398	7,089,862	6,444,224
POTASSIUM N-METHYLDITHIOCARBAMATE	0	0	0	9,143	0	105,364	137,098	449,804	581,840	851,181	1,908,501
PROPYLENE OXIDE	131,593	224,495	198,559	198,595	172,556	118,381	99,727	99,674	99,396	151,484	147,324
SODIUM TETRATHIOCARBONATE	226,590	543,229	799,092	898,145	688,701	596,028	375,487	352,342	212,308	259,542	330,886
SULFURYL FLUORIDE	1,746,320	1,805,401	1,938,693	2,173,338	2,790,343	2,420,624	2,585,841	3,045,084	3,112,077	3,270,698	3,335,523
Grand Total	37,533,457	38,734,423	38,859,291	36,551,202	42,642,511	35,693,356	30,917,388	35,549,446	38,306,558	40,576,355	39,568,916

Table 8B. *The reported cumulative acres treated with fumigant pesticides. Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1,2-DICHLOROPROPANE, 1,3-DICHLOROPROPENE AND RELATED C3 COMPOUNDS	43	144	164	70	207	136	370	44	45	9	0
1,3-DICHLOROPROPENE	4,174	17,223	22,193	27,059	29,430	33,101	30,817	42,064	48,944	56,618	51,284
ALUMINUM PHOSPHIDE	92,977	80,217	66,017	74,441	76,332	64,094	67,422	70,176	73,864	74,762	63,163
CARBON TETRACHLORIDE	0	0	0	23	0	20	0	0	0	0	0
CHLOROPICRIN	51,148	57,611	52,165	59,509	61,239	57,829	60,081	53,696	51,593	53,527	50,218
DAZOMET	384	863	1,099	3,589	243	222	224	136	326	298	113
ETHYLENE DIBROMIDE	0	0	0	20	<1	21	52	0	0	0	0
ETHYLENE DICHLORIDE	0	0	0	0	0	0	0	0	0	0	0
METAM-SODIUM	199,457	215,899	198,395	154,309	186,300	146,847	125,263	141,357	142,396	128,427	97,699
METHYL BROMIDE	107,933	96,507	103,068	90,107	102,125	75,741	60,892	53,100	55,251	57,175	45,529
POTASSIUM N-METHYLDITHIOCARBAMATE	0	0	21	50	0	534	2,321	9,073	12,887	10,229	19,285
PROPYLENE OXIDE	0	0	<1	0	573	0	0	<1	0	22	185
SODIUM TETRATHIOCARBONATE	12,997	27,736	35,473	34,488	24,947	21,002	13,574	11,559	6,832	8,497	7,977
SULFURYL FLUORIDE	0	0	12	0	17	4	0	0	50	2	57
Grand Total	469,113	496,202	478,606	443,664	481,412	399,550	361,018	381,204	392,188	389,565	335,509

Figure 6. *Use trends of fumigant pesticides. Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF OIL PESTICIDES

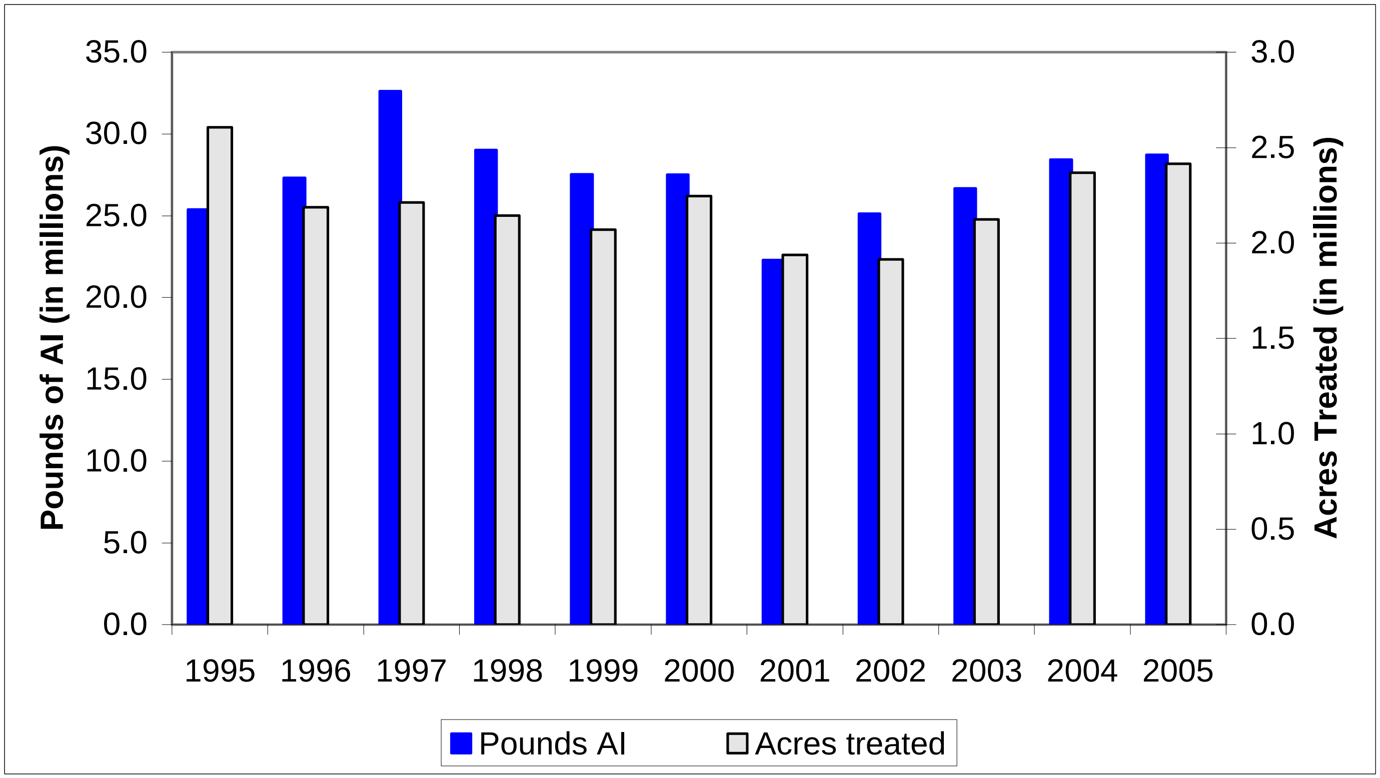
Table 9A. *The reported pounds of oil pesticides. As a broad group, oil pesticides and other petroleum distillates are on U.S. EPA's list of B2 carcinogens or the State's Proposition 65 list of chemicals "known to cause cancer." However, these classifications do not distinguish among oil pesticides that may not qualify as carcinogenic due to their degree of refinement. Many such oil pesticides also serve as alternatives to high-toxicity chemicals. For this reason, oil pesticide data was classified separately in this report. Use includes both agricultural and reportable non-agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
COAL TAR HYDROCARBONS	0	0	0	0	0	0	50	<1	0	0	0
HYDROTREATED PARAFFINIC SOLVENT	0	0	0	0	0	0	0	0	284,236	320,019	242,906
ISOPARAFFINIC HYDROCARBONS	10	5	2	35	8	13	1	1,928	23,782	30,095	31,183
KEROSENE	145,743	120,700	101,293	90,108	70,398	84,562	48,304	18,404	12,407	9,585	2,263
MINERAL OIL	3,350,535	4,797,876	5,542,530	5,286,094	4,418,280	3,911,471	3,654,856	5,054,070	6,280,443	9,053,668	9,104,453
NAPHTHA, HEAVY AROMATIC	26	143	83	0	0	0	29	0	2	53	0
PETROLEUM DERIVATIVE RESIN	4	94	15	6	1	3	1	<1	1	1	4
PETROLEUM DISTILLATES	2,459,518	1,705,072	1,791,012	1,604,775	2,416,054	2,299,176	1,739,436	1,565,116	1,879,545	1,600,483	2,036,895
PETROLEUM DISTILLATES, ALIPHATIC	0	0	0	0	0	<1	7	49,237	15,163	30,638	34,152
PETROLEUM DISTILLATES, AROMATIC	31,535	14,630	13,961	35,085	9,925	10,400	2,851	6,202	2,916	5,506	2,092
PETROLEUM DISTILLATES, REFINED	45,967	38,396	45,094	60,337	114,329	927,949	842,758	286,978	371,482	1,023,896	772,348
PETROLEUM HYDROCARBONS	234,001	266,895	210,042	236,590	121,783	143,090	219,545	216,917	985	642	956
PETROLEUM NAPHTHENIC OILS	0	12	1	9	2	3	91	325	208	24	48
PETROLEUM OIL, PARAFFIN BASED	434,878	312,359	267,704	0	310,988	344,350	342,367	283,487	367,051	433,848	405,778
PETROLEUM OIL, UNCLASSIFIED	18,687,636	20,063,955	24,633,153	21,723,758	20,084,263	19,797,620	15,447,561	17,656,554	17,447,935	15,927,177	16,108,926
PETROLEUM SULFONATES	<1	4	1	<1	<1	1	<1	<1	0	0	0
Grand Total	25,389,853	27,320,140	32,604,892	29,036,797	27,546,031	27,518,636	22,297,858	25,139,218	26,686,154	28,435,635	28,742,005

Table 9B. *The reported cumulative acres treated in California with oil pesticides. (See qualifying comments on U.S. EPA B2 carcinogen and Proposition 65 listing with Table 8A.) Uses include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
COAL TAR HYDROCARBONS	0	0	0	0	0	0	0	0	0	0	0
HYDROTREATED PARAFFINIC SOLVENT	0	0	0	0	0	0	0	0	306,243	327,022	251,537
ISOPARAFFINIC HYDROCARBONS	0	0	0	0	0	0	0	4,490	56,120	67,795	55,920
KEROSENE	333,112	289,469	240,080	223,822	179,961	227,734	138,896	29,561	21,672	11,992	4,493
MINERAL OIL	144,413	190,550	191,954	615,564	163,976	157,520	169,885	199,089	286,423	407,021	476,083
NAPHTHA, HEAVY AROMATIC	0	0	0	0	0	0	11	0	0	0	0
PETROLEUM DERIVATIVE RESIN	3	191	50	13	1	0	0	0	0	0	10
PETROLEUM DISTILLATES	440,375	369,500	299,592	265,736	223,509	274,543	213,784	210,437	236,822	244,673	171,081
PETROLEUM DISTILLATES, ALIPHATIC	0	0	0	0	0	0	5,104	44,494	26,131	25,904	22,723
PETROLEUM DISTILLATES, AROMATIC	53,211	12,324	19,003	2,153	7,088	6,238	1,900	3,935	1,804	569	385
PETROLEUM DISTILLATES, REFINED	3,976	5,145	6,146	6,162	12,495	42,145	48,446	35,407	39,838	79,589	116,253
PETROLEUM HYDROCARBONS	248,347	193,257	200,989	276,950	237,043	258,740	289,094	273,322	2,869	108	430
PETROLEUM NAPHTHENIC OILS	0	73	0	50	37	0	5,119	13,241	11,314	2,484	358
PETROLEUM OIL, PARAFFIN BASED	680,590	464,508	443,059	0	470,204	461,939	445,342	416,483	488,928	555,670	604,835
PETROLEUM OIL, UNCLASSIFIED	703,859	663,575	811,902	753,904	775,828	817,752	631,471	703,820	667,064	653,593	715,500
PETROLEUM SULFONATES	<1	<1	<1	0	<1	10	0	0	0	0	0
Grand Total	2,607,885	2,188,593	2,212,775	2,144,355	2,070,142	2,246,621	1,949,051	1,934,279	2,145,227	2,376,420	2,419,609

Figure 7. *Use trends of oil pesticides. As a broad group, oil pesticides and other petroleum distillates are on U.S. EPA's list of B2 carcinogens or the State's Proposition 65 list of chemicals "known to cause cancer." However, these classifications do not distinguish among oil pesticides that may not qualify as carcinogenic due to their degree of refinement. Many such oil pesticides also serve as alternatives to high-toxicity chemicals. For this reason, oil pesticide data was classified separately in this report. Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF REDUCED-RISK PESTICIDES

Table 10A. *The reported pounds of reduced-risk pesticides applied in California. These active ingredients are contained in pesticide products that have been given reduced-risk status by U.S. EPA. Use includes both agricultural and non-agricultural applications. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	<1	<1	<1	<1	<1
ACETAMIPRID	0	0	0	0	0	0	0	6,434	26,628	34,717	30,968
ACIBENZOLAR-S-METHYL	0	0	0	0	0	0	230	1,157	1,159	714	1,195
AZOXYSTROBIN	0	0	23,851	69,232	95,723	114,968	85,600	95,827	97,516	87,275	131,698
BIFENAZATE	0	0	0	0	0	92	523	24,719	42,866	60,594	86,618
BISPYRIBAC-SODIUM	0	0	0	0	0	0	0	2,378	2,219	3,242	1,992
BOSCALID	0	0	0	0	0	0	0	0	59	62,149	162,849
BUPROFEZIN	0	0	6,987	8,459	22,244	678	3,439	22,302	33,510	43,055	37,430
CARBO METHOXY ETHER CELLULOSE, SODIUM SALT	184	22,994	1,032	723	638	436	543	6	0	0	0
CARFENTRAZONE-ETHYL	0	0	0	3,076	2,730	0	492	2,128	14,196	14,315	9,903
CINNAMALDEHYDE	0	0	<1	<1	6,764	10,332	4,704	806	238	326	34
CORN GLUTEN MEAL	0	0	0	0	2,490	4,590	2,744	1,294	8	18	2
CYPRODINIL	0	0	0	48,417	56,268	98,773	81,216	99,483	121,341	108,068	140,764
FENAMIDONE	0	0	0	0	0	0	0	0	0	0	9,761
FENHEXAMID	0	0	0	0	12,386	36,240	39,583	50,073	64,535	53,890	71,068
FIPRONIL	0	0	<1	1	2	662	7,856	15,017	32,756	49,950	66,824
FLUDIOXONIL	0	0	0	551	349	568	974	5,021	7,369	6,504	10,161
FORCHLORFENURON	0	0	0	0	0	0	43	35	139	5	52
HEXAFLUMURON	<1	<1	<1	2	8	8	12	93	21	5	<1
IMAZAMOX, AMMONIUM SALT	0	0	0	0	0	0	0	1,490	2,668	3,046	4,050
INDOXACARB	0	0	0	0	0	3,535	29,016	27,098	70,058	36,930	70,780
IRON PHOSPHATE	0	0	0	66	187	344	617	545	855	1,255	1,621
MEFENOXAM	0	43	29,078	59,960	55,942	60,426	49,967	54,562	60,964	65,450	68,853
METHOXYFENOZIDE	0	0	0	0	0	0	0	0	861	74,915	144,322
METHYL ANTHRANILATE	0	6	184	49	57	50	37	85	34	534	151
NOVALURON	0	0	0	0	0	0	0	2	24	40	37

***Table 10A** (cont.)**.** The reported pounds of reduced-risk pesticides applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
OIL OF PEPPERMINT	0	0	0	0	0	0	<1	0	<1	<1	<1
OXYPURINOL	0	0	0	0	0	<1	<1	0	0	0	<1
POTASSIUM BICARBONATE	0	0	28	65,909	92,990	130,462	121,804	179,676	283,851	159,764	387,014
PROHEXADIONE CALCIUM	0	0	0	0	0	0	46	52	153	185	74
PYMETROZINE	0	0	0	0	18	829	1,284	1,420	2,226	5,250	5,158
PYRACLOSTROBIN	0	0	0	0	0	0	0	0	23,855	55,892	101,249
PYRIPROXYFEN	0	0	3,220	6,072	3,096	14,040	7,663	9,782	10,796	13,363	9,781
SODIUM BICARBONATE	0	0	0	0	5	22	230	2,063	0	126	0
SPINOSAD	0	0	10,146	29,717	44,573	55,443	51,071	53,574	61,613	65,984	76,021
TEBUFENOZIDE	7,955	3,463	5,300	9,178	8,815	62,310	65,724	65,094	93,057	21,087	10,262
THIAMETHOXAM	0	0	0	0	0	0	0	10,897	10,187	10,070	15,907
TRIFLOXYSTROBIN	0	0	0	0	0	45,938	12,303	18,321	21,234	16,629	31,856
XANTHINE	0	0	0	0	0	<1	<1	0	0	0	<1
Grand Total	8,138	26,506	79,825	301,413	405,284	640,744	567,721	751,434	1,086,997	1,055,345	1,688,457

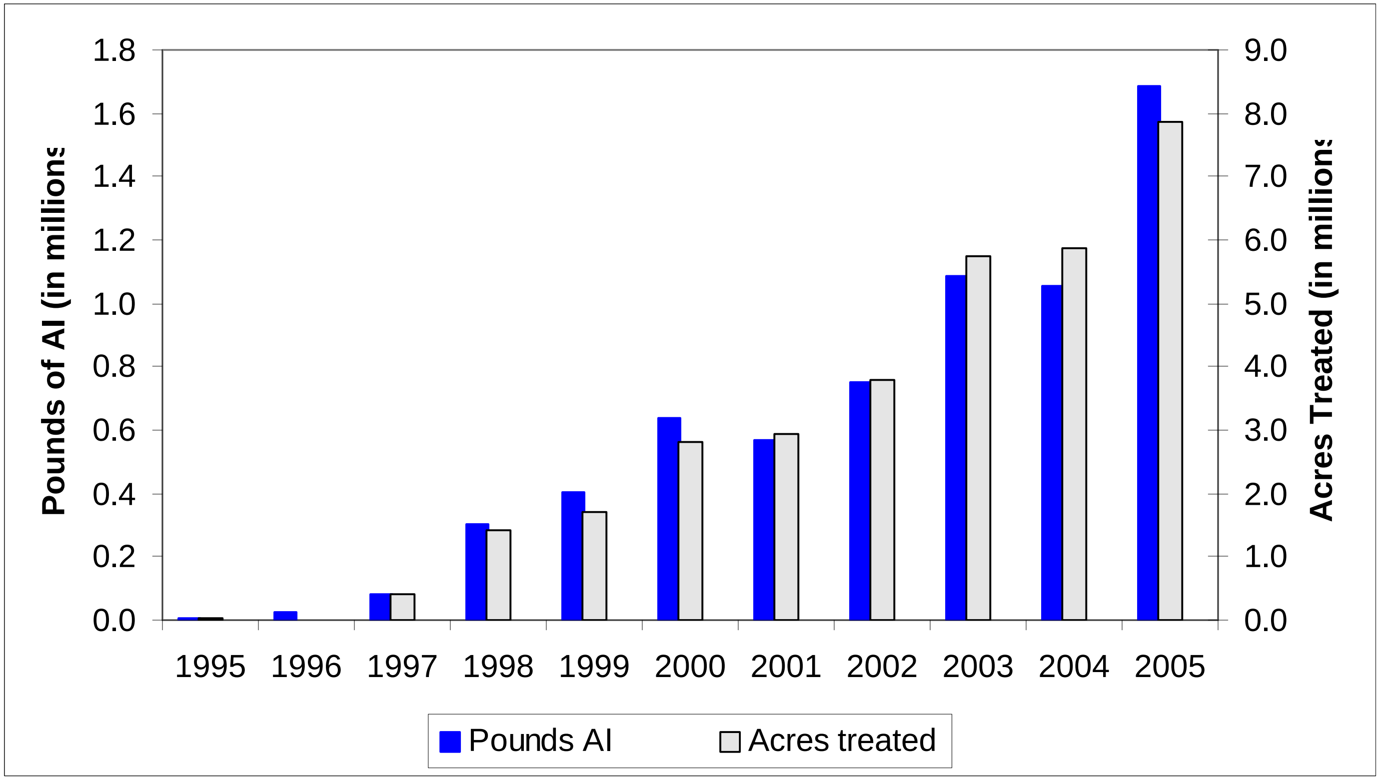
Table 10B. *The reported cumulative acres treated in California with each reduced-risk pesticide. These active ingredients are contained in pesticide products that have been given reduced-risk status by U.S. EPA. Use includes primarily agricultural applications. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	3	<1	9	4	8
CINNAMALDEHYDE	0	0	<1	<1	2,418	4,136	1,534	295	105	137	18
METHYL ANTHRANILATE	0	0	0	0	0	0	0	81	56	1,458	448
OXYPURINOL	0	0	0	0	0	0	0	0	0	0	0
POTASSIUM BICARBONATE	0	0	11	34,010	52,110	60,330	52,654	73,894	106,955	64,957	143,345
SODIUM BICARBONATE	0	0	0	0	8	0	0	0	0	100	0
XANTHINE	0	0	0	0	0	0	0	0	0	0	0
ACETAMIPRID	0	0	0	0	0	0	0	87,041	423,398	554,758	548,246
ACIBENZOLAR-S-METHYL	0	0	0	0	0	0	8,266	39,749	38,316	25,414	43,377
AZOXYSTROBIN	0	0	28,421	340,507	449,776	581,810	444,032	511,046	690,373	518,422	736,327
BIFENAZATE	0	0	0	0	0	249	2,173	58,876	97,369	136,234	179,221
BISPYRIBAC-SODIUM	0	0	0	0	0	0	0	80,499	70,514	94,653	58,923
BOSCALID	0	0	0	0	0	0	0	0	163	330,761	813,523
BUPROFEZIN	0	0	18,623	8,382	15,801	1,966	10,012	32,716	61,238	91,529	60,959
CARBO METHOXY ETHER CELLULOSE, SODIUM SALT	113	235	328	83	77	197	484	5	0	0	0
CARFENTRAZONE-ETHYL	0	0	0	38,578	17,800	0	7,027	16,440	167,610	357,461	333,120
CORN GLUTEN MEAL	0	0	0	0	0	0	7	3	0	0	0
CYPRODINIL	0	0	0	122,772	186,536	314,850	282,736	346,342	412,877	401,141	491,696
FENAMIDONE	0	0	0	0	0	0	0	0	0	0	51,385
FENHEXAMID	0	0	0	0	18,455	57,100	70,069	84,525	113,987	92,304	127,751
FIPRONIL	0	0	0	0	0	0	1	1	1	25	1
FLUDIOXONIL	0	0	0	0	1,102	343	431	21,654	29,962	28,372	37,039
FORCHLORFENURON	0	0	0	0	0	0	786	882	1,455	80	6,045
HEXAFLUMURON	0	0	0	0	0	0	1	0	2	0	0
IMAZAMOX, AMMONIUM SALT	0	0	0	0	0	0	0	34,700	60,827	72,851	98,029
INDOXACARB	0	0	0	0	0	33,833	390,579	365,901	900,278	493,004	899,498
IRON PHOSPHATE	0	0	0	205	470	852	1,036	1,929	1,253	2,148	3,892
MEFENOXAM	0	40	153,858	360,994	335,708	406,191	273,020	283,752	308,528	311,751	341,994
METHOXYFENOZIDE	0	0	0	0	0	0	0	0	3,239	387,470	779,084
NOVALURON	0	0	0	0	0	0	0	34	319	508	374

***Table 10B** (cont.)**.** The reported cumulative acres treated in California with each reduced-risk pesticide.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
OIL OF PEPPERMINT	0	0	0	0	0	0	0	0	0	0	0
PROHEXADIONE CALCIUM	0	0	0	0	0	0	156	341	852	943	382
PYMETROZINE	0	0	0	0	98	4,520	10,421	10,859	17,641	55,057	50,526
PYRACLOSTROBIN	0	0	0	0	0	0	0	0	156,150	495,107	934,091
PYRIPROXYFEN	0	0	60,164	64,648	35,307	72,934	100,297	142,040	197,811	234,152	175,543
SPINOSAD	0	0	128,313	384,192	541,190	680,424	694,687	731,544	806,260	858,714	984,391
TEBUFENOZIDE	32,418	14,449	28,620	53,705	52,379	387,464	399,966	348,320	523,303	125,362	67,819
THIAMETHOXAM	0	0	0	0	0	0	0	255,350	270,843	221,882	259,373
TRIFLOXYSTROBIN	0	0	0	0	0	198,588	201,521	278,530	312,257	255,432	433,540
Grand Total	32,531	14,724	418,337	1,408,077	1,709,237	2,805,785	2,951,898	3,807,349	5,773,952	6,212,190	8,659,967

Figure 8. *Use trends of reduced-risk pesticides. These active ingredients are contained in pesticide products that have been given reduced-risk status by U.S. EPA. Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



USE TRENDS OF BIOPESTICIDES

Table 11A. *The reported pounds of biopesticides applied in California. Biopesticides include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones). Use includes both agricultural and non-agricultural applications. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
(E)-4-TRIDECEN-1-YL-ACETATE	12	140	76	65	67	263	182	247	254	131	68
(E)-5-DECENOL	12	71	737	176	246	5	2	2	295	5	<1
(E)-5-DECENYL ACETATE	58	339	3,508	844	1,183	26	9	12	889	23	<1
(R,Z)-5-(1-DECENYL) DIHYDRO-2-(3H)-FURANONE	<1	0	0	<1	0	<1	0	0	0	<1	<1
(S)-KINOPRENE	18	137	121	1,274	357	245	311	326	417	358	246
(Z)-11-HEXADECEN-1-YL ACETATE	0	0	0	0	0	0	0	35	10	10	5
(Z)-11-HEXADECENAL	0	0	0	0	0	0	0	35	10	10	5
(Z)-4-TRIDECEN-1-YL-ACETATE	<1	4	2	2	2	9	6	8	8	4	2
(Z)-9-DODECENYL ACETATE	0	0	0	0	0	0	0	0	0	0	<1
(Z,E)-7,11-HEXADECADIEN-1-YL ACETATE	29	2	1	46	229	3	13	2	3	0	0
(Z,Z)-7,11-HEXADECADIEN-1-YL ACETATE	2	2	1	46	242	3	<1	3	3	0	0
1-DECANOL	1	1	<1	<1	<1	<1	<1	0	0	0	0
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	<1	<1	<1	<1	<1
1-NAPHTHALENEACETAMIDE	54	99	115	283	333	217	213	88	119	113	55
ACETIC ACID	0	0	0	0	0	0	0	0	<1	<1	<1
AGROBACTERIUM RADIOBACTER	6	14	28	20	7	2	1	4	3	2	<1
AGROBACTERIUM RADIOBACTER, STRAIN K1026	0	0	0	0	0	<1	<1	1	<1	<1	<1
ALLYL ISOTHIOCYANATE	0	0	<1	0	0	<1	<1	<1	<1	<1	<1
AMINO ETHOXY VINYL GLYCINE HYDROCHLORIDE	0	0	0	0	1	<1	1	1	0	0	24
AMPELOMYCES QUISQUALIS	<1	3	9	40	4	4	2	<1	<1	<1	<1
AZADIRACHTIN	558	812	840	653	16,764	1,234	1,536	1,483	1,366	2,915	1,280
BACILLUS PUMILUS, STRAIN QST 2808	0	0	0	0	0	0	0	0	<1	2	3,524
BACILLUS SPHAERICUS, SEROTYPE H-5A5B, STRAIN 2362	0	0	1,298	4,886	2,274	2,746	7,941	4,667	10,122	14,187	33,535
BACILLUS SUBTILIS GB03	0	0	<1	<1	<1	<1	1	4	5	7	15
BACILLUS THURINGIENSIS (BERLINER)	1,562	536	179	751	115	112	335	44	11	12	16
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, GC-91 PROTEIN	5,115	6,520	7,406	4,273	3,017	4,419	3,953	3,972	5,024	4,088	11,255
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, SEROTYPE H-7	8,050	10,145	14,210	10,854	10,427	9,065	5,540	5,881	7,548	3,014	2,221

***Table 11A** (cont.). The reported pounds of biopesticides applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BACILLUS THURINGIENSIS (BERLINER), SUBSP. ISRAELENSIS, SEROTYPE H-14	6,827	4,059	4,423	12,963	5,038	88,039	24,795	9,778	17,335	13,725	11,925
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI STRAIN SA-12	0	0	0	0	0	1,562	1,510	4,962	5,754	3,510	6,884
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, SEROTYPE 3A,3B	39,550	25,890	29,825	20,535	14,154	13,145	30,166	2,667	6,318	3,916	1,931
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG 2348	3,391	3,056	1,448	4,548	1,360	1,810	738	1,228	66	21	211
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG2371	7,466	3,468	2,752	1,633	213	139	58	19	39	2	5
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN SA-11	8,643	8,689	11,676	9,603	8,730	9,931	12,583	13,391	12,879	14,636	41,141
BACILLUS THURINGIENSIS (BERLINER), SUBSP. SAN DIEGO	1	3	26	8	34	18	8	1	2	1	<1
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI STRAIN BMP 123	0	0	0	6	1	33	79	164	130	10	1
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7841 LEPIDOPTERAN ACTIVE TOXIN	0	257	15,619	12,522	12,831	16,679	8,749	681	1,503	344	338
BACILLUS THURINGIENSIS VAR. KURSTAKI STRAIN M-200	0	0	0	0	0	<1	<1	0	<1	0	0
BACILLUS THURINGIENSIS VAR. KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7826	0	0	0	0	0	6,482	14,734	439	1,527	930	1,919
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN ABTS-1857	0	0	0	0	0	0	0	0	21,956	27,075	31,952
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN SD-1372, LEPIDOPTERAN ACTIVE TOXIN(S)	0	0	0	0	3	158	498	1,295	562	347	304
BACILLUS THURINGIENSIS, SUBSP. ISRAELENSIS, STRAIN AM 65-52	0	0	0	0	0	0	0	9,485	29,326	23,001	40,713
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN ABTS-351, FERMENTATION SOLIDS AND SOLUBLES	0	0	0	0	0	0	0	47	538	42,329	57,415
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN HD-1	0	<1	57	20,771	21,652	21,081	16,917	24,388	38,698	4,743	3,181

***Table 11A** (cont.)**.** The reported pounds of biopesticides applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BACILLUS THURINGIENSIS, VAR. KURSTAKI DELTA ENDOTOXINS CRY 1A(C) AND CRY 1C (GENETICALLY ENGINEERED) ENCAPSULATED IN PSEUDOMONAS FLUORESCENS (KILLED)	0	3,663	29,895	12,634	8,048	7,146	2,211	258	54	5	3
BEAUVERIA BASSIANA STRAIN GHA	0	1	573	1,243	914	913	678	1,032	715	863	787
CANDIDA OLEOPHILA ISOLATE I-182	0	0	305	103	55	0	0	0	0	0	0
CANOLA OIL	0	0	0	0	0	1	5	<1	1	4	1
CAPSICUM OLEORESIN	19	46	2	17	104	3	73	4	5	49	2
CASTOR OIL	<1	1	40	174	24	557	297	504	1,281	363	79
CINNAMALDEHYDE	0	0	<1	<1	6,764	10,332	4,704	806	238	326	34
CLARIFIED HYDROPHOBIC EXTRACT OF NEEM OIL	0	3,196	13,792	55,005	94,569	111,246	83,800	73,345	60,429	84,880	103,929
CODLING MOTH GRANULOSIS VIRUS	321	0	0	0	0	0	0	0	0	0	0
CONIOTHYRIUM MINITANS STRAIN CON/M/91-08	0	0	0	0	0	0	0	103	182	198	6
CYTOKININ	<1	0	0	<1	0	<1	<1	0	<1	0	0
DIHYDRO-5-HEPTYL-2(3H)-FURANONE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
DIHYDRO-5-PENTYL-2(3H)-FURANONE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
E,E-8,10-DODECADIEN-1-OL	1,067	253	431	220	21,029	6,278	6,390	5,126	1,807	1,113	2,180
E-11-TETRADECEN-1-YL ACETATE	0	0	3	2	548	397	65	122	131	91	79
E-8-DODECENYL ACETATE	38	27	46	57	66	92	73	59	113	122	110
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. KURSTAKI IN KILLED PSEUDOMONAS FLUORESCENS	14,535	30,809	43,815	35,129	28,435	17,904	6,913	3,174	445	114	7
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. SAN DIEGO IN KILLED PSEUDOMONAS FLUORESCENS	7	13	0	34	1	6	1	6	0	2	1
ESSENTIAL OILS	<1	0	<1	11	<1	<1	<1	<1	<1	1	<1
ETHYLENE	0	0	0	1	5,073	6	6	3	24	32	0
EUCALYPTUS OIL	0	0	0	0	0	0	0	0	0	0	50
EUGENOL	<1	0	0	3	0	<1	0	0	0	3	<1

***Table 11A** (cont.). The reported pounds of biopesticides applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
FARNESOL	39	53	38	30	36	37	15	10	9	7	10
GAMMA AMINOBUTYRIC ACID	0	0	0	0	0	0	23	3,100	6,077	8,402	8,081
GARLIC	2,549	5,108	8,983	10,203	7,113	899	1,490	684	295	174	203
GERMAN COCKROACH PHEROMONE	0	0	0	0	0	0	0	<1	<1	<1	<1
GIBBERELLINS	21,037	21,249	23,403	23,085	20,363	21,169	19,743	25,363	20,891	20,350	23,321
GIBBERELLINS, POTASSIUM SALT	9	<1	1	1	15	<1	1	<1	<1	1	<1
GLIOCLADIUM VIRENS GL-21 (SPORES)	15	144	156	104	86	60	314	110	48	30	19
GLUTAMIC ACID	0	0	0	0	0	0	23	3,100	6,077	8,402	8,081
HYDROGEN PEROXIDE	0	0	0	1	15	82	1,754	2,705	2,595	2,795	5,369
HYDROPRENE	5,476	1,131	9,305	1,486	1,609	1,700	1,380	1,656	1,035	1,309	2,901
IBA	8	16	14	38	9	12	18	16	12	19	9
LAGENIDIUM GIGANTEUM (CALIFORNIA STRAIN)	151	<1	134	859	499	0	1	0	0	58	<1
LAURYL ALCOHOL	580	85	207	111	7,287	486	302	249	243	295	864
LINALOOL	403	391	358	631	229	196	173	274	280	174	169
METARHIZIUM ANISOPLIAE, VAR. ANISOPLIAE, STRAIN ESF1	1	<1	3	37	15	18	15	22	<1	<1	<1
METHOPRENE (POST 1997 SEE CHEM CODE 5026)	8,822	3,213	29,905	1,796	10,285	14,303	2,484	5,121	7,874	8,802	9,898
METHYL ANTHRANILATE	0	6	184	49	57	50	37	85	34	534	151
METHYL SALICYLATE	0	0	0	0	0	0	<1	0	0	0	0
MUSCALURE	4	3	4	2	5	9	4	1	11	10	14
MYRISTYL ALCOHOL	117	18	42	22	1,502	99	62	51	49	60	175
MYROTHECIUM VERRUCARIA, DRIED FERMENTATION SOLIDS & SOLUBLES, STRAIN AARC-0255	0	0	1,097	8,496	18,824	20,869	45,917	36,280	47,037	39,789	27,977
NAA	41	18	21	238	14	24	10	6	5	9	12
NEROLIDOL	32	43	31	24	29	30	12	8	7	6	8
NITROGEN, LIQUIFIED	540,335	423,124	430,214	1,003,749	424,897	391,469	478,466	561,505	319,550	79,369	82,298
NONANOIC ACID	4,250	11,787	14,713	11,729	13,303	12,517	14,890	11,559	7,765	7,224	8,845
NONANOIC ACID, OTHER RELATED	224	620	774	617	700	659	784	608	409	380	466
NOSEMA LOCUSTAE SPORES	0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1

***Table 11A** (cont.)**.** The reported pounds of biopesticides applied in California.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
OIL OF ANISE	0	0	0	0	0	0	<1	<1	<1	<1	<1
OIL OF CEDARWOOD	0	0	0	0	0	0	0	0	0	0	0
OIL OF CITRONELLA	1	0	13	5	11	1	33	0	10	0	<1
OIL OF LEMONGRASS	<1	0	0	0	0	0	0	0	2	0	<1
OIL OF MUSTARD	<1	0	0	0	0	0	0	0	0	0	0
OXYPURINOL	0	0	0	0	0	<1	<1	0	0	0	<1
PAECILOMYCES FUMOSOROSEUS APOPKA STRAIN 97	0	0	0	0	0	0	5	0	0	0	0
PERFUME	0	0	0	<1	<1	<1	<1	<1	<1	<1	<1
POLY-D-GLUCOSAMINE	0	0	0	0	0	0	0	0	0	<1	0
POLYHEDRAL OCCLUSION BODIES (OB'S) OF THE NUCLEAR POLYHEDROSIS VIRUS OF HELICOVERPA ZEA (CORN EARWORM)	0	0	0	0	0	0	0	0	1	1	0
POTASSIUM BICARBONATE	0	0	28	65,909	92,990	130,462	121,804	179,676	283,851	159,764	387,014
PROPYLENE GLYCOL	54,137	61,455	60,421	67,530	54,281	63,627	58,293	60,369	50,440	44,213	47,739
PSEUDOMONAS FLUORESCENS, STRAIN A506	206	3,044	3,639	3,660	2,173	103	1,102	1,361	1,972	841	896
PSEUDOMONAS SYRINGAE STRAIN ESC-11	0	0	0	34	0	0	0	<1	0	20	<1
PSEUDOMONAS SYRINGAE, STRAIN ESC-10	0	15	<1	<1	0	0	0	0	0	0	0
PUTRESCENT WHOLE EGG SOLIDS	19	7	15	19	136	112	140	168	186	110	60
QST 713 STRAIN OF DRIED BACILLUS SUBTILIS	0	0	0	0	0	882	7,201	18,869	17,324	16,619	13,894
S-METHOPRENE	77	127	1,806	2,651	409	371	365	863	761	525	1,138
SODIUM BICARBONATE	0	0	0	0	5	22	230	2,063	0	126	0
SODIUM LAURYL SULFATE	21	9	6	14	8	2	9	<1	<1	3	15
SOYBEAN OIL	98,625	25,969	26,656	16,748	59,695	41,901	27,743	31,726	33,006	50,301	20,587
STREPTOMYCES GRISEOVIRIDIS STRAIN K61	21	1	2	5	2	7	2	1	1	<1	<1
TRICHODERMA HARZIANUM RIFAI STRAIN KRL-AG2	0	65	39	60	121	125	116	55	35	37	15
XANTHINE	0	0	0	0	0	<1	<1	0	0	0	<1
Z,E-9,12-TETRADECADIEN-1-YL ACETATE	0	0	0	0	0	0	0	<1	0	0	0
Z-11-TETRADECEN-1-YL ACETATE	0	0	<1	<1	85	61	9	18	19	14	12
Z-8-DODECENOL	6	4	7	10	12	16	13	11	20	22	19
Z-8-DODECENYL ACETATE	659	447	777	888	1,009	1,436	1,127	908	1,737	1,874	1,692
Z-9-TETRADECEN-1-OL	0	0	0	0	0	0	0	<1	0	0	0
Grand Total	835,208	660,410	796,257	1,432,274	982,743	1,036,126	1,022,210	1,118,504	1,037,814	700,310	1,009,397

Table 11B. *The reported cumulative acres treated in California with each biopesticide. Biopesticides includes microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones). Use includes primarily agricultural applications. The grand total for acres treated is less than the sum of acres for all active ingredients because some products contain more than one active ingredient. Zero values in early years likely indicate the pesticide was not yet registered for use. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
(E)-4-TRIDECEN-1-YL-ACETATE	706	5,428	3,574	2,886	3,132	12,571	9,159	11,739	10,902	5,555	3,226
(E)-5-DECENOL	725	1,434	2,187	1,414	1,034	784	1,316	1,206	1,360	809	71
(E)-5-DECENYL ACETATE	725	1,434	2,187	1,414	1,034	784	1,316	1,206	1,360	809	71
(R,Z)-5-(1-DECENYL) DIHYDRO-2-(3H)-FURANONE	0	0	0	1	0	0	0	0	0	15	0
(S)-KINOPRENE	44	341	179	2,610	888	600	847	869	754	1,864	487
(Z)-11-HEXADECENAL	0	0	0	0	0	0	0	1,053	476	365	164
(Z)-11-HEXADECEN-1-YL ACETATE	0	0	0	0	0	0	0	1,053	476	365	164
(Z)-4-TRIDECEN-1-YL-ACETATE	706	5,428	3,574	2,886	3,132	12,571	9,159	11,739	10,902	5,555	3,226
(Z)-9-DODECENYL ACETATE	0	0	0	0	0	0	0	0	0	0	570
(Z,E)-7,11-HEXADECADIEN-1-YL ACETATE	5,535	2,295	279	82	148	171	128	87	38	0	0
(Z,Z)-7,11-HEXADECADIEN-1-YL ACETATE	2,120	2,295	279	82	148	171	128	87	38	0	0
1-DECANOL	0	0	0	0	0	0	0	0	0	0	0
1-METHYLCYCLOPROPENE	0	0	0	0	0	0	3	<1	9	4	8
1-NAPHTHALENEACETAMIDE	812	1,784	1,820	5,211	5,418	4,135	3,690	1,705	2,355	2,201	1,100
ACETIC ACID	0	0	0	0	0	0	0	0	734	290	60
AGROBACTERIUM RADIOBACTER	2,110	6,048	1,284	5,954	1,517	1,072	514	500	365	493	306
AGROBACTERIUM RADIOBACTER, STRAIN K1026	0	0	0	0	0	4	325	355	716	524	292
ALLYL ISOTHIOCYANATE	0	0	2	0	0	0	1	0	36	0	20
AMINO ETHOXY VINYL GLYCINE HYDROCHLORIDE	0	0	0	75	142	1	6	10	0	0	229
AMPELOMYCES QUISQUALIS	366	4,566	18,628	15,039	8,363	7,156	2,193	540	332	697	247
AZADIRACHTIN	51,215	76,386	70,086	64,239	103,078	71,362	73,876	92,133	79,478	64,488	53,689
BACILLUS PUMILUS, STRAIN QST 2808	0	0	0	0	0	0	0	0	1	4	34,529
BACILLUS SPHAERICUS, SEROTYPE H-5A5B, STRAIN 2362	0	0	104	84	39	0	0	0	0	0	0
BACILLUS SUBTILIS GB03	0	0	0	0	0	0	0	0	0	379	23
BACILLUS THURINGIENSIS (BERLINER)	12,305	8,368	6,286	4,437	5,561	3,345	16,813	2,738	2	441	100
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, GC-91 PROTEIN	108,867	137,786	146,197	82,473	60,262	74,282	71,531	73,888	90,285	63,498	62,244
BACILLUS THURINGIENSIS (BERLINER), SUBSP. AIZAWAI, SEROTYPE H-7	68,505	84,793	109,951	86,430	85,564	65,923	41,378	45,129	54,037	24,160	18,237
BACILLUS THURINGIENSIS (BERLINER), SUBSP. ISRAELENSIS, SEROTYPE H-14	738	3,357	4,289	5,242	3,221	2,434	1,964	4,907	14,525	11,189	3,482

***Table 11B** (cont). The reported cumulative acres treated in California with each biopesticide.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI STRAIN SA-12	0	0	0	0	0	9,474	11,773	43,337	54,540	28,485	34,533
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, SEROTYPE 3A,3B	574,228	435,707	486,699	342,525	249,709	245,114	141,868	56,866	67,211	69,454	31,394
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG 2348	27,972	22,742	11,590	22,097	9,280	11,891	5,818	8,214	384	93	1,625
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN EG2371	62,435	32,471	19,739	11,015	1,684	845	439	134	338	19	54
BACILLUS THURINGIENSIS (BERLINER), SUBSP. KURSTAKI, STRAIN SA-11	134,225	139,051	175,772	161,858	152,834	143,643	174,400	180,617	158,413	123,786	155,759
BACILLUS THURINGIENSIS (BERLINER), SUBSP. SAN DIEGO	0	4	100	6	20	18	7	2	3	1	0
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI STRAIN BMP 123	0	0	0	87	7	687	1,913	6,279	3,013	268	20
BACILLUS THURINGIENSIS SUBSPECIES KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7841 LEPIDOPTERAN ACTIVE TOXIN	0	1,377	87,123	81,541	83,094	118,598	55,515	5,061	8,479	1,766	1,160
BACILLUS THURINGIENSIS VAR. KURSTAKI STRAIN M-200	0	0	0	0	0	2	0	0	1	0	0
BACILLUS THURINGIENSIS VAR. KURSTAKI, GENETICALLY ENGINEERED STRAIN EG7826	0	0	0	0	0	30,603	76,935	2,571	8,493	6,457	8,724
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN ABTS-1857	0	0	0	0	0	0	0	0	34,164	38,718	45,537
BACILLUS THURINGIENSIS, SUBSP. AIZAWAI, STRAIN SD-1372, LEPIDOPTERAN ACTIVE TOXIN(S)	0	0	0	0	32	1,561	4,718	10,656	4,989	3,465	2,965
BACILLUS THURINGIENSIS, SUBSP. ISRAELENSIS, STRAIN AM 65-52	0	0	0	0	0	0	0	5	1	3	133
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN ABTS-351, FERMENTATION SOLIDS AND SOLUBLES	0	0	0	0	0	0	0	1,310	924	84,404	108,077
BACILLUS THURINGIENSIS, SUBSP. KURSTAKI, STRAIN HD-1	0	24	2,718	202,653	217,136	199,377	170,574	138,223	124,389	44,550	29,081

***Table 11B** (cont). The reported cumulative acres treated in California with each biopesticide.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BACILLUS THURINGIENSIS, VAR. KURSTAKI DELTA ENDOTOXINS CRY 1A(C) AND CRY 1C (GENETICALLY ENGINEERED) ENCAPSULATED IN PSEUDOMONAS FLUORESCENS (KILLED)	0	6,387	43,741	23,196	14,779	14,698	4,622	546	111	7	<1
BEAUVERIA BASSIANA STRAIN GHA	0	3	1,459	2,991	25,510	3,399	2,853	3,673	2,887	4,019	3,426
CANDIDA OLEOPHILA ISOLATE I-182	0	0	0	0	0	0	0	0	0	0	0
CANOLA OIL	0	0	0	0	0	2	2	2	2	<1	2
CAPSICUM OLEORESIN	1,048	582	443	2,762	1,799	261	254	149	318	379	71
CASTOR OIL	0	0	<1	0	<1	1	0	0	0	0	0
CINNAMALDEHYDE	0	0	<1	<1	2,418	4,136	1,534	295	105	137	18
CLARIFIED HYDROPHOBIC EXTRACT OF NEEM OIL	0	7,526	13,537	22,092	45,247	49,142	36,602	34,133	38,314	51,009	67,258
CODLING MOTH GRANULOSIS VIRUS	448	0	0	0	0	0	0	0	0	0	0
CONIOTHYRIUM MINITANS STRAIN CON/M/91-08	0	0	0	0	0	0	0	935	1,352	1,781	26
CYTOKININ	0	0	0	82	0	3	0	0	0	0	0
DIHYDRO-5-HEPTYL-2(3H)-FURANONE	0	0	20	0	0	0	0	0	0	0	0
DIHYDRO-5-PENTYL-2(3H)-FURANONE	0	0	20	0	0	0	0	0	0	0	0
E,E-8,10-DODECADIEN-1-OL	3,880	3,811	3,696	4,300	4,514	10,407	10,381	11,841	21,217	17,383	21,896
E-11-TETRADECEN-1-YL ACETATE	0	0	13	2,171	54,460	38,834	14,063	16,870	10,335	8,836	7,351
E-8-DODECENYL ACETATE	3,870	6,045	9,932	11,791	23,549	22,721	33,383	33,602	39,198	41,752	33,419
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. KURSTAKI IN KILLED PSEUDOMONAS FLUORESCENS	35,755	69,222	96,678	83,238	59,905	32,372	15,188	7,525	1,160	143	33
ENCAPSULATED DELTA ENDOTOXIN OF BACILLUS THURINGIENSIS VAR. SAN DIEGO IN KILLED PSEUDOMONAS FLUORESCENS	4	1	0	19	7	6	4	<1	0	1	1
ESSENTIAL OILS	0	0	0	0	0	6	268	0	0	1	0
ETHYLENE	0	0	0	0	2	0	0	0	0	7	0
EUCALYPTUS OIL	0	0	0	0	0	0	0	0	0	0	150
EUGENOL	0	0	0	1	0	0	0	0	0	15	0

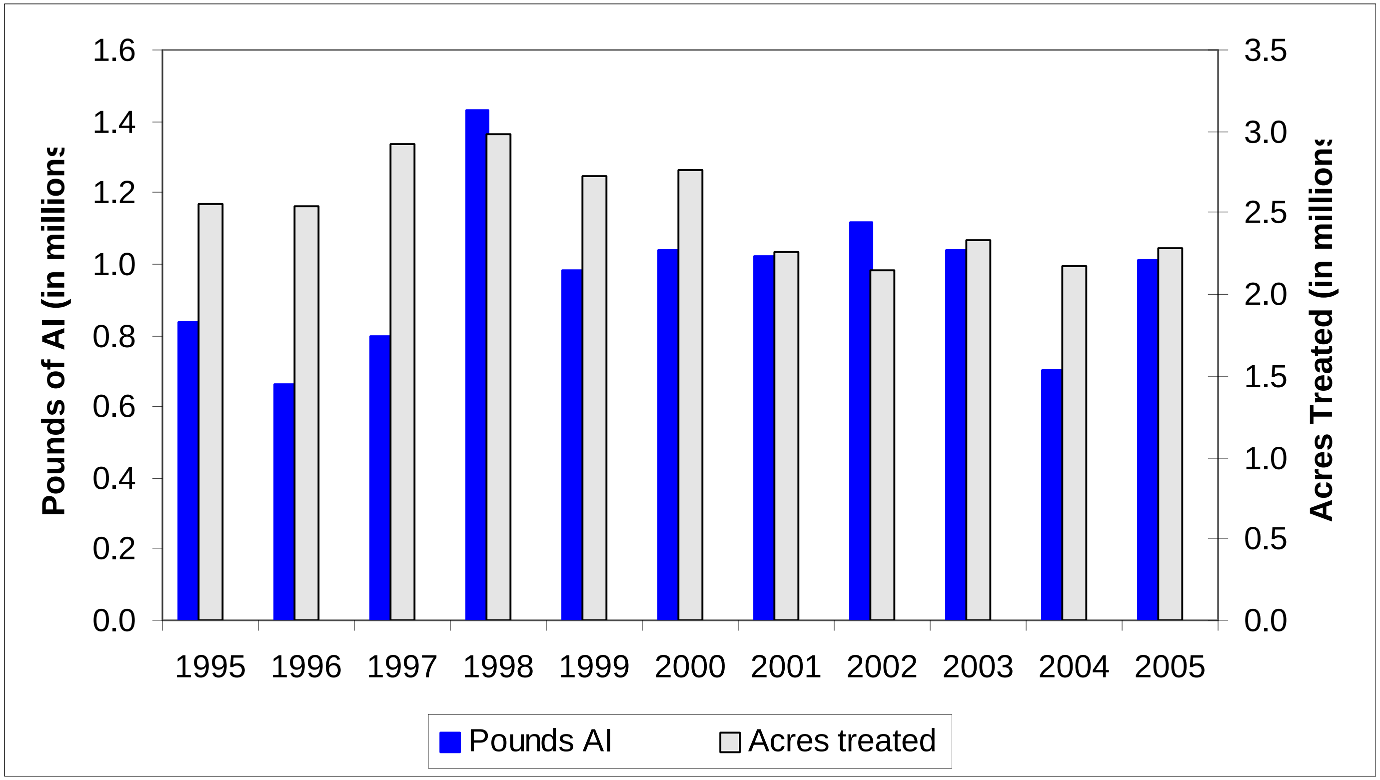
***Table 11B** (cont). The reported cumulative acres treated in California with each biopesticide.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
FARNESOL	17,721	22,113	16,837	12,543	43,212	25,673	8,495	6,584	5,451	4,294	4,369
GAMMA AMINOBUTYRIC ACID	0	0	0	0	0	0	320	43,652	87,153	117,477	114,189
GARLIC	3,976	6,586	24,333	12,403	7,376	4,725	2,407	2,756	828	259	513
GERMAN COCKROACH PHEROMONE	0	0	0	0	0	0	0	0	0	0	6
GIBBERELLINS	440,001	416,073	455,572	487,195	439,529	464,750	387,488	423,330	430,988	414,075	458,950
GIBBERELLINS, POTASSIUM SALT	903	101	184	70	1,429	8	188	22	59	170	65
GLIOCLADIUM VIRENS GL-21 (SPORES)	1	21	14	29	12	8	768	6	0	0	18
GLUTAMIC ACID	0	0	0	0	0	0	320	43,652	87,153	117,477	114,189
HYDROGEN PEROXIDE	0	0	0	0	5	21	485	633	802	1,057	981
HYDROPRENE	0	0	0	1	1	<1	1	0	0	<1	<1
IBA	139	104	410	1,319	1,236	266	124	244	232	1,566	319
LAGENIDIUM GIGANTEUM (CALIFORNIA STRAIN)	0	<1	0	0	0	0	0	0	0	24	2
LAURYL ALCOHOL	3,028	1,798	2,858	2,886	2,666	8,038	6,429	4,635	4,791	6,009	6,719
LINALOOL	0	0	0	0	0	0	0	0	0	0	0
METARHIZIUM ANISOPLIAE, VAR. ANISOPLIAE, STRAIN ESF1	0	0	0	0	0	0	0	0	0	0	0
METHOPRENE (POST 1997 SEE CHEM CODE 5026)	86	65	11	23	58	38	50	0	359	1	0
METHYL ANTHRANILATE	0	0	0	0	0	0	0	81	56	1,458	448
METHYL SALICYLATE	0	0	0	0	0	0	0	0	0	0	0
MUSCALURE	794	1,439	699	979	292	435	189	121	2,283	307	2,715
MYRISTYL ALCOHOL	3,028	1,798	2,858	2,886	2,666	8,038	6,429	4,635	4,791	6,009	6,719
MYROTHECIUM VERRUCARIA, DRIED FERMENTATION SOLIDS & SOLUBLES, STRAIN AARC-0255	0	0	104	1,514	3,348	3,173	4,392	3,926	4,390	8,348	4,680
NAA	33	41	364	542	788	172	102	72	75	1,096	289
NEROLIDOL	17,721	22,113	16,837	12,543	43,212	25,673	8,495	6,584	5,451	4,294	4,369
NITROGEN, LIQUIFIED	0	0	0	0	0	0	0	0	0	0	0
NONANOIC ACID	674	518	294	645	573	496	495	443	446	1,075	675
NONANOIC ACID, OTHER RELATED	674	518	294	645	573	496	495	443	446	1,075	675
NOSEMA LOCUSTAE SPORES	0	0	0	7	14	2	9	0	35	37	1

***Table 11B** (cont). The reported cumulative acres treated in California with each biopesticide.*

AI	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
OIL OF ANISE	0	0	0	0	0	0	0	0	0	0	0
OIL OF CEDARWOOD	0	0	0	0	0	0	0	0	0	0	0
OIL OF CITRONELLA	0	0	6	80	24	1	0	0	0	0	0
OIL OF LEMONGRASS	0	0	0	0	0	0	0	0	36	0	20
OIL OF MUSTARD	0	0	0	0	0	0	0	0	0	0	0
OXYPURINOL	0	0	0	0	0	0	0	0	0	0	0
PAECILOMYCES FUMOSOROSEUS APOPKA STRAIN 97	0	0	0	0	0	0	13	0	0	0	0
PERFUME	0	0	0	0	0	70	0	0	0	0	0
POLY-D-GLUCOSAMINE	0	0	0	0	0	0	0	0	0	<1	0
POLYHEDRAL OCCLUSION BODIES (OB'S) OF THE NUCLEAR POLYHEDROSIS VIRUS OF HELICOVERPA ZEA (CORN EARWORM)	0	0	0	0	0	0	0	0	293	742	0
POTASSIUM BICARBONATE	0	0	11	34,010	52,110	60,330	52,654	73,894	106,955	64,957	143,345
PROPYLENE GLYCOL	901,000	1,008,762	1,053,200	1,147,506	924,156	998,115	780,442	726,172	763,911	777,977	753,940
PSEUDOMONAS FLUORESCENS, STRAIN A506	990	16,951	26,617	29,656	15,760	1,443	11,668	13,126	16,945	6,559	7,176
PSEUDOMONAS SYRINGAE STRAIN ESC-11	0	0	0	17	0	0	0	0	0	0	0
PSEUDOMONAS SYRINGAE, STRAIN ESC-10	0	0	0	0	0	0	0	0	0	0	0
PUTRESCENT WHOLE EGG SOLIDS	68	0	0	0	0	0	0	0	0	0	0
QST 713 STRAIN OF DRIED BACILLUS SUBTILIS	0	0	0	0	0	2,154	15,205	40,573	54,553	58,871	55,873
S-METHOPRENE	0	0	0	505	<1	567	951	166	21	49	2,395
SODIUM BICARBONATE	0	0	0	0	8	0	0	0	0	100	0
SODIUM LAURYL SULFATE	<1	0	0	48	0	16	0	29	0	0	0
SOYBEAN OIL	86,291	16,839	22,476	10,427	13,609	12,837	11,254	18,627	15,359	9,870	6,344
STREPTOMYCES GRISEOVIRIDIS STRAIN K61	13	20	115	34	27	83	50	17	14	5	20
TRICHODERMA HARZIANUM RIFAI STRAIN KRL-AG2	0	<1	69	369	456	885	1,048	293	466	833	360
XANTHINE	0	0	0	0	0	0	0	0	0	0	0
Z,E-9,12-TETRADECADIEN-1-YL ACETATE	0	0	0	0	0	0	0	13	0	0	0
Z-11-TETRADECEN-1-YL ACETATE	0	0	13	2,171	54,460	38,834	14,063	16,870	10,335	8,836	7,351
Z-8-DODECENOL	3,870	6,045	9,932	11,791	23,549	22,721	33,383	33,602	39,198	41,752	33,419
Z-8-DODECENYL ACETATE	3,870	6,045	9,932	11,791	23,549	22,721	33,383	33,602	39,198	41,752	33,419
Z-9-TETRADECEN-1-OL	0	0	0	0	0	0	0	13	0	0	0
Grand Total	2,584,223	2,594,644	2,968,227	3,039,624	2,883,367	2,897,954	2,379,256	2,312,607	2,532,594	2,409,053	2,499,808

Figure 9. *Use trends of biopesticides. Biopesticides include microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds that are not toxic to the target pest (such as pheromones). Reported pounds of active ingredient (AI) applied include both agricultural and reportable non-agricultural applications. The reported cumulative acres treated include primarily agricultural applications. Data are from the Department of Pesticide Regulation's Pesticide Use Reports.*



V. TRENDS IN PESTICIDE USE IN CERTAIN COMMODITIES

This summary describes possible reasons for changes in pesticide use from 2004 to 2005 for the following commodities: (1) cotton, (2) almonds, (3) wine grapes, (4) table and raisin grapes, (5) alfalfa, (6) processing tomatoes, (7) oranges, (8) head lettuce, (9) rice, (10) peaches and nectarines, (11) strawberries, and (12) carrots. These 12 commodities were chosen because each were treated with more than 5 million pounds of active ingredients (AI) or cumulatively treated on more than 2 million acres. Collectively, this represents 70 percent of all reported pesticide pounds used and 79 percent of the acres treated in 2005.

Information used to develop this section was drawn from several publications and phone interviews with pest control advisors, growers, University of California Cooperative Extension farm advisors and specialists, researchers, and commodity association representatives. The information collected was analyzed by DPR staff using their extensive knowledge of pesticides, California agriculture, pests, and pest management practices to draw conclusions about possible explanations for changes in pesticide use. However, it is important to note these explanations are based on anecdotal information, not rigorous statistical analyses.

Reported pesticide use in California in 2005 totaled 194 million pounds, an increase of 14 million pounds from 2004 (8 percent increase). The AIs with the largest uses by pounds were sulfur, petroleum oils, metam-sodium, 1,3-dichloropropene (1,3-D), and mineral oil. Sulfur use increased by 7.3 million pounds (13 percent) and was the most highly used pesticide in 2005, both in pounds applied and acres treated. By pounds, sulfur accounted for 32 percent of all reported pesticide use in 2005 and accounted for much of the increase in pesticide use from 2004 to 2005. Sulfur is a natural fungicide favored by both conventional and organic farmers. Petroleum oil use increased by 182,000 pounds (1.1 percent), metam sodium use decreased by 1.6 million pounds (-11 percent), 1,3-D use increased by 375,000 pounds (4.2 percent), and mineral oil use remained nearly the same.

Sulfur was used mostly to control powdery mildew on grapes and had the largest increase in use by both pounds and acres treated from 2004 to 2005. Oils and the fumigant metam sodium had the next highest use by pounds, but the biggest increase in pounds applied after sulfur were the fumigant potassium n-methyldithiocarbamate and the fungicide copper hydroxide. In 2005 oils were used mostly on almonds and oranges. Oils are low risk pesticides used mostly to control insects and mites. Nearly half of the total pounds of metam sodium were on carrots, with processing tomatoes and potato accounting for another 26 percent. Potassium n-methyldithiocarbamate was used mostly on broccoli and peppers and copper hydroxide on walnuts.

Different pesticides are used at different rates. In California, most pesticides are applied at rates of around 1 to 2 pounds per acre. However, fumigants are usually applied at rates of hundreds of pounds per acre. Thus, comparing use by pounds will emphasize fumigants. Comparing use among different pesticides using acres treated gives a different picture.

By acres treated, the non-adjuvant pesticides with the greatest use in 2005 were sulfur, glyphosate, oils, oxyfluorfen, and chlorpyrifos. Use of all of these pesticides increased. Most of the increase in total acres treated was from increased use of sulfur, boscalid, pyraclostrobin, and indoxacarb. Boscalid and pyraclostrobin are two recently registered, reduced-risk fungicides used mostly on almonds and grapes. Indoxacarb is a recently registered insecticide; 75 percent of the total pounds were applied to cotton and alfalfa. The herbicide glyphosate was used mostly on rights of way, almonds, and cotton. Oxyfluorfen is often applied with glyphosate in cotton and almonds. Chlorpyrifos was used mostly on cotton,

DPR data analyses have shown that pesticide use varies from year to year depending upon pest problems, weather, acreage and types of crops planted, economics, and other factors. In general, spring 2005 was cool and rainy so diseases of many crops were worse than the previous year and therefore fungicide use was greater and accounted for most of the increased pesticide use in 2005. Pounds applied and acres treated of most of the other major pesticide types increased as well, except for herbicides and fumigants. Prices for most of the 12 crops improved in 2005, which may have also been an incentive to use more pesticides to protect valuable crops.

In the following tables, use is given by pounds of AI applied and by acres treated. Acres treated means the cumulative number of acres treated; the acres treated in each application are summed even when the same field is sprayed more than once in a year. (For example, if the same acre is treated three times in a calendar year with an individual AI, it is counted as three acres treated).

Cotton

Cotton is grown for fiber, oil, and animal feed and is one of the most widely grown crops in California. Cotton acres planted decreased by 15 percent from 2004 to 2005. Two main kinds of cotton are grown: upland and Pima. Most cotton acreage is in upland cotton, but a greater percentage of Pima cotton was planted in 2005 than in 2004. Some cotton has also been genetically modified to be tolerant to the herbicide glyphosate (Roundup); acres planted with Roundup Ready cotton decreased by 21 percent from 2004 to 2005. Most cotton is grown in the southern San Joaquin Valley, but a small percentage is grown in Imperial and Riverside counties and several counties in the Sacramento Valley.

Table 12A*. Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for cotton each year from 2001 to 2005. Planted acres from 2001 to 2004 are from CDFA 2006; planted acres in 2005 are from NASS, July 2006a; Roundup Ready acres from NASS, June 2006; marketing year average prices from 2001 to 2003 are from NASS, July 2002, July 2003, and July 2004; from 2004 and 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	8,127,020	7,157,764	7,141,281	7,150,897	6,946,000
Acres Treated	9,632,312	8,298,884	10,467,671	10,422,661	11,374,132
Acres Planted Upland Cotton	630,000	480,000	550,000	560,000	430,000
Acres Planted Pima Cotton	240,000	210,000	150,000	215,000	230,000
Acres Planted Total	870,000	690,000	700,000	775,000	660,000
Price Upland $/lbs	$0.416	$0.573	$0.745	$0.516	$0.600
Price Pima $/lbs	$0.856	$0.860	$1.230	$0.882	$1.190
Acres Roundup Ready	170,100	124,800	148,500	218,400	172,000
Percent Roundup Ready	20	18	21	28	26

***Table 12B**. Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for cotton from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-13	-12	0	0	-3
Acres Treated	-18	-14	26	0	9
Acres Planted Upland Cotton	-19	-24	15	2	-23
Acres Planted Pima Cotton	66	-13	-29	43	7
Acres Planted Total	-5	-21	1	11	-15
Price Upland $/lbs	-20	38	30	-31	16
Price Pima $/lbs	-15	0	43	-28	35
Acres Roundup Ready	29	-27	19	47	-21

***Figure 10**. Acres of cotton treated by all AIs in the major types of pesticides from 1993 to 2005.*

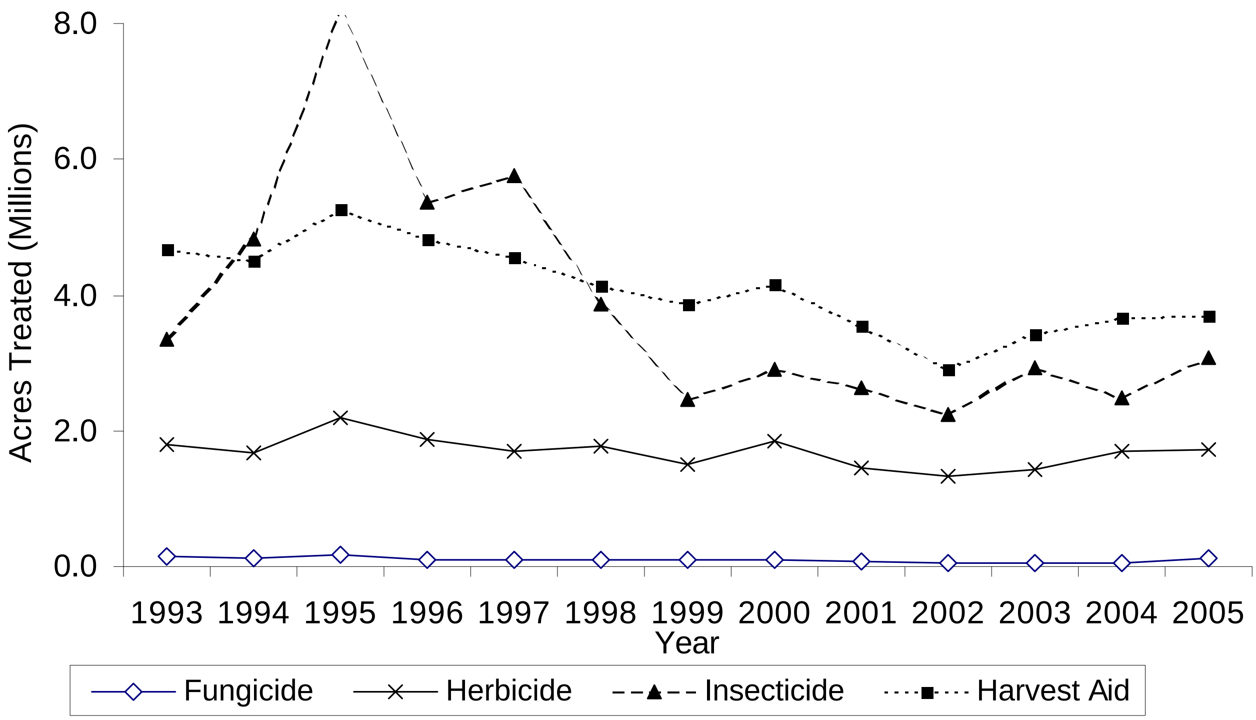


Table 12C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
SODIUM CHLORATE	HARVEST AID	2,515,818	2,310,248	1,713,708	1,415,551	1,142,341	-273,210	-19
CHLORPYRIFOS	INSECTICIDE	271,892	221,562	278,734	202,314	346,774	144,460	71
DEF	HARVEST AID	257,062	190,149	233,323	179,689	99,019	-80,670	-45
NALED	INSECTICIDE	165,604	87,089	69,376	36,387	107,437	71,051	195
ENDOSULFAN	INSECTICIDE	44,281	61,265	58,101	76,638	11,952	-64,686	-84
PYRIPROXYFEN	INSECTICIDE	2,415	3,812	3,529	4,970	922	-4,047	-81
METHOXYFENOZIDE	INSECTICIDE			74	2,386	9,419	7,033	295
AZOXYSTROBIN	FUNGICIDE	4	84	1,355	4,478	16,523	12,045	269
IMIDACLOPRID	INSECTICIDE	7,056	4,255	4,494	2,784	7,033	4,249	153
PYRAFLUFEN-ETHYL	HARVEST AID				449	1,110	661	147

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Although cotton acreage decreased by 15 percent, pounds of AI applied decreased by only 3 percent and acres treated actually increased by 9 percent. The increase in acres treated was mostly from insecticide use, which increased by 24 percent, with herbicide and harvest aid use remaining about the same. The increase in insecticide use occurred in Kings, Fresno, and Madera counties; in nearly all other counties insecticide use decreased. Fungicide use also dramatically increased but there is much less use of fungicides than other kinds of pesticides so it did not contribute significantly to the overall increase.

The increase in pounds of insecticides was mostly from chlorpyrifos, but there were also increases in naled, oxamyl, indoxacarb, methoxyfenozide, and imidacloprid. Some insecticide use decreased, primarily the miticides propargite, dicofol, and abamectin, but also endosulfan and pyriproxyfen. Chlorpyrifos, naled, imidacloprid, and endosulfan were used mostly for aphids and whiteflies; pyriproxyfen was used mostly on whiteflies; and methoxyfenozide was used mostly on beet armyworm and other lepidopteran pests.

In 2005, the cool, rainy spring lead to high weed and lygus bug growth, but delayed build up of mites. Later in the season there were higher populations of aphids and lepidopteran pests, but fewer problems with whiteflies. These pest populations probably explain the higher use of chlorpyrifos, naled, and imidacloprid and the lower use of pyriproxyfen. Because of few mite problems earlier in the season, growers tended to not treat for mites. However, the hot summer provided conditions for mite buildups, which caused significant problems especially in Kern County. By that time it was too late to treat for the mites, which explains why miticide use was down despite the high mite populations. Also, Pima cotton has been replacing Acala cotton and Pima is less susceptible to mites. However, Pima is more susceptible to aphid and whitefly damage. Also, sticky cotton is more of a problem for Pima than Acala. Sticky cotton occurs when excretions from aphids and whiteflies fall on open cotton bolls and this causes problems when the cotton is ginned and lowers the quality of the cotton lint.

Total herbicide use was nearly the same in 2005 as in 2004. Both years had rainy winters and springs, which were conducive to weed growth, so herbicide use in both years was relatively high. Glyphosate is still by far the mostly widely used herbicide and its use increased slightly in 2005. The other main herbicides are oxyfluorfen and trifluralin. However, there were some changes in herbicides used. Glyphosate, potassium salt (Roundup Original Max® and Roundup Weathermax®) increased and glyphosate, isopropylamine decreased (mostly in product Roundup Ultramax®); oxyfluorfen increased and trifluralin decreased. Oxyfluorfen use increased possibly because it is one of the few herbicides that can be used at layby.

Fungicides are not widely used in cotton, but their use more than doubled from 2004 to 2005. The increase was mostly from azoxystrobin and TCMTB. Azoxystrobin is applied to cotton fields at planting to control seedling diseases. TCMTB is also for seedling diseases but is applied as a seed treatment. Fungicide use increased in 2005 because the cool, wet spring was conducive to seedling diseases.

Pounds of harvest aids decreased by 9 percent from 2004 to 2005; however, acres treated with harvest aids was nearly the same in 2005 as in 2004. The decrease in pounds was mostly in sodium chlorate, S,S,S-tributyl phosphorotrithioate (DEF), and ethephon, which are all used at relatively high rates compared to most other harvest aids. Pounds decreased while acres treated did not because the rate of use of sodium chlorate and S,S,S-tributyl phosphorotrithioate decreased considerably between 2004 and 2005, and because use of pyraflufen-ethyl increased by 150 percent and this AI is used at very low rates. However, pounds of urea dihydrogen sulfate (or AMADS) increased, which is one of the components of Cotton Quik® products, along with ethephon. Use of ethephon itself decreased because besides Cotton Quik® ethephon is used in the products Prep® and Finish®, whose use decreased. Growers are switching from Prep® and Finish® to Cotton Quik® because Cotton Quik® is more effective and cheaper.

Almonds

Almonds are California's largest tree nut crop in total dollar value and acreage. They are the largest horticultural export in value from the United States. Approximately 6,000 almond growers produce nearly 100 percent of the commercial domestic supply and more than 75 percent of worldwide production. Nearly 80 countries import California almonds. The United States is the largest market for almonds; overseas, Spain and Germany remain the two top markets followed by India, Japan and Italy. The top five markets accounted for 51 percent of total exports.

Table 13A. *Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for almonds each year from 2001 to 2005. Planted acres from 2001 to 2004 are from CDFA 2006; planted acres in 2005 are from NASS, May 2006a; marketing year average prices from 2001 to 2005 from NASS, July 2006c.*

	2001	**2002**	**2003**	**2004**	**2005**
Lbs AI	10,161,186	11,932,343	13,369,000	16,191,070	17,154,773
Acres Treated	5,049,101	5,420,473	6,330,462	7,315,859	8,891,719
Acres Planted	600,000	605,000	610,000	620,000	680,000
Price $/lb	$0.91	$1.11	$1.57	$2.21	$2.60

Table 13B. *Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for almonds from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-13	17	12	21	6
Acres Treated	-30	7	17	16	22
Acres Planted	-1	1	1	2	10
Price $/ton	-6	22	41	41	18

Figure 11. *Acres of almonds treated by all AIs in the major types of pesticides from 1993 to 2005.*

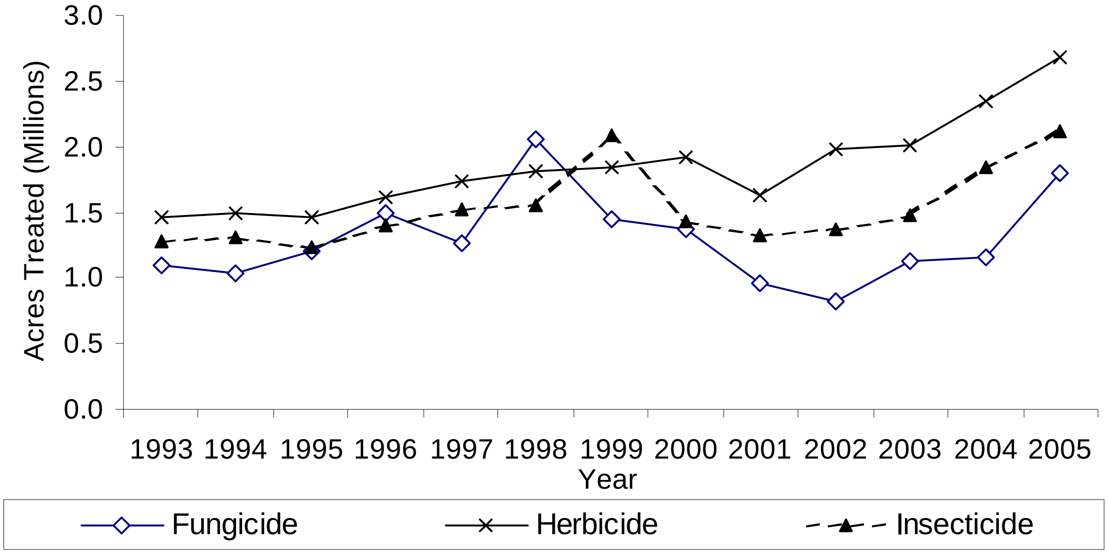


Table 13C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
ZIRAM	FUNGICIDE	396,435	387,770	532,546	301,759	586,331	284,572	94
SULFUR	FUNGICIDE/ INSECTICIDE	123,452	114,400	209,648	258,248	532,132	273,883	106
GLYPHOSATE	HERBICIDE	696,523	867,047	912,227	1,024,463	1,233,520	209,057	20
OIL	INSECTICIDE	6,069,660	7,507,455	7,533,377	9,582,986	9,767,957	184,971	2
PHOSMET	INSECTICIDE	98,285	108,919	76,804	279,009	185,533	-93,476	-34
FLUMIOXAZIN	HERBICIDE					11,549	11,549	
PYRACLOSTROBIN	FUNGICIDE				6,217	22,995	16,778	270
BOSCALID	FUNGICIDE				12,241	45,271	33,031	270
BIFENAZATE	INSECTICIDE		174	144	6,760	17,820	11,060	164
AZOXYSTROBIN	FUNGICIDE	19,086	18,534	23,325	19,961	50,985	31,024	155

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Pesticide use on almonds increased from 2004 to 2005, especially acres treated with fungicides, which increased by 55 percent. Acres treated with insecticides and herbicides also increased, though only by 15 percent. Different factors play a role in understanding pesticide use trends. The most significant current almond industry trend is the increase in planted acreage. Almond growers report thousands of new acreage being planted. Yet, until more technologically sophisticated methods of surveying acreage are employed, available objective data may lag behind actual new acreage. New acreage will increase the acres treated, particularly in the case of a one-time application of a preplant fumigant. Another significant change within the almond industry is a shift from older, more broad-spectrum pesticides to newer, reduced-risk compounds.

Total almond production in 2005 was down slightly from 2004 at 998 million pounds. However, the price for almonds remained good at $2.60 a pound. Historically, when prices are up growers are more inclined to apply pesticides to protect the crop, thereby increasing the number of acres treated.

Growers in all regions reported use of winter sanitation to reduce over-wintering populations of navel orangeworm (NOW). Generally, wet weather prevailed early in the season in all growing regions. Growers reported wet conditions through the bloom period into post-bloom, with unsettled conditions well into May. This created ideal conditions for diseases such as anthracnose, brown rot, scab and shot hole. As a result, growers were very diligent in their use of fungicides to protect the crop. This would explain the significant increase in the use of many fungicides in 2005. In particular, acres treated with reduced risk materials azoxystrobin, boscalid and pyraclostrobin increased significantly, partially due to the increased incidence of Alternaria, a summer disease. It should be noted, that due to the extended cool weather conditions growers reported a general suppression of mite problems till later in the season.

In contrast to the cool wet spring the summer was long and hot. This resulted in mite problems in many orchards as evidenced by an increase in the use of abamectin, bifenazate and hexythiazox. The use of propargite for mites decreased slightly from 2004. This may be due to a reported shift away from propargite to newer reduced risk materials, particularly in the southern growing region. Peach twig borer (PTB), navel orange worm (NOW), and Oriental fruit moth (OFM) were not a particular problem in 2005. Reported insecticide use by pounds was about the same as 2004 with a few notable exceptions. Use of reduced risk insecticides including methoxyfenozide, spinosad, and diflubenzuron increased 136 percent, 135 percent, and 48 percent, respectively. In contrast the use of phosmet decreased 34 percent. Generally, orchards were pretty clean from worm damage. Ants, however, were more of a problem. A small percentage of growers reported using chlorpyrifos to control ants. The majority seemed to prefer using baits. This is reflected by reported increases in acres treated with abamectin and pyriproxyfen.

Due to the long wet spring herbicide use was up. This is reflected in reported increases in both pounds applied and acres treated with glyphosate, oxyfluorfen, oryzalin and paraquat dichloride. Tank mixes with glyphosate and oxyfluorfen, or glyphosate and oryzalin have been a standard herbicide mix for years. Growers sometimes will use oxyfluorfen (Goal®) at a low rate to take advantage of its contact action as a boost for glyphosate (Roundup®). Also, oryzalin was in short supply for several years. It is now available again and use is increasing.

The use of fumigants methyl bromide and 1,3–D decreased in 2005. This could be attributed to a modest slow down in the huge increase in newly planted and replanted almonds over the last few years. Newly planted acreage normally requires a one-time preplant fumigation. Use of sodium tetrathiocarbonate (Enzone®) increased significantly in 2005. This increase could be attributed to its reported use as a post plant treatment to control nematodes in established orchards.

Wine grapes

California has four major wine grape production regions: 1) North Coast (Lake, Mendocino, Napa, Sonoma, and Solano counties); 2) Central Coast (Alameda, Monterey, San Luis Obispo, Santa Barbara, San Benito, Santa Cruz, and Santa Clara counties); 3) Northern San Joaquin Valley (San Joaquin, Calaveras, Amador, Sacramento, Merced, Stanislaus, and Yolo counties); and 4) Southern San Joaquin Valley (Fresno, Kings, Tulare, Kern, and Madera counties). Factors that influence changes in pesticide use on wine grapes include weather, topography and pest pressures (which vary by region), competition from newer products, application restrictions, efforts by growers to reduce costs, and increasing emphasis on sustainable farming. The pooled figures in this report may not reflect differences in pesticide use patterns between production regions.

Table 14A*. Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for wine grapes each year from 2001 to 2005. Planted acres from 2001 to 2004 are from CDFA 2006; planted acres in 2005 are from NASS, March 2006; marketing year average prices from 2001 to 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	22,780,014	24,110,818	23,463,989	23,800,640	29,796,746
Acres Treated	6,450,639	6,661,038	6,634,442	6,569,015	8,041,013
Acres Planted	570,000	556,000	529,000	513,000	522,000
Price $/ton	$597.00	$535.00	$530.00	$570.00	$582.00

Table 14B*. Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for wine grapes from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-18	6	-3	1	25
Acres Treated	-8	3	0	-1	22
Acres Planted	0	-2	-5	-3	2
Price $/ton	5	-10	-1	8	2

Figure 12. *Acres of wine grapes treated by all AIs in the major types of pesticides from 1993 to 2005.*

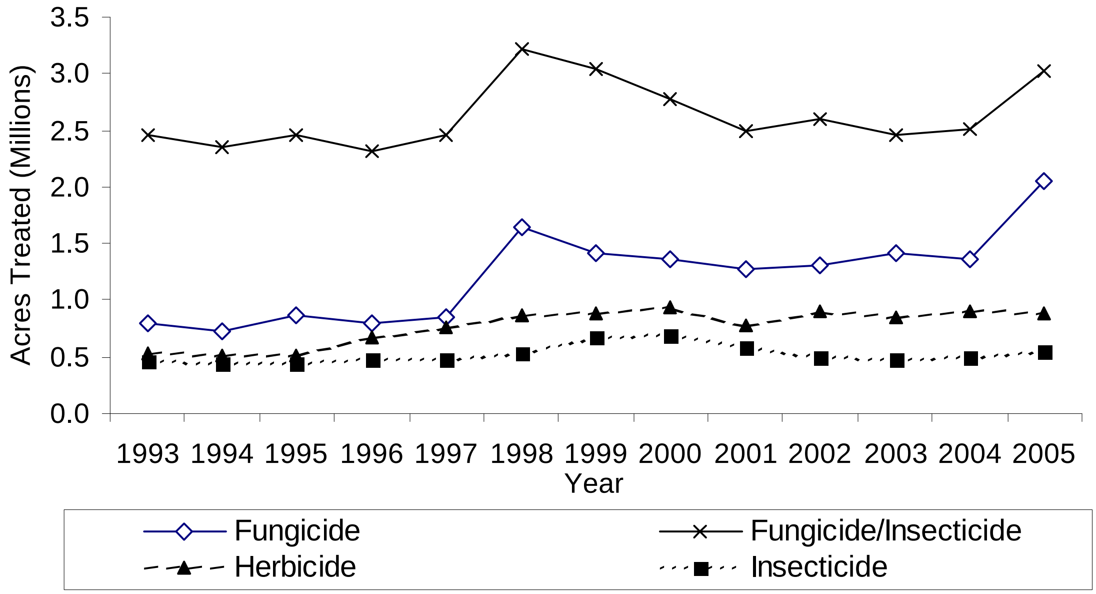


Table 14C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
SULFUR	FUNGICIDE/ INSECTICIDE	19,705,049	21,108,331	20,310,162	20,610,744	25,038,185	4,427,441	21
OIL	INSECTICIDE	149,764	215,254	282,106	457,675	761,983	304,308	66
POTASSIUM BICARBONATE	FUNGICIDE	92,628	139,537	214,999	88,370	250,747	162,377	184
COPPER	FUNGICIDE	357,987	255,184	301,250	268,294	417,391	149,097	56
GLYPHOSATE	HERBICIDE	344,589	402,701	392,950	385,650	448,329	62,679	16
MANCOZEB	FUNGICIDE	55,660	35,950	53,937	25,577	80,625	55,048	215
BOSCALID	FUNGICIDE				13,660	32,804	19,144	140
PYRACLOSTROBIN	FUNGICIDE				6,937	16,602	9,664	139
FENARIMOL	FUNGICIDE	3,550	2,652	3,405	1,800	3,869	2,068	115
CYPRODINIL	FUNGICIDE	17,803	17,433	22,534	14,081	27,351	13,270	94

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Total wine grape acres treated with pesticides increased by 22 percent and total pounds used increased by 25 percent from 2004 to 2005, even though total acres planted increased by only 2 percent. This increase was due chiefly to a jump in the application of fungicides and fungicide/insecticides (mainly sulfur) to cope with severe disease pressure caused by an exceptionally long cool, wet spring. Total acres treated with those two groups of pesticides rose 50 and 20 percent, respectively. Total pounds of fungicide applied increased by 88 percent. Total acres treated with insecticide increased 10 percent. Total acres treated with herbicide declined slightly from 2004, although total pounds of herbicide applied rose 6 percent.

Late June and July brought improved grape growing conditions. Once summer heat set in, however, there was heavy mite pressure in some wine grape regions. Cool fall weather boosted grape size and the wine grape crop was very high quality. Wine grape yield set a record in 2005. Production of both red and white wine grape varieties increased by more than a third over 2004 levels, flooding the market. In many cases, wineries accepted only contract tonnages. Some wine grape growers sold grapes at low prices for concentrate, or left their fruit to raisin on the vine. Nevertheless, the overall price per ton for wine grapes increased by 2 percent.

The major insecticides and miticides applied in 2005 by acres treated were imidacloprid, methoxyfenozide, fenpropathrin, the miticide bifenazate, chlorpyrifos, and *Bacillus thuringiensis* (*Bt*) products. Factors that may have contributed to increased insecticide use in 2005 were localized infestations of mites and vine mealybug (VMB), pre-harvest applications against leafhoppers to improve field conditions for workers, and increased use of reduced-risk products, which sometimes require more frequent and better-timed applications to be effective. Bifenazate is a selective alternative to older, higher-risk miticides, which have longer worker re-entry periods. Imidacloprid and chlorpyrifos are being used in widening eradication and management programs for VMB, an invasive pest that had spread into 21 counties in 2005. Fenpropathrin is applied against leafhoppers, sharpshooters, and moths. Methoxyfenozide and *Bt* products control moths. In 2005, application of insecticidal oils increased 66 percent by weight. Oils have many attractive, broad-spectrum properties and are low-risk. They can replace a surfactant and eradicate mildew growth, as well as suppressing mites and insects such as grape leafhoppers. They are increasingly mixed with fungicides.

Rain and low temperatures lasting into June exacerbated problems with fungus diseases such as *Botrytis* bunch rot and mildew. Sulfur, copper products, myclobutanil, trifloxystrobin, boscalid, pyraclostrobin, and tebuconazole were the most-used fungicides in terms of acres treated. Pounds of sulfur, potassium bicarbonate, myclobutanil, and fenarimol applied for powdery mildew control jumped. Use of the broader-spectrum fungicides copper, mancozeb, boscalid, pyraclostrobin, trifloxystrobin, tebuconazole, and cyprodinil also increased sharply by weight. Five of the fungicides with large increases in pounds applied are low-risk pesticides including sulfur, potassium bicarbonate, boscalid, pyraclostrobin, and cyprodinil.

Herbicides used most in wine grapes by acres treated were glyphosate products, oxyfluorfen, paraquat, and simazine. Pounds of glyphosate products applied rose 16 percent, probably due to rank weed growth brought on by the long, wet spring, its use as an alternative to simazine, and tolerance by some vineyard weeds. Pounds of simazine decreased by 9 percent, reflecting more stringent regulation for ground water protection, the increasing availability of alternative chemicals, and unfavorably wet application conditions for pre-emergent herbicides.

Fumigants applied for wine grape production rose 13 percent in 2005 by total acres treated, and 107 percent by total pounds applied. In terms of acres treated, the preplant fumigant 1,3-dichloropropene, which controls nematodes, and sodium tetrathiocarbonate, which is effective against nematodes, phylloxera, and root rots, were the major fumigants used to kill soil pests. Use of the general purpose soil fumigant methyl bromide, though comparatively small, increased by weight (from 5,285 to 113,356 pounds) and by area treated (from 18 to 332 acres) in spite of regulatory moves to phase it out. There was an 8 percent reduction in the pounds of aluminum phosphide used for rodent control in wine grapes. Some sustainable agriculture programs are encouraging nonchemical rodent control measures, such as trapping and the provision of owl nesting boxes in or near vineyards. In addition, prolonged wet, cool weather may have reduced rodent reproduction.

Plant growth regulators (PGR) are not widely used in wine grapes, but pounds of PGR increased by 25 percent in 2005. The most common PGRs were gibberellins, which are geographically registered for certain varieties, and are applied in early spring in order to lengthen and loosen grape clusters. Less compact clusters may be less vulnerable to berry splitting and bunch rot.

Table grapes and raisins

Table and raisin grapes comprise approximately half of California's total grape crop, the other half being wine grapes. These categories may shift depending on market conditions, since some grape varieties can be used for more than one purpose. Commercial production of table grapes is centered in the Southern San Joaquin Valley. The Coachella Valley is California's other significant table grape production area. In an average year, the state produces 850,000 to 890,000 tons of table grapes, about 8 percent coming from the Coachella Valley. The Southern San Joaquin Valley region includes Fresno, Madera, Tulare, Kern, and Kings counties; the Coachella Valley region includes Riverside, Imperial, and San Bernardino counties. In most years, roughly a third of the raisin grape crop is crushed for wine or concentrate. California produced about 300,000 tons of raisins in 2005. Almost all were from the Southern San Joaquin Valley, although a few raisins are produced in the Northern San Joaquin Valley region (San Joaquin, Calaveras, Amador, Sacramento, Merced, and Stanislaus counties).

Table 15A*. Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for raisin and table grapes each year from 2001 to 2005. Planted acres from 2001 to 2004 are from CDFA 2006; planted acres in 2005 are from NASS, March 2006; marketing year average prices from 2001 to 2005 from NASS, July 2006c.*

	2001	**2002**	**2003**	**2004**	**2005**
Lbs AI	19,638,908	22,161,905	21,525,557	21,399,763	23,244,868
Acres Treated	5,670,936	5,901,253	5,937,751	5,684,603	6,591,375
Acres Planted Raisin	242,000	252,000	260,000	248,000	246,000
Acres Planted Table	98,000	97,000	93,000	92,000	93,000
Acres Planted Total	340,000	349,000	353,000	340,000	339,000
Price Raisin $/ton	$186.00	$152.00	$170.00	$306.00	$246.00
Price Table $/ton	$610.00	$616.00	$601.00	$695.00	$443.00
Price all	$308.21	$280.96	$283.55	$411.26	$300.04

Table 15B*. Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for raisin and table grapes from 2001 to 2005.*

	2001	**2002**	**2003**	**2004**	**2005**
Lbs AI	-27	13	-3	-1	9
Acres Treated	-30	4	1	-4	16
Acres Planted Raisin	-16	4	3	-5	-1
Acres Planted Table	-2	-1	-4	-1	1
Acres Planted Total	-12	3	1	-4	0
Price Raisin $/ton	12	-18	12	80	-20
Price Table $/ton	8	1	-2	16	-36
Price all	15	-9	1	45	-27

Figure 13. *Acres of raisin and table grapes treated by all AIs in the major types of pesticides from 1993 to 2005.*

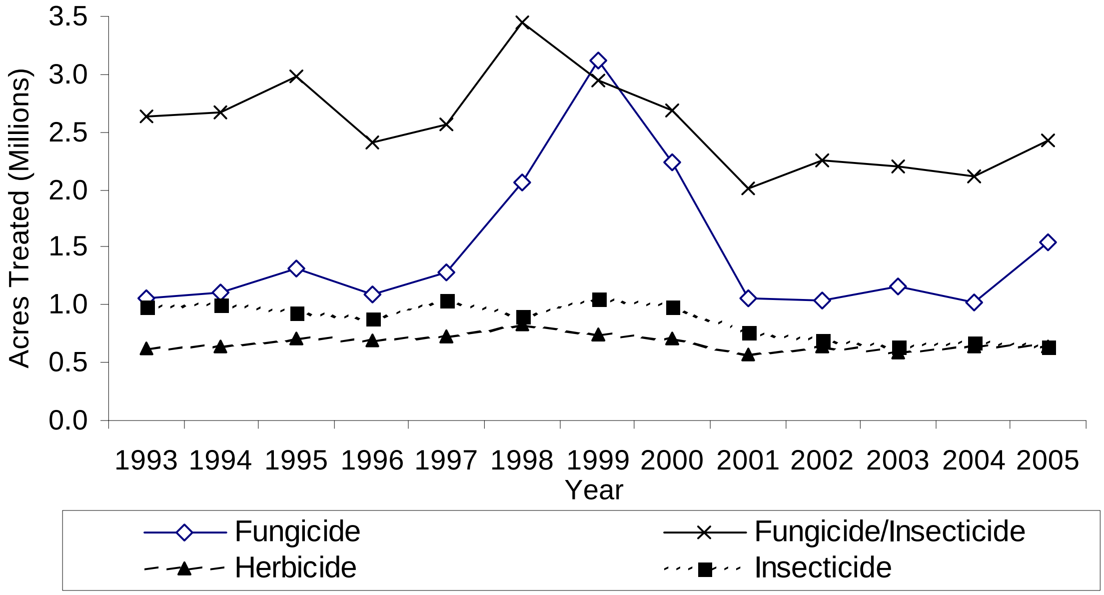


Table 15C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PCT CHANGE**
SULFUR	FUNGICIDE/ INSECTICIDE	15,675,845	18,113,628	17,693,678	17,449,547	19,453,133	2,003,587	11
CRYOLITE	INSECTICIDE	958,279	828,599	688,927	671,784	452,286	-219,499	-33
COPPER PRODUCTS	FUNGICIDES	426,434	393,581	698,879	419,997	534,794	114,797	27
POTASSIUM BICARBONATE	FUNGICIDE	7,458	24,797	37,798	29,249	90,412	61,163	209
SIMAZINE	HERBICIDE	110,101	124,878	122,347	122,462	84,270	-38,192	-31
SPINOSAD	INSECTICIDE			3	436	5,389	4,953	1,135
KRESOXIM-METHYL	FUNGICIDE	2,013	2,481	4,680	1,309	6,590	5,281	403
BOSCALID	FUNGICIDE			1	9,105	23,564	14,458	159
PYRACLOSTROBIN	FUNGICIDE			1	4,625	11,967	7,343	159
TRIFLUMIZOLE	FUNGICIDE	6,443	8,732	7,126	2,236	5,503	3,267	146

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Although total acres planted to table and raisin grapes was unchanged, total acres treated with the major categories of pesticides and total pounds of pesticide active ingredients applied increased in 2005 by 16 and 9 percent, respectively. This increase was due to more acres being treated with fungicides (up 52 percent) and fungicide/insecticides (up 15 percent) to cope with high disease pressure caused by an exceptionally long cool, wet spring. Total acres treated with herbicides were almost unchanged from 2004, and acres treated with insecticides declined by 8 percent.

Spring mildew lowered the quality of the raisin grape crop. June and July brought ideal grape growing conditions, although there was some extra culling at the end of July due to off color and rot caused by extreme heat. In general, the table grape crop was of good size and quality. Once summer heat set in there were mite problems in many vineyards. Rain damage from late September thunderstorms caused some raisin losses and threatened quality, triggering applications of mold and mildew inhibitors. The size of the 2005 table and raisin grape harvest did not change much from the previous year. A high-quality, bumper wine grape crop meant, however, that relatively few table and raisin grapes were sold to vintners, and a high proportion was used for fresh-market fruit or raisins. The price per ton for both table and raisin grapes fell, by 36 and 20 percent respectively.

Insect and mite pressure was low in 2005 due to the late advent of warm weather. The major insecticides and miticides applied in 2005 by acres treated were methoxyfenozide, cryolite, imidacloprid, *Bt* products, spinosad, and bifenazate. Methoxyfenozide, cryolite, and *Bt* all control moths, and spinosad is effective against moths and thrips. Imidacloprid is used against small sucking insects: mealybugs, scales, phylloxera, leafhoppers, sharpshooters, and thrips. Bifenazate, a relatively new selective miticide, is gaining market share because of long worker re-entry periods for alternative products. The use of cryolite continued to decline in 2005, dropping 33 percent by weight while pounds applied of spinosad, a newer low-risk alternative that can be used in organic production, soared more than tenfold. These trends reflect limitations placed on cryolite by wineries and export contracts.

Severe pressure from mildew and other diseases such as Botrytis bunch rot and Phomopsis cane and leaf spot led to a 40 percent increase in total fungicide application by weight, and a 52 percent jump in acres treated. Fungicides most used for table and raisin grape production in 2005 by acres treated were sulfur, copper, myclobutanil, boscalid, pyraclostrobin, tebuconazole, and trifloxystrobin. All of these as well as potassium bicarbonate, kresoxim-methyl, and triflumizole provide good to excellent control of powdery mildew, which is the reason for most fungicide use in San Joaquin Valley and Coachella Valley vineyards. Table 15C shows exceptional increases in pounds applied of seven fungicides including four low-risk pesticides: sulfur, potassium bicarbonate, boscalid, and pyraclostrobin.

Most-used herbicides by acres treated were glyphosate, paraquat, oxyfluorfen, simazine, and oryzalin. In spite of all the wet winter/spring weather, herbicide use changed little either in terms of acres treated or pounds applied. This may be due in part to cost cutting in a year of low commodity prices. Simazine use decreased 31 percent by weight, probably because of difficult application conditions, increased restrictions for ground water protection, and the increasing availability of alternative chemicals.

Pounds applied of the two most-used soil fumigants, sodium tetrathiocarbonate for nematodes and phylloxera and the preplant chemical 1,3-dichloropropene, decreased as total vineyard acres treated with fumigants declined by 39 percent. This trend probably reflects increased adoption of pest- and disease-resistant rootstocks by table and raisin grape growers. In contrast, acres treated with methyl bromide before planting (143 in 2005) and the number of pounds applied, although relatively small, almost tripled in spite of regulatory moves to phase it out because it is an ozone layer-depleting chemical. Increased use in grape nurseries use may account for some of that change. Pounds of methyl bromide applied for postharvest treatment of grapes for export increased by 16 percent, corresponding with greater commodity volume. Use of sulfur dioxide, the major postharvest fungicide applied to table grapes, also rose 16 percent by weight, reflecting a larger amount of grapes in storage and/or longer storage periods. In contrast, pounds applied of aluminum phosphide, the main postharvest fumigant for raisins, dropped by 43 percent.

Raisin and table grape acres treated with plant growth regulators (PGR) rose 12 percent while PGR pounds applied declined by 23 percent. This seeming discrepancy resulted from increased use of the most-used PGR gibberellin, which is a lower-dose compound sprayed between mid-May and early June to reduce fruit set and increase fruit size. Fewer acres are treated with forchlorfenuron, which is used in the same way as gibberellin but is more expensive, with ethephon to improve the color of red grapes, and with hydrogen cyanamide, which is sprayed during the dormant period to promote increased and uniform budbreak in areas like the Coachella Valley that have warmer winters.

Alfalfa

Alfalfa hay is produced for animal feed. Most counties produce some alfalfa hay, but half of the state's production comes from Kern, Imperial, Tulare, Merced, and Fresno counties. Harvested alfalfa acres decreased in 2005 by 5 percent compared to 2004, but the price per ton of alfalfa hay increased in 2005 by 19 percent. The dairy industry is still the biggest market for alfalfa hay production.

Table 16A. *Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for alfalfa each year from 2001 to 2005. Harvested acres from 2001 to 2004 are from CDFA 2006; harvested acres in 2005 are from NASS, July 2006a; marketing year average prices from 2001 to 2005 are from NASS, July 2002, July 2003, July 2004, July 2005, July 2006.*

	2001	2002	2003	2004	2005
Lbs AI	2,919,521	3,008,510	2,921,442	2,662,360	2,838,945
Acres Treated	4,443,511	4,467,000	4,857,298	4,167,860	5,154,019
Acres Harvested	1,010,000	1,160,000	1,090,000	1,050,000	1,000,000
Price $/ton	$119.00	$98.00	$93.00	$116.00	$138.00

Table 16B. *Percent difference from previous year for reported pounds of all AIs, acres treated, acres harvested, and prices for alfalfa from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-12	3	-3	-9	7
Acres Treated	-14	1	9	-14	24
Acres Harvested	-1	15	-6	-4	-5
Price $/ton	29	-18	-5	25	19

Figure 14. *Acres of alfalfa treated by all AIs in the major types of pesticides from 1993 to 2005.*

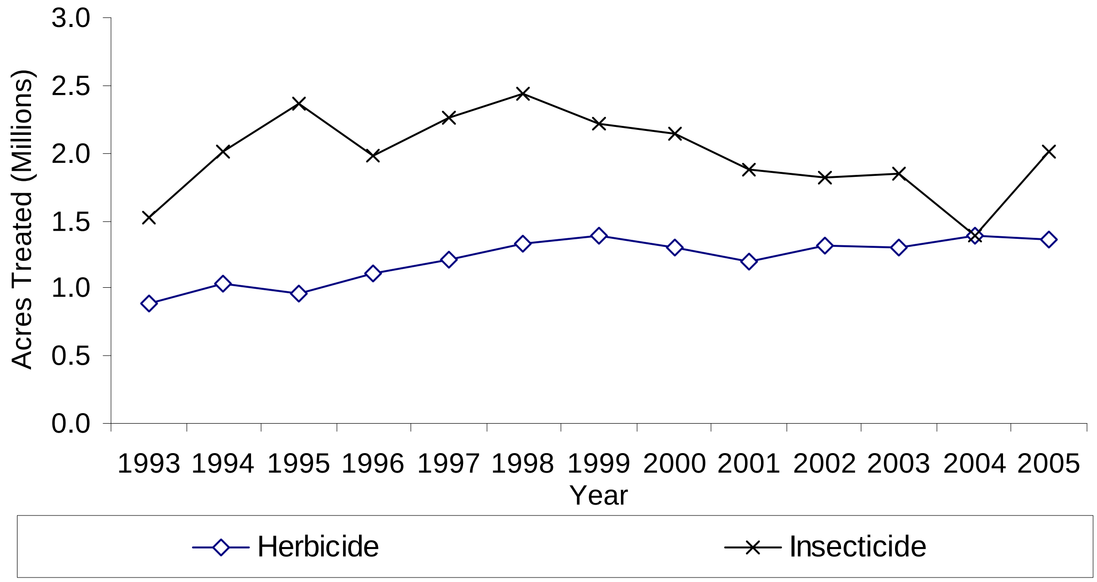


Table 16C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
CHLORPYRIFOS	INSECTICIDE	231,575	186,815	249,221	174,553	260,386	85,833	49
DIURON	HERBICIDE	168,962	236,864	275,190	294,543	211,537	-83,006	-28
TRIFLURALIN	HERBICIDE	548,173	626,609	613,411	554,322	593,243	38,922	7
METHOMYL	INSECTICIDE	79,681	38,839	59,055	21,121	59,801	38,681	183
EPTC	HERBICIDE	137,783	129,273	57,366	71,196	97,065	25,869	36
IMAZETHAPYR, AMMONIUM SALT	HERBICIDE	398	478	355	479	4,183	3,704	773
INDOXACARB	INSECTICIDE		7,211	18,547	8,620	23,784	15,164	176
BT	INSECTICIDE	5,154	5,037	2,874	1,448	3,451	2,003	138
(S)-CYPERMETHRIN	INSECTICIDE		4	1,033	2,874	5,993	3,120	109
DIQUAT DIBROMIDE	HERBICIDE/ DEFOLIANT	17,323	9,056	9,424	17,587	11,138	-6,450	-37

* *change in pounds of AI used from 2004 to 2005*

** *percent change in pounds used from 2004 to 2005.*

The total pounds of pesticide active ingredient applied increased 7 percent from 2004 to 2005 and acres treated increased 24 percent. This increase was due to increased use of insecticides; the use of herbicides, the only other major pesticide category, decreased by 2 percent.

Insecticide use in pounds increased by 31 percent from 457,000 pounds in 2004 to 598,000 pounds in 2005, while the acres treated increased by 44 percent. The increased use of insecticides was mainly chlorpyrifos (49 percent), methomyl (183 percent), indoxacarb (176 percent), *Bt* (138 percent), and (s)-cypermethrin (109 percent). Insecticide use increased probably because of higher insect populations (western yellow striped armyworm, beet armyworm, alfalfa caterpillar, and Egyptian alfalfa weevil). The increased use of chlorpyrifos and methomyl were attributed specifically to the heavy pressure of western yellow striped armyworm, beet armyworm, and alfalfa caterpillar in Sacramento Valley and San Joaquin Valley. As for chlorpyrifos, the North East and South East regions of California showed a decrease in use in 2005.

The decrease in herbicide use may be explained mostly by the decrease in alfalfa acres planted. Another possible reason for the decline in herbicide use was the introduction of Roundup Ready® genetically modified varieties in the Valley. The use of some herbicides, such as diuron and diquat dibromide decreased, and the use of other herbicides, such as trifluralin, EPTC, and imazethapyr ammonium salt, increased. Diquat dibromide is a desiccant used in seed production. In 2005, diquat dibromide and paraquat dichloride were used by seed growers to desiccate seed fields prior to harvest. Diquat was preferred, but it took multiple applications in most locations. Use of diquat dibromide decreased in San Joaquin Valley and other regions except Sacramento Valley. Diuron use decreased in most regions in the state except in the South Coast region. Most of the increased use of trifluralin was in the San Joaquin Valley and South Coast region, while use of imazethapyr ammonium salt increased in all regions except the South Coast region. Although the reasons for selecting certain herbicides were unclear, the awareness of groundwater contamination by some active ingredients may have played a role in this reduction.

Tomato (Processing)

Processing tomato growers planted 267,000 acres in 2005, 34,000 fewer acres than were planted in 2004 and the third fewest acres in the last sixteen years. Virtually all of the processing tomatoes continue to be located in the Sacramento Valley (28 percent) or San Joaquin Valley (67 percent). Fresno County accounted for over a third of the crop, followed by Yolo County with 14 percent.

***Table 17A**. Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for processing tomatoes each year from 2001 to 2005. Planted acres from 2001 to 2005 are from NASS, May 2006b; marketing year average prices from 1999 to 2001 are from NASS, January 2002; prices from 2002 to 2004 are from NASS, January 2005; from 2005 from NASS, January 2006.*

	2001	2002	2003	2004	2005
Lbs AI	7,917,190	10,645,802	10,943,416	11,530,842	11,293,906
Acres Treated	1,893,948	2,031,303	2,673,696	2,509,685	2,775,383
Acres Planted	258,000	296,000	289,000	301,000	267,000
Price $/ton	$57.50	$56.80	$57.20	$57.40	$59.60

***Table 17B**. Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for processing tomatoes from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-26	34	3	5	-2
Acres Treated	-21	7	32	-6	11
Acres Planted	-11	15	-2	4	-11
Price $/ton	-2	-1	1	0	4

***Figure 15**. Acres of processing tomatoes treated by all AIs in the major types of pesticides from 1993 to 2005.*

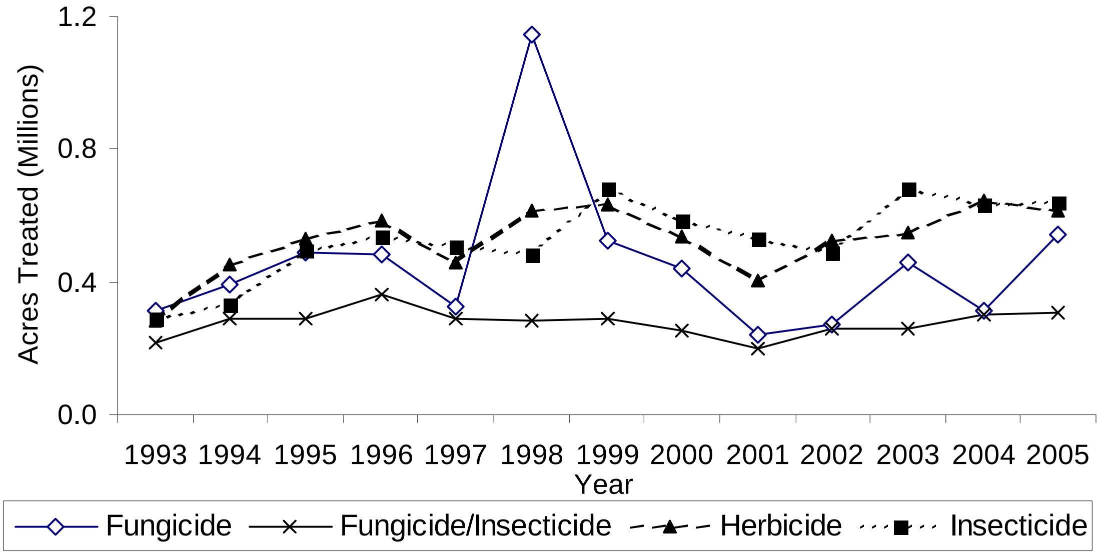


***Table 17C**. Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
METAM-SODIUM	FUMIGANT	2,277,842	2,761,785	2,647,542	2,526,294	1,791,937	-734,357	-29
COPPER HYDROXIDE	FUNGICIDE	38,740	26,141	94,583	15,727	156,478	140,751	895
SULFUR	FUNGICIDE/ INSECTICIDE	4,887,829	6,844,656	6,912,869	7,757,126	7,882,610	125,484	2
MANCOZEB	FUNGICIDE	23,936	19,301	43,597	14,869	79,547	64,678	435
MANEB	FUNGICIDE	2,690	2,319	43,210	7,272	45,614	38,342	527
CYMOXANIL	FUNGICIDE					2,539	2,539	
FAMOXADONE	FUNGICIDE					2,539	2,539	
COPPER OXIDE (OUS)	FUNGICIDE	127		24,481	4,862	25,442	20,580	423
ETHEPHON	PLANT GROWTH REGULATOR	22,267	19,718	18,034	4,004	19,696	15,692	392
TEBUFENOZIDE	INSECTICIDE	10,646	9,011	17,103	5,842	1,792	-4,050	-69

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Although planted acres decreased by 11 percent, pounds of AI decreased by only 2 percent and acres treated actually increased by 11 percent from 2004 to 2005. Most of the increase in acres treated was from fungicides, due to early season wet and cool weather which led to an increased threat of foliar pathogens, mainly bacterial speck. Acres treated with herbicide decreased by 5 percent and insecticide acres treated was about the same in 2005 as in 2004.

Weather conditions in March, April and May were wet compared to 2004. In 2005, over 4 inches of rain fell in the north and nearly 3 inches in the south, a 6-8 fold increase over the same March – May period in 2004. Grower use of copper compounds and other fungicides increased over

125 percent from 227,282 pounds in 2004 to 512,858 pounds in 2005. Most of the increase came in March, April and May as growers applied fungicides, particularly copper compounds, to prevent bacterial speck and other foliar diseases from affecting yields. Maneb and mancozeb—used as tank mixes with copper to help combat copper resistant foliar diseases—also increased. Sulfur use remained about the same in comparison to 2004.

Sulfur and metam-sodium accounted for over 87 percent of the total pounds of pesticide active ingredient applied to tomatoes in 2005. Sulfur was used for russet mite and powdery mildew during May, June and July. Warm weather during early summer was conducive to both pests and helps explain the increased use, despite fewer planted acres. Use of the fumigant metam-sodium for preplant weed control decreased by 29 percent (pounds AI) as transplanted tomatoes increased and growers used traditional preplant herbicides like s-metolachlor and metribuzin. Nearly 70 percent of the metam-sodium was applied during the winter, January through March.

Insecticide use by pounds of active ingredient increased by 8 percent over 2004 levels, but accounted for less than 2 percent of total pesticide use. Dimethoate (Cygon®) remains the highest use insecticide in pounds in 2005, increasing slightly from 2004 to 41,768 pounds. Methomyl use increased 56 percent in 2005, from 12,423 pounds in 2004 to 19,368 pounds in 2005. Use of low-risk insecticides increased 32 percent to 32,280 pounds, led by increases in methoxyfenozide (Intrepid®), *Bt* products, and indoxacarb (Avaunt®). These three insecticides increased 82 percent, from 15,186 pounds in 2004 to 27,627 pounds in 2005. Methoxyfenozide use doubled from 2004 levels and continued to replace tebufenozide (Confirm®) for armyworm control.

Overall, pounds of herbicides decreased slightly (1.1 percent) from 2004 to 2005. The use of the three major herbicides— s-metolachlor, trifluralin, and glyphosate—accounted for 93 percent of the 419,026 pounds of herbicide use on processing tomatoes in 2005. Transplant tomatoes continue to increase over direct seeded, resulting in increased use of s-metalochlor (1 percent increase to 175,133 pounds) and metribuzin (13 percent increase to 8,279 pounds) and decreased use of napropamide (31 percent, 4,728 pounds) and pebulate (86 percent, 1,124 pounds).

Oranges

Oranges are the eighth highest value crop grown in California. Eighty-six percent of California oranges are grown in the San Joaquin Valley (Fresno, Kern and Tulare counties). The rest are grown in the interior region (5 percent, in Riverside and San Bernardino counties) and on the south coast (about 7 percent of the state’s acreage, mostly in Ventura and San Diego). Intermittent rain hampered the orange harvest in California in 2005.

Table 18A. *Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for oranges each year from 2001 to 2005. Bearing acres from 1999-00 to 2003-04 are from CDFA 2006; bearing acres in 2004-05 are from NASS, September 2005; marketing year average prices (equivalent P.H.D.) in 1999-00 to 2001-01 are from NASS, July 2003; prices in 2001-02 to 2002-03 are from NASS, July 2005; prices from 2003-04 and 2004-05 are from NASS, July 2006c. A box is about 75 pounds of oranges.*

	2001	2002	2003	2004	2005
Lbs AI	6,293,041	6,949,452	7,237,990	9,603,848	12,304,564
Acres Treated	1,727,085	1,910,155	2,050,026	2,249,087	2,623,957
Acres Bearing*	198,000	195,000	189,500	182,000	176,000
Price $/box*	$9.44	$10.85	$7.51	$11.16	$10.51

** The bearing acres and prices values are for the season that starts the fall of the previous year to the summer of the year shown in heading in the table, although the PUR values are by calendar year.*

Table 18B. *Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for oranges from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-27	10	4	33	28
Acres Treated	-21	11	7	10	17
Acres Bearing	-1	-2	-3	-4	-3
Price $/box	75	15	-31	49	-6

Figure 16. *Acres of oranges treated by all AIs in the major types of pesticides from 1993 to 2005.*

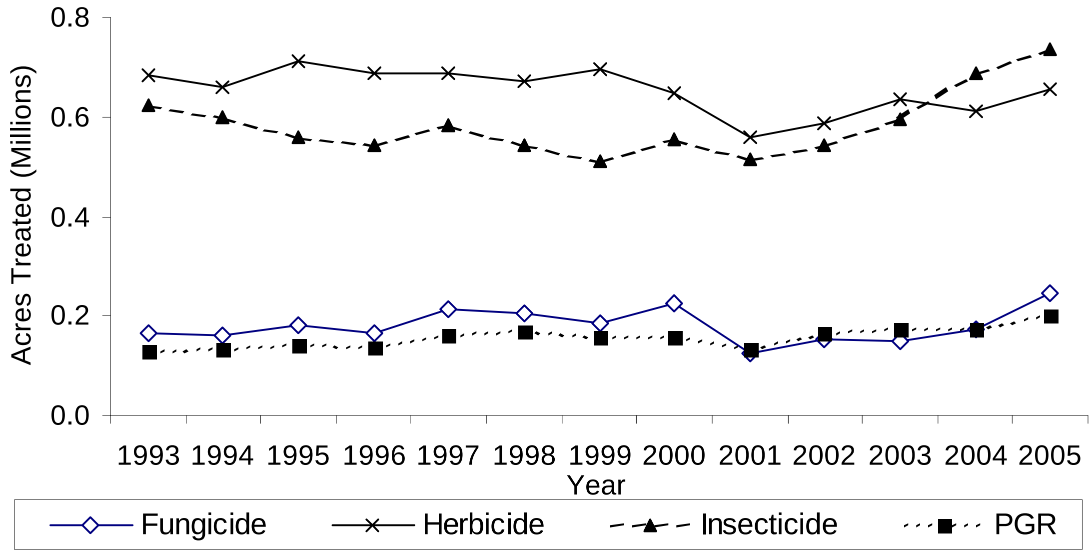


Table 18C*. Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
COPPER HYDROXIDE	FUNGICIDE	216,731	265,955	252,534	259,964	474,286	214,322	82
COPPER SULFATE (BASIC)	FUNGICIDE	179,118	301,091	286,414	407,592	486,532	78,939	19
GLYPHOSATE	HERBICIDE	229,344	262,840	297,500	285,727	357,377	71,650	25
SIMAZINE	HERBICIDE	180,431	194,463	199,705	187,163	208,031	20,869	11
DIURON	HERBICIDE	173,960	182,711	179,096	167,782	181,505	13,723	8
PYRIDABEN	INSECTICIDE	3,347	3,357	4,741	2,011	6,364	4,353	216
IMIDACLOPRID	INSECTICIDE	2,533	4,370	6,825	6,007	2,063	-3,944	-66
ORYZALIN	HERBICIDE	230	1,444	5,253	11,279	21,296	10,017	89
BT	INSECTICIDE	2,029	3,323	2,972	7,812	11,826	4,014	51
MALATHION	INSECTICIDE	21,979	11,545	12,001	10,832	15,440	4,608	43

** change in pounds of AI used from 2004 to 2005*
*** percent change in pounds used from 2004 to 2005.*

More acres were treated with pesticides in 2005 than in 2004, although there were fewer bearing acres. The number of bearing acres has steadily decreased every year since the 1999-00 season, a national trend. Total pesticide use (as pounds AI) in oranges between 2004 and 2005 increased by 28 percent. Most of the change was due to increased fungicide use, although there were increases in insecticides, herbicides and plant growth regulators used. The acres treated in 2005 also increased, by 17 percent.

California weather in 2005 was unsettled. According to the National Oceanic and Atmospheric Administration, winter storms in Southwest California led to record or near-record seasonal precipitation for much of the region. Spring rains continued into May in some of the citrus-growing regions. Temperatures were cooler than normal for much of the spring and early summer, but later in summer temperatures were unusually high. Fresno had a record-breaking string of days over 100ºF in late July and August. This brought the yearly average temperature above normal. Unsettled weather also brought tornadoes to the San Joaquin Valley.

Overall the acres treated with insecticides were up 7 percent from 2004, a change of approximately 65,000 acres. Petroleum oil, spinosad, chlorpyrifos, cyfluthrin, mineral oil, and pyriproxifen remain the most widely used insecticides. Others are of interest this year due to large changes in acres treated. These are *Bt*, imidacloprid, malathion and pyridaben. *Bt* is used for caterpillar pests. Its use increased possibly due to an increase in two new lepidopteran pests, citrus peelminer and citrus leafminer although this insecticide is not very effective on these pests. Imidacloprid is used primarily for glassy-winged sharpshooter control. Its use decreased as a direct result of the successful treatment and reduction of glassy-winged sharpshooters in the San Joaquin Valley. Malathion is used for scales, especially cottony cushion scale. Pounds used of malathion increased while acres treated decreased. The pounds per acre increased because it takes a higher rate of malathion to kill scale insects. Pyridaben is used for mite control. Its use increased because citrus red mites were a problem this year due to the prolonged cool, wet spring weather.

Overall fungicide use was up 41 percent from 2004, a change of approximately 74,000 acres. This increase was mostly due to increases in use of copper hydroxide and copper sulfate (basic). Copper hydroxide and copper sulfate are used to prevent Phytophthora gummosis, Phytophthora root rot, and fruit diseases such as brown rot and Septoria spot. The fungus responsible for Septoria spot causes spotting of Valencia oranges and this damage to the rind lowers the fruit's grade. It occurs in the San Joaquin Valley and interior districts of southern California during cool, moist weather. Brown rot, caused by Phytophthora fungi, also occurs when conditions are cool and wet. In 2005, weather during harvest provided optimal conditions for these two fruit diseases, requiring preventive fungicide applications. Respraying is recommended in years with heavy rainfall although field workers report that there was not a lot of either disease in 2005. Copper was applied a second time, in many cases to qualify for export to Korea.

Overall acres treated with sulfur increased 98 percent from 2004, a change of 2,896 acres, and pounds used increased by 117 percent. Sulfur is used to control fungal diseases, mites and citrus thrips. It can also be used for citrus peelminer, a pest that was seen in larger numbers in 2005. A higher use rate of sulfur is needed to treat this insect pest.

Overall herbicide use was up 7 percent from 2004, a change of approximately 44,000 acres. The prolonged cool wet spring of 2005 contributed to the rise in herbicide use. Glyphosate was the most frequently used herbicide with a 25 percent increase in pounds used. It is used for post-emergent weed control. Use of simazine and diuron increased (11 percent and 8 percent, respectively). Simazine and diuron are used for pre-emergent weed control in established orchards. Bearing acres decreased as growers pulled out old trees and replanted. Oryzalin use has increased every year since 2001. Pounds of oryzalin used increased 89 percent between 2004 and 2005. It is used for pre-emergent treatment of weeds in newly planted orchards and established orchards. Acreage treated has increased each year although bearing acres have decreased.

Head Lettuce

Head lettuce is grown in four regions in the state: the central coastal area (Monterey, San Benito, Santa Cruz, and Santa Clara counties); the southern coastal area (Santa Barbara and San Luis Obispo counties); the San Joaquin Valley (Fresno, Kings, and Kern counties); and the southern deserts (Imperial and Riverside counties). In 2004, 59 percent of all California head lettuce was planted in the central coastal area, 17 percent in the southern coastal area, 12 percent in the San Joaquin Valley, and 11 percent in the southern deserts. California produces 70 to 75 percent of the head lettuce grown in the United States annually. In this analysis, the central and southern coastal areas are combined.

Table 19A. *Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for head lettuce each year from 2001 to 2005. Harvested acres from 2001 to 2004 are from CDFA 2006; harvested acres in 2005 are from NASS, January 2006; marketing year average prices from 2001 to 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	1,431,087	1,440,302	1,468,612	1,617,854	1,824,787
Acres Treated	2,071,215	2,008,936	2,042,801	2,226,577	2,357,304
Acres Harvested	128,000	130,000	132,000	139,000	131,000
Price $/cwt	$18.50	$14.90	$21.00	$15.10	$15.90

Table 19B. *Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for head lettuce from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	–19	1	2	10	13
Acres Treated	2	–3	2	9	6
Acres Harvested	–2	2	2	5	–6
Price $/cwt	–2	–19	41	–28	5

Figure 17. *Acres of head lettuce treated by all AIs in the major types of pesticides from 1993 to 2005.*

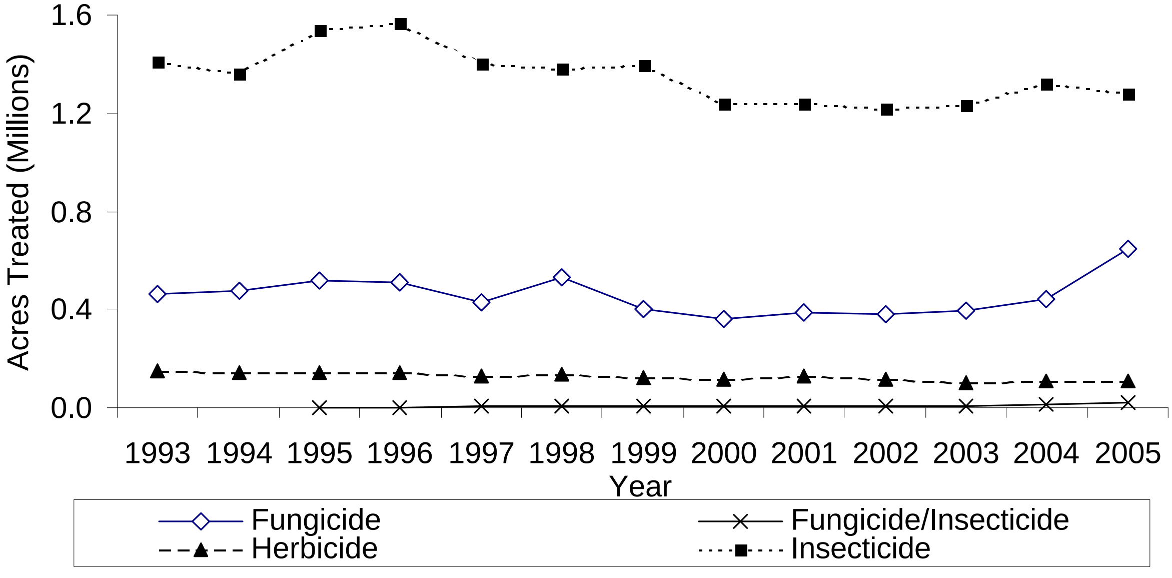


Table 19C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
FOSETYL-AL	FUNGICIDE	97,313	66,378	142,117	85,207	138,994	53,787	63
POTASSIUM PHOSPHITE	FUNGICIDE			47	17,583	49,429	31,846	181
SULFUR	FUNGICIDE/ INSECTICIDE	13,274	9,473	12,589	17,168	29,155	11,987	70
DIAZINON	INSECTICIDE	70,909	74,293	78,712	87,027	75,783	-11,245	-13
ACEPHATE	INSECTICIDE	95,641	97,985	81,183	82,661	71,856	-10,804	-13
CYMOXANIL	FUNGICIDE					5,588	5,588	
FAMOXADONE	FUNGICIDE					5,588	5,588	
TEBUFENOZIDE	INSECTICIDE	3,743	2,516	3,456	2,756	839	-1,918	-70
MEFENOXAM	FUNGICIDE	991	563	356	858	2,523	1,666	194
BOSCALID	FUNGICIDE				3,310	8,974	5,664	171

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Pesticide use by pounds and acres treated on head lettuce gradually declined from 1995 through 2003, but increased in 2004 and 2005. Overall use of fungicides, fumigants, and herbicides rose and use of insecticides declined from 2004 to 2005. Major pesticides with the largest percent increase in pounds AI were mefenoxam**,** potassium phosphite, boscalid, sulfur, and fosetyl-al. Major pesticides with the largest percent decrease were tebufenozide, diazinon, and acephate. During 2005, the top insecticides used (by acres treated) were permethrin, diazinon, spinosad, (S)-cypermethrin, and lambda-cyhalothrin. The main fungicides used were maneb, dimethomorph, fosetyl-al, cymoxanil and famoxadone. Three herbicides dominated ? propyzamide (pronamide), bensulide, and benefin. Metam-sodium was the main fumigant used, followed by 1,3–dichloropropene, chloropicrin, and methyl bromide.

Use of insecticides varied among the different lettuce-growing areas. In the coastal area, 17 percent fewer acres were treated with insecticides during 2005 than 2004. Acres treated with insecticides increased by 28 percent in the southern deserts, and by 16 percent in the San Joaquin Valley. There was a 6 percent decrease from 2004 to 2005 in acres of head lettuce harvested. Fungicide use increased by acres treated in all lettuce-growing areas, possibly due to a wet winter and wet, cool spring along the coast, and a wet spring in the southern deserts, which led to outbreaks of diseases such as downy mildew and anthracnose.

The insecticides spinosad and (S)-cypermethrin are used to manage larvae of beet armyworm and cabbage looper, primarily pests in the southern deserts. Use in pounds of these two insecticides, as well as methoxyfenozide and emamectin benzoate, increased in the southern deserts in 2005, possibly due to high worm pressure. Permethrin, primarily used for controlling seedling pests in the southern deserts such as crickets, earwigs, cutworms, and sowbugs, increased by 2 percent. Use of tebufenozide, an insect growth regulator (IGR) for worms, plummeted in most areas, possibly because of the recent registration of methoxyfenozide, another IGR thought to be more effective. Use of methoxyfenozide increased in use by 65 percent. The increase in use of (S)-cypermethrin, lambda-cyhalothrin, methomyl, cyfluthrin, and esfenvalerate probably resulted from higher populations of thrips, which have become serious pests in the southern deserts of California. Abamectin use decreased in all regions while permethrin use increased in all areas except for the San Joaquin Valley.

Diazinon is a preplant treatment applied for soil pests, and until 2005 was recommended for symphylans. A recent trial showed better control by the pyrethroids lambda-cyhalothrin and (S)-cypermethrin. Use of diazinon decreased by 14 percent and lambda-cyhalothrin by 12 percent in the coastal area, possibly because symphylans were not as abundant as in 2004. However, use of S-cypermethrin (in pounds) increased in the coastal area. Diazinon use decreased by 18 percent in the southern deserts, where it is often used for stand-establishment pests such as crickets, darkling ground beetles, earwigs, and sowbugs. In the coastal area, use of acephate and the neonicotinoid insecticide, imidacloprid, decreased because lettuce aphids were scarce.

Several active ingredients—both old chemistry and reduced risk, are rotated for downy mildew, a disease that has many pathovars. In 2005, maneb was the dominant fungicide used in head lettuce production, primarily to control downy mildew and prevent anthracnose. In the coastal area, pounds of maneb declined by 7 percent from 2004 to 2005, dimethomorph, first registered in 2003, increased in use by 49 percent. Use of fosetyl-al rose in all lettuce-growing areas by 54 percent from 2004 to 2005, possibly due to effectiveness against the prevalent downy mildew pathovars. A new reduced-risk product for downy mildew registered in 2005 contains equal amounts of the active ingredients cymoxanil and famoxadone. Over 11,00 pounds of these AIs were used on over 45,000 acres, mostly in the coastal area. Potassium phosphite is another new active ingredient for downy mildew of lettuce. Its use throughout California has increased by

181 percent from 2004 to 2005 (pounds used), and it seems to be most popular in the coastal area. From 2004 to 2005, mefenoxam use for downy mildew increased by 194 percent (pounds used). Finally, another newly registered reduced-risk product for downy mildew that contains the active ingredient fenamidone was used on nearly 22,000 acres in 2005. (See Sulfur below for powdery mildew.)

Lettuce drop (Sclerotinia drop) is another fungal disease with a shift in popular active ingredients. Use of iprodione fell by 12 percent from 2004 to 2005, but use of boscalid, a new reduced-risk material, rose by 171 percent. (See also chloropicrin below.)

Sulfur is applied as a foliar treatment for powdery mildew, and along with the reduced-risk fungicide, azoxystrobin, is the only labeled product used to manage this disease. Sulfur use increased from 2004 to 2005 by 77 percent (over 14,000 acres covered), while that of azoxystrobin increased by 159 percent (almost 5,000 acres covered).

Herbicide acres treated increased by 1 percent from 2004 to 2005, despite wet spring weather throughout the state. Pounds of propyzamide (pronamide), applied as a postplant–preemergence herbicide, increased statewide by 3 percent from 2004 to 2005 The increases in propyzamide use occurred in the San Joaquin Valley and southern deserts, where use increased by about 50 and 28 percent, respectively. As consistent with its use for the past ten years, propyzamide was applied to many more acres than the preemergence bensulide, which targets small-seeded annual grasses and is not as effective as propyzamide in the coastal areas. Use of benefin, a pre-plant herbicide popular in the San Joaquin Valley, decreased statewide from 2004 to 2005.

Nematodes are not economic pests of head lettuce, so soil is primarily fumigated to control soil-borne diseases. In 2005, fumigants, mostly metam-sodium, were used on fewer than 17 percent of all lettuce acreage. Each lettuce-growing area had a unique assortment of fumigants. Metam-sodium use dominated in the San Joaquin Valley; 1,3–dichloropropene in the deserts; and methyl bromide in the coastal area. Although mainly used to eliminate soil-borne diseases, metam-sodium also controls weeds in lettuce fields, if somewhat unreliably. In 2005, fields fumigated with metam-sodium represented less than 3 percent of all lettuce acreage. Use of 1,3–dichloropropene increased by half, but only a fraction of lettuce acreage was treated. In the deserts, 1,3–dichloropropene was used exclusively, and only 35 acres were treated. The third most widely used fumigant, chloropicrin, reduces soil populations of Verticillium wilt and lettuce drop alone or when combined with methyl bromide or 1,3–dichloropropene. In 2005, chloropicrin was used only in the coastal area, and use decreased by 35 percent.

Rice

California's Sacramento Valley contains more than 95 percent of the state's rice acreage. The remainder is in north to central San Joaquin Valley. The leading rice-producing counties are Colusa, Sutter, Butte, Glenn, and Yolo. Approximately 500,000 acres in the Sacramento Valley are of a soil type restricting the crops to rice or pasture. The remainder of the acreage has greater crop flexibility.

Table 20A. *Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for rice each year from 2001 to 2005. Planted acres from 2001 to 2004 are from CDFA 2006; planted acres in 2005 are from NASS, July 2006a; marketing year average prices from 2001 to 2003 are from NASS, July 2003 and July 2004; from 2004 and 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	5,945,926	5,962,401	6,490,215	6,615,296	5,123,593
Acres Treated	1,738,355	2,061,850	2,226,949	2,755,210	1,996,951
Acres Planted	473,000	533,000	509,000	595,000	528,000
Price $/cwt	$5.28	$6.32	$10.40	$7.34	$10.50

Table 20B*. Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for rice from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-16	0	9	2	-23
Acres Treated	-20	19	8	24	-28
Acres Planted	-14	13	-5	17	-11
Price $/cwt	6	20	65	-29	43

Figure 18*. Acres of rice treated by all AIs in the major types of pesticides from 1993 to 2005.*

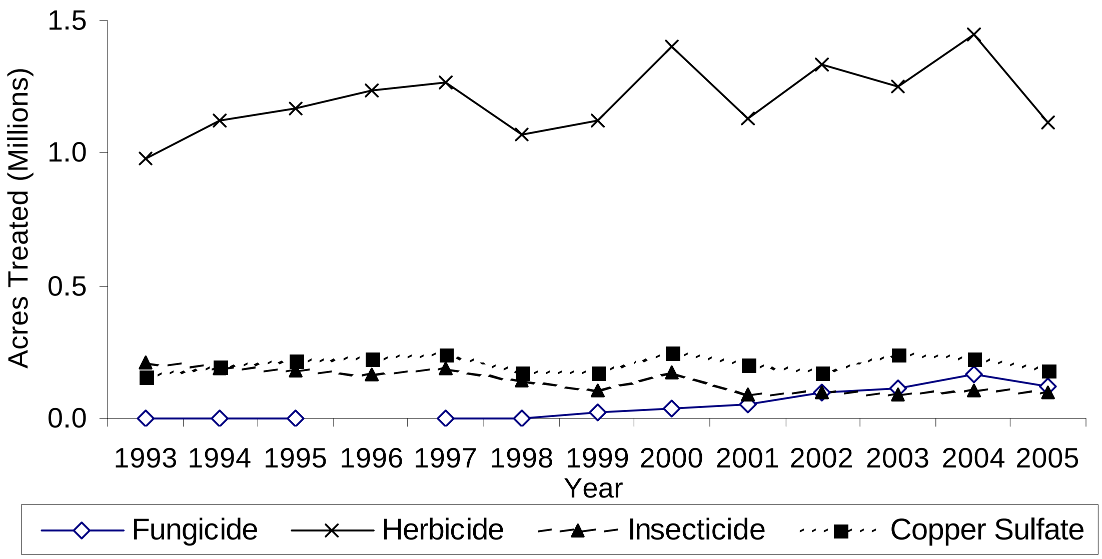


***Table 20C**. Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
COPPER SULFATE (PENTAHYDRATE)	ALGAECIDE	2,666,466	2,209,754	3,259,593	2,958,246	2,372,354	-585,892	-20
PROPANIL	HERBICIDE	1,382,080	1,470,045	1,376,294	1,685,833	1,418,100	-267,732	-16
MOLINATE	HERBICIDE	732,507	877,572	539,870	367,155	171,302	-195,853	-53
THIOBENCARB	HERBICIDE	644,570	839,171	587,156	521,556	448,182	-73,374	-14
CYHALOFOP BUTYL	HERBICIDE	5,490	8,172	25,910	56,184	24,984	-31,200	-56
PENOXSULAM	HERBICIDE					2,643	2,643	
BENSULFURON METHYL	HERBICIDE	3,048	2,421	1,286	1,697	784	-914	-54
CARFENTRAZONE-ETHYL	HERBICIDE	492	2,128	12,250	8,247	4,019	-4,228	-51
BISPYRIBAC-SODIUM	HERBICIDE		2,378	2,214	3,238	1,991	-1,246	-38
AZOXYSTROBIN	FUNGICIDE	8,822	15,848	13,954	25,949	16,622	-9,326	-36

** change in pounds of AI used from 2004 to 2005*
*** percent change in pounds used from 2004 to 2005.*

Pesticide use decreased approximately 28 percent from 2004 to 2005 in terms of acres treated, and decreased approximately 23 percent in terms of pounds AI applied. That decrease was partly due to a decrease in rice acres planted, which decreased from 595,000 acres planted in 2004 to 528,000 acres in 2005, a 13 percent decline. In 2005, there were no major shifts in pest pressure. Herbicides accounted for most of the non-adjuvant pesticide use, in terms of both acres treated (74 percent) and pounds of AI (47 percent). Herbicide use has increased slightly during the 1990's, but herbicide acres treated decreased by approximately 23 percent from 2004 to 2005. Acres treated with insecticides decreased by 8 percent and fungicides decreased by 28 percent from 2004 to 2005. None of the non-adjuvant pesticides that accounted for 95 percent of all use by acres treated increased from 2004 to 2005, except for penoxsulam and lambda-cyhalothrin. Pesticides with the largest percentage decreases in use include cyhalofop butyl, bensulfuron methyl, molinate, and carfentrazone ethyl, which are all herbicides.

The major herbicides by acres treated in rice in 2005 were propanil, triclopyr, thiobencarb, cyhalofop butyl, and penoxsulam. Use of nearly all the major herbicides decreased dramatically, except for penoxsulam. One reason for decreased herbicide use, in addition to the reduced planted acres, was wet weather causing difficulty with proper application timing. In 2005, penoxsulam was registered and available for use the first time.

Lambda-cyhalothrin is the most widely used insecticide and one of the few pesticides that actually increased from 2004 to 2005. It is used primarily for rice water weevil control and secondarily for armyworm control. In 2005, a late season armyworm infestation took place, which resulted in the increase in lambda cyhalothrin use. Insect pressure is low for California rice and lambda-cyhalothrin is used on approximately 10 percent of all rice planted in California.

Copper sulfate is the only algaecide registered for use on California rice, and one of the few products acceptable for organic rice production. The product doubles as a control for tadpole shrimp, which is very important to organic rice growers.

Peaches and Nectarines

California ranks first in the United States in peach and nectarine production, growing 75 percent of peaches and 92 percent of nectarines in 2005. The state produced 100 percent of U.S. processed peaches and 55 percent of U.S. fresh market peaches. Clingstone peaches, largely grown in the Sacramento Valley, comprise about 56 percent of total peach tonnage in California. They are used exclusively for processing into canned and frozen products (including baby food) and juice. Most fresh market peaches and nectarines are produced in the central San Joaquin Valley. California freestone peaches for fresh shipping represent 33 percent of annual peach tonnage. Fresh market nectarines comprise approximately 100 percent of annual nectarine tonnage. Clingstone and freestone peach acreage both decreased slightly in 2005, while nectarine acreage remained unchanged. Peaches and nectarines are discussed together because pest management issues for the two crops are very similar.

Table 21A. *Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for peaches and nectarines each year from 2001 to 2005. Bearing acres for peaches and nectarines from 2001 to 2004 are from CDFA 2006; bearing acres in 2005 are from NASS, July 2006b; marketing year average prices for fresh (freestone) peach from 2001 to 2003 are from July 2003 and July 2004, for 2004 and 2005 from NASS, July 2006c; prices for nectarines years 2001 to 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	6,003,210	6,510,986	6,486,354	6,432,523	6,497,930
Acres Treated	1,609,554	1,581,916	1,496,832	1,518,626	1,579,062
Acres Bearing Peach	65,800	68,000	68,000	69,000	66,400
Acres Bearing Nectarine	36,500	36,500	36,500	36,500	36,500
Acres Bearing Total	102,300	104,500	104,500	105,500	102,900
Price $/ton Peach	$428.00	$418.00	$406.00	$341.00	$540.00
Price $/ton Nectarine	$464.00	$382.00	$436.00	$342.00	$504.00
Price $/ton Total	$440.84	$405.43	$416.48	$341.35	$527.23

Table21B. *Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for peaches and nectarines from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-11	8	0	-1	1
Acres Treated	-5	-2	-5	1	4
Acres Bearing Peach	1	3	0	1	-4
Acres Bearing Nectarine	3	0	0	0	0
Acres Bearing Total	2	2	0	1	-2
Price $/ton Peach	13	-2	-3	-16	58
Price $/ton Nectarine	17	-18	14	-22	47
Price $/ton Total	14	-8	3	-18	54

Figure 19. *Acres of peaches and nectarines treated by all AIs in the major types of pesticides from 1993 to 2005.*

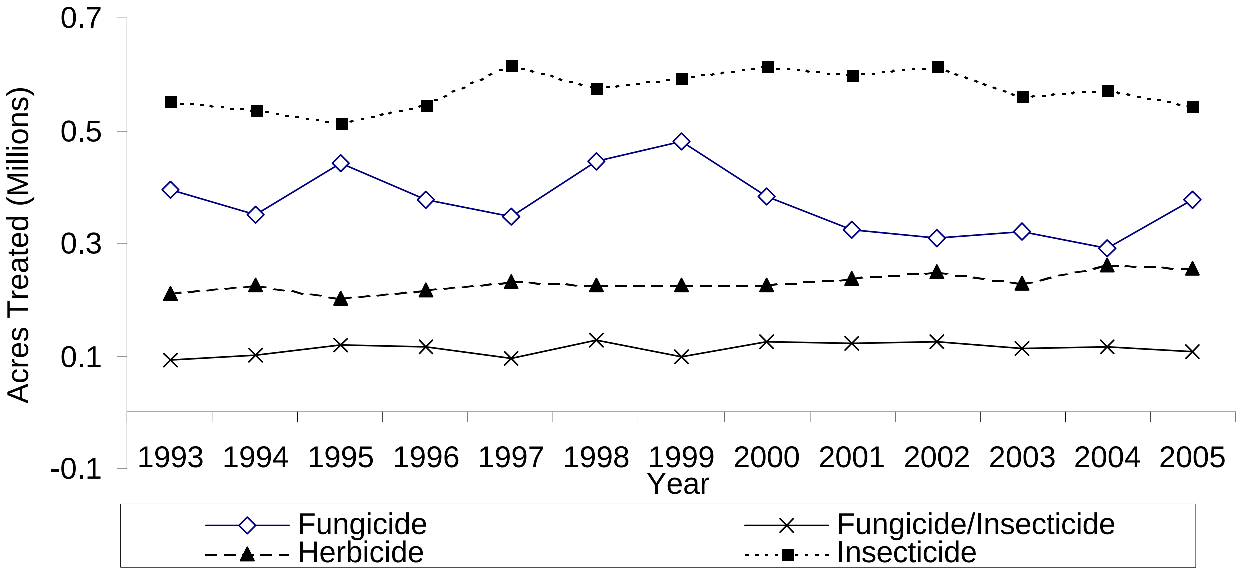


Table 21C. *Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
OIL	INSECTICIDE	2,994,836	3,207,022	3,302,142	3,333,768	3,257,233	-76,535	-2
COPPER	FUNGICIDES	599,802	683,336	722,225	672,799	598,432	-74,367	-11
PHOSMET	INSECTICIDE	140,965	137,730	99,266	117,423	79,081	-38,343	-33
SULFUR	FUNGICIDE/ INSECTICIDE	1,104,404	1,221,616	1,122,603	1,028,113	1,061,816	33,703	3
GLYPHOSATE	HERBICIDE	90,953	104,589	96,086	132,134	159,568	27,434	21
PYRACLOSTROBIN	FUNGICIDE				617	1,786	1,169	190
BOSCALID	FUNGICIDE				1,215	3,516	2,302	190
MYCLOBUTANIL	FUNGICIDE	2066	2101	1091	1,199	2,446	1,247	104
SIMAZINE	HERBICIDE	22313	20911	19251	22,754	12,525	-10,228	-45
PROPICONAZOLE	FUNGICIDE	4,435	3,890	4,754	4,615	7,995	3,380	73

* *change in pounds of AI used from 2004 to 2005*
** *percent change in pounds used from 2004 to 2005.*

Peach and nectarine acreage treated with the major categories of pesticides has fluctuated from year to year since 1993 without clear increasing or decreasing trends. Total pounds of pesticide AI applied and acres treated increased somewhat in 2005 (1 percent and 4 percent, respectively), even though there was slightly less planted acreage than in 2004. The overall increase was mainly due to a jump in fungicide applications against diseases favored by the long cool, wet spring. Rain during bloom reduced fruit set and the low temperatures slowed maturation of early varieties. There was little pest pressure until summer heat brought on mite problems in some locations. Extreme heat in July/August caused some damage to fruit, such as flesh corking, and increased culling. In general, however, fruit size, quality and color were good. Yields were down about 12 percent from 2004 levels' Prices were 54 percent higher, regaining a more normal level after several downward-trending years.

Total acres treated stayed about the same or decreased for the major insecticides used: oils; esfenvalerate; phosmet; the Oriental fruit moth (OFM) mating disruption pheromones E–8–dodecenyl acetate, Z–8–dodecenyl acetate, and Z–8–dodecenol; spinosad; and chlorpyrifos. This is probably due to the short season and relatively light pest pressure in 2005. Oils are applied during the dormant season to forestall outbreaks of scales, mites, and moth pests. Esfenvalerate and chlorpyrifos are broad-spectrum chemicals that may be used in dormant applications or during the growing season. Spinosad and phosmet both control moths and katydids. The use of phosmet declined by 33 percent, perhaps because of delayed emergence and reproduction of moth pests due to cool weather, and growers' increasing adoption of OFM mating disruption and other reduced-risk alternatives.

In 2005 the most-used fungicides by acres treated were sulfur, copper, propiconazole, ziram, iprodione, cyprodinil and tebuconazole. Fungicide applications increased because rain and cooler-than-normal temperatures lasted until June and favored disease development. Applications of sulfur, the standard treatment for powdery mildew, were up 3 percent by weight. Use of copper, which controls leaf curl and shot hole disease, decreased 11 percent by weight, probably due to recent price hikes and the availability of alternative chemicals. Although total acreage treated with fungicides increased by 30 percent, total pounds applied decreased by 3 percent. That difference in trends reflects increasing adoption of lower-dose chemicals that are being substituted for older products, or used in rotations to avoid resistance development. The use of propiconazole and myclobutanil, low-dose chemicals applied against powdery mildew and fungus diseases such as brown rot and ripe fruit rot, grew 73 and 104 percent, respectively. New research findings indicated that propiconazole also controls sour rot, a yeast infection. Use of pyraclostrobin and boscalid, low-dose, reduced-risk alternatives for mildew and fungus control, jumped 190 percent.

Even though 2005 was a problem year for weeds because of higher than normal winter/spring rainfall, slightly fewer acres were treated with herbicides than in 2004. In 2004, herbicide use jumped in these crops; that may have reduced 2005 weed pressure. However, pounds of herbicide applied increased 13 percent, perhaps in response to exceptionally rank weed growth, or because of dosage differences between products or AIs. The most-used herbicides in 2005 by acres treated were glyphosate, oxyfluorfen, paraquat, 2,4-D, simazine, and oryzalin. Although simazine remain important, its use decreased 45 percent by weight due to regulatory restriction for ground water protection and the increasing availability of alternative chemicals. Pounds of glyphosate used went up 21 percent, perhaps partly as a substitute for simazine, and possibly reflecting glyphosate tolerance by some orchard weeds.

Total acres treated with preplant fumigants declined by 8 percent, including reductions in areas treated with chloropicrin, sodium tetrathiocarbonate, and methyl bromide. In contrast, fumigant use by weight increased. That was due in large part to a 32 percent jump in the amount of 1,3-dichloropropene applied, even though acres treated with that fumigant increased by only 2 percent. That disparity may have been caused by changing application patterns. Methyl bromide is coming under increasing regulatory restriction. Its preplant use in stone fruit orchards declined 9 percent by weight Pounds of methyl bromide used for postharvest treatment of peaches and nectarines fell by 47 percent because there was a smaller crop in storage and new export protocols adopted by several countries (especially Mexico) allow alternatives to postharvest fumigation.

Strawberries

Strawberries are grown mostly for fresh market. Depending on market prices, some are processed. California strawberry production occurs primarily along the central and southern coast, with small but significant production occurring in the Central Valley.

Table 22A*. Total reported pounds of all active ingredients (AIs), acres treated, acres planted, and prices for strawberries each year from 2001 to 2005. Harvested acres from 2001 to 2004 are from CDFA 2006; harvested acres in 2005 are from NASS, July 2006b; marketing year average prices from 2001 to 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	7,892,756	8,208,032	9,175,187	9,566,254	9,145,802
Acres Treated	874,220	981,757	1,267,524	1,241,172	1,185,481
Acres Harvested	26,400	28,500	29,600	33,200	34,300
Price $/cwt	$70.60	$67.40	$72.80	$73.30	$61.80

Table 22B*. Percent difference from previous year for reported pounds of all AIs, acres treated, acres harvested, and prices for strawberries from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	2	4	12	4	-4
Acres Treated	-14	12	29	-2	-4
Acres Harvested	-4	8	4	12	3
Price $/ton	15	-5	8	1	-16

Figure 20*. Acres of strawberries treated by all AIs in the major types of pesticides from 1993 to 2005.*

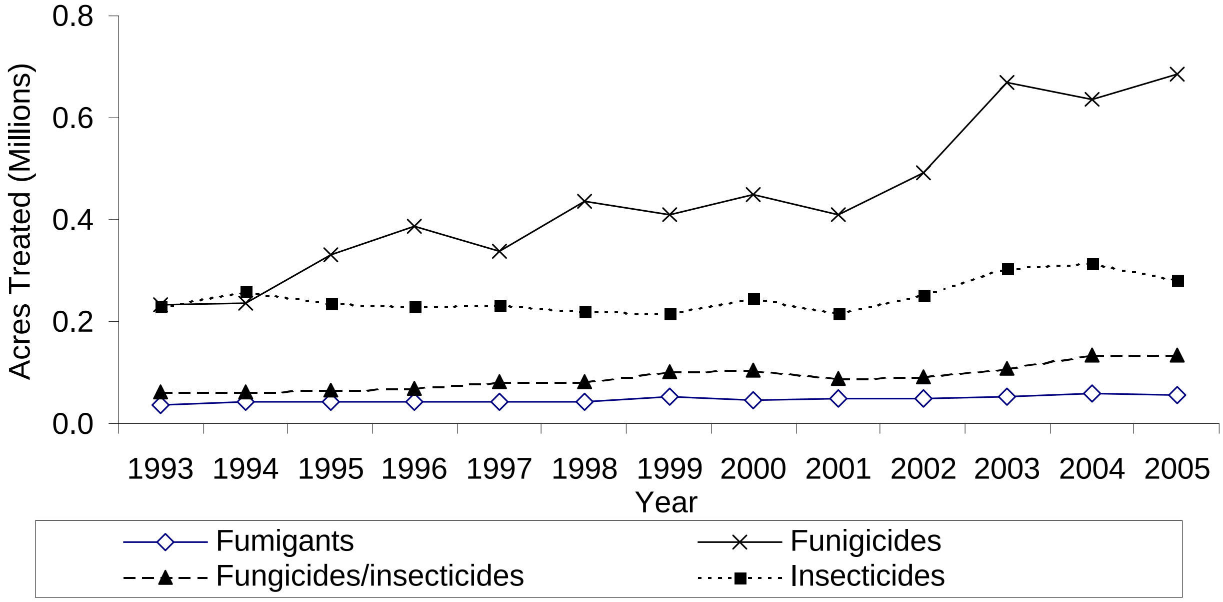


Table 22C*. Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
METHYL BROMIDE	FUMIGANT	3,777,605	3,706,589	3,671,982	3,190,832	2,922,984	-267,848	-8
CHLOROPICRIN	FUMIGANT	3,011,780	2,910,013	3,282,719	3,258,930	3,182,417	-76,513	-2
1,3-D	FUMIGANT	146,636	440,338	884,326	1,523,348	1,596,114	72,766	5
SULFUR	FUNGICIDE/ INSECTICIDE	252,776	278,557	326,340	491,637	458,876	-32,761	-7
CAPTAN	FUNGICIDE	170,360	217,646	285,272	236,823	261,563	24,740	10
BORAX	FUNGICIDE/ INSECTICIDE				67	336	269	399
BOSCALID	FUNGICIDE			0	8,572	15,779	7,207	84
AZOXYSTROBIN	FUNGICIDE	830	5,289	4,512	4,941	2,831	-2,111	-43
HEXYTHIAZOX	INSECTICIDE	2,141	2,513	2,578	2,896	1,729	-1,167	-40
BT	INSECTICIDE	6,596	4,460	11,200	16,092	26,156	10,064	63

** change in pounds of AI used from 2004 to 2005*
*** percent change in pounds used from 2004 to 2005.*

The amount of strawberry acreage treated with pesticides and pounds applied declined 4 percent from 2004 to 2005. Fungicides, followed by insecticides, account for the largest proportion of pesticides applied. Use of pesticides in the major AI categories decreased from 2004 to 2005 except for fungicides, which increased by 8 percent. The major pesticides with greatest increase in percent of pounds of AI from 2004 to 2005 were borax, boscalid, *Bt***,** pyraclostrobin, and cyprodinil. The major pesticides with greatest decreased use by pounds were azoxystrobin, hexythiazox, mefenoxam, thiram, and harpin protein. Most of the November and December PUR data from Ventura County had not been received by the time of this report. The crop most affected by these missing data is strawberry and based on the average use in November and December from 2000 to 2004, the final total pounds of AI is projected to be about 60,000 pounds higher. The AIs most affected in strawberries are captan and sulfur.

The major strawberry pests are botrytis, powdery mildew, and lygus bugs in the northern growing areas. Worms (various moth and beetle larvae) especially cutworms and beet armyworms continue to be particularly troublesome in the southern growing areas.

Most of the pesticides used, as measured by acres treated, were fungicides. Between 2004 and 2005 fungicide use increased by 6 percent. The major fungicides by acres treated in 2005 were captan, sulfur, pyraclostrobin, fenhexamid, boscalid, and myclobutanil. The older registered fungicides (captan, thiram, thiophanate-methyl, and benomyl) and the newly registered fenhexamid, fludioxonil, cyprodinil and boscalid are generally used to control Botrytis fruit rot, a major disease of strawberries. Use of all of these products increased in 2005 in terms of pounds applied except thiram. This increase was likely due to prolonged rainy and cloudy conditions during bloom and increased acreage, specifically of summer planted strawberries. Thiram use continued the declines seen from 2002 to 2003 and 2003 to 2004. Declines were likely due to replacement by captan for resistance management. Following a 104 percent increase in 2003, thiophanate -methyl increased another 3 percent in 2004 and again by 12 percent in 2005. This increase continues the trend of thiophanate-methyl replacement of benomyl as an inexpensive systemic fungicide.

Conventional strawberry growers primarily used sulfur, myclobutanil, boscalid, and pyraclostrobin to control powdery mildew. Sulfur is inexpensive and is also used by organic growers. Sulfur, myclobutanil, azoxystrobin and triflumizole use declined in 2005 because of replacement by boscalid and pyraclostrobin, which are very effective against powdery mildew. Both acres treated with these two products and pounds of active ingredient increased in 2005 over 2004. Pyraclostrobin is frequently used in combination with boscalid.

The major insecticides used by acres treated were spinosad, malathion, fenpropathrin, naled, and methomyl. Acres treated with all of the major broad-spectrum insecticides decreased primarily because of reduced pest pressures from lygus and worms (moth and beetle larvae) in 2005 although lygus bugs continue to be a serious problem. Fenpropathrin is also used in combination with malathion to control whitefly. Pyriproxyfen, a newly registered insect growth regulator, is effective against white flies. Reduction of whitefly pressure has lead to lower use of pyriproxyfen and imidacloprid (also a growth regulator) as well as a reduction in use of pyrethroids mixed with malathion. Reduction in two-spotted spider mite pressure may also have resulted in some reduction in petroleum oil use and replacement by the miticides: etoxazole, spiromesifen and bifenazate. Most conventional growers continue to use the pyrethroid miticide, bifenazate since its introduction in 2003. Use of hexythiazox declined by 40 percent, and bifenazate declined by 18 percent in 2005 from 2004 as spiromesifen and etoxazole have become available. Use of spinosad for cutworm and beet armyworm control declined by 5 percent while acres treated with *Bt* (all forms) increased proportionally.

Strawberry production relies on several fumigants. Overall fumigant use decreased by 4 percent, including chloropicrin, methyl bromide, metam sodium and metam potassium. 1,3–D, use alone increased. Fumigants usually are applied at higher rates than other pesticide types, such as fungicides and insecticides. Fumigants are applied at high rates, in part, because they treat a volume of space rather than a surface area such as leaves and stems of plants. Thus, the pounds applied are large relative to other pesticide types even though the number of applications or number of acres treated may be relatively small. Fumigants accounted for about 87 percent of all pesticide AIs by pounds applied in strawberries. Methyl bromide pounds used decreased by 8 percent, from 3,190,832 pounds in 2004 to 2,922,984 pounds in 2005 despite a 3 percent increase in acres harvested. Decline in methyl bromide use continues a steady trend since a peak in 1999. The missing data from Ventura County is not expected to have much effect on methyl bromide totals because historically little methyl bromide has been used in Ventura in November and December. This decrease in methyl bromide use was likely a result of increase in price for this fumigant due to the Montreal Protocol phase-out, and use of less costly replacements such as 1,3-D. However, township caps on 1,3-D are limiting use of this AI as well. Growers also appear to be replacing methyl bromide with 1,3–D formulated with various percentages of chloropicrin, chloropicrin alone, and metam sodium. 1,3–D use both in pounds and in acres treated with this fumigant increased 5 percent in 2005. Chloropicrin use in pounds decreased by 2 percent from 2004 to 2005. Pounds of metam sodium decreased by 17 percent. Metam sodium is generally more effective in controlling weeds, but less effective than 1,3-D or 1,3-D plus chloropicrin against soil-borne diseases and nematodes.

Carrots

California is the largest producer of carrots in the United States. Carrots are grown for fresh market and processing. California has four main production regions for carrots: the San Joaquin Valley (Kern County), with significant production in Cuyama Valley (San Luis Obispo and Santa Barbara counties); the low desert (Imperial and Riverside counties); the high desert (Los Angeles County); and the central coast (Monterey County). The San Joaquin Valley accounts for more than half the state's acreage.

Table 23A. *Total reported pounds of all active ingredients, acres treated, acres planted, and prices for carrots each year from 2001 to 2005. Harvested acres of all carrots from 2001 to 2004 are from CDFA 2006; harvested acres in 2005 are from NASS, January 2006; marketing year average prices from 2001 to 2005 from NASS, July 2006c.*

	2001	2002	2003	2004	2005
Lbs AI	6,506,317	7,823,438	8,613,683	8,075,913	8,957,476
Acres Treated	359,125	426,126	448,463	503,022	531,778
Acres Harvested	72,300	71,100	71,500	70,800	71,100
Price $/cwt	$18.10	$20.30	$20.40	$21.50	$21.70

Table 23B. *Percent difference from previous year for reported pounds of all AIs, acres treated, acres planted, and prices for carrots from 2001 to 2005.*

	2001	2002	2003	2004	2005
Lbs AI	-14	20	10	-6	11
Acres Treated	-13	19	5	12	6
Acres Harvested	-2	-2	1	-1	0
Price $/cwt	36	12	0	5	1

Figure 21. *Acres of carrots treated by all AIs in the major types of pesticides from 1993 to 2005.*

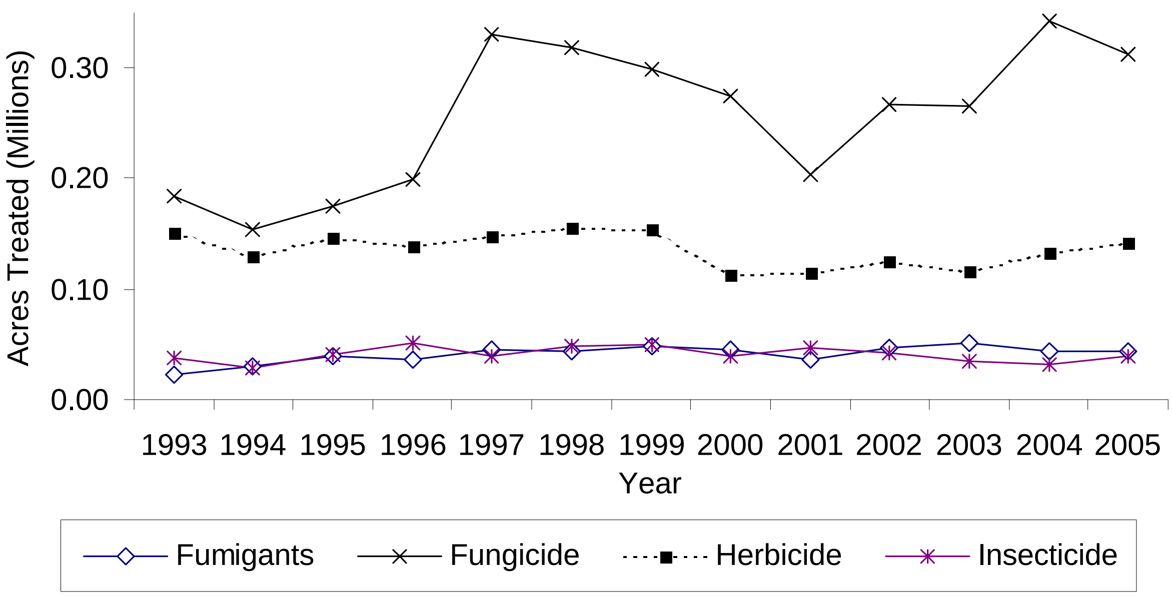


Table 23C*. Pesticide use in pounds of AI each year from 2001 to 2005. The pesticides listed are among those with the greatest change in use from 2004 to 2005.*

AI	AI TYPE	2001	2002	2003	2004	2005	CHANGE*	PERCENT CHANGE**
METAM-SODIUM	FUMIGANT	5,226,254	5,536,826	5,919,588	5,062,340	5,918,304	855,964	17
1,3-D	FUMIGANT	404,770	980,857	1,197,998	1,359,024	914,918	-444,106	-33
SULFUR	FUNGICIDE	171,488	217,912	298,558	324,131	559,029	234,898	72
TRIFLURALIN	HERBICIDE	28,023	31,343	32,522	29,486	32,384	2,898	10
LINURON	HERBICIDE	46,319	51,845	46,511	55,620	58,412	2,792	5
ESFENVALERATE	INSECTICIDE	690	423	509	264	594	329	125
FLUAZIFOP-P-BUTYL	HERBICIDE	2,667	2,840	1,835	3,332	5,078	1,745	52
DIAZINON	INSECTICIDE	4,451	6,677	5,751	5,750	4,090	-1,660	-29
AZOXYSTROBIN	FUNGICIDE	137	2,337	1,626	1,609	1,264	-345	-21
MEFENOXAM	FUNGICIDE	15,339	17,495	15,049	19,217	16,803	-2,414	-14

** change in pounds of AI used from 2004 to 2005*
*** percent change in pounds used from 2004 to 2005.*

While total acres of carrots harvested remained nearly constant, pesticide use (as acres treated) in carrots continues to increase yearly since 2001. Between 2004 and 2005, pounds of AI applied increased 11 percent and acres treated increased 6 percent. Acres treated with fumigants remained constant, fungicide use declined 9 percent, herbicide use increased 7 percent, and insecticide use increased 25 percent. Pesticides used most (as measured by acres treated) were mefenoxam, linuron, sulfur, trifluralin, iprodione, metam-sodium, copper hydroxide, pyraclostrobin, and chlorothalonil. The major pesticides with increased percentage in acres treated were esfenvalerate, sulfur, fluazifop-p-butyl, metam sodium, iprodione, chlorothalonil, and trifluralin. The major pesticides with decreased percentage use were copper compounds, mefenoxam, 1,3 dichloropropene, diazinon, and azoxystrobin.

Cumulatively, the most used pesticide category for carrots, as measured by acres treated, was fungicides. From 2004 to 2005 acres treated with fungicides decreased 9 percent while pounds increased by 57 percent. The most applied fungicides in 2005 were mefenoxam, sulfur, copper compounds, iprodione, and pyraclostrobin (registered in 2003). Alternaria leaf blight, a foliar disease, is generally controlled by iprodione, chlorothalonil, pyraclostrobin, or azoxystrobin. Azoxystrobin and pyraclostrobin are strobilurins with the same mode of action. In terms of pounds of AI, azoxystrobin decreased in use 21 percent while pyraclostrobin, iprodione, and chlorothalonil use increased. Alternaria leaf blight has become less of a problem recently because of the introduction of resistant carrot varieties. Cavity spot is a major, troublesome soil-borne fungal disease that is commonly controlled by applying mefenoxam or metam sodium (a soil fumigant). Growers might have relied less on mefenoxam, which declined by 13 percent by pounds, to manage this root disease in 2005, resulting in an increased use of metam sodium. Powdery mildew is primarily controlled by sulfur, which is inexpensive and especially popular with organic growers. Sulfur use increased in desert regions in 2005 because weather conditions increased powdery mildew infections.

The main herbicides used in carrot production were linuron, trifluralin, and fluazifop-p-butyl. The two most important are linuron (58412 pounds, 82,136 acres treated) and trifluralin (32,384 pounds, 41,059 acres treated). Linuron, a postemergence herbicide, provides good control of broadleaf weeds and small grasses. Pounds of fluazifop-p-butyl a selective postemergence phenoxy herbicide used for control of most annual and perennial grass increased by 52 percent. Also use of the post emergent herbicide clethodim increased 128 percent in 2005. Trifluralin, a preemergent herbicide, is used by carrot growers to complement linuron for weed management. There are no alternatives to trifluralin; use of this herbicide increased 10 percent. However, metam sodium and crop rotation may be more effective for controlling specific weeds, e.g., nut sedges, especially purple nutsedge.

Carrot production relies on the fumigants metam sodium, 1,3-D, and chloropicrin. These fumigants are used at high rates to control soil-borne pests. Methyl bromide is no longer used on carrots. In 2005, fumigants accounted for about 80 percent of the total pounds of pesticide AIs applied to carrots. This figure is unchanged from 2004. Acres treated with fumigants remain unchanged. By pounds 1,3–D use decreased by 33 percent, while use of metam sodium increased 17 percent and chloropicrin use increased by 11 percent. 1, 3-D is used to control nematodes and secondarily against wireworms, cutworms, and symphylans, but is less effective than metam sodium against fungi and weeds. Fields are sampled for nematode populations. If the counts are low to moderate the fields are usually treated with metam sodium. If the counts are high they are treated with 1,3-D. 1,3-D usage was down in 2005 probably because nematodes were less of a problem.

Insects are not generally a major problem in carrot production, except for white flies that are controlled with esfenvalerate. The major insecticides used in 2005 were esfenvalerate, diazinon, spinosad, cyfluthrin, and carbaryl. In 2005, pounds of esfenvalerate applied increased by 125 percent. Esfenvalerate is generally used to control white fly and flea beetle but also against leafhoppers and cutworms. The pyrethroid, cyfluthrin, used to control cutworm and crown root aphids also increased. Carbaryl use declined by 14 percent. Foliar spray formulations of carbaryl are used for control of armyworms, leafhoppers, and flea beetles, while bait formulations are primarily used for saltmarsh caterpillars and cutworms. Esfenvalerate and cyfluthrin use may have increased because they are slightly more insect specific while spinosad, carbaryl, and methomyl are broader spectrum older materials. It appears that greater problems with leafhopper in 2005 may have led to increased use of pesticides targeting those insects. Use of methoxyfenozide against armyworms also increased.