



# WASHINGTON'S AGRICULTURAL FRUIT CHEMICAL USAGE, 2005

NATIONAL AGRICULTURAL STATISTICS SERVICE

United States Department of Agriculture  
Washington Field Office • Olympia, WA 98507  
[www.usda.gov/nass/](http://www.usda.gov/nass/)



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## Sweet Cherries

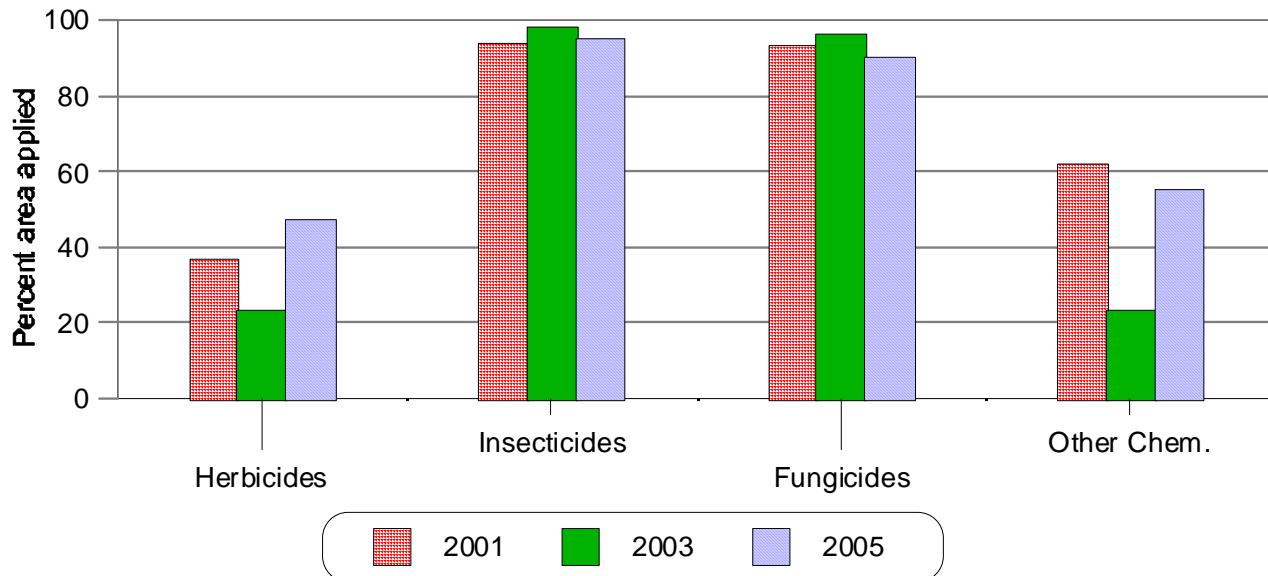
Four states were surveyed for sweet cherries in 2005: California, Michigan, Oregon, and Washington. Surveyed acreage totaled 76,200 bearing acres. Washington was the largest state surveyed for sweet cherries and accounted for 38 percent of the acreage.

### Sweet Cherries: Pesticide Applications, Bearing Acreage and Percentage Receiving Applications, Major States and Total, 2003 and 2005

State	Bearing Acreage		Area Receiving							
			Herbicide		Insecticide		Fungicide 1/		Other Chemicals	
	2003	2005	2003	2005	2003	2005	2003	2005	2003	2005
Acres								Percent		
California	30,000	27,000	45	47	66	58	71	61	15	35
Michigan	8,100	8,200	33	39	82	84	91	86	20	74
Oregon	12,000	12,000	39	27	93	92	87	92	21	50
Washington	26,000	29,000	23	47	98	95	96	90	23	55
<b>TOTAL</b>	<b>76,100</b>	<b>76,200</b>	<b>35</b>	<b>43</b>	<b>83</b>	<b>80</b>	<b>84</b>	<b>80</b>	<b>18</b>	<b>49</b>

1/ Total applied excludes Bt's (*Bacillus thuringiensis*) and other biologicals. Quantities are not available because amounts of active ingredient are not comparable between products

### Sweet Cherries: Ag Chemical Applications, Washington



# Sweet Cherries: Agricultural Chemical Applications, Washington, 2003 and 2005 1/

Active Ingredient 2/	Area Applied		Applications		Rate Per Application		Rate Per Crop Year		Total Applied	
	2003	2005	2003	2005	2003	2005	2003	2005	2003	2005
<b>Herbicides:</b>	<b>Percent</b>		<b>Number</b>		<b>Pounds Per Acre</b>				<b>1,000 Lbs.</b>	
2, 4-D	3	-	1.7	-	1.07	-	1.85	-	1.6	-
2,4-D, dimeth. salt	-	3	-	1.3	-	0.703	-	0.911	-	0.8
Carfentrazone-ethyl	-	1	-	1.3	-	0.028	-	0.036	-	**
Glyphosate iso. salt	19	31	2.0	1.7	1.17	0.857	2.42	1.459	12.0	13.1
Norflurazon	-	1	-	1.3	-	1.994	-	2.543	-	0.7
Oryzalin	-	4	-	1.5	-	2.557	-	3.732	-	4.3
Oxyfluorfen	*	2	1.0	1.1	0.75	0.703	0.75	0.744	0.2	0.4
Paraquat	9	25	1.7	1.4	0.80	0.668	1.38	0.956	3.3	6.9
Pendimethalin	-	2	-	1.6	-	2.388	-	3.805	-	2.4
Simazine	-	2	-	1.5	-	1.354	-	2.014	-	1.3
<b>Insecticides:</b>	<b>Percent</b>		<b>Number</b>		<b>Pounds Per Acre</b>				<b>1,000 Lbs.</b>	
Azinphos-methyl	69	50	1.7	1.6	0.77	0.716	1.34	1.166	24.0	16.8
Benzoic acid	-	8	-	1.1	-	0.414	-	0.469	-	1.1
Bifenazate	-	5	-	1.1	-	0.201	-	0.220	-	0.3
Bt subsp. kurstaki	-	5	-	1.9	-	3/	-	3/	-	**
Carbaryl	68	48	1.8	1.3	1.72	1.710	3.16	2.218	55.5	30.6
Chlorpyrifos	57	44	1.1	1.1	1.89	1.846	2.13	2.093	31.7	26.5
Diazinon	14	11	1.0	1.2	1.98	1.583	2.05	1.826	7.7	5.6
Dimethoate	23	12	1.0	1.0	0.91	1.154	0.95	1.195	5.8	4.0
Endosulfan	19	13	1.0	1.2	1.92	1.696	2.01	1.986	9.9	7.5
Fenbutatin-oxide	-	2	-	1.0	-	0.927	-	0.954	-	0.6
Hexythiazox	-	2	-	2.0	-	0.118	-	0.239	-	0.1
Imidacloprid	4	48	1.2	1.5	0.06	0.139	0.08	0.210	0.1	2.9
Kaolin	-	2	-	1.3	-	34.754	-	43.815	-	20.2
Malathion	36	17	2.1	1.9	1.17	0.947	2.54	1.814	24.1	8.8
Petroleum distillate	73	58	1.6	1.9	22.30	18.354	35.60	34.800	676.9	589.3
Propargite	4	-	1.6	-	1.45	-	2.33	-	2.3	-
Spinosad	46	66	1.7	1.7	0.09	0.096	0.15	0.166	1.8	3.2
Thiamethoxam	-	2	-	1.3	-	0.084	-	0.110	-	0.1
<b>Fungicides:</b>	<b>Percent</b>		<b>Number</b>		<b>Pounds Per Acre</b>				<b>1,000 Lbs.</b>	
Azoxystrobin	7	-	1.5	-	0.22	-	0.35	-	0.6	-
Basic copper sulfate	5	-	1.5	-	6.05	-	9.30	-	12.8	-
Boscalid	-	54	-	1.6	-	0.013	-	0.021	-	0.3
Calcium polysulfide	11	9	1.0	1.1	23.74	26.568	24.45	29.023	67.2	73.4
Copper hydroxide	39	44	1.2	1.4	4.01	3.801	5.18	5.225	52.8	66.4
Copper oxide	-	8	-	1.5	-	5.565	-	8.625	-	20.1
Copper sulfate	5	4	1.5	1.5	2.83	2.407	4.30	3.705	5.8	4.2
Fenarimol	19	6	1.4	1.3	0.08	0.084	0.11	0.112	0.5	0.2
Mancozeb	-	4	-	1.1	-	1.469	-	1.589	-	1.7
Myclobutanil	59	46	1.6	1.5	0.13	0.119	0.21	0.174	3.3	2.3
Potassium bicarbon.	-	14	-	2.1	-	1.844	-	3.909	-	15.5
Propiconazole	32	21	1.4	1.3	0.12	0.120	0.16	0.150	1.3	0.9
Pyraclostrobin	-	66	-	1.9	-	0.034	-	0.064	-	1.2
Quintec	-	51	-	1.5	-	0.114	-	0.167	-	2.5
Sulfur	57	58	2.4	2.3	7.92	6.972	19.48	15.749	287.8	265.8
Tebuconazole	24	9	1.3	1.5	0.21	0.214	0.28	0.325	1.7	0.9
Thiophanate-methyl	6	-	1.3	-	0.96	-	1.28	-	2.1	-
Trifloxystrobin	8	8	1.7	1.2	0.10	0.098	0.17	0.117	0.3	0.3
Triflumizole	57	41	1.6	1.3	0.32	0.335	0.53	0.451	7.8	5.3
<b>Other Chemicals:</b>	<b>Percent</b>		<b>Number</b>		<b>Pounds Per Acre</b>				<b>1,000 Lbs.</b>	
Cytokinins	11	18	2.4	1.8	3/	3/	3/	3/	**	**
Ethephon	2	5	1.0	1.2	0.30	0.827	0.30	0.972	0.1	1.4
Gibberellic acid	57	45	1.2	1.3	0.04	0.044	0.06	0.057	0.8	0.7
Methyl anthranilate	1	1	1.5	1.1	3.53	2.822	5.44	2.976	1.6	1.1
Octadecadien (E,Z)	-	1	-	1.4	-	0.104	-	0.150	-	0.1
Octadecadien (Z,Z)	-	1	-	1.4	-	1.457	-	2.100	-	0.9

Note: Data may not multiply across due to rounding. \* Area applied is less than 0.5 percent. \*\* Total applied is less than 50 lbs.

1/ Bearing acres in 2003 and 2005 for Washington were 26,000 acres and 29,000 acres respectively. 2/ Insufficient reports to publish data for the following agricultural chemicals 2003; **Herbicides:** 2,4-D, dimeth. salt, Glyphosate diam salt, Napropamide, Oryzalin, Pendimethalin. 2003; **Insecticides:** Acetamiprid, Amitraz, Azadirachtin, Benzoic acid, Bt (*Bacillus thur.*), Clofentezine, Efenvalerate, Ethyl parathion, Fenbutatin-oxide, Formetanate hydro., Methoxychlor, Phosmet, Potassium salts, Pyrethrins, Pyridaben, Pyriproxyfen, Rotenone. 2003; **Fungicides:** *Bacillus subtilis*, Benomyl, Captan, Chlorothalonil, Copper chloride hyd., Copper oxychlo. sul., Copper oxychloride, Copper resinate, Fenbuconazole, Fosetyl-al, Mancozeb, Mefenoxam, Oxytetracycline, Potassium bicarbon, Pseudomonas fluores., Pyraclostrobin, Streptomycin, Ziram. 2003; **Other Chemicals:** Aluminum phosphide, Dodecadien-1-ol, Harpin protein, Lactic acid, NAA, Prohexadione calcium, Strychnine, Zinc phosphide. 2005; **Herbicides:** 2,4-D, dieth sal, Clopyralid, Diuron, Flumioxazin, Glyphosate amm. salt, Isoxaben, Sulfosate, Tebuthiuron, Triallate. 2005; **Insecticides:** Abamectin, Acetamiprid, Aluminum phosphide, Azadirachtin, Clofentezine, Formetanate hydro., Lambda-cyhalothrin, Methomyl, Methyl parathion, Novaluron, Oxamyl, Petroleum oil, Potassium salts, Propargite, Pyridaben, Pyriproxyfen. 2005; **Fungicides:** Agrobacterium radio., Azoxystrobin, *Bacillus pumilus*, *Bacillus subtilis*, Basic copper sulfate, Captan, Cyprodinil, Dinocap, Dodine, Etridiazole, Fenbuconazole, Ferbam, Fosetyl-al, Iprodione, Kresoxim-methyl, Maneb, Mefenoxam, Oxytetracycline, Phosphorous acid, Streptomycin, Thiophanate-methyl, Thiram, Triadimefon, Ziram. 2005; **Other Chemicals:** Benzyladenine, Butenoic Acid Hydro., Chlorophacinone, Diphacinone, Dodecadien-1-ol, GABA, Gibberellins A4A7, Harpin protein, L-Glutamic acid, Lactic acid, Metam-sodium, NAA, NAD, Prohexadione calcium, Strychnine, Zinc phosphide. 3/ Rate per acre is less than 0.0005 lbs. 4/ Rates and total applied are not available because amounts of active ingredient are not comparable between products.

# Sweet Cherries: Agricultural Chemical Applications, Major States, 2003 and 2005 1/

Active Ingredient 2/	Area Applied		Applications		Rate Per Application		Rate Per Crop Year		Total Applied	
	2003	2005	2003	2005	2003	2005	2003	2005	2003	2005
<b>Herbicides:</b>	<b>Percent</b>		<b>Number</b>		<b>Pounds Per Acre</b>		<b>1,000 Lbs.</b>			
2,4-D	4	-	1.4	-	0.78	-	1.12	-	3.0	-
2,4-D, dieth sal	-	1	-	1.1	-	0.629	-	0.703	-	0.6
2,4-D, dimeth. salt	3	5	1.5	1.3	0.32	0.627	0.50	0.790	1.1	3.2
Carfentrazone-ethyl	-	1	-	1.3	-	0.028	-	0.036	-	**
Diuron	1	*	1.1	1.1	0.22	1.606	0.24	1.725	0.2	0.5
Glyphosate iso. salt	23	29	1.6	1.5	1.08	0.824	1.73	1.270	30.8	27.7
Norflurazon	1	2	1.1	1.2	0.83	1.373	0.96	1.616	0.8	2.0
Oryzalin	4	6	1.0	1.3	1.87	2.195	2.04	2.775	6.5	11.9
Oxyfluorfen	12	13	1.4	1.2	0.31	0.400	0.44	0.479	4.2	4.8
Paraquat	16	20	1.5	1.4	0.50	0.585	0.78	0.805	9.2	12.4
Pendimethalin	2	1	1.0	1.4	1.82	2.373	1.89	3.356	2.7	3.0
Simazine	3	2	1.0	1.2	0.69	1.234	0.71	1.499	1.6	2.3
Sulfosate	1	-	1.3	-	0.93	-	1.29	-	1.0	-
<b>Insecticides:</b>										
Azinphos-methyl	56	45	1.9	1.6	0.40	0.657	0.77	1.082	33.1	36.8
Benzoic acid	3	14	1.0	1.1	0.12	0.236	0.13	0.271	0.3	3.0
Bifenazate	-	5	-	1.1	-	0.201	-	0.220	-	0.8
Bt (Bacillus thur.)	7	-	1.0	-	3/	-	3/	-	3/	-
Bt subsp. kurstaki	-	4	-	1.6	-	3/	-	3/	-	**
Carbaryl	31	28	1.7	1.3	1.85	1.777	3.15	2.315	73.3	49.8
Chlorpyrifos	30	26	1.1	1.1	1.91	1.835	2.21	2.044	50.4	40.0
Clofentezine	7	6	1.0	1.1	0.12	0.190	0.13	0.213	0.7	1.0
Diazinon	10	8	1.1	1.1	1.57	1.544	1.76	1.723	13.0	10.8
Dimethoate	22	13	1.0	1.0	0.45	1.109	0.49	1.164	8.1	11.2
Endosulfan	12	8	1.0	1.2	1.12	1.661	1.17	1.972	10.8	12.7
Esfenvalerate	21	27	1.9	1.9	0.04	0.050	0.08	0.095	1.3	2.0
Fenbutatin-oxide	2	3	1.1	1.1	0.60	0.859	0.69	0.982	0.9	2.0
Hexythiazox	-	3	-	1.4	-	0.166	-	0.234	-	0.6
Imidacloprid	3	21	1.1	1.5	0.04	0.132	0.05	0.198	0.1	3.2
Kaolin	-	3	-	1.3	-	31.966	-	41.447	-	85.1
Lambda-cvhalothrin	-	4	-	1.1	-	0.029	-	0.032	-	0.1
Malathion	40	23	3.1	3.3	0.52	0.855	1.66	2.801	50.4	48.9
Methidathion	-	3	-	1.2	-	1.071	-	1.301	-	3.3
Methyl bromide	-	2	-	1.1	-	47.382	-	50.436	-	73.3
Permethrin	25	5	1.8	1.9	0.01	0.101	0.02	0.188	0.4	0.7
Petroleum distillate	48	41	1.6	1.7	24.61	20.336	39.37	34.481	1,450.6	1,072.5
Petroleum oil	6	-	2.2	-	2.31	-	5.09	-	21.8	-
Phosmet	2	3	1.1	1.1	0.60	1.084	0.71	1.160	0.8	2.5
Propargite	18	13	1.1	1.5	1.14	1.718	1.34	2.505	18.2	24.8
Pyriproxyfen	-	1	-	1.1	-	0.087	-	0.095	-	0.1
Spinosad	25	52	1.5	1.7	0.08	0.096	0.13	0.162	2.5	6.4
Thiamethoxam	-	3	-	1.2	-	0.056	-	0.070	-	0.2
<b>Fungicides:</b>										
Azoxystrobin	3	1	1.5	1.5	0.23	0.175	0.35	0.263	0.9	0.2
Basic copper sulfate	4	2	1.3	1.2	3.92	2.637	5.24	3.234	15.7	5.6
Boscalid	-	39	-	1.5	-	0.012	-	0.018	-	0.5
Benomyl	2	-	1.1	-	0.40	-	0.45	-	0.7	-
Calcium polysulfide	7	6	1.0	1.2	26.86	21.338	28.67	26.114	158.2	111.0
Captan	5	4	1.4	1.4	0.87	1.695	1.28	2.357	4.7	7.2
Chlorothalonil	14	14	2.0	2.1	1.09	2.108	2.26	4.407	23.5	46.2
Copper hydroxide	29	28	1.3	1.3	3.94	3.716	5.22	4.835	116.4	102.5
Copper oxide	-	4	-	1.5	-	5.463	-	8.048	-	24.9
Copper oxychlo. sul.	*-	-	1.0	-	0.88	-	0.92	-	0.6	-
Copper oxychloride	4	-	1.1	-	2.11	-	2.45	-	6.6	-

See footnotes at the end of the table.

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## Sweet Cherries: Agricultural Chemical Applications, Major States, 2003 and 2005 1/(cont.)

Active Ingredient 2/	Area Applied		Applications		Rate Per Application		Rate Per Crop Year		Total Applied	
	2003	2005	2003	2005	2003	2005	2003	2005	2003	2005
<b>Fungicides:</b>	<b>Percent</b>		<b>Number</b>		<b>Pounds Per Acre</b>		<b>1,000 Lbs.</b>			
Copper sulfate	4	3	1.3	1.5	4.11	3.049	5.36	4.650	16.9	10.6
Dodine	3	*	1.1	1.7	0.26	1.014	0.30	1.700	0.6	0.6
Fenarimol	11	3	1.4	1.3	0.05	0.078	0.07	0.101	0.6	0.2
Fenbuconazole	10	10	1.7	1.9	0.09	0.084	0.16	0.160	1.1	1.3
Fenhexamid	-	16	-	1.3	-	0.536	-	0.705	-	8.7
Ferbam	29	-	2.6	-	0.20	-	0.52	-	11.5	-
Fosetyl-al	*	-	1.2	-	1.18	-	1.48	-	1.1	-
Iprodione	26	12	1.2	1.2	0.44	0.666	0.56	0.790	11.2	6.9
Mancozeb	-	3	-	1.1	-	1.627	-	1.808	-	4.2
Myclobutanil	29	31	1.5	1.4	0.13	0.117	0.20	0.167	4.4	3.9
Potassium bicarbon.	11	6	2.6	2.1	1.11	1.857	2.99	3.943	24.3	18.1
Propiconazole	17	16	1.3	1.4	0.12	0.114	0.16	0.155	2.1	1.9
Pyraclostrobin	15	46	1.4	1.7	0.11	0.029	0.16	0.049	1.8	1.7
Quintec	-	25	-	1.5	-	0.114	-	0.169	-	3.2
Sulfur	35	40	2.5	2.4	6.95	6.358	17.97	14.973	476.6	457.4
Tebuconazole	32	29	1.5	1.6	0.17	0.179	0.26	0.284	6.3	6.2
Thiophanate-methyl	3	2	1.4	1.3	0.87	0.786	1.23	1.039	2.6	1.4
Trifloxystrobin	6	5	1.5	1.1	0.06	0.095	0.09	0.109	0.4	0.4
Triflumizole	29	22	1.6	1.4	0.30	0.332	0.49	0.449	10.6	7.6
Ziram	4	4	1.6	1.9	2.51	2.407	4.01	4.586	11.7	15.1
<b>Other Chemicals:</b>										
Chloropicrin	6	-	1.1	-	27.56	-	30.22	-	139.2	-
Cyanamid	8	9	1.2	1.2	0.68	16.557	0.84	19.487	5.1	137.1
Cytokinins	9	15	2.3	1.8	3/	3/	3/	3/	**	**
Ethepron	16	15	1.0	1.1	0.21	0.520	0.22	0.562	2.6	6.6
GABA	-	1	-	1.6	-	0.081	-	0.133	-	0.1
Gibberellic acid	36	33	1.2	1.2	0.05	0.049	0.06	0.060	1.7	1.5
L-Glutamic acid	-	1	-	1.6	-	0.081	-	0.133	-	0.1
Methyl anthranilate	1	1	1.3	1.3	1.52	2.220	2.12	2.834	2.0	3.0
Methy bromide	7	-	1.0	-	62.04	-	67.78	-	356.7	-
Octadecadien (E,Z)	-	1	-	1.4	-	0.104	-	0.150	-	0.2
Octadecadien (Z,Z)	-	1	-	1.4	-	1.457	-	2.100	-	2.3
Spirodiclofen	-	3	-	1.0	-	0.255	-	0.255	-	0.5
Strychnine	5	4	1.9	1.3	0.005	0.008	0.009	0.011	**	**
Zinc phosphide	*	2	1.1	1.8	0.03	0.084	0.04	0.155	**	0.2

Note: Data may not multiply across due to rounding.

\* Area applied is less than 0.5 percent. \*\* Total applied is less than 50 lbs.

1/ Bearing acres in 2003 for the 4 major states were 76,100 acres. Bearing acres in 2005 for the 4 major states were 76,200 acres. States included both years were CA, MI, OR, & WA. Acreage in CA in 2001 includes nonbearing acres. Application of some active ingredients may refer only to nonbearing acres.

2/ Insufficient reports to publish data for the following agricultural chemicals: 2003; **Herbicides:** Acifluorfen, Bentazon, Dichlobenil, Glufosinate-ammonium, Glyphosate diam salt, Lactofen, Napropamide, Sethoxydim, Terbacil, Triclopyr. 2003; **Insecticide:** Acetamiprid, Amitraz, Azadirachtin, Carbofuran, Dicofol, Ethyl parathion, Fenamiphos, Fenpropothrin, Formetanate hydro., Hexythiazox, Kaolin, Lambda-cyhalothrin, Methidathion, Methoxychlor, Piperonyl butoxide, Potassium salts, Pyrethrins, Pyridaben, Pyriproxyfen, Rotenone. 2003; **Fungicides:** Bacillus subtilis, Copper amm. Complex, Copper chloride hyd., Copper oxide, Copper resinate, Dicloran, Fenhexamid, Mancozeb, Mefenoxam, Oxytetracycline, Pseudomonas fluorescens, Streptomycin. 2003; **Other Chemicals:** Aluminum phosphide, Chlorophacinone, Diphacinone, Dodecadien-1-ol, E-8-Dodecenyl acetat, GABA, Harpin protein, Iron phosphate, L-Glutamic acid, Lactic acid, Metaldehyde, NAA, Prohexadione calcium, Z-8-Dodecanol, Z-8-Dodecen acetate. 2005; **Herbicides:** Clethodim, Cloypralid, Flumioxazin, Glufosinate-ammonium, Glyphosate, Glyphosate amm. salt, Isoxaben, MSMA, Napropamide, Pronamide, Sethoxydim, Sulfosate, Tebuthiuron, Terbacil, Triallate. 2005; **Insecticides:** Abamectin, Acetamiprid, Aluminum phosphide, Azadirachtin, Ethyl parathion, Fenamiphos, Formetanate hydro., Methomyl, Methyl parathion, Novaluron, Oxamyl, Petroleum oil, Potassium salts, Pyrethrins, Pyridaben. 2005; **Fungicides:** Agrobacterium radio., Bacillus pumilus, Bacillus subtilis, Benomyl, Copper amm. complex, Copper chloride hyd., Copper oxychloride, Cresol, Cyprodinil, Dinocap, Etridiazole, Ferbam, Fosetyl-al, Kresoxim-methyl, Maneb, Mefenoxam, Metiram, Metiram, Oxytetracycline, Phosphorous acid, Streptomycin, Thiram, Triadimefon, Xylenol. 2005; **Other Chemicals:** Benzyladenine, Butenoic Acid Hydro., Chlorophacinone, Dichloropropene, Diphacinone, Dodecadien-1-ol, E-8-Dodecenyl acetat, Gibberellins A4A7, Harpin protein, Iron phosphate, Lactic acid, Metaldehyde, Metam-sodium, NAA, NAD, Prohexadione calcium, Z-8-Dodecen acetate.

3/ Rate per acre is less than 0.0005 lbs.