

# Use Trends of Biopesticides: Cumulative Acres Treated

Text files of data are available at <<https://files.cdpr.ca.gov/pub/outgoing/pur/data/>>. The reported cumulative acres treated with chemicals that are biopesticides. Biopesticides include microorganisms and naturally occurring compounds, or compounds similar to those found in nature that are not toxic to the target pest (such as pheromones). Use includes primarily agricultural applications (Most nonagricultural pesticide use reports are not required to report acreage. A zero indicates some nonagricultural use occurred, but acreage was not reported. The word "none" or "N/A" indicates no use at all that year). The grand total for acres treated may be less than the sum of acres treated for all chemicals because some products contain more than one active ingredient.

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>(3s, 6r)-3-methyl-6-isopropenyl-9-decen-1-yl acetate</b>	N/A	24	N/A	215	8,683	35,138	58,613	59,905	60,412	60,565
<b>(3s, 6s)-3-methyl-6-isopropenyl-9-decen-1-yl acetate</b>	N/A	24	N/A	215	8,683	35,138	58,613	59,905	60,412	60,565
<b>(e)-4-tridecen-1-yl-acetate</b>	N/A	1,074	N/A	N/A	N/A	<0.01	11	10	N/A	N/A
<b>(e)-5-decen-1-ol</b>	83	20	166	354	348	326	751	538	207	228
<b>(e)-5-decenol</b>	837	639	348	368	832	1,053	906	1,069	462	846
<b>(e)-5-decenyl acetate</b>	920	659	514	721	1,179	1,379	1,658	1,608	669	1,074
<b>(e,e)-9, 11-tetradecadien-1-yl acetate</b>	985	466	645	349	374	364	51	110	57	21
<b>(e,z)-7,9-dodecadien-1-yl acetate</b>	2,479	1,623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>(s)-kinoprene</b>	675	750	990	691	679	871	967	1,012	791	609
<b>(s)-verbenone</b>	N/A	N/A	<0.01	<0.01	3	1	<0.01	<0.01	<0.01	<0.01

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
(z)-11-hexadecen-1-yl acetate	N/A	N/A	N/A	26	2,994	1,807	3,955	3,754	13,451	21,661
(z)-11-hexadecenal	N/A	N/A	74	145	2,951	1,351	876	3,754	12,762	21,651
(z)-4-tridecen-1-yl acetate	N/A	1,074	N/A	N/A	N/A	<0.01	11	10	N/A	N/A
(z)-9-dodecenyl acetate	555	1,966	950	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(z,e)-7,11-hexadecadien-1-yl acetate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	N/A	N/A
(z,z)-11,13-hexadecadienal	20,591	38,681	61,037	66,068	67,233	89,479	186,467	175,122	196,821	213,436
(z,z)-3,13-octadecadien-1-ol acetate	0	N/A	10	25	N/A	N/A	N/A	N/A	N/A	N/A
(z,z)-7,11-hexadecadien-1-yl acetate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	N/A	N/A
1,4-dimethylnaphthalene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,7-dioxaspiro-(5,5)-undecane	43	25	32	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1-methylcyclopropene	21	14	10	6	13	5	4	2	1	2
1-naphthaleneacetamide	343	394	257	338	319	483	229	323	16	76
2,4-decadienoic acid, ethyl ester, (2e,4z)-	N/A	179	3,247	1,309	1,014	583	1,609	1,167	278	322
2-methyl-1-butanol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,7-dimethyl-6-octen-1-ol	3,939	3,545	3,111	4,331	5,936	5,749	4,265	3,707	3,631	2,328
3-decen-2-one	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A	N/A
Acetic acid	3,114	10,301	15,775	10,437	18,729	13,906	15,506	8,018	7,569	2,529

<b>Chemical</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Agrobacterium radiobacter</b>	622	664	806	613	99	570	246	89	170	380
<b>Agrobacterium radiobacter, strain k1026</b>	9,016	754	745	0	N/A	N/A	N/A	N/A	N/A	N/A
<b>Allyl isothiocyanate</b>	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A	N/A
<b>Almond, bitter</b>	88	68	73	N/A	4	198	86	10	0	<0.01
<b>Amino ethoxy vinyl glycine hydrochloride</b>	16,371	17,666	20,248	14,254	13,067	25,478	32,244	32,205	22,423	18,922
<b>Ammonium bicarbonate</b>	43	25	32	N/A	N/A	N/A	N/A	<0.01	N/A	N/A
<b>Ammonium nitrate</b>	1,085,772	953,176	988,173	882,572	829,516	744,071	676,471	652,246	643,353	538,073
<b>Ammonium nonanoate</b>	239	284	452	459	320	455	529	719	574	1,607
<b>Aspergillus flavus strain af36</b>	89,337	147,011	159,586	183,128	188,090	207,315	220,108	250,238	303,915	270,829
<b>Aureobasidium pullulans strain dsm 14940</b>	254	2,823	1,569	5,376	8,675	18,112	12,117	11,353	10,535	7,097
<b>Aureobasidium pullulans strain dsm 14941</b>	254	2,823	1,569	5,376	8,675	18,112	12,117	11,353	10,535	7,097
<b>Azadirachtin</b>	113,976	159,292	193,933	175,604	175,709	151,565	156,840	195,337	205,933	212,831
<b>Bacillus amyloliquefaciens strain d747</b>	29,684	41,678	38,555	57,375	90,617	68,143	77,315	62,680	58,198	58,588
<b>Bacillus amyloliquefaciens strain f727</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7,568	3,557	5,819
<b>Bacillus amyloliquefaciens strain mbi 600</b>	0	N/A	N/A	165	1,607	4,793	13,866	23,662	26,633	53,463

<b>Chemical</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Bacillus firmus (strain i-1582)</b>	N/A	12	45	41	43	29	5	6	<0.01	6
<b>Bacillus mycoides isolate j</b>	N/A	N/A	N/A	N/A	11,591	5,455	6,024	4,914	2,770	3,396
<b>Bacillus popilliae</b>	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	N/A	N/A	N/A	N/A
<b>Bacillus pumilus, strain qst 2808</b>	68,138	83,406	89,485	83,285	95,326	84,838	86,122	109,660	94,707	75,017
<b>Bacillus sphaericus 2362, serotype h5a5b, strain abts 1743 fermentation solids, spores and insecticidal toxins</b>	38	110	118	233	542	<0.01	1,848	608	548	1,288
<b>Bacillus subtilis strain iab/bs03</b>	N/A	N/A	N/A	N/A	N/A	3,277	13,910	11,462	18,557	24,727
<b>Bacillus subtilis var. amyloliquefaciens strain fzb24</b>	1,702	3,516	4,328	152	<0.01	N/A	N/A	N/A	N/A	N/A
<b>Bacillus thuringiensis (berliner)</b>	262	91	249	247	573	186	67	75	301	206
<b>Bacillus thuringiensis (berliner), subsp. aizawai, gc-91 protein</b>	22,511	28,611	26,155	25,221	49,005	54,008	64,108	68,547	68,897	79,102
<b>Bacillus thuringiensis (berliner), subsp. aizawai, serotype h-7</b>	3,296	2,941	1,360	624	1,025	451	3,146	387	584	362
<b>Bacillus thuringiensis (berliner), subsp. israelensis, serotype h-14</b>	1,072	1,154	1,607	101	294	149	1,424	763	381	444

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<b>Bacillus thuringiensis (berliner), subsp. kurstaki strain sa-12</b>	9,925	10,751	10,850	13,714	3,214	326	189	215	96	106
<b>Bacillus thuringiensis (berliner), subsp. kurstaki, serotype 3a,3b</b>	818	453	145	274	787	1,358	815	40	231	54
<b>Bacillus thuringiensis (berliner), subsp. kurstaki, strain eg 2348</b>	3,580	4,038	2,502	4,480	4,004	132	88	220	88	N/A
<b>Bacillus thuringiensis (berliner), subsp. kurstaki, strain sa-11</b>	96,045	111,634	108,456	95,637	121,136	135,126	132,441	163,324	141,348	134,269
<b>Bacillus thuringiensis (berliner), subsp. san diego</b>	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A	N/A
<b>Bacillus thuringiensis subspecies kurstaki strain bmp 123</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A
<b>Bacillus thuringiensis subspecies kurstaki, genetically engineered strain eg7841 lepidopteran active toxin</b>	5	99	116	473	8	3	4,205	21,591	30,303	18,932
<b>Bacillus thuringiensis var. kurstaki strain m-200</b>	N/A	N/A	<0.01	N/A	1	<0.01	1	N/A	N/A	N/A

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Bacillus thuringiensis var. kurstaki, genetically engineered strain eg7826</b>	N/A	N/A	N/A	9	N/A	37	N/A	N/A	N/A	N/A
<b>Bacillus thuringiensis, subsp. aizawai, strain abts-1857</b>	36,837	68,895	70,583	86,966	111,201	104,954	141,820	150,009	172,660	191,219
<b>Bacillus thuringiensis, subsp. aizawai, strain sd-1372, lepidopteran active toxin(s)</b>	113	47	306	120	77	118	18	2	26	27
<b>Bacillus thuringiensis, subsp. israelensis, strain am 65-52</b>	831	2,624	2,115	1,652	1,630	8,064	3,582	6,583	4,065	2,742
<b>Bacillus thuringiensis, subsp. kurstaki, strain abts-351, fermentation solids and solubles</b>	147,816	192,454	153,135	193,896	232,492	214,986	248,798	199,237	209,485	168,029
<b>Bacillus thuringiensis, subsp. kurstaki, strain hd-1</b>	10,138	7,887	10,593	1,361	895	141	224	137	259	199
<b>Bacillus thuringiensis, var. kurstaki delta endotoxins cry 1a(c) and cry 1c (genetically engineered) encapsulated in pseudomonas fluorescens (killed)</b>	N/A	<0.01	N/A	<0.01	N/A	2	N/A	<0.01	<0.01	N/A
<b>Bacillus velezensis</b>	21	302	467	609	2,293	1,473	972	180	128	145

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bacteriophage active against xanthomonas campestris pv. vesicatoria and pseudomonas syringae pv. tomato	21	12	N/A	N/A	1	N/A	9	15	N/A	N/A
Bacteriophages active against xylella fastidiosa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25	17	36
Balsam fir oil	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01	N/A	N/A	N/A
Beauveria bassiana hf 23	N/A	N/A	N/A	32	69	81	96	131	101	96
Beauveria bassiana strain ant-03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,182	4,606	5,451
Beauveria bassiana strain gha	6,857	10,900	14,377	11,145	16,957	17,983	14,720	22,405	22,690	28,676
Beauveria bassiana strain ppri 5339	N/A	N/A	N/A	N/A	N/A	N/A	131	622	629	429
Beta-conglutin	N/A	N/A	9,032	12,422	15,510	9,584	6,803	9,778	13,117	25,012
Buffalo gourd root powder	161	200	224	114	154	194	197	15	20	N/A
Burkholderia rinojensis strain a396	N/A	196	5,531	6,816	17,303	35,117	82,890	98,846	88,648	116,136
Butyl mercaptan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium acetate	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A	N/A	N/A
Calcium salts of phosphorous acid	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	452	N/A
Canola oil	5,788	4,272	7,455	20,351	47,851	75,266	61,484	52,460	37,044	36,609
Capsicum oleoresin	546	1,541	1,997	2,084	3,777	6,459	4,937	4,314	2,998	2,759
Carbon dioxide	5	20	19	2	<0.01	<0.01	<0.01	<0.01	9	7
Castor oil	<0.01	<0.01	<0.01	<0.01	N/A	0	N/A	10	<0.01	5

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cerevisane (cell walls of saccharomyces cerevisiae strain las117)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	386
Chenopodium ambrosiodes near ambrosiodes	22,574	25,820	19,072	15,804	15,002	635	267	93	196	25
Chromobacterium subtsugae strain praa4-1	38,138	61,191	62,518	43,365	48,875	55,891	53,344	48,885	39,205	44,552
Cinnamaldehyde	N/A	N/A	N/A	N/A	110	0	N/A	8,454	6,980	3,450
Citric acid	1,542,679	1,686,277	1,923,049	2,202,219	2,158,349	2,189,904	2,350,300	2,325,860	2,193,262	2,284,031
Clarified hydrophobic extract of neem oil	60,212	85,369	87,947	65,680	59,527	47,146	52,577	52,452	27,812	13,287
Codling moth granulosis virus	4,341	4,530	3,683	2,938	4,426	4,922	5,431	6,827	4,860	2,856
Coniothyrium minitans strain con/m/91-08	4,286	4,886	6,194	4,105	5,134	3,250	1,978	4,891	4,291	7,207
Corn syrup	15,992	14,206	18,817	18,940	48,655	74,221	63,679	50,796	35,482	48,967
Cottonseed oil	98,797	78,736	67,349	41,034	36,856	35,581	32,024	15,258	14,019	8,080
Coyote urine	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cytokinin (as kinetin)	352	3,290	1,966	1,910	3,506	5,052	1,159	115	1,135	38
Diallyl disulfide	N/A	N/A	N/A	225	223	N/A	N/A	85	N/A	N/A
Dihydro-5-heptyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A	N/A
Dihydro-5-pentyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A	N/A
E,e-8,10-dodecadien-1-ol	18,241	16,548	10,763	12,918	17,123	15,873	15,748	16,180	14,917	13,861
E-11-tetradecen-1-yl acetate	4,396	489	696	369	1,013	421	557	1,750	154	2,745
E-8-dodecenyl acetate	47,640	41,405	42,645	39,638	38,315	42,097	45,933	43,447	40,585	39,392



Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Encapsulated delta endotoxin of bacillus thuringiensis var. kurstaki in killed pseudomonas fluorescens	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Essential oils	<0.01	<0.01	<0.01	181	61	169	124	52	221	135
Ethylene	36	21	28	77	26	17	16	13	25	18
Eugenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A	<0.01
Farnesol	3,940	3,547	3,121	4,331	5,936	5,749	4,265	3,707	3,631	2,328
Fenugreek	88	68	73	N/A	4	198	86	10	0	<0.01
Ferric sodium edta	8,038	10,540	12,522	13,115	13,697	14,410	11,970	8,557	6,778	5,922
Fish oil	252	N/A	N/A	66	N/A	N/A	N/A	172	N/A	N/A
Formic acid	5	178	1,203	60	1	402	<0.01	<0.01	4	300
Fox urine	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Gamma aminobutyric acid	576	314	287	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Garlic	14,485	8,509	4,767	7,185	3,819	6,615	8,091	6,881	5,001	2,665
Geraniol	3,939	3,545	3,111	4,331	5,936	5,749	4,265	3,707	3,631	2,328
German cockroach pheromone	<0.01	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A
Gibberellins	550,518	530,086	523,059	544,711	501,854	506,560	529,262	507,722	486,152	466,836
Gibberellins, potassium salt	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A	N/A	N/A
Gliocladium virens gl-21 (spores)	5,444	5,187	7,439	7,140	4,914	4,300	2,396	168	48	2
Glutamic acid	576	314	287	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gs-omega/kappa-hctx-hv1a (versitide peptide)	N/A	N/A	N/A	1	N/A	1	324	36,966	81,720	130,704
Harpin protein	95	1	N/A	112	0	N/A	N/A	N/A	17	376
Heptyl butyrate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Hydrogen peroxide	22,957	27,951	32,676	69,022	65,570	103,675	297,954	201,083	189,969	199,930
Hydroprene	4	0	0	7	28	35	31	9	15	4
Iba	962	940	489	808	1,437	528	813	890	1,074	2,183
Indole	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron hedta	2	<0.01	<0.01	<0.01	2	<0.01	<0.01	<0.01	<0.01	<0.01
Iron phosphate	6,286	8,109	8,618	13,322	11,992	9,259	10,469	12,748	9,590	12,505
Isaria fumosorosea strain fe 9901	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9	1,038
Kaolin	80,075	88,044	101,645	115,467	103,356	99,004	80,707	79,900	71,885	77,820
Kinoprene	6	25	7	3	0	6	0	3	1	2
Lactic acid	N/A	N/A	38	59	225	3	99	83	78	14
Lactose	80,242	61,764	81,390	77,746	74,127	70,431	72,066	65,994	66,706	65,258
Lagenidium giganteum (california strain)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Laminarin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	707	4,107	5,961
Lauryl alcohol	7,807	5,681	5,725	4,718	4,354	4,793	3,756	5,059	5,355	4,729
Lavandulyl senecioate	5,869	6,294	8,424	18,076	74,825	141,767	194,088	179,933	208,403	221,978
Limonene	29,577	32,924	45,208	40,224	68,084	54,171	47,966	47,100	29,403	20,806
Linalool	<0.01	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Margosa oil	9,546	19,013	19,917	25,805	32,268	23,518	37,578	37,380	38,884	43,245
Menthol	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metarhizium anisopliae strain f52	133	634	122	55	2	0	1	0	N/A	N/A
Methoprene	<0.01	<0.01	<0.01	42	106	<0.01	710	1,986	633	315
Methyl anthranilate	1,092	808	895	1,463	2,490	2,041	1,908	2,933	2,879	3,692
Methyl eugenol	<0.01	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Methyl nonyl ketone	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A
Methyl salicylate	N/A	N/A	N/A	N/A	10	44	N/A	N/A	144	N/A
Muscalure	50	139	41	19	178	125	36	24	25	19
Muscodor albus strain sa13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	135	N/A	N/A

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Myristyl alcohol	7,807	5,681	5,725	4,718	4,354	4,793	3,756	5,059	5,355	4,729
Myrothecium verrucaria, dried fermentation solids & solubles, strain aarc-0255	4,456	3,637	8,775	6,473	4,075	5,037	4,966	3,720	1,801	2,612
N6-benzyl adenine	2,954	2,630	2,595	2,999	2,322	3,160	5,415	3,771	3,517	3,611
Naa	293	109	210	84	84	17	18	19	26	29
Naa, ammonium salt	10,611	9,703	9,966	778	671	2,792	1,728	2,371	1,407	1,951
Naa, ethyl ester	113	189	37	45	7,899	8,232	9,856	5,802	5,181	2,646
Naa, potassium salt	6	110	35	8,819	8,650	5,764	5,725	5,082	5,392	6,291
Naa, sodium salt	153	85	55	11	N/A	N/A	22	N/A	N/A	N/A
Natamycin	7	32	35	27	5	N/A	90	113	3	173
Nerolidol	3,940	3,547	3,121	4,331	5,936	5,749	4,265	3,707	3,631	2,328
Nitrogen, liquified	<0.01	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nonanoic acid	2,166	2,074	1,040	653	1,889	1,394	628	406	1,189	928
Nonanoic acid, other related	2,166	2,074	1,040	653	1,219	619	488	396	276	380
Nosema locustae spores	1,207	910	750	50	0	1	N/A	116	0	N/A
Oil of anise	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A
Oil of black pepper	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Oil of cedarwood	N/A	N/A	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A	N/A
Oil of citronella	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Oil of jojoba	316	323	83	16	5	N/A	7	N/A	N/A	N/A
Oil of lemon eucalyptus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil of orange	N/A	N/A	21,472	37,651	66,215	53,681	47,190	45,651	28,783	20,389
Oxypurinol	N/A	6	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Paecilomyces fumosoroseus apopka strain 97</b>	12,822	18,487	19,097	31,000	26,577	15,462	23,738	27,792	17,300	3,345
<b>Pantoea agglomerans strain e325, nrri b-21856</b>	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Phenylethyl propionate</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Phosphoric acid, monopotassium salt</b>	219	<0.01	1,837	3,142	2,284	2,025	570	62	N/A	N/A
<b>Piperine</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Polyhedral occlusion bodies (ob's) of the nuclear polyhedrosis virus of helicoverpa zea (corn earworm)</b>	337	518	1,011	4,902	8,857	8,803	4,958	7,220	9,616	9,932
<b>Polyoxin d, zinc salt</b>	143,483	165,601	191,654	231,719	242,568	264,129	305,807	268,118	230,191	221,679
<b>Potassium bicarbonate</b>	85,935	85,701	112,055	156,452	162,481	125,421	156,460	106,704	72,249	88,077
<b>Potassium phosphite</b>	131,623	214,917	199,632	299,260	387,641	411,300	545,143	468,000	418,907	419,155
<b>Potassium silicate</b>	3,524	12,973	13,499	12,133	14,938	8,228	12,930	20,729	16,592	14,293
<b>Potassium sorbate</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A
<b>Propylene glycol</b>	974,932	1,069,976	1,107,639	1,122,703	1,209,428	1,187,145	1,277,626	1,141,099	993,057	989,513
<b>Propyleneglycol monolaurate</b>	159	76	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Pseudomonas chlororaphis subsp. aurantiaca strain afs009</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,093	4,671	15,431
<b>Pseudomonas fluorescens, strain a506</b>	431	1,178	376	601	524	533	328	167	218	146

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<b>Pseudomonas syringae, strain esc-10</b>	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Purpureocillium lilacinum strain 251</b>	20,039	25,826	32,089	26,924	22,752	15,917	11,461	12,699	12,506	12,322
<b>Putrescent whole egg solids</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Pythium oligandrum dv74</b>	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Qst 713 strain of dried bacillus subtilis</b>	141,336	138,006	140,844	130,217	128,151	145,009	178,775	152,970	145,399	119,372
<b>Quillaja</b>	28,538	30,232	31,107	53,339	53,857	69,345	54,788	33,988	17,209	7,198
<b>Reynoutria sachalinensis</b>	96,190	95,988	105,561	128,059	125,137	112,110	138,941	136,462	104,579	79,848
<b>S-abscisic acid</b>	11,645	12,761	11,202	11,471	12,079	8,770	7,937	6,772	8,543	5,952
<b>S-methoprene</b>	49,491	53,371	102,129	76,961	53,963	71,339	105,757	118,526	66,474	91,789
<b>Sawdust</b>	109	N/A	N/A	160	N/A	N/A	N/A	<0.01	300	72
<b>Sesame oil</b>	1	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A
<b>Silver nitrate</b>	N/A	N/A	N/A	0	1	N/A	2	2	121	34
<b>Sodium bicarbonate</b>	291	544	706	796	162	1	N/A	2	N/A	9
<b>Sodium carbonate peroxyhydrate</b>	11,764	17,035	8,051	10,137	7,129	12,824	12,061	13,308	12,227	12,257
<b>Sodium chloride</b>	207	135	66	134	144	42	100	75	35	31
<b>Sodium lauryl sulfate</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Sorbitol octanoate</b>	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	0	N/A
<b>Soybean oil</b>	4,524	6,275	5,476	7,018	7,910	18,460	29,903	29,024	29,126	18,428
<b>Streptomyces griseoviridis strain k61</b>	5	10	18	5	4	5	2	0	0	2
<b>Streptomyces lydicus wyec 108</b>	16,071	14,050	16,546	20,473	15,970	10,221	15,115	11,087	8,450	9,313
<b>Sucrose octanoate</b>	5	10	2	12	<0.01	N/A	N/A	N/A	N/A	N/A
<b>Sugar</b>	1,062	1,427	452	504	86	212	160	57	194	47

Chemical	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Swinglea glutinosa extract	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4	12,348	8,531
Tea tree oil	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29	26
Thyme	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thyme oil	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thymol	1	1	1,267	490	44	311	608	2,613	86	34
Trichoderma harzianum rifai strain krl-ag2	994	2,507	2,346	2,207	2,244	2,404	2,412	1,629	1,657	3,089
Trichoderma icc 012 asperellum	604	35	251	159	92	139	444	650	2,524	3,737
Trichoderma icc 080 gamsii	604	35	251	159	92	139	444	650	2,524	3,737
Trimethylamine	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ulocladium oudemansii (u3 strain)	19	707	406	150	28	1,674	1,178	715	460	265
Vanillin	88	68	73	N/A	4	198	86	10	0	<0.01
Vegetable oil	350,771	243,680	311,693	405,341	603,909	584,960	513,784	396,440	323,573	330,777
Xanthine	N/A	6	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A
Yeast	325	142	220	25	6	14	<0.01	<0.01	34	<0.01
Yucca schidigera	19,524	11,285	7,347	9,376	6,289	10,926	14,716	12,054	9,877	20,747
Z,e-9,12-tetradecadien-1-yl acetate	<0.01	<0.01	<0.01	<0.01	43	507	3,079	<0.01	689	10
Z-11-tetradecen-1-yl acetate	3,411	23	51	20	639	57	506	1,639	97	2,724
Z-8-dodecenol	47,640	41,405	42,645	39,638	38,315	42,097	45,933	43,447	40,585	39,392
Z-8-dodecenyl acetate	47,640	41,405	42,645	39,638	38,315	42,097	45,933	43,447	40,585	39,392
<b>Total</b>	<b>6,551,858</b>	<b>6,925,111</b>	<b>7,488,061</b>	<b>8,018,095</b>	<b>8,560,111</b>	<b>8,638,344</b>	<b>9,592,351</b>	<b>9,048,473</b>	<b>8,463,393</b>	<b>8,485,912</b>