

Use Trends of Biopesticides: Cumulative Acres Treated

[Text files](https://files.cdpr.ca.gov/pub/outgoing/pur/data/) 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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(3s, 6r)-3-methyl-6-isopropenyl-9-decen-1-yl acetate	N/A	7	N/A	24	N/A	215	8,683	35,138	58,613	59,856
(3s, 6s)-3-methyl-6-isopropenyl-9-decen-1-yl acetate	N/A	7	N/A	24	N/A	215	8,683	35,138	58,613	59,856
(e)-4-tridecen-1-yl-acetate	N/A	N/A	N/A	1,074	N/A	N/A	N/A	<0.01	11	10
(e)-5-decen-1-ol	N/A	53	83	20	166	354	348	326	751	538
(e)-5-decenol	166	502	837	639	348	368	832	1,053	906	1,069
(e)-5-decenyl acetate	166	555	920	659	514	721	1,179	1,379	1,658	1,608
(e,e)-9, 11-tetradecadien-1-yl acetate	759	608	985	466	645	349	374	364	51	110
(e,z)-7,9-dodecadien-1-yl acetate	18,104	22,856	2,479	1,623	N/A	N/A	N/A	N/A	N/A	N/A
(s)-kinoprene	346	506	675	750	990	691	679	871	967	1,012

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(s)-verbenone	N/A	100	N/A	N/A	<0.01	<0.01	3	1	<0.01	<0.01
(z)-11-hexadecen-1-yl acetate	49	N/A	N/A	N/A	N/A	26	2,994	1,807	3,955	3,754
(z)-11-hexadecenal	N/A	N/A	N/A	N/A	74	145	2,951	1,351	876	3,754
(z)-4-tridecen-1-yl-acetate	N/A	N/A	N/A	1,074	N/A	N/A	N/A	<0.01	11	10
(z)-9-dodecenyl acetate	1,814	392	555	1,966	950	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	N/A	N/A	16
(z,z)-11,13-hexadecadienal	11,336	17,283	20,591	38,681	61,037	66,068	67,233	89,479	186,467	175,132
(z,z)-7,11-hexadecadien-1-yl acetate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16
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	<0.01	30	43	25	32	N/A	N/A	N/A	N/A	N/A
1-methylcyclopropene	1	17	21	14	10	6	13	5	4	2
1-naphthaleneacetamide	315	393	343	394	257	338	319	483	229	323
2,4-decadienoic acid, ethyl ester, (2e,4z)-	N/A	N/A	N/A	179	3,247	1,309	1,014	583	1,609	1,167
2-methyl-1-butanol	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,13 octadecadien-1-yl acetate	131	N/A	<0.01	N/A	10	25	N/A	N/A	N/A	N/A
3,7-dimethyl-6-octen-1-ol	788	2,220	3,939	3,545	3,111	4,331	5,936	5,749	4,265	3,707
acetic acid	162	3,165	3,114	10,301	15,775	10,437	18,729	13,906	15,506	8,018
agrobacterium radiobacter	690	852	622	664	806	613	99	570	246	89
agrobacterium radiobacter, strain k1026	19	4,947	9,016	754	745	<0.01	N/A	N/A	N/A	N/A

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
allyl isothiocyanate	N/A	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A
almond, bitter	412	271	88	68	73	N/A	4	198	86	10
amino ethoxy vinyl glycine hydrochloride	11,108	14,991	16,371	17,666	20,248	14,254	13,067	25,478	32,244	32,205
ammonium bicarbonate	<0.01	30	43	25	32	N/A	N/A	N/A	N/A	<0.01
ammonium nitrate	817,488	867,723	1,085,772	953,176	988,173	882,572	829,523	744,071	676,466	651,114
ammonium nonanoate	N/A	N/A	239	284	452	459	320	455	529	719
aspergillus flavus strain af36	260	48,833	89,337	147,011	159,586	183,128	188,090	207,315	220,109	250,058
aureobasidium pullulans strain dsm 14940	N/A	N/A	254	2,823	1,569	5,376	8,675	18,112	12,117	11,347
aureobasidium pullulans strain dsm 14941	N/A	N/A	254	2,823	1,569	5,376	8,675	18,112	12,117	11,347
azadirachtin	70,593	99,406	113,976	159,292	193,933	175,604	175,709	151,566	156,729	195,341
bacillus amyloliquefaciens strain d747	N/A	2,337	29,684	41,678	38,555	57,375	90,617	68,143	77,315	62,673
bacillus amyloliquefaciens strain mbi 600	N/A	2	<0.01	N/A	N/A	165	1,607	4,793	13,866	23,662
bacillus firmus (strain i-1582)	N/A	N/A	N/A	12	45	41	43	29	5	6
bacillus mycoides isolate j	N/A	N/A	N/A	N/A	N/A	N/A	11,591	5,455	6,024	4,914
bacillus popilliae	N/A	N/A	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	N/A	N/A
bacillus pumilus, strain qst 2808	84,358	76,388	68,138	83,406	89,485	83,285	95,326	84,838	86,134	109,687

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
bacillus sphaericus 2362, serotype h5a5b, strain abts 1743 fermentation solids, spores and insecticidal toxins	<0.01	231	38	110	118	233	542	<0.01	1,848	608
bacillus subtilis gb03	6	<0.01	21	302	467	609	2,293	1,473	972	180
bacillus subtilis strain iab/bs03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3,277	13,910	11,462
bacillus subtilis var. amyloliquefaciens strain fzb24	N/A	406	1,702	3,516	4,328	152	<0.01	N/A	N/A	N/A
bacillus thuringiensis (berliner)	877	292	262	91	249	247	573	186	67	74
bacillus thuringiensis (berliner), subsp. aizawai, gc-91 protein	18,657	25,262	22,511	28,611	26,155	25,221	49,005	54,008	64,108	68,547
bacillus thuringiensis (berliner), subsp. aizawai, serotype h-7	7,766	6,064	3,296	2,941	1,360	624	1,025	451	3,146	387
bacillus thuringiensis (berliner), subsp. israelensis, serotype h-14	337	718	1,072	1,154	1,607	101	294	149	1,424	763
bacillus thuringiensis (berliner), subsp. kurstaki strain sa-12	8,247	15,379	9,925	10,751	10,850	13,714	3,214	326	190	216
bacillus thuringiensis (berliner), subsp. kurstaki, serotype 3a,3b	3,063	1,973	818	453	145	274	787	1,358	815	37
bacillus thuringiensis (berliner), subsp. kurstaki, strain eg 2348	3,428	645	3,580	4,038	2,502	4,480	4,004	132	88	220
bacillus thuringiensis (berliner), subsp. kurstaki, strain eg2371	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
bacillus thuringiensis (berliner), subsp. kurstaki, strain sa-11	84,119	81,617	96,045	111,634	108,456	95,637	121,136	135,126	132,441	163,324

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
bacillus thuringiensis (berliner), subsp. san diego	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A
bacillus thuringiensis subspecies kurstaki strain bmp 123	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12
bacillus thuringiensis subspecies kurstaki, genetically engineered strain eg7841 lepidopteran active toxin	200	373	5	99	116	473	8	3	4,205	21,591
bacillus thuringiensis var. kurstaki strain m-200	N/A	N/A	N/A	N/A	<0.01	N/A	1	<0.01	1	N/A
bacillus thuringiensis var. kurstaki, genetically engineered strain eg7826	N/A	1,320	N/A	N/A	N/A	9	N/A	37	N/A	N/A
bacillus thuringiensis, subsp. aizawai, strain abts-1857	35,312	41,722	36,837	68,895	70,583	86,966	111,201	104,954	141,726	149,903
bacillus thuringiensis, subsp. aizawai, strain sd-1372, lepidopteran active toxin(s)	640	4	113	47	306	120	77	118	18	2
bacillus thuringiensis, subsp. israelensis, strain am 65-52	1,052	1,360	831	2,624	2,115	1,652	1,630	8,064	3,582	6,583
bacillus thuringiensis, subsp. kurstaki, strain abts-351, fermentation solids and solubles	152,728	165,138	147,816	192,454	153,135	193,896	232,492	214,994	248,798	199,255
bacillus thuringiensis, subsp. kurstaki, strain hd-1	16,218	15,228	10,138	7,887	10,593	1,361	895	141	224	137

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
bacillus thuringiensis, var. kurstaki delta endotoxins cry 1a(c) and cry 1c (genetically engineered) encapsulated in pseudomonas fluorescens (killed)	<0.01	10	N/A	<0.01	N/A	<0.01	N/A	2	N/A	<0.01
bacteriophage active against xanthomonas campestris pv. vesicatoria and pseudomonas syringae pv. tomato	11	25	21	12	N/A	N/A	1	N/A	9	15
bacteriophages active against xylella fastidiosa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25
balsam fir oil	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01	N/A
beauveria bassiana hf 23	N/A	N/A	N/A	N/A	N/A	32	69	81	96	131
beauveria bassiana strain gha	2,706	4,017	6,857	10,900	14,377	11,145	16,957	17,983	14,720	22,405
beta-conglutin	N/A	N/A	N/A	N/A	9,032	12,422	15,510	9,584	6,803	9,778
buffalo gourd root powder	N/A	25	161	200	224	114	154	194	197	15
burkholderia sp strain a396 cells and fermentation media	N/A	N/A	N/A	196	5,531	6,816	17,303	35,117	82,891	98,695
butyl mercaptan	N/A	<0.01	N/A	N/A	N/A	N/A	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	N/A	N/A	<0.01	N/A
canola oil	3,872	2,329	5,788	4,272	7,455	20,351	47,851	75,266	61,484	52,460
capsicum oleoresin	238	576	546	1,541	1,997	2,084	3,777	6,459	4,937	4,314

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
carbon dioxide	26	1,796	5	20	19	2	<0.01	<0.01	<0.01	<0.01
castor oil	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	N/A	10
chenopodium ambrosiodes near ambrosiodes	6,868	13,401	22,574	25,820	19,072	15,804	15,002	635	267	93
chromobacterium subtsugae strain praa4-1	N/A	1,424	38,138	61,191	62,518	43,365	48,875	55,891	53,344	48,853
cinnamaldehyde	<0.01	N/A	N/A	N/A	N/A	N/A	110	<0.01	N/A	8,454
citric acid	1,335,401	1,389,828	1,542,679	1,686,277	1,923,049	2,202,219	2,158,320	2,190,001	2,350,229	2,324,513
clarified hydrophobic extract of neem oil	41,125	43,193	60,212	85,369	87,947	65,680	59,527	47,146	52,577	52,375
codling moth granulosis virus	3,468	3,445	4,341	4,530	3,683	2,938	4,426	4,922	5,431	6,827
coniothyrium minitans strain con/m/91-08	1,107	1,697	4,286	4,886	6,194	4,105	5,134	3,250	1,978	4,891
corn syrup	27,721	27,760	15,992	14,206	18,817	18,940	48,655	74,221	63,679	50,784
cottonseed oil	177,732	95,344	98,797	78,736	67,349	41,034	36,856	35,581	32,032	15,257
coyote urine	12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
cytokinin (as kinetin)	199	2,409	352	3,290	1,966	1,910	3,506	5,052	1,159	115
diallyl disulfide	N/A	N/A	N/A	N/A	N/A	225	223	N/A	N/A	85
dihydro-5-heptyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A
dihydro-5-pentyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
e,e-8,10-dodecadien-1-ol	17,872	15,908	18,241	16,548	10,763	12,918	17,123	15,873	15,748	15,976
e-11-tetradecen-1-yl acetate	1,701	4,485	4,396	489	696	369	1,013	421	557	1,750
e-8-dodecenyl acetate	45,667	49,300	47,640	41,405	42,645	39,638	38,315	42,097	45,959	43,623
encapsulated delta endotoxin of bacillus thuringiensis var. kurstaki in killed pseudomonas fluorescens	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
essential oils	<0.01	<0.01	<0.01	<0.01	<0.01	181	61	169	124	52
ethylene	70	49	36	21	28	77	26	17	16	13
eucalyptus oil	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
eugenol	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A
farnesol	826	2,227	3,940	3,547	3,121	4,331	5,936	5,749	4,265	3,707
fenugreek	412	271	88	68	73	N/A	4	198	86	10
ferric sodium edta	3,049	8,428	8,038	10,540	12,522	13,115	13,697	14,410	11,970	8,557
fish oil	<0.01	382	252	N/A	N/A	66	N/A	N/A	N/A	172
formic acid	1	369	5	178	1,203	60	1	402	<0.01	<0.01
fox urine	12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
gamma aminobutyric acid	542	1,811	576	314	287	N/A	N/A	N/A	N/A	N/A
garlic	1,369	12,410	14,485	8,509	4,767	7,185	3,819	6,615	8,091	6,879
geraniol	788	2,220	3,939	3,545	3,111	4,331	5,936	5,749	4,265	3,707
german cockroach pheromone	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	N/A
gibberellins	514,357	531,046	550,518	530,086	523,059	544,711	501,854	506,560	529,232	507,540
gibberellins, potassium salt	150	795	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A
gliocladium virens gl-21 (spores)	1,076	3,172	5,444	5,187	7,439	7,140	4,914	4,300	2,061	168

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
glutamic acid	542	1,811	576	314	287	N/A	N/A	N/A	N/A	N/A
gs-omega/kappa-hctx-hv1a (versitide peptide)	N/A	N/A	N/A	N/A	N/A	1	N/A	1	324	36,966
harpin protein	1,582	115	95	1	N/A	112	<0.01	N/A	N/A	N/A
heptyl butyrate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
hydrogen peroxide	39,194	21,877	22,957	27,951	32,676	69,022	65,570	103,675	297,876	201,048
hydroprene	<0.01	2	4	<0.01	<0.01	7	28	35	31	9
iba	1,156	1,283	962	940	489	808	1,437	528	813	890
indole	N/A	N/A	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
iron hedta	N/A	<0.01	2	<0.01	<0.01	<0.01	2	<0.01	<0.01	<0.01
iron phosphate	5,477	6,519	6,286	8,109	8,618	13,322	11,992	9,259	10,469	12,748
kaolin	51,100	57,877	80,075	88,044	101,645	115,467	103,356	99,004	80,678	79,887
kinoprene	9	3	6	25	7	3	<0.01	6	<0.01	3
lactic acid	N/A	N/A	N/A	N/A	38	59	225	3	99	83
lactose	92,348	68,442	80,242	61,764	81,390	77,746	74,127	70,431	72,066	65,931
lagenidium giganteum (california strain)	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
lauryl alcohol	6,443	6,681	7,807	5,681	5,725	4,718	4,354	4,793	3,755	5,058
lavandulyl senecioate	11,754	6,666	5,869	6,294	8,424	18,076	74,825	141,775	193,981	179,838
limonene	15,514	73,605	29,577	32,924	45,208	40,224	68,084	54,171	47,997	47,074
linalool	<0.01	<0.01	<0.01	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
margosa oil	4,260	7,977	9,546	19,013	19,917	25,805	32,268	23,518	37,578	37,307
menthol	<0.01	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
metarhizium anisopliae strain f52	N/A	202	133	634	122	55	2	<0.01	1	<0.01
metarhizium anisopliae, var. anisopliae, strain esf1	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
methoprene	896	<0.01	<0.01	<0.01	<0.01	42	106	<0.01	710	1,986
methyl anthranilate	2,043	215	1,092	808	895	1,463	2,490	2,041	1,908	2,924
methyl eugenol	<0.01	N/A	<0.01	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01
methyl nonyl ketone	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
methyl salicylate	N/A	N/A	N/A	N/A	N/A	N/A	10	44	N/A	N/A
muscalure	68	40	50	139	41	19	178	125	29	24
muscodor albus strain sa13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	135
myristyl alcohol	6,443	6,681	7,807	5,681	5,725	4,718	4,354	4,793	3,755	5,058
myrothecium verrucaria, dried fermentation solids & solubles, strain aarc-0255	5,136	4,274	4,456	3,637	8,775	6,473	4,075	5,037	4,966	3,720
n6-benzyl adenine	1,691	1,666	2,954	2,630	2,595	2,999	2,322	3,160	5,415	3,771
naa	219	655	293	109	210	84	84	17	18	19
naa, ammonium salt	9,075	11,922	10,611	9,703	9,966	778	671	2,792	1,728	2,371
naa, ethyl ester	396	384	113	189	37	45	7,899	8,232	9,856	5,802
naa, potassium salt	N/A	N/A	6	110	35	8,819	8,650	5,764	5,725	5,082
naa, sodium salt	N/A	N/A	153	85	55	11	N/A	N/A	22	N/A
natamycin	N/A	N/A	7	32	35	27	5	N/A	90	113
nerolidol	826	2,227	3,940	3,547	3,121	4,331	5,936	5,749	4,265	3,707
nitrogen, liquefied	<0.01	<0.01	<0.01	5	N/A	N/A	N/A	N/A	N/A	N/A

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
nonanoic acid	828	480	2,166	2,074	1,040	653	1,889	1,394	628	406
nonanoic acid, other related	828	460	2,166	2,074	1,040	653	1,219	619	488	396
nosema locustae spores	12	1,612	1,207	910	750	50	<0.01	1	N/A	116
oil of anise	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	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	N/A	N/A	<0.01	<0.01	N/A	N/A	N/A	N/A
oil of citronella	48	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
oil of jojoba	1,762	1,077	316	323	83	16	5	N/A	7	N/A
oil of lemon eucalyptus	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
oil of orange	N/A	N/A	N/A	N/A	21,472	37,651	66,215	53,681	47,220	45,624
oxypurinol	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	<0.01
paecilomyces fumosoroseus apopka strain 97	N/A	2,113	12,822	18,487	19,097	31,000	26,577	15,462	23,739	27,792
pantoea agglomerans strain e325, nrri b-21856	25	50	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A
phenylethyl propionate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
phosphoric acid, monopotassium salt	1,275	561	219	<0.01	1,837	3,142	2,284	2,025	570	62
piperine	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
polyhedral occlusion bodies (ob's) of the nuclear polyhedrosis virus of helioverpa zea (corn earworm)	14,752	1,297	337	518	1,011	4,902	8,857	8,803	4,958	7,084

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
polyoxin d, zinc salt	69,822	95,645	143,483	165,601	191,654	231,719	242,628	264,184	305,798	268,052
potassium bicarbonate	118,891	75,445	85,935	85,701	112,055	156,452	162,483	125,417	156,375	106,562
potassium phosphite	82,403	115,913	131,623	214,917	199,632	299,260	387,641	411,299	545,151	467,634
potassium silicate	808	537	3,524	12,973	13,499	12,133	14,938	8,228	12,930	20,729
potassium sorbate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01
propylene glycol	664,307	676,714	974,932	1,069,976	1,107,639	1,122,703	1,209,430	1,187,187	1,277,344	1,137,882
propyleneglycol monolaurate	N/A	N/A	159	76	N/A	N/A	N/A	N/A	N/A	N/A
pseudomonas chlororaphis subsp. aurantiaca strain afs009	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,093
pseudomonas fluorescens, strain a506	1,281	372	431	1,178	376	601	524	533	328	167
pseudomonas syringae, strain esc-10	N/A	N/A	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
purpureocillium lilacium strain 251	2,330	3,531	20,039	25,826	32,089	26,924	22,752	15,917	11,461	12,704
putrescent whole egg solids	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pythium oligandrum dv74	2	2	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A
qst 713 strain of dried bacillus subtilis	118,105	124,794	141,336	138,006	140,844	130,217	128,151	145,009	178,777	152,944
quillaja	30,225	22,907	28,538	30,232	31,107	53,339	53,857	69,345	54,788	33,988

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
reynoutria sachalinensis	90,750	94,114	96,190	95,988	105,561	128,066	125,137	112,120	138,947	136,366
s-abscisic acid	9,558	14,974	11,645	12,761	11,202	11,471	12,079	8,770	7,937	6,772
s-methoprene	62,653	87,637	49,491	53,371	102,129	76,961	53,963	71,339	105,757	118,468
sawdust	N/A	74	109	N/A	N/A	160	N/A	N/A	N/A	<0.01
sesame oil	1,938	39	1	N/A	N/A	N/A	N/A	6	N/A	N/A
silver nitrate	<0.01	5	N/A	N/A	N/A	<0.01	1	N/A	2	2
sodium bicarbonate	967	1,101	291	544	706	796	162	1	N/A	2
sodium carbonate peroxyhydrate	6,566	13,797	11,764	17,035	8,051	10,137	7,129	12,824	12,065	13,308
sodium chloride	2	73	207	135	66	134	144	42	100	75
sodium lauryl sulfate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
sorbitol octanoate	42	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A	N/A
soybean oil	3,636	3,303	4,524	6,275	5,476	7,018	7,910	18,460	29,855	29,002
streptomyces griseoviridis strain k61	1	<0.01	5	10	18	5	4	5	2	<0.01

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
streptomyces lydicus wyec 108	6,404	10,367	16,071	14,050	16,546	20,473	15,970	10,221	15,115	11,087
sucrose octanoate	148	1	5	10	2	12	<0.01	N/A	N/A	N/A
sugar	5,807	4,843	1,062	1,427	452	504	86	212	160	57
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	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
thymol	10	18	1	1	1,267	490	44	311	608	2,613
trichoderma harzianum rifai strain krl-ag2	871	1,088	994	2,507	2,346	2,207	2,244	2,404	2,412	1,629
trichoderma icc 012 asperellum	86	704	604	35	251	159	92	139	444	650
trichoderma icc 080 gamsii	86	704	604	35	251	159	92	139	444	650
trimethylamine	N/A	N/A	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ulocladium oudemansii (u3 strain)	N/A	N/A	19	707	406	150	28	1,674	1,178	715
vanillin	412	271	88	68	73	N/A	4	198	86	10
vegetable oil	458,756	266,226	350,771	243,680	311,693	405,341	603,909	584,960	513,796	396,440

Chemical	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
xanthine	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	<0.01
yeast	5,261	3,729	325	142	220	25	6	14	<0.01	<0.01
yucca schidigera	4,907	16,093	19,524	11,285	7,347	9,376	6,289	10,926	14,716	12,052
z,e-9,12-tetradecadien-1-yl acetate	49	<0.01	<0.01	<0.01	<0.01	<0.01	43	507	3,079	<0.01
z-11-tetradecen-1-yl acetate	942	3,877	3,411	23	51	20	639	57	506	1,639
z-8-dodecenol	45,667	49,300	47,640	41,405	42,645	39,638	38,315	42,097	45,959	43,623
z-8-dodecenyl acetate	45,667	49,300	47,640	41,405	42,645	39,638	38,315	42,097	45,959	43,623
Total	5,515,352	5,590,494	6,551,858	6,925,111	7,488,061	8,018,102	8,560,153	8,638,560	9,591,040	9,030,696