

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	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
(3s, 6r)-3-methyl-6-isopropenyl-9-decen-1-yl acetate	7	N/A	24	N/A	215	8,683	35,138	58,613	59,905	60,268
(3s, 6s)-3-methyl-6-isopropenyl-9-decen-1-yl acetate	7	N/A	24	N/A	215	8,683	35,138	58,613	59,905	60,268
(e)-4-tridecen-1-yl acetate	N/A	N/A	1,074	N/A	N/A	N/A	<0.01	11	10	N/A
(e)-5-decen-1-ol	53	83	20	166	354	348	326	751	538	207
(e)-5-decenol	502	837	639	348	368	832	1,053	906	1,069	462
(e)-5-decenyl acetate	555	920	659	514	721	1,179	1,379	1,658	1,608	669
(e,e)-9, 11-tetradecadien-1-yl acetate	608	985	466	645	349	374	364	51	110	57
(e,z)-7,9-dodecadien-1-yl acetate	22,856	2,479	1,623	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(s)-kinoprene	506	675	750	990	691	679	871	967	1,012	791
(s)-verbenone	100	N/A	N/A	<0.01	<0.01	3	1	<0.01	<0.01	<0.01
(z)-11-hexadecen-1-yl acetate	N/A	N/A	N/A	N/A	26	2,994	1,807	3,955	3,754	13,451
(z)-11-hexadecenal	N/A	N/A	N/A	74	145	2,951	1,351	876	3,754	12,762
(z)-4-tridecen-1-yl acetate	N/A	N/A	1,074	N/A	N/A	N/A	<0.01	11	10	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
(z)-9-dodecenyl acetate	392	555	1,966	950	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	N/A	16	N/A
(z,z)-11,13-hexadecadienal	17,283	20,591	38,681	61,037	66,068	67,233	89,479	186,467	175,122	196,791
(z,z)-7,11-hexadecadien-1-yl acetate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	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	30	43	25	32	N/A	N/A	N/A	N/A	N/A	N/A
1-methylcyclopropene	17	21	14	10	6	13	5	4	2	1
1-naphthaleneacetamide	393	343	394	257	338	319	483	229	323	16
2,4-decadienoic acid, ethyl ester, (2e,4z)-	N/A	N/A	179	3,247	1,309	1,014	583	1,609	1,167	278
2-methyl-1-butanol	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
3,13 octadecadien-1-yl acetate	N/A	0	N/A	10	25	N/A	N/A	N/A	N/A	N/A
3,7-dimethyl-6-octen-1-ol	2,220	3,939	3,545	3,111	4,331	5,936	5,749	4,265	3,707	3,631
3-decen-2-one	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A
acetic acid	3,165	3,114	10,301	15,775	10,437	18,729	13,906	15,506	8,018	7,569
agrobacterium radiobacter	852	622	664	806	613	99	570	246	89	170
agrobacterium radiobacter, strain k1026	4,947	9,016	754	745	0	N/A	N/A	N/A	N/A	N/A
allyl isothiocyanate	<0.01	N/A	N/A	N/A	<0.01	N/A	N/A	<0.01	N/A	N/A
almond, bitter	271	88	68	73	N/A	4	198	86	10	0

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
amino ethoxy vinyl glycine hydrochloride	14,991	16,371	17,666	20,248	14,254	13,067	25,478	32,244	32,205	22,393
ammonium bicarbonate	30	43	25	32	N/A	N/A	N/A	N/A	<0.01	N/A
ammonium nitrate	867,723	1,085,772	953,176	988,173	882,572	829,516	744,071	676,487	651,960	642,635
ammonium nonanoate	N/A	239	284	452	459	320	455	529	719	574
aspergillus flavus strain af36	48,833	89,337	147,011	159,586	183,128	188,090	207,315	220,108	250,238	303,584
aureobasidium pullulans strain dsm 14940	N/A	254	2,823	1,569	5,376	8,675	18,112	12,117	11,347	10,535
aureobasidium pullulans strain dsm 14941	N/A	254	2,823	1,569	5,376	8,675	18,112	12,117	11,347	10,535
azadirachtin	99,406	113,976	159,292	193,933	175,604	175,709	151,565	156,840	195,323	205,863
bacillus amyloliquefaciens strain d747	2,337	29,684	41,678	38,555	57,375	90,617	68,143	77,315	62,680	54,626
bacillus amyloliquefaciens strain f727	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7,568	3,572
bacillus amyloliquefaciens strain mbi 600	2	0	N/A	N/A	165	1,607	4,793	13,866	23,662	26,633
bacillus firmus (strain i-1582)	N/A	N/A	12	45	41	43	29	5	6	<0.01
bacillus mycoides isolate j	N/A	N/A	N/A	N/A	N/A	11,591	5,455	6,024	4,914	2,770
bacillus popilliae	N/A	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	N/A	N/A	N/A
bacillus pumilus, strain qst 2808	76,388	68,138	83,406	89,485	83,285	95,326	84,838	86,134	109,660	94,707

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
bacillus sphaericus 2362, serotype h5a5b, strain abts 1743 fermentation solids, spores and insecticidal toxins	231	38	110	118	233	542	<0.01	1,848	608	548
bacillus subtilis gb03	0	21	302	467	609	2,293	1,473	972	180	128
bacillus subtilis strain iab/bs03	N/A	N/A	N/A	N/A	N/A	N/A	3,277	13,910	11,462	18,551
bacillus subtilis var. amyloliquefaciens strain fzb24	406	1,702	3,516	4,328	152	<0.01	N/A	N/A	N/A	N/A
bacillus thuringiensis (berliner)	292	262	91	249	247	573	186	67	75	301
bacillus thuringiensis (berliner), subsp. aizawai, gc-91 protein	25,262	22,511	28,611	26,155	25,221	49,005	54,008	64,108	68,547	66,429
bacillus thuringiensis (berliner), subsp. aizawai, serotype h-7	6,064	3,296	2,941	1,360	624	1,025	451	3,146	387	584
bacillus thuringiensis (berliner), subsp. israelensis, serotype h-14	718	1,072	1,154	1,607	101	294	149	1,424	763	381
bacillus thuringiensis (berliner), subsp. kurstaki strain sa-12	15,379	9,925	10,751	10,850	13,714	3,214	326	189	215	96
bacillus thuringiensis (berliner), subsp. kurstaki, serotype 3a,3b	1,973	818	453	145	274	787	1,358	815	40	231
bacillus thuringiensis (berliner), subsp. kurstaki, strain eg 2348	645	3,580	4,038	2,502	4,480	4,004	132	88	220	88

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
bacillus thuringiensis (berliner), subsp. kurstaki, strain sa-11	81,617	96,045	111,634	108,456	95,637	121,136	135,126	132,441	163,324	141,201
bacillus thuringiensis (berliner), subsp. san diego	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	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	12	N/A
bacillus thuringiensis subspecies kurstaki, genetically engineered strain eg7841 lepidopteran active toxin	373	5	99	116	473	8	3	4,205	21,591	30,303
bacillus thuringiensis var. kurstaki strain m-200	N/A	N/A	N/A	<0.01	N/A	1	<0.01	1	N/A	N/A
bacillus thuringiensis var. kurstaki, genetically engineered strain eg7826	1,320	N/A	N/A	N/A	9	N/A	37	N/A	N/A	N/A
bacillus thuringiensis, subsp. aizawai, strain abts-1857	41,722	36,837	68,895	70,583	86,966	111,201	104,954	141,820	150,009	169,861
bacillus thuringiensis, subsp. aizawai, strain sd-1372, lepidopteran active toxin(s)	4	113	47	306	120	77	118	18	2	26
bacillus thuringiensis, subsp. israelensis, strain am 65-52	1,360	831	2,624	2,115	1,652	1,630	8,064	3,582	6,583	4,065

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
bacillus thuringiensis, subsp. kurstaki, strain abts-351, fermentation solids and solubles	165,138	147,816	192,454	153,135	193,896	232,492	214,986	248,798	199,281	209,374
bacillus thuringiensis, subsp. kurstaki, strain hd-1	15,228	10,138	7,887	10,593	1,361	895	141	224	137	252
bacillus thuringiensis, var. kurstaki delta endotoxins cry 1a(c) and cry 1c (genetically engineered) encapsulated in pseudomonas fluorescens (killed)	10	N/A	<0.01	N/A	<0.01	N/A	2	N/A	<0.01	<0.01
bacteriophage active against xanthomonas campestris pv. vesicatoria and pseudomonas syringae pv. tomato	25	21	12	N/A	N/A	1	N/A	9	15	N/A
bacteriophages active against xylella fastidiosa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25	17
balsam fir oil	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	<0.01	<0.01	N/A	N/A
beauveria bassiana hf 23	N/A	N/A	N/A	N/A	32	69	81	96	131	101
beauveria bassiana strain ant-03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,182	4,606
beauveria bassiana strain gha	4,017	6,857	10,900	14,377	11,145	16,957	17,983	14,720	22,405	22,700
beauveria bassiana strain ppri 5339	N/A	N/A	N/A	N/A	N/A	N/A	N/A	131	622	416
beta-conglutin	N/A	N/A	N/A	9,032	12,422	15,510	9,584	6,803	9,778	13,117

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
buffalo gourd root powder	25	161	200	224	114	154	194	197	15	20
burkholderia sp strain a396 cells and fermentation media	N/A	N/A	196	5,531	6,816	17,303	35,117	82,890	98,846	88,667
butyl mercaptan	<0.01	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	N/A	<0.01	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	0	N/A	452
canola oil	2,329	5,788	4,272	7,455	20,351	47,851	75,266	61,484	52,460	37,044
capsicum oleoresin	576	546	1,541	1,997	2,084	3,777	6,459	4,937	4,314	2,990
carbon dioxide	1,796	5	20	19	2	<0.01	<0.01	<0.01	<0.01	9
castor oil	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	0	N/A	10	<0.01
chenopodium ambrosiodes near ambrosiodes	13,401	22,574	25,820	19,072	15,804	15,002	635	267	93	196
chromobacterium subtsugae strain praa4-1	1,424	38,138	61,191	62,518	43,365	48,875	55,891	53,344	48,885	39,152
cinnamaldehyde	N/A	N/A	N/A	N/A	N/A	110	0	N/A	8,454	6,980
citric acid	1,389,828	1,542,679	1,686,277	1,923,049	2,202,219	2,158,349	2,189,904	2,350,300	2,325,095	2,185,354
clarified hydrophobic extract of neem oil	43,193	60,212	85,369	87,947	65,680	59,527	47,146	52,577	52,358	27,797
codling moth granulosus virus	3,445	4,341	4,530	3,683	2,938	4,426	4,922	5,431	6,827	4,860
coniothyrium minitans strain con/m/91-08	1,697	4,286	4,886	6,194	4,105	5,134	3,250	1,978	4,891	4,291
corn syrup	27,760	15,992	14,206	18,817	18,940	48,655	74,221	63,679	50,796	35,423
cottonseed oil	95,344	98,797	78,736	67,349	41,034	36,856	35,581	32,024	15,258	14,019
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)	2,409	352	3,290	1,966	1,910	3,506	5,052	1,159	115	1,135
diallyl disulfide	N/A	N/A	N/A	N/A	225	223	N/A	N/A	85	N/A
dihydro-5-heptyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
dihydro-5-pentyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A	N/A
e,e-8,10-dodecadien-1-ol	15,908	18,241	16,548	10,763	12,918	17,123	15,873	15,746	15,949	14,912
e-11-tetradecen-1-yl acetate	4,485	4,396	489	696	369	1,013	421	557	1,750	154
e-8-dodecenyl acetate	49,300	47,640	41,405	42,645	39,638	38,315	42,097	45,933	43,639	40,585
encapsulated delta endotoxin of bacillus thuringiensis var. kurstaki in killed pseudomonas fluorescens	<0.01	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	<0.01	181	61	169	124	52	221
ethylene	49	36	21	28	77	26	17	16	13	25
eugenol	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A	N/A	N/A
farnesol	2,227	3,940	3,547	3,121	4,331	5,936	5,749	4,265	3,707	3,631
fenugreek	271	88	68	73	N/A	4	198	86	10	0
ferric sodium edta	8,428	8,038	10,540	12,522	13,115	13,697	14,410	11,970	8,557	6,776
fish oil	382	252	N/A	N/A	66	N/A	N/A	N/A	172	N/A
formic acid	369	5	178	1,203	60	1	402	<0.01	<0.01	4
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	1,811	576	314	287	N/A	N/A	N/A	N/A	N/A	N/A
garlic	12,410	14,485	8,509	4,767	7,185	3,819	6,615	8,091	6,879	4,993
geraniol	2,220	3,939	3,545	3,111	4,331	5,936	5,749	4,265	3,707	3,631
german cockroach pheromone	<0.01	<0.01	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	N/A	N/A
gibberellins	531,046	550,518	530,086	523,059	544,711	501,854	506,560	529,262	507,784	485,924
gibberellins, potassium salt	795	N/A	N/A	N/A	N/A	58	N/A	N/A	N/A	N/A
gliocladium virens gl-21 (spores)	3,172	5,444	5,187	7,439	7,140	4,914	4,300	2,396	168	48
glutamic acid	1,811	576	314	287	N/A	N/A	N/A	N/A	N/A	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
gs-omega/kappa-hctx-hv1a (versitide peptide)	N/A	N/A	N/A	N/A	1	N/A	1	324	36,966	81,687
harpin protein	115	95	1	N/A	112	0	N/A	N/A	N/A	17
heptyl butyrate	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
hydrogen peroxide	21,877	22,957	27,951	32,676	69,022	65,570	103,675	297,961	201,083	189,893
hydroprene	2	4	0	0	7	28	35	31	9	15
iba	1,283	962	940	489	808	1,437	528	813	890	1,074
indole	N/A	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
iron hedta	<0.01	2	<0.01	<0.01	<0.01	2	<0.01	<0.01	<0.01	<0.01
iron phosphate	6,519	6,286	8,109	8,618	13,322	11,992	9,259	10,469	12,748	9,579
isaria fumosorosea strain fe 9901	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9
kaolin	57,877	80,075	88,044	101,645	115,467	103,356	99,004	80,705	79,900	71,882
kinoprene	3	6	25	7	3	0	6	0	3	1
lactic acid	N/A	N/A	N/A	38	59	225	3	99	83	78
lactose	68,442	80,242	61,764	81,390	77,746	74,127	70,431	72,066	65,994	66,439
lagenidium giganteum (california strain)	2	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	N/A	707	4,107
lauryl alcohol	6,681	7,807	5,681	5,725	4,718	4,354	4,793	3,755	5,058	5,350
lavandulyl senecioate	6,666	5,869	6,294	8,424	18,076	74,825	141,767	194,088	179,933	208,399
limonene	73,605	29,577	32,924	45,208	40,224	68,084	54,171	47,966	47,079	29,346
linalool	<0.01	<0.01	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
margosa oil	7,977	9,546	19,013	19,917	25,805	32,268	23,518	37,578	37,380	38,862
menthol	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
metarhizium anisopliae strain f52	202	133	634	122	55	2	0	1	0	N/A
methoprene	<0.01	<0.01	<0.01	<0.01	42	106	<0.01	710	1,986	633
methyl anthranilate	215	1,092	808	895	1,463	2,490	2,041	1,908	2,933	2,879
methyl eugenol	N/A	<0.01	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
methyl nonyl ketone	N/A	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
methyl salicylate	N/A	N/A	N/A	N/A	N/A	10	44	N/A	N/A	144
muscalure	40	50	139	41	19	178	125	36	24	25

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
muscodor albus strain sa13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	135	N/A
myristyl alcohol	6,681	7,807	5,681	5,725	4,718	4,354	4,793	3,755	5,058	5,350
myrothecium verrucaria, dried fermentation solids & solubles, strain aarc-0255	4,274	4,456	3,637	8,775	6,473	4,075	5,037	4,966	3,720	1,801
n6-benzyl adenine	1,666	2,954	2,630	2,595	2,999	2,322	3,160	5,415	3,771	3,516
naa	655	293	109	210	84	84	17	18	19	26
naa, ammonium salt	11,922	10,611	9,703	9,966	778	671	2,792	1,728	2,371	1,407
naa, ethyl ester	384	113	189	37	45	7,899	8,232	9,856	5,802	5,181
naa, potassium salt	N/A	6	110	35	8,819	8,650	5,764	5,725	5,082	5,392
naa, sodium salt	N/A	153	85	55	11	N/A	N/A	22	N/A	N/A
natamycin	N/A	7	32	35	27	5	N/A	90	113	3
nerolidol	2,227	3,940	3,547	3,121	4,331	5,936	5,749	4,265	3,707	3,631
nitrogen, liquefied	<0.01	<0.01	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
nonanoic acid	480	2,166	2,074	1,040	653	1,889	1,394	628	406	1,031
nonanoic acid, other related	460	2,166	2,074	1,040	653	1,219	619	488	396	276
nosema locustae spores	1,612	1,207	910	750	50	0	1	N/A	116	0
oil of anise	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	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	N/A	<0.01	<0.01	N/A	N/A	N/A	N/A	N/A
oil of citronella	N/A	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
oil of jojoba	1,077	316	323	83	16	5	N/A	7	N/A	N/A
oil of lemon eucalyptus	<0.01	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	N/A	21,472	37,651	66,215	53,681	47,190	45,629	28,726
oxypurinol	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	<0.01	N/A
paecilomyces fumosoroseus apopka strain 97	2,113	12,822	18,487	19,097	31,000	26,577	15,462	23,738	27,792	17,300

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
pantoea agglomerans strain e325, nrri b-21856	50	50	N/A	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	561	219	<0.01	1,837	3,142	2,284	2,025	570	62	N/A
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 helicoverpa zea (corn earworm)	1,297	337	518	1,011	4,902	8,857	8,803	4,958	7,220	9,616
polyoxin d, zinc salt	95,645	143,483	165,601	191,654	231,719	242,568	264,129	305,808	268,105	230,109
potassium bicarbonate	75,445	85,935	85,701	112,055	156,452	162,481	125,421	156,476	106,704	72,168
potassium phosphite	115,913	131,623	214,917	199,632	299,260	387,641	411,300	545,143	467,907	418,409
potassium silicate	537	3,524	12,973	13,499	12,133	14,938	8,228	12,930	20,729	16,592
potassium sorbate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A
propylene glycol	676,714	974,932	1,069,976	1,107,639	1,122,703	1,209,428	1,187,145	1,277,622	1,141,059	991,384
propyleneglycol monolaurate	N/A	159	76	N/A	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	1,093	4,671
pseudomonas fluorescens, strain a506	372	431	1,178	376	601	524	533	328	167	218
pseudomonas syringae, strain esc-10	N/A	<0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
purpureocillium lilacinum strain 251	3,531	20,039	25,826	32,089	26,924	22,752	15,917	11,461	12,699	12,506
putrescent whole egg solids	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
pythium oligandrum dv74	2	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
qst 713 strain of dried bacillus subtilis	124,794	141,336	138,006	140,844	130,217	128,151	145,009	178,791	152,964	144,900
quillaja	22,907	28,538	30,232	31,107	53,339	53,857	69,345	54,788	33,988	17,209
reynoutria sachalinensis	94,114	96,190	95,988	105,561	128,059	125,137	112,110	138,953	136,460	103,944
s-abscisic acid	14,974	11,645	12,761	11,202	11,471	12,079	8,770	7,937	6,772	8,543
s-methoprene	87,637	49,491	53,371	102,129	76,961	53,963	71,339	105,757	118,467	66,474
sawdust	74	109	N/A	N/A	160	N/A	N/A	N/A	<0.01	300
sesame oil	39	1	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A
silver nitrate	5	N/A	N/A	N/A	0	1	N/A	2	2	121
sodium bicarbonate	1,101	291	544	706	796	162	1	N/A	2	N/A
sodium carbonate peroxyhydrate	13,797	11,764	17,035	8,051	10,137	7,129	12,824	12,061	13,308	12,227
sodium chloride	73	207	135	66	134	144	42	100	75	35
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	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	0
soybean oil	3,303	4,524	6,275	5,476	7,018	7,910	18,460	29,903	29,024	29,118
streptomyces griseoviridis strain k61	0	5	10	18	5	4	5	2	0	0
streptomyces lydicus wyec 108	10,367	16,071	14,050	16,546	20,473	15,970	10,221	15,115	11,087	8,440
sucrose octanoate	1	5	10	2	12	<0.01	N/A	N/A	N/A	N/A
sugar	4,843	1,062	1,427	452	504	86	212	160	57	194
swinglea glutinosa extract	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,348
tea tree oil	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29
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	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
thymol	18	1	1	1,267	490	44	311	608	2,613	86
trichoderma harzianum rifai strain krl-ag2	1,088	994	2,507	2,346	2,207	2,244	2,404	2,412	1,629	1,657

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
trichoderma icc 012 asperellum	704	604	35	251	159	92	139	444	650	2,513
trichoderma icc 080 gamsii	704	604	35	251	159	92	139	444	650	2,513
trimethylamine	N/A	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
ulocladium oudemansii (u3 strain)	N/A	19	707	406	150	28	1,674	1,178	715	460
vanillin	271	88	68	73	N/A	4	198	86	10	0
vegetable oil	266,226	350,771	243,680	311,693	405,341	603,909	584,960	513,784	396,440	322,826
xanthine	N/A	N/A	6	N/A	N/A	N/A	N/A	N/A	<0.01	N/A
yeast	3,729	325	142	220	25	6	14	<0.01	<0.01	34
yucca schidigera	16,093	19,524	11,285	7,347	9,376	6,289	10,926	14,716	12,052	9,877
z,e-9,12-tetradecadien-1-yl acetate	<0.01	<0.01	<0.01	<0.01	<0.01	43	507	3,079	<0.01	689
z-11-tetradecen-1-yl acetate	3,877	3,411	23	51	20	639	57	506	1,639	97
z-8-dodecenol	49,300	47,640	41,405	42,645	39,638	38,315	42,097	45,933	43,639	40,585
z-8-dodecenyl acetate	49,300	47,640	41,405	42,645	39,638	38,315	42,097	45,933	43,639	40,585
Total	5,590,494	6,551,858	6,925,111	7,488,061	8,018,095	8,560,111	8,638,344	9,592,425	9,047,137	8,439,702