

Use Trends of Biopesticides: Pounds Applied

Text files of data are available at <<https://files.cdpr.ca.gov/pub/outgoing/pur/data/>>. The reported pounds of chemicals used 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 both agricultural and reportable nonagricultural applications. The word "none" or "N/A" indicates no use at all that year. Values > 1 are rounded.

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
(3s, 6r)-3-methyl-6-isopropenyl-9-decen-1-yl acetate	<0.01	N/A	<0.01	N/A	0	12	148	65	51	53
(3s, 6s)-3-methyl-6-isopropenyl-9-decen-1-yl acetate	<0.01	N/A	<0.01	N/A	0	12	148	65	51	53
(e)-4-tridecen-1-yl acetate	N/A	N/A	23	N/A	N/A	N/A	0	0	0	N/A
(e)-5-decen-1-ol	0	0	0	1	8	2	2	45	51	28
(e)-5-decenol	2	3	1	7	8	95	5	6	2	1
(e)-5-decenyl acetate	10	7	4	17	134	99	63	746	840	463
(e,e)-9, 11-tetradecadien-1-yl acetate	3	4	3	3	1	12	2	0	0	0
(e,z)-7,9-dodecadien-1-yl acetate	270	24	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(s)-kinoprene	300	285	311	429	327	253	378	531	478	359
(s)-verbenone	55	N/A	N/A	781	633	28	5	26	12	14
(z)-11-hexadecen-1-yl acetate	N/A	N/A	N/A	N/A	0	98	34	30	92	294
(z)-11-hexadecenal	N/A	N/A	N/A	1	1	98	33	19	92	293
(z)-4-tridecen-1-yl acetate	N/A	N/A	1	N/A	N/A	N/A	0	3	6	N/A
(z)-9-dodecenyl acetate	0	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
(z,e)-7,11-hexadecadien-1-yl acetate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A
(z,z)-11,13-hexadecadienal	271	321	619	969	1,072	1,086	1,404	1,846	1,511	1,644
(z,z)-7,11-hexadecadien-1-yl acetate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A
1,4-dimethylnaphthalene	893	1,163	1,085	891	660	133	836	379	274	411
1,7-dioxaspiro-(5,5)-undecane	0	1	0	1	N/A	N/A	N/A	N/A	N/A	N/A
1-methylcyclopropene	1	1	0	1	1	1	1	1	0	0
1-naphthaleneacetamide	20	19	22	18	14	11	17	11	11	1
2,4-decadienoic acid, ethyl ester, (2e,4z)-	N/A	N/A	0	4	3	3	2	1	48	4
2-methyl-1-butanol	N/A	0	0	0	0	1	0	1	1	2
3,13 octadecadien-1-yl acetate	N/A	<0.01	N/A	0	142	N/A	N/A	N/A	N/A	N/A
3,7-dimethyl-6-octen-1-ol	28	54	42	49	72	95	98	70	62	60
3-decen-2-one	N/A	N/A	N/A	N/A	N/A	N/A	N/A	443	N/A	N/A
acetic acid	601	43	62	20,806	9,111	5,357	4,248	1,508	2,007	286
agrobacterium radiobacter	28	230	271	137	2,561	64	59	248	49	49
agrobacterium radiobacter, strain k1026	0	34	0	0	<0.01	N/A	N/A	N/A	N/A	N/A
allyl isothiocyanate	0	N/A	N/A	N/A	0	N/A	N/A	0	N/A	N/A
almond, bitter	0	0	<0.01	0	N/A	<0.01	0	<0.01	<0.01	<0.01
amino ethoxy vinyl glycine hydrochloride	1,368	1,444	1,757	2,011	1,380	1,296	2,532	2,983	3,003	2,267

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ammonium bicarbonate	7	51	34	42	N/A	N/A	N/A	N/A	0	N/A
ammonium nitrate	66,531	86,008	88,037	91,564	89,252	86,912	78,360	84,603	80,366	73,202
ammonium nonanoate	N/A	1,937	3,131	3,399	27,356	19,625	17,272	5,421	8,751	9,006
aspergillus flavus strain af36	4	4	8	9	14	15	16	18	20	24
aureobasidium pullulans strain dsm 14940	N/A	81	458	356	1,095	2,493	3,956	2,794	2,353	2,209
aureobasidium pullulans strain dsm 14941	N/A	81	458	356	1,095	2,493	3,956	2,794	2,353	2,209
azadirachtin	4,193	3,387	4,323	5,108	4,774	4,884	4,424	4,586	6,191	6,645
bacillus amyloliquefaciens strain d747	869	84,957	177,589	131,298	209,773	395,706	272,746	298,243	230,243	220,056
bacillus amyloliquefaciens strain f727	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	32,134	17,863
bacillus amyloliquefaciens strain mbi 600	0	0	N/A	N/A	15	79	275	699	1,300	1,595
bacillus firmus (strain i-1582)	N/A	N/A	42	190	170	212	160	33	28	7
bacillus mycoides isolate j	N/A	N/A	N/A	N/A	N/A	1,085	568	531	423	178
bacillus popilliae	N/A	<0.01	0	0	<0.01	N/A	<0.01	N/A	N/A	N/A
bacillus pumilus, strain qst 2808	6,771	6,249	7,957	8,123	7,890	9,239	7,552	7,735	10,181	8,701
bacillus sphaericus 2362, serotype h5a5b, strain abts 1743 fermentation solids, spores and insecticidal toxins	9,123	10,500	10,499	12,357	13,122	16,362	10,812	11,726	10,813	7,196

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
bacillus subtilis gb03	1	1	2	3	3	4	3	3	2	2
bacillus subtilis strain iab/bs03	N/A	N/A	N/A	N/A	N/A	N/A	5	48	18	166
bacillus subtilis var. amyloliquefaciens strain fzb24	2	94	119	178	6	<0.01	N/A	N/A	N/A	N/A
bacillus thuringiensis (berliner)	18	11	4	29	21	14	17	8	13	21
bacillus thuringiensis (berliner), subsp. aizawai, gc-91 protein	17,042	13,265	18,776	16,771	18,882	34,178	45,073	54,344	58,210	56,006
bacillus thuringiensis (berliner), subsp. aizawai, serotype h-7	714	359	333	184	73	118	48	548	43	82
bacillus thuringiensis (berliner), subsp. israelensis, serotype h-14	6,028	2,588	4,932	6,633	5,829	5,957	5,563	8,430	5,871	5,596
bacillus thuringiensis (berliner), subsp. kurstaki strain sa-12	10,361	8,311	7,971	8,579	9,804	2,218	563	352	404	414
bacillus thuringiensis (berliner), subsp. kurstaki, serotype 3a,3b	234	53	41	18	34	76	91	27	4	7
bacillus thuringiensis (berliner), subsp. kurstaki, strain eg 2348	44	500	514	344	645	396	8	0	0	0
bacillus thuringiensis (berliner), subsp. kurstaki, strain sa-11	52,424	78,064	80,401	80,958	74,963	96,414	119,097	116,440	142,755	118,208
bacillus thuringiensis (berliner), subsp. san diego	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	N/A	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
bacillus thuringiensis subspecies kurstaki strain bmp 123	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5	N/A
bacillus thuringiensis subspecies kurstaki, genetically engineered strain eg7841 lepidopteran active toxin	298	116	65	3	43	3	1	2,503	14,065	15,633
bacillus thuringiensis var. kurstaki strain m-200	N/A	N/A	N/A	<0.01	N/A	<0.01	1	0	N/A	N/A
bacillus thuringiensis var. kurstaki, genetically engineered strain eg7826	528	N/A	N/A	N/A	7	N/A	15	N/A	N/A	N/A
bacillus thuringiensis, subsp. aizawai, strain abts-1857	30,649	29,863	49,186	55,914	72,261	92,931	88,725	118,092	129,650	146,273
bacillus thuringiensis, subsp. aizawai, strain sd-1372, lepidopteran active toxin(s)	1	18	6	43	13	6	16	2	1	6
bacillus thuringiensis, subsp. israelensis, strain am 65-52	179,756	56,363	49,610	55,727	80,137	73,504	75,322	66,789	74,906	67,896
bacillus thuringiensis, subsp. kurstaki, strain abts-351, fermentation solids and solubles	95,440	83,415	111,388	95,487	117,902	134,880	121,693	160,878	132,219	127,212
bacillus thuringiensis, subsp. kurstaki, strain hd-1	3,187	2,323	1,928	1,860	186	111	13	24	16	27

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
bacillus thuringiensis, var. kurstaki delta endotoxins cry 1a(c) and cry 1c (genetically engineered) encapsulated in pseudomonas fluorescens (killed)	4	N/A	0	N/A	<0.01	N/A	5	N/A	0	0
bacteriophage active against xanthomonas campestris pv. vesicatoria and pseudomonas syringae pv. tomato	<0.01	<0.01	<0.01	N/A	N/A	<0.01	N/A	<0.01	<0.01	N/A
bacteriophages active against xylella fastidiosa	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	<0.01
balsam fir oil	0	0	0	1	0	N/A	0	<0.01	N/A	N/A
beauveria bassiana hf 23	N/A	N/A	N/A	N/A	37	55	67	72	78	83
beauveria bassiana strain ant-03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	783	3,775
beauveria bassiana strain gha	1,221	1,796	2,749	3,514	2,850	5,690	7,040	6,211	6,993	7,651
beauveria bassiana strain ppri 5339	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11	141	543
beta-conglutin	N/A	N/A	N/A	6,762	6,099	7,383	4,314	2,968	4,819	6,915
buffalo gourd root powder	1	25	5	6	8	3	73	33	7	96
burkholderia sp strain a396 cells and fermentation media	N/A	N/A	2,829	58,593	53,655	115,528	216,387	412,625	553,798	527,545
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

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
calcium salts of phosphorous acid	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A
canola oil	15	28	61	97	247	286	2,177	2,833	3,051	1,446
capsicum oleoresin	12	10	27	92	125	203	635	409	419	287
carbon dioxide	42,612	21,186	18,297	17,675	25,366	26,359	36,307	73,226	38,421	45,292
castor oil	2	0	8	0	4	N/A	3	N/A	15	1
chenopodium ambrosiodes near ambrosiodes	10,231	20,267	17,504	12,828	10,207	8,300	387	186	85	146
chromobacterium subtsugae strain praa4-1	1,169	30,262	46,419	45,917	31,445	36,395	42,933	39,024	37,379	28,564
cinnamaldehyde	N/A	N/A	N/A	N/A	N/A	59	1	N/A	4,032	3,173
citric acid	94,969	128,806	114,940	126,174	142,111	136,402	152,412	166,097	178,147	191,635
clarified hydrophobic extract of neem oil	78,007	119,298	197,351	222,748	166,062	173,113	138,380	139,921	199,865	80,284
codling moth granulosis virus	0	0	0	0	0	0	0	0	1	1
coniothyrium minitans strain con/m/91-08	245	611	641	786	657	665	424	216	543	489
corn syrup	4,766	3,216	3,344	4,342	4,850	14,787	22,773	18,305	16,166	13,969
cottonseed oil	114,610	105,083	132,464	87,451	55,082	45,678	35,072	39,589	16,873	21,715
coyote urine	2	3	9	6	3	6	3	3	3	2
cytokinin (as kinetin)	0	<0.01	0	0	0	0	0	0	<0.01	0
diallyl disulfide	N/A	N/A	N/A	N/A	103	94	N/A	N/A	26	N/A
dihydro-5-heptyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A
dihydro-5-pentyl-2(3h)-furanone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<0.01	N/A	N/A
e,e-8,10-dodecadien-1-ol	1,995	2,276	1,395	1,445	1,079	5,420	1,209	863	1,214	965
e-11-tetradecen-1-yl acetate	133	142	61	73	32	295	40	8	12	2
e-8-dodecenyl acetate	283	273	224	339	390	1,714	271	323	538	199

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
encapsulated delta endotoxin of bacillus thuringiensis var. kurstaki in killed pseudomonas fluorescens	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
essential oils	1	0	15	12	20	24	11	7	1	1
ethylene	954	1,359	1,333	1,683	1,299	1,248	953	1,022	904	828
eugenol	1	0	1	0	1	0	0	N/A	N/A	N/A
farnesol	11	21	17	20	29	38	39	28	25	24
fenugreek	8	2	1	7	N/A	0	10	0	0	0
ferric sodium edta	6,351	5,855	6,790	8,000	12,449	12,329	8,118	8,568	5,866	4,312
fish oil	5,466	4,114	N/A	N/A	1,078	N/A	N/A	N/A	2,561	N/A
formic acid	634	66	337	2,606	1,243	984	1,647	352	6,568	220
fox urine	2	1	4	3	1	4	2	1	2	1
gamma aminobutyric acid	133	42	15	15	N/A	N/A	N/A	N/A	N/A	N/A
garlic	1,905	2,832	1,392	667	849	529	1,127	1,098	1,556	1,140
geraniol	28	54	42	49	72	95	98	70	62	60
german cockroach pheromone	<0.01	<0.01	<0.01	N/A	<0.01	<0.01	<0.01	<0.01	N/A	N/A
gibberellins	24,216	41,418	27,422	27,409	23,142	27,104	28,657	25,412	29,043	18,964
gibberellins, potassium salt	5	N/A	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A
gliocladium virens gl-21 (spores)	1,957	3,538	2,989	4,586	4,395	2,829	2,707	1,395	136	11
glutamic acid	133	42	15	15	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	N/A	0	N/A	3	22	1,423	3,879
harpin protein	1	1	<0.01	N/A	0	<0.01	N/A	N/A	N/A	0
heptyl butyrate	0	14	6	4	3	13	4	28	12	6
hydrogen peroxide	36,310	47,239	49,826	74,419	130,417	312,065	355,410	460,548	564,259	564,514
hydroprene	3,948	7,352	5,734	6,456	3,920	3,155	2,935	4,250	2,823	1,812

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
iba	12	15	14	13	10	19	17	29	31	50
indole	N/A	<0.01	N/A	<0.01	0	0	0	0	0	0
iron hedta	43	92	120	91	170	213	113	157	185	186
iron phosphate	2,327	2,119	2,007	2,071	2,250	3,482	2,837	3,208	3,543	2,680
isaria fumosorosea strain fe 9901	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20
kaolin	2,014,970	2,473,768	2,854,542	3,411,740	3,591,384	3,193,218	3,270,212	2,723,607	2,957,908	2,616,436
kinoprene	3	8	33	17	10	1	0	0	2	1
lactic acid	N/A	N/A	N/A	2	3	12	10	15	19	23
lactose	6,554	7,143	6,616	7,855	8,501	8,889	7,959	8,192	7,402	7,542
lagenidium giganteum (california strain)	5	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	25	196
lauryl alcohol	755	449	293	501	319	2,566	309	230	437	260
lavandulyl senecioate	586	477	3,166	507	1,035	1,312	2,282	4,190	3,325	2,689
limonene	74,369	61,334	68,137	72,906	67,550	92,320	106,974	56,867	57,306	46,795
linalool	136	72	62	93	15	11	2	1	0	<0.01
margosa oil	9,106	12,189	22,585	26,019	32,493	25,061	13,756	41,100	39,013	50,904
menthol	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
metarhizium anisopliae strain f52	116	89	121	20	54	2	1	1	0	N/A
methoprene	1,304	1,350	3,556	1,390	1,271	1,064	764	801	1,719	2,867
methyl anthranilate	300	1,237	634	672	789	1,118	958	1,208	1,396	1,581
methyl eugenol	N/A	9	N/A	N/A	126	386	1,149	1,138	500	691
methyl nonyl ketone	N/A	0	0	0	0	0	1	0	0	N/A
methyl salicylate	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A	1
muscalure	16	13	17	23	30	44	60	20	14	15
muscodor albus strain sa13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	270	N/A
myristyl alcohol	155	91	60	102	65	520	63	47	89	53

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
myrothecium verrucaria, dried fermentation solids & solubles, strain aarc- 0255	25,556	26,005	17,675	30,810	26,033	22,923	23,021	21,639	22,057	11,418
n6-benzyl adenine	168	183	184	230	221	161	198	477	364	274
naa	9	15	12	18	11	100	11	14	20	9
naa, ammonium salt	1,400	1,056	945	996	125	181	335	249	257	220
naa, ethyl ester	4	3	5	3	38	10,502	13,162	13,844	7,899	7,051
naa, potassium salt	N/A	53	15	2	934	1,017	607	613	599	578
naa, sodium salt	N/A	2	1	0	0	N/A	N/A	1	N/A	N/A
natamycin	N/A	0	1	1	1	0	N/A	96	288	6
nerolidol	28	54	42	49	72	95	98	70	62	60
nitrogen, liquefied	74	594	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A
nonanoic acid	18,200	21,545	17,530	14,482	13,301	14,610	12,755	12,359	13,722	10,367
nonanoic acid, other related	958	1,134	923	762	700	769	671	649	722	544
nosema locustae spores	1	0	0	0	1	<0.01	<0.01	N/A	<0.01	<0.01
oil of anise	0	0	<0.01	0	0	<0.01	<0.01	0	N/A	N/A
oil of black pepper	<0.01	1	1	0	0	0	0	0	0	0
oil of cedarwood	N/A	N/A	N/A	0	<0.01	N/A	N/A	N/A	N/A	N/A
oil of citronella	N/A	N/A	1	5	0	1	0	1	1	0
oil of jojoba	507	135	376	44	19	2	N/A	12	N/A	N/A
oil of lemon eucalyptus	3	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	198	386	1,360	479	487	506	381
oxypurinol	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	<0.01	N/A
paecilomyces fumosoroseus apopka strain 97	508	3,302	5,951	5,631	8,947	8,659	5,100	8,346	8,649	5,558
pantoea agglomerans strain e325, nrri b- 21856	1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
phenylethyl propionate	535	701	712	185	96	140	34	20	15	42
phosphoric acid, monopotassium salt	3,927	1,918	374	9,585	15,002	11,445	10,125	3,350	275	N/A
piperine	<0.01	0	0	0	0	0	0	0	0	0
polyhedral occlusion bodies (ob's) of the nuclear polyhedrosis virus of helicoverpa zea (corn earworm)	6	1	2	4	20	41	41	22	33	46
polyoxin d, zinc salt	4,738	6,731	7,412	8,613	10,308	10,656	11,457	13,147	11,805	9,502
potassium bicarbonate	229,238	239,909	223,547	318,119	462,830	489,086	350,416	470,689	314,301	192,488
potassium phosphite	281,901	390,547	708,940	666,757	952,554	1,167,494	1,205,225	1,652,977	1,409,055	1,259,728
potassium silicate	988	5,407	23,582	36,525	25,901	33,039	13,821	28,004	51,209	26,757
potassium sorbate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	N/A
propylene glycol	60,679	86,335	90,353	87,138	91,155	103,909	108,383	122,442	104,064	98,606
propyleneglycol monolaurate	N/A	203	44	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	3,387	8,474
pseudomonas fluorescens, strain a506	59	92	270	87	123	111	113	66	38	39
pseudomonas syringae, strain esc-10	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
purpureocillium lilacinum strain 251	840	4,073	5,031	6,408	6,273	5,474	3,817	2,939	3,417	3,390
putrescent whole egg solids	1	1	1	1	6	5	6	2	6	8
pythium oligandrum dv74	<0.01	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
qst 713 strain of dried bacillus subtilis	23,645	24,605	20,969	20,919	21,063	21,952	21,291	25,549	19,022	16,868
quillaja	785	1,040	775	829	1,027	1,385	1,452	1,636	1,259	1,088
reynoutria sachalinensis	14,803	15,355	16,105	18,362	23,508	23,644	20,086	23,471	23,882	19,562
s-abscisic acid	2,651	2,131	2,382	2,114	2,192	2,220	1,861	1,856	1,222	1,590
s-methoprene	2,324	2,331	2,524	2,781	3,220	3,133	4,077	11,691	4,192	6,646
sawdust	4	4	N/A	N/A	1	N/A	N/A	N/A	0	13
sesame oil	15	0	N/A	N/A	N/A	N/A	2	N/A	N/A	N/A
silver nitrate	<0.01	N/A	N/A	N/A	<0.01	0	N/A	0	<0.01	1
sodium bicarbonate	179	44	479	420	13,604	3,679	3	N/A	1	N/A
sodium carbonate peroxyhydrate	300,693	295,762	463,448	244,233	261,347	165,621	329,252	276,394	277,896	266,624
sodium chloride	111	119	211	216	128	81	110	147	82	158
sodium lauryl sulfate	884	431	570	1,749	507	1,200	1,334	1,148	1,223	1,235
sorbitol octanoate	N/A	N/A	N/A	N/A	N/A	0	N/A	N/A	N/A	0
soybean oil	22,065	45,973	59,297	69,771	84,295	80,999	82,753	70,341	70,941	67,346
streptomyces griseoviridis strain k61	<0.01	10	11	18	5	4	2	1	0	0
streptomyces lydicus wyec 108	2	3	3	3	4	3	2	4	2	2
sucrose octanoate	55	188	98	203	29	7	N/A	N/A	N/A	N/A
sugar	1,240	51	16	60	667	4	20	775	120	69
swinglea glutinosa extract	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18,636
tea tree oil	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9
thyme	844	1,135	1,150	257	122	181	25	11	9	9
thyme oil	N/A	N/A	N/A	1	3	12	7	7	3	51
thymol	181	398	314	278	570	564	679	162	455	181
trichoderma harzianum rifai strain krl-ag2	158	186	86	65	112	64	86	95	80	116
trichoderma icc 012 asperellum	19	43	2	2	9	4	1	32	24	50

Chemical	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
trichoderma icc 080 gamsii	19	43	2	2	9	4	1	32	24	50
trimethylamine	N/A	0	N/A	<0.01	0	0	0	0	0	0
ulocladium oudemansii (u3 strain)	N/A	29	792	516	155	34	2,131	1,444	836	595
vanillin	1	0	0	1	N/A	<0.01	2	0	0	<0.01
vegetable oil	276,278	315,218	267,446	485,628	517,951	665,971	828,425	669,353	581,767	449,080
xanthine	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	<0.01	N/A
yeast	818	80	32	86	14	4	12	0	0	30
yucca schidigera	7,147	12,327	5,652	2,565	3,130	2,173	5,733	6,806	4,935	6,510
z,e-9,12-tetradecadien-1-yl acetate	6	14	122	20	10	21	62	159	20	70
z-11-tetradecen-1-yl acetate	8	8	0	0	0	0	0	0	0	<0.01
z-8-dodecenol	48	44	38	52	60	201	47	52	93	35
z-8-dodecenyl acetate	4,005	3,467	3,248	3,765	4,300	6,479	4,157	4,052	8,206	3,082
Total	4,320,493	5,090,982	6,167,978	6,882,041	7,690,007	8,119,189	8,399,953	8,650,973	8,652,867	7,651,511