# Use Trends of Biopesticides: Cumulative Acres Treated

Text files of data are available. The reported cumulative acres treated with biopesticides. Biopesticides include naturally occurring substances that control pests (biochemical pesticides) and microorganisms that control pests (microbial pesticides). The definition may also include new technologies that do not easily fit into one of those two categories. Acres treated totals are cumulative, meaning that if a one-acre field was treated three times in a year, the cumulative acres treated would equal three acres. Cumulative acres treated totals include pesticide use reports (PURs) with unit treated equal to acres (A) or square feet (S), the latter of which was converted to acres. PURs with volume (cubic feet, etc.), weight (tons, lbs, etc.), or miscellaneous units (bins, holes, etc.) are not included in the acres treated totals. Most nonagricultural PURs are not required to report acres treated, so the acres treated totals are predominantly agricultural pesticide uses. If pounds were reported for a year but acres treated is zero, then the pesticide use was non-agricultural. The total for acres treated may be less than the sum of the table rows because the total is adjusted to prevent the overcounting of acreage for pesticide products with more than one active ingredient. Values greater than one are rounded. For more information, see Pesticide Use Annual Report Data Access, References, and Definitions Guide.

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| (3s,6r)-3-methyl-6-isopropenyl-9-decen-1-yl acetate | 0 | 215 | 8,683 | 35,138 | 58,613 | 59,905 | 60,468 | 60,617 | 67,619 | 61,093 |
| (3s,6s)-3-methyl-6-isopropenyl-9-decen-1-yl acetate | 0 | 215 | 8,683 | 35,138 | 58,613 | 59,905 | 60,468 | 60,617 | 67,619 | 61,093 |
| (e)-4-tridecen-1-yl-acetate | 0 | 0 | 0 | 0 | 11 | 10 | 0 | 0 | 0 | 0 |
| (e)-5-decen-1-ol | 565 | 1,349 | 1,692 | 2,507 | 2,480 | 3,121 | 2,043 | 1,963 | 1,961 | 1,500 |
| (e)-5-decenyl acetate | 565 | 1,349 | 1,692 | 2,507 | 2,480 | 3,121 | 2,043 | 1,963 | 1,961 | 1,500 |
| (e,e)-8,10-dodecadien-1-ol | 9,733 | 12,418 | 16,774 | 15,777 | 15,437 | 16,180 | 14,787 | 13,821 | 16,102 | 13,542 |
| (e,e)-9, 11-tetradecadien-1-yl acetate | 543 | 264 | 263 | 341 | 51 | 110 | 57 | 21 | < 1 | 8 |
| (s)-kinoprene | 997 | 694 | 679 | 877 | 967 | 1,015 | 791 | 612 | 756 | 1,014 |
| (s)-verbenone | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 50 | 175 |
| (z)-11-hexadecen-1-yl acetate | 0 | 26 | 2,994 | 1,807 | 3,955 | 3,754 | 13,451 | 21,661 | 16,829 | 43,469 |
| (z)-11-hexadecenal | 74 | 145 | 2,951 | 1,351 | 876 | 3,754 | 12,762 | 21,651 | 16,829 | 43,437 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| (z)-4-tridecen-1-yl-acetate | 0 | 0 | 0 | 0 | 11 | 10 | 0 | 0 | 0 | 0 |
| (z)-9-dodecenyl acetate | 950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (z,e)-7,11-hexadecadien-1-yl acetate | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 |
| (z,z)-11,13-hexadecadienal | 61,037 | 66,068 | 67,233 | 89,479 | 186,467 | 175,122 | 196,805 | 214,702 | 338,707 | 338,504 |
| (z,z)-3,13-octadecadien-1-ol acetate | 10 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| (z,z)-7,11-hexadecadien-1-yl acetate | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 |
| 1,4-dimethylnaphthalene | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1,7-dioxaspiro-(5,5)-undecane | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1-aminocyclopropane-1-carboxylic acid | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 86 | 219 | 497 |
| 1-methylcyclopropene | 10 | 6 | 13 | 5 | 4 | 2 | 1 | 2 | 2 | 2 |
| 2,4-decadienoic acid, ethyl ester, (2e,4z)- | 3,246 | 1,308 | 1,014 | 582 | 1,609 | 1,167 | 278 | 322 | 1,641 | 517 |
| 2-methyl-1-butanol | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3,7-dimethyl-6-octen-1-ol | 3,111 | 4,331 | 5,936 | 5,749 | 4,265 | 3,707 | 3,631 | 2,328 | 1,419 | 266 |
| 3-decen-2-one | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Acetic acid | 15,815 | 10,437 | 18,729 | 13,906 | 15,506 | 8,018 | 7,569 | 2,529 | 31 | 2 |
| Aggregated adjuvant data | 21,818 | 39,862 | 66,373 | 54,164 | 47,532 | 45,850 | 28,863 | 20,762 | 32,829 | 95,748 |
| Agrobacterium radiobacter strain: k1026 | 745 | < 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Agrobacterium radiobacter strain: k84 | 806 | 613 | 99 | 570 | 246 | 89 | 170 | 380 | 240 | 188 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Albifimbia verrucariasolids and solubles strain: aarc-0255 | 8,775 | 6,473 | 4,075 | 5,037 | 4,966 | 3,720 | 1,801 | 2,612 | 355 | 172 |
| Allyl isothiocyanate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Aminoethoxyvinylglycine hydrochloride | 20,248 | 14,254 | 13,067 | 25,478 | 32,244 | 32,205 | 22,356 | 18,925 | 11,551 | 14,160 |
| Ammonium bicarbonate | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ammonium nitrate | 988,882 | 882,616 | 830,497 | 741,547 | 676,471 | 652,453 | 644,424 | 540,360 | 559,763 | 506,888 |
| Ammonium nonanoate | 452 | 459 | 320 | 455 | 529 | 719 | 573 | 1,633 | 390 | 165 |
| Aspergillus flavus strain nrrl #21882 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 86,785 | 264,754 | 246,863 |
| Aspergillus flavus strain: af-36 | 159,586 | 183,128 | 188,090 | 207,315 | 220,108 | 250,238 | 304,380 | 270,857 | 120,322 | 122,067 |
| Aureobasidium pullulans subspecies pullulans dsm # 14940 | 1,569 | 5,376 | 8,675 | 18,112 | 12,117 | 11,353 | 10,582 | 7,097 | 3,336 | 2,672 |
| Aureobasidium pullulans subspecies pullulans dsm # 14941 | 1,569 | 5,376 | 8,675 | 18,112 | 12,117 | 11,353 | 10,582 | 7,097 | 3,336 | 2,672 |
| Azadirachtin | 194,100 | 175,629 | 175,709 | 151,565 | 158,987 | 195,339 | 206,154 | 213,212 | 164,485 | 136,630 |
| Bacillus altitudinis strain: qst 2808 | 89,494 | 83,285 | 95,326 | 84,837 | 86,122 | 109,660 | 94,727 | 75,454 | 75,005 | 83,375 |
| Bacillus amyloliquefacens strain: f727 | 0 | 0 | 0 | 0 | 0 | 7,568 | 3,557 | 5,819 | 16,626 | 13,094 |
| Bacillus amyloliquefaciens subsp. plantarum strain: fzb42 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 489 | 45 |
| Bacillus firmus strain: i-1582 | 45 | 41 | 43 | 29 | 5 | 6 | 0 | 6 | 0 | 0 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bacillus mycoides isolate j | 0 | 0 | 11,591 | 5,455 | 6,024 | 4,914 | 2,770 | 3,396 | 3,066 | 2,646 |
| Bacillus popilliae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus sphaericus 2362 serotype h5a5b strain: abts 1743 | 118 | 233 | 542 | 0 | 1,848 | 608 | 548 | 1,288 | 42 | 524 |
| Bacillus subtilis strain: afs032321 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,632 | 50 |
| Bacillus subtilis strain: fmch002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus subtilis subspecies subtilis strain: iab/bs03 | 0 | 0 | 0 | 3,277 | 13,910 | 11,465 | 18,557 | 24,727 | 24,327 | 18,080 |
| Bacillus subtilis var. amyloliquefaciens strain fzb24 | 4,328 | 152 | 0 | 0 | 0 | 0 | 0 | 0 | 406 | 29 |
| Bacillus thuringiensis (berliner) | 54 | 157 | 559 | 153 | 50 | 53 | 92 | 103 | 438 | 31 |
| Bacillus thuringiensis (berliner), subsp. aizawai, serotype h-7 | 1,360 | 624 | 1,025 | 451 | 3,146 | 387 | 584 | 362 | 264 | 203 |
| Bacillus thuringiensis (berliner), subsp. kurstaki, serotype 3a,3b | 152 | 314 | 597 | 1,337 | 332 | 12 | 25 | 22 | 75 | 134 |
| Bacillus thuringiensis (berliner), subsp. kurstaki, strain sa-11 | 79,130 | 69,697 | 63,724 | 76,889 | 85,142 | 100,368 | 87,241 | 86,892 | 64,662 | 76,146 |
| Bacillus thuringiensis (berliner), subsp. san diego | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus thuringiensis subsp. aizawai strain: abts-1857 | 70,658 | 86,966 | 111,201 | 104,954 | 141,820 | 150,009 | 172,665 | 191,347 | 174,736 | 175,592 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bacillus thuringiensis subsp. aizawai strain: gc-91 | 26,190 | 25,247 | 49,005 | 54,008 | 64,108 | 68,567 | 68,930 | 79,178 | 42,279 | 58,386 |
| Bacillus thuringiensis subsp. aizawai strain: sd-1372, lepidopteran active toxins | 306 | 120 | 77 | 118 | 18 | 2 | 26 | 27 | 51 | 0 |
| Bacillus thuringiensis subsp. israelensis strain: am 65-52 | 2,115 | 1,652 | 1,630 | 1,064 | 3,582 | 6,569 | 4,062 | 2,742 | 2,715 | 1,900 |
| Bacillus thuringiensis subsp. israelensis strain: sum-6218 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus thuringiensis subsp. kurstaki delta endotoxin protein (crya(c)), genetically engineered in kill pseudomonas fluorescens | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus thuringiensis subsp. kurstaki strain: abts-351 | 155,824 | 198,543 | 236,700 | 215,172 | 249,437 | 199,506 | 210,195 | 168,691 | 211,695 | 238,456 |
| Bacillus thuringiensis subsp. kurstaki strain: eg7826, genetically engineered | 0 | 9 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus thuringiensis subsp. kurstaki strain: eg7841 , genetically engineered | 116 | 473 | 8 | 3 | 4,205 | 21,591 | 30,292 | 18,932 | 5,129 | 5,615 |
| Bacillus thuringiensis subsp. kurstaki strain: evb-113-19 | 0 | 0 | 0 | 0 | 0 | 14,759 | 61,329 | 123,564 | 191,533 | 117,683 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Bacillus thuringiensis subsp. kurstaki strain: m-200 | 0 | 0 | 1 | 0 | < 1 | 0 | 0 | 0 | 0 | 0 |
| Bacillus thuringiensis subsp. kurstaki strain: sa-12 | 40,176 | 39,654 | 61,641 | 58,563 | 46,929 | 63,171 | 54,371 | 47,931 | 38,639 | 21,285 |
| Bacillus thuringiensis subspecies israelensis strain bmp 144 | 1,607 | 101 | 294 | 149 | 1,424 | 763 | 381 | 444 | 154 | 293 |
| Bacillus thuringiensis subspecies kurstaki strain bmp 123 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Bacillus thuringiensis, subsp. kurstaki, strain hd-1 | 10,593 | 1,361 | 895 | 141 | 224 | 137 | 259 | 199 | 368 | 92 |
| Bacillus velezensis strain: d747 | 38,591 | 57,375 | 90,617 | 68,143 | 77,312 | 62,680 | 58,186 | 58,642 | 52,580 | 46,471 |
| Bacillus velezensis strain: env503 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bacillus velezensis strain: gb03 | 467 | 609 | 2,293 | 1,473 | 972 | 180 | 128 | 145 | 51 | 14 |
| Bacillus velezensis strain: mbi 600 | 0 | 165 | 1,607 | 4,793 | 13,866 | 23,662 | 26,633 | 53,835 | 45,017 | 33,832 |
| Bacillus velezensis strain: qst 713 | 140,829 | 130,217 | 128,154 | 145,009 | 178,751 | 153,024 | 145,839 | 120,042 | 136,069 | 103,302 |
| Bacteriophage active against pseudomonas syringae pathovar tomato | 0 | 0 | < 1 | 0 | 9 | 15 | 0 | 0 | 35 | 0 |
| Bacteriophages active against xylella fastidiosa | 0 | 0 | 0 | 0 | 0 | 25 | 17 | 36 | 53 | 92 |
| Balsam fir oil | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Beauveria bassiana hf23 | 0 | 32 | 69 | 81 | 96 | 131 | 101 | 96 | 76 | 62 |
| Beauveria bassiana strain: ant-03 | 0 | 0 | 0 | 0 | 0 | 1,182 | 4,606 | 5,451 | 3,874 | 4,016 |
| Beauveria bassiana strain: gha | 14,377 | 11,145 | 16,957 | 17,983 | 14,720 | 22,405 | 22,676 | 28,966 | 25,092 | 26,044 |
| Beauveria bassiana strain: ppri 5339 | 0 | 0 | 0 | 0 | 131 | 622 | 629 | 434 | 375 | 302 |
| Beta-conglutin | 9,032 | 12,422 | 15,510 | 9,584 | 6,803 | 9,778 | 13,117 | 25,012 | 47,738 | 33,473 |
| Burkholderia rinojensis strain a396 | 5,531 | 6,816 | 17,303 | 35,117 | 85,132 | 98,846 | 88,951 | 116,517 | 111,728 | 102,958 |
| Calcium acetate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Calcium salts of phosphorous acid | 0 | 0 | 0 | 0 | < 1 | 0 | 452 | 0 | < 1 | 9 |
| Canola oil | 7,455 | 20,351 | 47,851 | 75,266 | 61,484 | 52,460 | 37,044 | 37,259 | 29,087 | 40,093 |
| Capsicum oleoresin | 1,997 | 2,084 | 3,777 | 6,459 | 4,937 | 4,314 | 2,998 | 2,760 | 4,283 | 5,516 |
| Castor oil | 0 | 0 | 0 | < 1 | 0 | 10 | 0 | 4 | 0 | 0 |
| Cerevisane (cell walls of saccharomyces cerevisiae strain las117) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 386 | 14,296 | 14,576 |
| Chromobacterium subtsugae strain: praa4-1 | 62,747 | 43,390 | 48,875 | 55,891 | 54,449 | 48,885 | 39,355 | 45,023 | 47,522 | 48,992 |
| Cinnamaldehyde | 0 | 0 | 110 | < 1 | 0 | 8,454 | 6,980 | 3,450 | 8,165 | 3,708 |
| Citric acid | 1,923,716 | 2,202,490 | 2,158,349 | 2,189,919 | 2,350,456 | 2,327,086 | 2,193,749 | 2,295,427 | 2,373,489 | 2,979,060 |
| Clarified hydrophobic extract of neem oil | 88,106 | 65,755 | 59,527 | 47,140 | 52,572 | 52,453 | 27,810 | 13,314 | 22,913 | 19,597 |
| Clonostachys rosea strain: j1446 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 247 | 320 | 1,148 |
| Clove oil | 0 | 0 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 0 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Coniothyrium minitans strain: con/m/91-08 | 6,194 | 4,104 | 5,159 | 3,250 | 1,978 | 4,891 | 4,291 | 7,207 | 3,275 | 5,302 |
| Corn syrup | 18,817 | 18,940 | 48,910 | 74,221 | 63,679 | 50,796 | 35,515 | 49,019 | 50,571 | 0 |
| Cottonseed oil | 67,349 | 41,034 | 36,856 | 35,581 | 32,024 | 15,258 | 13,989 | 8,090 | 4,539 | 15,541 |
| Coyote urine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cydia pomonella granulosis virus | 3,683 | 2,938 | 4,426 | 4,922 | 5,417 | 6,827 | 4,860 | 2,856 | 3,427 | 2,627 |
| Cytokinin (as kinetin) | 1,966 | 1,910 | 3,506 | 5,052 | 1,159 | 115 | 1,135 | 38 | 157 | 7,012 |
| Diallyl disulfide | 0 | 225 | 222 | 0 | 0 | 85 | 0 | 0 | 0 | 0 |
| Dihydro-5-heptyl-2(3h) -furanone | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| Dihydro-5-pentyl-2(3h) -furanone | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| Dysphania ambrosioides | 19,072 | 15,804 | 15,002 | 635 | 267 | 93 | 195 | 25 | 2,026 | 40 |
| E-11-tetradecen-1-yl acetate | 594 | 284 | 902 | 398 | 556 | 1,750 | 154 | 2,745 | 1,111 | 2,120 |
| E-8-dodecenyl acetate | 43,675 | 40,138 | 38,664 | 42,192 | 46,318 | 43,447 | 40,828 | 39,548 | 46,406 | 44,812 |
| Essential oils | 0 | 0 | 61 | 77 | 6 | 32 | 30 | 0 | 0 | 0 |
| Ethylene | 28 | 77 | 26 | 17 | 16 | 13 | 25 | 18 | 28 | 299 |
| Eugenol | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,183 |
| Extract of caesalpinia spinosa | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| Farnesol | 3,121 | 4,331 | 5,936 | 5,749 | 4,265 | 3,707 | 3,631 | 2,328 | 1,419 | 266 |
| Ferric sodium edta | 12,521 | 13,115 | 13,697 | 14,410 | 11,996 | 8,557 | 6,726 | 5,922 | 8,743 | 6,237 |
| Formic acid | 1,203 | 60 | 1 | 402 | 0 | 0 | 4 | 300 | < 1 | 8 |
| Fox urine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gamma aminobutyric acid | 287 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Garlic | 4,767 | 7,185 | 3,819 | 6,615 | 8,091 | 6,881 | 5,001 | 2,665 | 5,243 | 4,977 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Geraniol | 3,111 | 4,331 | 5,936 | 5,749 | 4,265 | 3,707 | 3,631 | 2,328 | 1,419 | 1,449 |
| German cockroach pheromone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gibberellins | 523,059 | 544,818 | 501,854 | 506,607 | 583,798 | 507,833 | 486,384 | 467,882 | 425,859 | 432,434 |
| Gibberellins, potassium salt | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Glutamic acid | 287 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Glutens, corn | 123,931 | 90,332 | 79,646 | 70,462 | 59,993 | 79,859 | 80,214 | 73,086 | 48,708 | 66,613 |
| Gs-omega/kappa-hxtx-hv1a, versitude peptide | 0 | 1 | 0 | < 1 | 324 | 36,966 | 81,942 | 130,768 | 175,078 | 145,221 |
| Harpin protein | 0 | 112 | < 1 | 0 | 0 | 0 | 17 | 376 | 2,321 | 12,639 |
| Heptyl butyrate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hydrogen peroxide | 32,676 | 69,022 | 65,570 | 103,675 | 299,197 | 201,078 | 366,246 | 200,471 | 362,069 | 332,335 |
| Hydroprene | < 1 | 7 | 28 | 35 | 31 | 9 | 15 | 4 | < 1 | < 1 |
| Hypocrea (teleomorph) | 251 | 159 | 92 | 139 | 444 | 650 | 2,524 | 3,737 | 11,651 | 13,388 |
| Hypocrea atroviridis | 251 | 159 | 92 | 139 | 444 | 650 | 2,524 | 3,737 | 11,651 | 13,388 |
| Hypocrea atroviridis (telomorph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 0 |
| Iba | 489 | 808 | 1,437 | 528 | 813 | 890 | 1,074 | 2,183 | 1,790 | 2,536 |
| Indole | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Iron hedta | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 20,291 | 59,089 |
| Iron phosphate | 8,618 | 13,322 | 11,992 | 9,259 | 10,469 | 12,748 | 9,590 | 12,506 | 11,471 | 14,417 |
| Isaria fumosorosea apopka strain: 97 | 19,113 | 31,000 | 26,577 | 15,462 | 23,694 | 25,222 | 17,361 | 3,367 | 5,134 | 5,117 |
| Isaria fumosorosea strain: fe 9901 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1,038 | 1,005 | 1,820 |
| Kaolin | 101,645 | 115,467 | 103,356 | 99,096 | 80,707 | 79,910 | 71,911 | 77,912 | 91,491 | 96,546 |
| Kinoprene | 0 | 0 | < 1 | 0 | 0 | 0 | 1 | < 1 | 0 | 0 |
| Lactic acid | 0 | 59 | 225 | 0 | 99 | 83 | 78 | 14 | 0 | 27 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Lactose | 81,390 | 77,746 | 74,127 | 70,431 | 72,066 | 65,994 | 66,733 | 65,537 | 77,030 | 68,599 |
| Laminarin | 0 | 0 | 0 | 0 | 0 | 707 | 4,107 | 5,961 | 3,463 | 7,003 |
| Lauryl alcohol | 5,725 | 4,718 | 4,354 | 4,793 | 3,756 | 5,059 | 5,358 | 4,732 | 4,103 | 4,534 |
| Lavandulyl senecioate | 8,424 | 18,076 | 74,825 | 141,767 | 194,088 | 179,933 | 208,421 | 221,965 | 208,765 | 138,582 |
| Limonene | 45,208 | 40,224 | 68,084 | 54,171 | 47,966 | 47,160 | 29,463 | 21,170 | 32,472 | 55,987 |
| Linalool | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Margosa oil | 19,940 | 25,805 | 32,268 | 23,524 | 37,578 | 37,380 | 38,870 | 43,433 | 45,285 | 77,712 |
| Metarhizium robertsii strain: f52 | 122 | 55 | 2 | < 1 | 1 | < 1 | 0 | 0 | 278 | 1,484 |
| Methoprene | 0 | 0 | 12 | 0 | 0 | 2 | 2 | 2 | < 1 | 2 |
| Methyl anthranilate | 895 | 1,463 | 2,490 | 2,041 | 1,908 | 2,933 | 2,879 | 3,692 | 3,606 | 3,327 |
| Methyl eugenol | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Methyl mercaptan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 120 | 372 |
| Methyl nonyl ketone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Methyl salicylate | 0 | 0 | 10 | 44 | 0 | 0 | 144 | 0 | 36 | 0 |
| Muscalure | 41 | 19 | 178 | 125 | 36 | 24 | 25 | 19 | 16 | 46 |
| Muscodor albus strain: sa13 | 0 | 0 | 0 | 0 | 0 | 135 | 0 | 0 | 0 | 0 |
| Myristyl alcohol | 5,725 | 4,718 | 4,354 | 4,793 | 3,756 | 5,059 | 5,358 | 4,732 | 4,103 | 4,534 |
| N6-benzyl adenine | 2,595 | 2,999 | 2,322 | 3,160 | 5,412 | 3,770 | 3,516 | 3,610 | 5,635 | 5,527 |
| Natamycin | 35 | 27 | 5 | 0 | 90 | 113 | 3 | 173 | 110 | 473 |
| Nerolidol | 3,121 | 4,331 | 5,936 | 5,749 | 4,265 | 3,707 | 3,631 | 2,328 | 1,419 | 266 |
| Nitrogen, liquified | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 6 |
| Nonanoic acid | 1,040 | 653 | 1,889 | 1,375 | 628 | 406 | 1,189 | 1,074 | 1,027 | 2,152 |
| Nonanoic acid, other related | 1,040 | 653 | 1,219 | 600 | 488 | 396 | 276 | 380 | 189 | 204 |
| Nosema locustae spores | 750 | 50 | < 1 | 1 | 0 | 116 | < 1 | 0 | 0 | 0 |
| Nuranone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Oil of anise | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oil of black pepper | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oil of cedarwood | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oil of citronella | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | < 1 | 0 |
| Oil of jojoba | 83 | 16 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oxypurinol | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Phenylethyl propionate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Phosphoric acid, monopotassium salt | 1,837 | 3,142 | 2,284 | 2,025 | 570 | 62 | 0 | 0 | 0 | 75 |
| Piperine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Polyhedral occlusion bodies (obs') of helicoverpa zea (corn earworm) nucleopolyhedrovirus strain: aba-npv-u | 1,011 | 4,902 | 8,857 | 8,803 | 4,958 | 7,220 | 9,616 | 9,876 | 12,308 | 15,872 |
| Polyoxin d, zinc salt | 191,654 | 231,715 | 242,568 | 264,129 | 305,573 | 268,143 | 230,216 | 221,932 | 334,779 | 288,392 |
| Potassium bicarbonate | 112,126 | 156,482 | 162,481 | 125,421 | 265,537 | 106,704 | 72,251 | 88,439 | 181,970 | 152,440 |
| Potassium carbonate | 0 | 0 | 0 | 0 | 0 | 76 | 532 | 9,763 | 41,238 | 42,340 |
| Potassium phosphite | 199,792 | 299,792 | 387,641 | 411,327 | 545,124 | 468,000 | 418,917 | 419,329 | 486,149 | 449,373 |
| Potassium silicate | 13,519 | 12,133 | 14,938 | 8,226 | 12,925 | 20,729 | 16,592 | 14,293 | 11,974 | 8,083 |
| Potassium sorbate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Prohydrojasmon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 819 | 790 |
| Pseudomonas chlororaphis subsp. aurantiaca strain: afs009 | 0 | 0 | 0 | 0 | 0 | 1,093 | 4,671 | 15,431 | 21,653 | 10,143 |
| Pseudomonas fluorescens, strain a506 | 376 | 601 | 524 | 533 | 328 | 167 | 218 | 146 | 687 | 10 |
| Purpureocillium lilacinum strain 251 | 32,089 | 26,924 | 22,752 | 15,917 | 11,461 | 12,699 | 12,506 | 12,358 | 10,878 | 10,069 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Purpureocillium lilacinum strain: pl11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 604 |
| Putrescent whole egg solids | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Quillaja | 31,107 | 53,339 | 53,857 | 69,345 | 54,788 | 34,058 | 17,269 | 7,208 | 2,223 | 6,473 |
| Reynoutria sachalinensis (giant knotweed) plant extract | 105,565 | 128,059 | 125,137 | 112,110 | 140,062 | 136,537 | 104,805 | 80,397 | 101,337 | 73,847 |
| Rhamnolipid biosurfactant | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| S-abscisic acid | 11,202 | 11,471 | 12,079 | 8,770 | 7,937 | 6,772 | 8,543 | 5,952 | 4,859 | 7,081 |
| S-methoprene | 102,139 | 77,003 | 54,058 | 71,339 | 106,470 | 120,583 | 67,166 | 92,136 | 46,832 | 55,088 |
| Saccharomyces cerevisiae strain: las02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Sawdust | 0 | 160 | 0 | 0 | 0 | 0 | 300 | 72 | 201 | 0 |
| Silver nitrate | 0 | < 1 | < 1 | 0 | 2 | 2 | 121 | 34 | 69 | 12 |
| Sodium bicarbonate | 706 | 796 | 162 | < 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sodium chloride | 66 | 134 | 144 | 42 | 100 | 75 | 35 | 31 | < 1 | 10 |
| Sodium lauryl sulfate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sodium percarbonate | 8,051 | 10,137 | 7,129 | 12,824 | 12,051 | 13,308 | 12,227 | 12,251 | 15,801 | 17,865 |
| Sorbitol octanoate | 0 | 0 | < 1 | 0 | 0 | 0 | < 1 | 0 | 0 | 0 |
| Soybean oil | 5,476 | 7,018 | 7,910 | 18,460 | 29,903 | 29,024 | 29,126 | 18,428 | 43,530 | 130,827 |
| Strepomyces lydicus strain: wyec 108 | 16,583 | 20,493 | 15,970 | 10,221 | 15,094 | 11,087 | 8,453 | 9,313 | 6,626 | 4,597 |
| Streptomyces acidiscabies strain: rl-110 [jcm 7913] | 28 | < 1 | 65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Streptomyces griseoviridis strain k61 | 18 | 5 | 4 | 5 | 2 | < 1 | < 1 | 2 | 8 | 69 |
| Sucrose octanoate | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Sugar | 452 | 504 | 86 | 212 | 160 | 57 | 194 | 47 | 43 | 192 |
| Swinglea glutinosa extract | 0 | 0 | 0 | 0 | 0 | 4 | 12,413 | 8,733 | 6,203 | 14,609 |
| Tea tree oil | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 26 | 32 | 138 |
| Thyme oil | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Thymol | 1,267 | 490 | 44 | 311 | 608 | 12,000 | 86 | 34 | 32 | 1,199 |
| Trichoderma harzianum rifai strain krl-ag2 | 2,346 | 2,207 | 2,244 | 2,404 | 2,412 | 1,629 | 1,657 | 3,089 | 5,005 | 6,208 |
| Trichoderma harzianum strain t-78 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Trichoderma virens strain: gl-21 | 7,439 | 7,140 | 4,914 | 4,300 | 2,396 | 168 | 48 | 2 | 278 | 201 |
| Trimethylamine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| Ulocladium oudemansii (u3 strain) | 406 | 150 | 28 | 1,674 | 1,178 | 715 | 460 | 265 | 310 | 172 |
| Vegetable oil | 311,693 | 405,341 | 603,909 | 584,960 | 513,784 | 396,500 | 323,694 | 330,777 | 341,668 | 548,002 |
| Xanthine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Yeast | 220 | 25 | 6 | 14 | 0 | 0 | 34 | 0 | 41 | 0 |
| Yeast extract hydrolysate from saccharomyces cerevisiae | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 |
| Yucca, extract | 7,347 | 9,376 | 6,289 | 10,926 | 14,716 | 12,054 | 9,877 | 20,759 | 6,697 | 9,076 |
| Z,e-9,12-tetradecadien-1-yl acetate | 0 | 0 | 43 | 506 | 3,079 | 0 | 689 | 10 | 0 | 32 |
| Z-11-tetradecen-1-yl acetate | 51 | 20 | 639 | 57 | 506 | 1,639 | 97 | 2,724 | 1,111 | 2,120 |
| Z-7-tetradecen-2-one | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Z-8-dodecenol | 43,675 | 40,138 | 38,664 | 42,192 | 46,318 | 43,447 | 40,828 | 39,548 | 46,406 | 44,812 |
| Z-8-dodecenyl acetate | 43,675 | 40,138 | 38,664 | 42,192 | 46,318 | 43,447 | 40,828 | 39,548 | 46,406 | 44,812 |

| Chemical | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 6,518,287 | 7,029,168 | 7,464,469 | 7,560,242 | 8,580,458 | 8,075,161 | 7,870,221 | 7,888,994 | 8,597,095 | 9,092,847 |