

WASHINGTON AGRICULTURAL CHEMICAL USAGE 2001 Fruit Crops



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General

Chemical usage data for selected Washington fruit crops are presented in the accompanying releases. These data are the results of the Fruit Chemical Usage Survey that was conducted in the fall of 2001. This survey was designed to collect data on pesticides applied to selected fruit crops in 2001. A sampling of producers in major fruit growing states, across the United States, was chosen to establish the estimation base. The probability nature of the survey allowed for estimates that are representative of chemical use on all targeted fruits in each of the participating states. Survey results include estimates of the percent of area treated, number of applications, rates per application, rates per crop year, and total pounds of chemical applied. Data are summarized for the active ingredients of pesticides and other chemicals applied. Pesticide data were collected for specific formulations of trade name products and then converted to active ingredients. Therefore, the estimates associated with a particular active ingredient may represent applications of several trade name products. Pesticide application rates also reflect partial coverage applications as a result of band, spot, and alternate row spraying techniques. This survey excludes any chemical treatments applied to the fruit after harvest. Data on fertilizer applications were collected during the 1999 Fruit Chemical Usage Survey, but were not collected in 2001.

Targeted crops in Washington included apples, pears, sweet cherries, grapes, and raspberries. Chemical use releases for all five crops surveyed in Washington, and crops surveyed in other states, are available upon request or via the Internet. Thanks are given to the many Washington fruit producers and contractors who provided the information summarized in these reports. Detailed reports, such as these, would not be possible without their voluntary cooperation.

Terms and Definitions

Active ingredient is the specific chemical which kills or controls the target pests. Usage data are reported by pesticide product and are converted to an amount of active ingredient. A single method of conversion has been chosen for active ingredients having more than one way of being converted. For example in this report, copper compounds are expressed in their metallic copper equivalent, and others such as 2,4-D and glyphosate are expressed in their acid equivalent. **Allelopathic** is the release of chemical compounds from a plant that will inhibit the growth of another plant, such as weeds.

Agricultural chemicals refer to the active ingredients in fertilizers and pesticides. **Pesticides** include any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant. Pests targeted by pesticides include weeds, insects, fungi, and other forms of life.

Herbicides, insecticides, fungicides, and other chemicals make up the four classes of pesticides presented in this report. Miticides and nematicides are included as insecticides, while soil fumigants, growth regulators, defoliants, and desiccants are included as other chemicals. This report excludes pesticides used for seed treatments and for post-harvest applications to the commodity.

Bearing acres is the area of fruit, nut, berry, and vine crops that have reached a commercially productive bearing age. This age varies by crop, area, and producer. **Nonbearing acres** is the area of young plants that are considered by a grower to have not yet reached a commercially productive age. **Crop year** refers to the period immediately following harvest for the previous crop through harvest of the current crop.

Application rates refers to the average number of pounds of a fertilizer primary nutrient or pesticide active ingredient applied to an acre of land in one application. The rate reflects the effect of band, spot, or alternate row middle spraying. **Rate per crop year** is the average number of pounds applied of an ingredient to one acre of land over the entire crop year, counting multiple applications. **Number of applications** is the average number of times a treated acre receives a specific agricultural chemical. **Area applied** represents the percent of crop acres receiving one or more applications of a specific agricultural chemical. This report does not contain **acre treatments**. However, acre treatments can be calculated by multiplying acres planted by the percent of area applied and the average number of applications.

Trade name is the trademark name given to a specific formulation of a pesticide product. A formulation contains a specific concentration of the active ingredient, carrier materials, and other ingredients such as emulsifiers and wetting agents. Some formulations as in the case of pre-mixes, can contain more than one active ingredient. **Common name** is an officially recognized name for an active ingredient.

Class, Common Name, and Trade Name

The following is a list of the common name, associated class and trade name of active ingredients in this publication. The classes are herbicides (H), insecticides (I), fungicides (F), and other chemicals (O). This list is provided as an aid in reviewing pesticide data. Pre-mixes are not listed. The list is not complete and NASS does not mean to imply use of any specific trade name.

CLASS	COMMON NAME	TRADE NAME
H	2, 4-D	Several
H	2, 4-D, Dimeth. salt	Saber, Weedar, Weedaxe
H	2, 4-DP, Dimethylamine salt	2, 4-D Amine
I	Abamectin	Agri-Mek, Clinch Ant Bait
F	Agrobacterium radiobacter	Galltrol
O	Aluminum phosphide	Aluminum Phosphide, Fumiphos, Gastoxin, Phostoxin
I	Amitraz	Mitac
F	Ampelomyces quisqualis isolate	AQ 10 Biofungicide
F	Anilazine	Dyrene
H	Atrazine	Atrazine
I	Azadirachtin	AZA-Direct, Ecozin, Margosan, Neemix
I	Azinphos-methyl	Azinphos-M, Guthion, Sniper
F	Azoxystrobin	ICIA5504, Abound, Quadris
F	Bacillus subtilis	Serenade
I	Bacillus thuringiensis	Agree, Biobit, Condor, Crymax, Cutlass, Deliver, Dipel, Javelin, Larvo-Bt, MVP, Xentari
F	Basic copper sulfate	Basic Copper Sulfate, Bonide Garden Dust, C-O-C-S, Cop-O-Zinc Nu-Cop, Nutra Spray, Top Cop, Tri-Basic Copper
F	Basic cupric zinc sulfate comp	Zinc Coposil
I	Beauveria bassiana	Mycotrol
F	Benomyl	Benlate
I	Benzoic acid	Intrepid
O	Benzyladenine	Accel, Perlan, Promalin, Typy
I	Bifenazate	Acramite
I	Bifenthrin	Brigade, Capture
I	Buprofezin	Applaud
O	Butenoic acid hydrochloride	Retain
F	Calcium polysulfide	Lime Sulfur Solution, Orthorix Polysul, Sulforix
O	Capsaicin	Hot Sauce Animal Repellent
F	Captan	Agway Fruit Tree Spray, Captan, Captec, Ortho Home Orchard Spray
I	Carbaryl	Agway Fruit Tree Spray, Carbaryl, Sevin
I	Carbofuran	Furadan
O	Carbon	Gas Cartridge Rodenticide, The Giant Destroyer
I	Carbophenothion	Trithion
F	Carboxin	Vitavax
I	Chitin	Clandosan
O	Chlorophacinone	Rozol
O	Chloropicrin	Chloropicrin, Telone, Tri-Clor
F	Chlorothalonil	Bravo, Echo
I	Chlorpyrifos	Chlorpyrifos, Dursban, Lorsban, Nufos
I	Cinnamaldehyde	Valero
H	Clethodim	Prism, Select
I	Clofentezine	Apollo
H	Clopyralid	Curtail, Stinger
F	Copper ammonium complex	Copper-Count-N
F	Copper chloride hydroxide	Agra-cop, Microperse
F	Copper hydroxide	Blue Shield, Champ, Champion, Kocide, Kop-Hydroxide, Mankocide, Nu-Cop, ProCop
F	Copper oxide	Nordox
F	Copper oxychloride	C-O-C-S, Microperse
F	Copper oxychloride sulfate	C-O-C-S, Copodust, Oxycop
F	Copper resinate	Tenn-Cop
F	Copper sulfate	Basicop, Bluestone, Copper Sulfate
F	Cresol	Gallex
I	Cryolite	Cryolite, Kryocide
O	Cyanamid	Dormex
H	Cyanazine	Bladex
I	Cyd-X-Granulovirus	Virosoft Bioinsecticide
F	Cyprodinil	Switch, Vanguard
O	Cytokinins	Cytokin Bioregulator, Cyzer, Foliar Trigger
I	Diazinon	Diazinon, Spectracide, Spectracide 25
O	Dichloropropene	Telone
F	Dicloran	Botran
I	Dicofol	Dicofol, Kelthane
I	Diffubenzuron	Dimilin, Micromite
I	Dimethoate	Cygon, Digon, Dimethoate

CLASS	COMMON NAME	TRADE NAME
F	Dimethylphenol	Gallex
F	Dinocap	Karathane
H	Dinoseb	Dinitro
O	Diphacinone	Diphacinone, Ramik
H	Diquat	Diquat
H	Diuron	Direx, Karmex, Krovar
O	Dodecanol	Isomate
F	Dodine	Cyprex, Dodine, Syllit
O	Dodecadien-1-ol	Checkmate, Disrupt, Isomate, NoMate
O	E-8-Dodecenyl acetate	Checkmate, Consep, Isomate
H	EPTC	Eptam
I	Endosulfan	Endocide, Endosulfan, Phaser, Thiodan
I	Esfenvalerate	Asana
O	Ethephon	Ethephon, Ethrel
I	Ethion	Ethion
I	Ethyl parathion	Parathion
I	Fenamiphos	Nemacur
F	Fenarimol	Rubigan
F	Fenbuconazole	Enable, Indar
I	Fenbutatin-oxide	Vendex
F	Fenhexamid	Elevate
I	Fenpropathrin	Danitol
I	Fenvalerate	Pydrin
F	Ferbam	Carbamate, Ferbam
H	Fluazifop-P-butyl	Fusilade
F	Fludioxonil	Switch
O	Forchlorfenuron	KT-30
I	Formetanate hydro.	Carzol
F	Fosetyl-al	Aliette
O	Garlic oil	Allityn, Envirepel, Garlic Barrier, Guardian Spray Insect Repellent
O	Gibberellic acid	Falgro, GibGro, Gibbex, Pro-Gibb, ProVide, RyzUp
O	Gibberellins A4A7	Accel, Perlan, Promalin, TypRus, Typy
H	Glufosinate-ammonium	Finale, Rely
F	Glyodin	Glyodin
H	Glyphosate	Engame, Glyfos, Glyphomax, Honcho, Landmaster, Mirage, Protocol, Rattler, Rodeo, Roundup
O	Gossypure	Checkmate, Decoy, NoMate, Stirrup
O	Harpin protein	Messenger
H	Hexazinone	Velpar
I	Hexythiazox	Savey
I	Imidacloprid	Admire, Provado
O	Indole butyric acid	Hormex Rooting Powder, PGR-IV, Stimulate Yield Enhancer, Cytoplex, Maxon, Early Harvest
I	Indoxacarb	Avaunt
F	Iprodione	Rovral
H	Isoxaben	Gallery
I	Kaolin	Kaolin, Surround
F	Kresoxim-methyl	Sovran
O	Lactic acid	Propel
H	MCPA	Curtail, Weedar
I	Malathion	Agway Fruit Tree Spray, Cythion, Fyfanon, Malathion
F	Mancozeb	Dithane, Mancozeb, Manex, Mankocide, Manzate, Penncozeb, Ridomil Gold MZ
F	Maneb	AgSCO MN, Amazin, Dithane, Maneb, Manex
F	Mefenoxam	Ridomil, Subdue
O	Mepiquat chloride	Ponnax Growth Regulator
F	Metalaxyl	Ridomil
O	Metaldehyde	Deadline, Metaldehyde, Trail's End
O	Metam-sodium	Metam Sodium, Sectagon, Vapam
I	Methidathion	Supracide
I	Methomyl	Lannate
I	Methoxychlor	Agway Fruit Tree Spray, Methoxychlor
O	Methyl anthranilate	ReJex-it
O	Methyl bromide	Methyl Bromide
I	Methyl parathion	Methyl Parathion, Penncap
F	Metiram	Polyram
O	Monocarbamide dihyd.	Engame, Enquik, Wilthin
F	Myclobutanil	Laredo, Nova, RH-144228, Rally
I	Myrothecium verrucaria	Ditera
O	NAA	Alphaspra, Fruit-Fix, Fruitone, Kling Tite, NAA, Stop Drop
O	NAA, Potassium salt	Fruit-Fix

CLASS	COMMON NAME	TRADE NAME
O	NAD	Amid-Thin
I	Naled	Dibrom
H	Napropamide	Devrinol
I	Neem oil, clar. hyd.	Triact, Trilogy
H	Norflurazon	Solicam
O	Octadecadien (E,Z)	Isomate
O	Octadecadien (Z,Z)	Isomate
H	Oryzalin	Surflan
I	Oxamyl	Vydate
H	Oxyfluorfen	Goal
F	Oxytetracycline	Mycoshield
I	Oxythioquinox	Morestan
H	Paraquat	Cyclone, Gramoxone
O	Pelargonic acid	Sythe, Thinnex
H	Pendimethalin	Pendimax, Prowl
F	PCNB	Defend
I	Permethrin	Ambush, LastCall, Pounce
I	Petroleum distillate	Citrus Oil, Damoil, Dinitro, Dormant Emulsion Oil, Gavicide, Oil, Saf-T-Side, Sunspray
I	Petroleum oil	Damoil Dormant Oil Spray
I	Phosmet	Imidan
I	Phosphamidon	Phosphamidon
I	Piperonyl butoxide	Diatect, Evergreen, Pyrenone
F	Potassium bicarbonate	Armicarb, Kaligreen
I	Potassium salt	M-Pede, Safer Insecticidal Soap
O	Prohexadione calcium	Apogee
H	Pronamide	Kerb
I	Propargite	Comite, Omite, Ornamite
F	Propiconazole	Orbit
H	Prosulfuron	Peak
F	Pseudomonas fluorescens	Frostban
I	Pyrethrins	Bonide Garden Dust, Diatect, Evergreen, Pyrellin, Pyrenone
I	Pyridaben	Nexter, Pyramite, Sanmite
I	Pyriproxyfen	Esteem, Knack
I	Rotenone	Bonide Garden Dust, Pyrellin
H	Sethoxydim	Poast, Torpedo
I	Silicon dioxide	Diatect
H	Simazine	Caliber, Princep, Sim-Trol, Simazine
O	Sodium nitrate	Gas Cartridge Rodenticide, The Giant Destroyer
O	Sodium tetrathiocarb	Enzone
I	Spinosad	NAF-550 Fruit Fly Bait, SpinTor, Success
F	Streptomycin	Agri-Mycin, Streptomycin
O	Strychnine	Strychnine
H	Sulfosate	Touchdown
F	Sulfur	Ben-Sul, Bonide Garden Dust, Bravo S, C-O-C-S, CSC, Golden Dew, Kocide, Kolodust, Kolospray, Microperse, Microthiol, RH-144228, Suffa, Sulfur, Super Six, Super-Sul, Thiolux
F	Tebuconazole	Elite
I	Tebufenozide	Confirm
H	Terbacil	Sinbar
O	Tetradecanol	Isomate
O	Tetradecen-1-OL (Z)	3M Pheromone-Mating Disruption, Checkmate, Confuse, Isomate, NoMate
O	Tetradecen-1-yl (E)	Checkmate, Confuse, NoMate
I	Thiamethoxam	Actara
H	Thiazopyr	Mandate, Visor
F	Thiophanate-methyl	Topsin
F	Thiram	Thiram
F	Triadimefon	Bayleton
H	Triclopyr	Crossbow, Remedy
F	Trifloxystrobin	Flint
F	Triflumizole	Procure
H	Trifluralin	Treflan, Trifluralin, Trilin
F	Triforine	Funginex
F	Vinclozolin	Ronilan
O	Z-8-Dodecanol	Checkmate, Consep, Isomate
O	Z-8-Dodecenyl acetate	Checkmate, Consep, Isomate
O	Zinc phosphide	Zinc Phosphide
F	Ziram	Ziram