

66 pesticides of concern for California red-legged frog

Primary uses in California, with pounds applied statewide in 2003

Acephate (insecticide)

Vegetables and melons	115,000
Cotton	55,000
Structural pest control	20,000
Greenhouse & Nursery	16,000
Landscape maintenance	4,450

Targets: western spruce budworm, spruce budworm, gypsy moth, and needle-miners in forestry; grasshoppers in rangeland; fall armyworm, mole crickets, sod webworm for home lawns. Acephate is used to kill aphids and other biting and sucking insects as well as leaf-miners, caterpillars, sawflies, and thrips. Commonly a foliar spray (also available in granules), it is used on ornamentals, especially roses and chrysanthemums.

Alachlor (herbicide)

Corn	12,000
Beans	12,000

Aldicarb (insecticide)

Cotton	250,000
Pecans	7,000
Nurseries	1,700
Beans	950

Targets: insects, nematodes, mites.

Atrazine (herbicide)

Forest Timberland	29,000
Corn	17,000
Sudangrass & Bermudagrass	9,000
Sugarcane	1,200

Azinphos-Methyl (insecticide)

Almond	100,000
Pistachio	64,000
Apple	20,000
Pear	14,000
Walnut	8,000
Peach	2,000

Targets: control of insects in seed orchards. Almonds: navel orange-worm, perch twig borer, ants, mites, San Jose scale, wood boring insects, leaf-rollers, oriental fruit moth, wood-boring beetle.

Bensulide (herbicide)

Lettuce	118,000
Broccoli	28,000
Mustard	15,000
Cantaloupe	13,000
Onion	13,000
Cabbage	11,000
Melon	5,000
Landscape Maintenance	3,500
Pepper	3,500

Bromacil(herbicide)

Orange, Lemon, Grapefruit	30,000
Rights of Way	17,000
Landscape Maintenance	5,200

Captan (fungicide)

Strawberry	291,000
Almond	113,000
Prune	64,000
Grape	20,000
Peach, Plum, Nectarine	11,000
Greenhouse & Nursery	5,000
Sunflower	1,400
Landscape Maintenance	1,300
Apple	1,100

Carbaryl (insecticide)

Orange	56,000
Apple	24,000
Landscape Maintenance	14,000
Structural Pest Control	9,000
Grape	8,000
Pistachio	8,000
Cherry	8,000
Corn	7,000
Olive	7,000
Tomato	7,000
Peach	7,000
Asparagus	6,000
Lemon	5,000
Strawberry	5,000
Plum	4,000
Pepper	4,000
Sugarbeet	3,200
Tangerine	2,500

Targets: Forestry uses include control of western spruce budworm, pandora moth, various nursery and seed orchard insects, mountain pine beetle, and western pine beetle. Rangeland uses include control of grasshoppers, black grass bug, Mormon cricket, range caterpillar and range crane fly. Home uses: chinch bug, armyworm, ants, June beetle, sod webworm, ticks, fleas. Carbaryl is quite toxic to honey bees, certain beneficial insects such as lady beetles, and parasitic wasps and bees.

Chloropicrin (insecticide/fumigant)

Strawberry	3,283,000
Greenhouse & Nursery	323,000
Soil Fumigation	278,000
Pepper	209,000
Raspberry	162,000
Tomato	132,000
Lettuce	110,000
Watermelon	81,000
Carrot	70,000
Onion	55,000
Cantaloupe	49,000
Potato	45,000

Eggplant	19,000
Celery	12,000
Spinach	11,000
Turf/Sod	10,000
Beet	9,000
Structural Pest Control	8,600
Uncultivated Ag	8,200
Almond	8,000

Note that this is the alternative choice to methyl bromide for strawberry fumigation.

Chlorothalonil (fungicide)

Tomato	253,000
Landscape Maintenance	135,000
Onion	79,000
Potato	50,000
Celery	48,000
Greenhouse & Nursery	36,000
Carrot	26,000
Turf/Sod	12,000
Rights of Way	11,000
Pistachio	11,000
Broccoli	10,000

Chlorpyrifos (insecticide)

Cotton	279,000
Alfalfa	249,000
Almond	203,000
Walnut	163,000
Structural Pest Control	103,000
Grape	77,000
Orange	74,000
Sugarbeet	67,000
Broccoli	62,000
Lemon	56,000
Corn	30,000
Peach	29,000
Nectarine	24,000
Plum	19,000
Cauliflower	16,000
Apple	14,000
Greenhouse & Nursery	9,000

Target: Widely used as a perimeter treatment and sprayed near buildings, chlorpyrifos kills ants, armyworms, ticks, chinch bugs, mites, roaches, crickets, cutworms, earwigs, fleas, grasshoppers, millipedes, sow-bugs, turf weevils, mole crickets, and white grubs.

Alternatives: See <http://www.beyondpesticides.org/alternatives/factsheets/alts%20to%20chlorpyrifos.pdf>

Chlorthal-Dimethyl (DCPA) (herbicide)

Broccoli	97,000
Onion	57,000
Cauliflower	18,000
Greenhouse & Nursery	9,000
Turf/Sod	9,000
Chinese Cabbage	8,000
Cabbage	7,000

Rappini	7,000
Radish	7,000

2,4-D (herbicide)

Wheat	157,000
Almond	72,000
Rights of Way	46,000
Oat	27,000
Uncultivated Ag	25,000
Barley	23,000
Landscape Maintenance	18,000
Walnut	17,000
Corn	16,000
Bermudagrass	15,000
Grape	12,000
Pasture Land	11,000
Forage Hay/Silage	11,000
Orange	10,000
Regulatory Pest Control	8,000
Rice	7,000
Rangeland	7,000

Diazinon (insecticide)

Lettuce	144,000
Structural Pest Control	52,000
Peach	37,000
Almond	36,000
Prune	33,000
Onion	24,000
Spinach	23,000
Broccoli	18,000
Sugarbeet	14,000
Corn	11,000
Landscape Maintenance	10,000
Grape	10,000
Bean	10,000
Tomato	10,000

1,3-Dichlorpropene (fumigant)

Carrot	1,198,000
Strawberry	884,000
Almond	829,000
Grape	584,000
Soil Fumigation	544,000
Peach	333,000
Greenhouse & Nursery	254,000
Walnut	210,000
Potato	189,000
Pepper, Fruiting	136,000
Watermelon	107,000
Nectarine	103,000
Uncultivated Ag	102,000
Tomato	96,000
Onion	76,000
Spinach	76,000
Citrus	73,000

Cherry	64,000
Plum	62,000
Parsley	58,000
Prune	48,000
Lettuce	46,000
Orange	44,000

Dicofol (acaricide)

Cotton	122,000
Bean	23,000
Orange	14,000
Walnut	9,000
Grape	3,000
Peach	2,200
Watermelon	1,800
Apple	1,700
Prune	1,300

Diiflubenzuron (insecticide)

Artichoke	4,000
Public Health	1,600
Walnut	1,400

Dimethoate (insecticide)

Alfalfa	47,000
Orange	37,000
Bean	32,000
Broccoli	30,000
Tomato	28,000
Corn	21,000
Grape	21,000
Lettuce	19,000
Cotton	18,000
Wheat	12,000

Disulfoton (insecticide)

Asparagus	15,000
Lettuce	6,000
Pepper, Fruiting	5,300
Broccoli	4,900
Wheat	3,300
Greenhouse & Nursery	3,100
Barley	2,400

Diuron (herbicide)

Rights of Way	632,000
Alfalfa	275,000
Orange	179,000
Landscape Maintenance	67,000
Grape	43,000
Walnut	38,000
Cotton	25,000
Asparagus	15,000
Lemon	14,000
Structural Pest Control	9,000

Endosulfan (insecticide and acaricide)

Cotton	58,000
Tomato	24,000
Lettuce	20,000
Alfalfa	12,000
Cantaloupe	6,900
Broccoli	3,600
Melon	3,300

EPTC (herbicide)

Alfalfa	57,000
Sugarbeet	25,000
Potato	24,000
Bean	14,000
Safflower	8,000
Tomato	3,300
Corn	3,000
Almond	2,700

Esfenvalerate (insecticide)

Almond	6,700
Tomato	3,900
Corn	3,200
Peach	3,100
Artichoke	2,000
Walnut	1,500
Prune	1,400
Bean	1,300
Sugarbeet	1,100
Lettuce	1,100
Nectarine	1,000

Target: used on a wide range of pests such as moths, flies, beetles, and other insects.

Fenamiphos (insecticide)

Grape	46,000
Orange	9,000

Glysofate (herbicide)

Rights of Way	1,886,000
Almond	911,000
Grape	582,000
Cotton	452,000
Landscape Maintenance	405,000
Orange	294,000
Walnut	177,000
Pistachio	151,000
Uncultivated Ag	122,000
Corn	102,000
Lemon	92,000
Tomato	90,000
Greenhouse & Nursery	66,000
Forest, Timberland	58,000
Public Health	56,000
Avocado	55,000
Peach	53,000

Hexazinone (herbicide)

Alfalfa	77,000
Forest, Timberland	34,000
Rights of Way	2,700

Imazapyr (herbicide)

Forest, Timberland	10,000
Rights of Way	1,900

Iprodione (fungicide)

Almond	117,000
Lettuce	57,000
Carrot	18,000
Peach	16,000
Grape	13,000
Greenhouse & Nursery	11,000
Cherry	10,000
Landscape Maintenance	10,000
Nectarine	9,000
Onion	7,000

Linuron (herbicide)

Carrot	47,000
Asparagus	8,000
Celery	5,000

Malathion (insecticide)

Landscape Maintenance	140,000
Alfalfa	101,000
Strawberry	76,000
Regulatory Pest Control	66,000
Structural Pest Control	54,000
Lettuce	35,000
Walnut	26,000
Celery	15,000
Public Health	12,000
Orange	12,000
Date	9,000
Bean	9,000
Cotton	7,000
Greenhouse & Nursery	6,000

Mancozeb (fungicide)

Grape	111,000
Onion	72,000
Landscape Maintenance	65,000
Turf/Sod	64,000
Tomato	63,000
Potato	56,000
Pear	36,000
Apple	25,000
Greenhouse & Nursery	24,000
Wheat	13,000

Maneb (fungicide)

Lettuce	510,000
Walnut	264,000
Almond	136,000
Tomato	48,000
Onion	35,000
Cabbage	10,000
Potato	9,000

Metam Sodium (biocide)

Carrot	5,956,000
Tomato	2,875,000
Potato	1,402,000
Pepper, Fruiting	693,000
Onion	395,000
Cantaloupe	322,000
Uncultivated Ag	293,000
Broccoli	289,000
Lettuce	287,000
Soil Fumigation	253,000
Greenhouse & Nursery	249,000
Sweet Potato	240,000
Strawberry	238,000
Spinach	230,000
Melon	147,000
Watermelon	112,000
Rights of Way	106,000
Cotton	97,000
Orange	88,000
Cauliflower	62,000
Grape	51,000

Methamidophos (insecticide/acaricide)

Tomato	16,000
Cotton	7,000
Potato	6,000
Alfalfa	5,000
Structural Pest Control	2,000

Methidathion (insecticide/acaricide)

Orange	13,000
Almond	10,000
Peach	6,000
Walnut	5,000
Artichoke	5,000
Plum	4,000
Olive	3,000

Methomyl (insecticide/acaricide)

Lettuce	61,000
Alfalfa	59,000
Tomato	56,000
Corn	41,000
Grape	20,000
Sugarbeet	20,000
Strawberry	20,000

Bean	12,000
Celery	9,000
Cantaloupe	8,000
Pepper, Fruiting	8,000

Methoprene (insecticide)

Public Health	8,200
Structural Pest Control	230

Methyl Parathion (insecticide/acaricide)

Walnut	70,000
Corn	6,000

Target: codling moth, the major walnut insect pest. Codling moth is the key pest of walnuts and is the most economically important insect pest statewide and must be controlled in many early-blooming varieties. Approximately 60% of the acreage planted in California is susceptible to damage from codling moth and require from one to three treatments every year to prevent serious economic damage. There are indications that codling moth is adapting to heretofore tolerant cultivars so the percentage of susceptible acreage will probably increase. Also navel orangeworm.

Metolachlor (herbicide)

Tomato	103,000
Cotton	101,000
Corn	44,000
Bean	33,000

Molinate (herbicide)

Rice	540,000
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Alternative: Molinate is already being phased out. Rice growers support the requests for voluntary cancellation and for modifications to the terms and conditions of molinate registrations, under which the sale and distribution of all molinate products will decrease during the next five years and use of molinate will end as of August 31, 2009. This phase-down period will allow rice growers time for transition to registered alternatives to molinate and any new alternatives that may be developed

Myclobutanil (fungicide)

Grape	47,000
Almond	14,000
Strawberry	6,000
Landscape Maintenance	2,000
Apple	1,900
Cotton	1,700

Naled (insecticide/acaricide)

Cotton	69,000
Broccoli	26,000
Public Health	19,000
Strawberry	19,000
Sugarbeet	11,000
Animal Premise	11,000
Walnut	7,000

Norflurazon (herbicide)

Almond	38,000
Alfalfa	38,000
Grape	17,000

Rights of Way	15,000
Orange	14,000
Walnut	5,000

Oryzalin (herbicide)

Grape	110,000
Almond	93,000
Pistachio	60,000
Rights of Way	57,000
Landscape Maintenance	34,000

Oxamyl (insecticide/acaricide/nematicide)

Cotton	63,000
Celery	14,000
Tomato	8,000
Pepper, Fruiting	3,000
Onion	3,000

Oxydemeton-Methyl (insecticide)

Broccoli	42,000
Lettuce	32,000
Cauliflower	9,000
Cabbage	4,000

Oxyfluoren (herbicide)

Grape	128,000
Almond	91,000
Pistachio	46,000
Cotton	41,000
Rights of Way	28,000
Walnut	22,000
Onion	10,000
Uncultivated Ag	9,000

Paraquat Dichloride (herbicide)

Cotton	237,000
Grape	195,000
Almond	140,000
Alfalfa	137,000
Rights of Way	93,000
Walnut	28,000
Pistachio	20,000
Peach	14,000

Pendimethalin (herbicide)

Cotton	118,000
Landscape Maintenance	37,000
Pistachio	18,000
Onion	17,000
Rights of Way	17,000
Almond	14,000
Corn	13,000
Garlic	13,000
Greenhouse & Nursery	10,000
Bean	9,000
Grape	8,000

Permethrin (insecticide)

Structural Pest Control	285,000
Lettuce	37,000
Pistachio	32,000
Almond	20,000
Landscape Maintenance	13,000

Target: toxic to honey bees and other beneficial insects

Phorate (insecticide/nematicide)

Cotton	28,000
Potato	13,000
Corn	12,000
Sugarbeet	9,000
Greenhouse & Nursery	3,000

Phosmet (insecticide/acaricide)

Almond	77,000
Apple	52,000
Peach	52,000
Nectarine	47,000
Walnut	45,000
Plum	32,000
Pear	19,000

Prometryn (herbicide)

Cotton	153,000
Celery	24,000
Parsley	5,000
Uncultivated Ag	1,000

Propanil (herbicide)

Rice	1,376,000
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Propargite (insecticide)

Corn	401,000
Almond	251,000
Walnut	140,000
Grape	119,000
Cotton	86,000
Bean	17,000
Cherry	16,000
Nectarine	13,000

Propyzamide (Pronamide) (herbicide)

Lettuce	95,000
Artichoke	2,000
Turf/Sod	1,500
Endive	1,500

Rotenone (insecticide)

Only 250 pounds applied statewide in 2003

Simazine (herbicide/algicide)

Grape	233,000
Orange	200,000
Almond	62,000
Walnut	55,000
Rights of Way	26,000
Avocado	18,000
Lemon	17,000
Olive	14,000

Strychnine (rodenticide)

Landscape Maintenance	266
Vertebrate Control	140
Grape	124
Almond	52
Walnut	51
Pistachio	37
Rights of Way	32

Only 838 pounds applied statewide in 2003

Thiobencarb (herbicide)

Rice	587,000
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SSS-Tributyl Phosphororithiolate (DEF or Tribufos) (defoliant)

Cotton	233,000
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Triclopyr (herbicide)

Rice	48,000
Rights of Way	30,000
Landscape Maintenance	30,000
Forest Timberland	18,000

Trifluralin (herbicide)

Cotton	168,000
Tomato	108,000
Safflower	24,000
Grape	11,000
Sugarbeet	11,000

Vinclozolin (fungicide)

Lettuce	15,000
Landscape Maintenance	1,900

Ziram (fungicide)

Almond	533,000
Peach	134,000
Nectarine	43,000
Pear	36,000
Grape	17,000
Apricot	11,000