

## Pesticide Tables for Potato Pests

Tables 1-3 present nearly exhaustive lists of insecticides and biocontrol agents that are registered to control arthropod pests of potatoes in the PNW. Some of these products provide better control than others. Tables 1 and 2 are lists of conventional pesticides, with Table 1 being products with a single active ingredient and Table 2 being mixed products commonly known as “package mixes.” Most package mixes have a broad spectrum of control, but if over-used can contribute to outbreaks of certain pests such as aphids and spider mites, and also increase the risk of insecticide resistance due to over-application of a single mode-of-action such as the neonicotinoids (IRAC Group 4A). Table 3 lists many of the available products that are either biocontrol microbes, approved for organic use, or are not directly insecticidal. The latter category includes some of the oil sprays, which are most effective in interrupting virus transmission by aphids, as opposed to killing insects outright.

**Table 1. Single active ingredient products**

Type	Active Ingredient	Trade Name	Target Pest(s)	Insecticide Group	Signal Word	Restricted Use?	REI	PHI (days)
FU	1,3 dichloropropene	Telone II (Dow)	symphylan, wireworm	Soil fumigant	Warning	N	5 days	NA
F	abamectin (a.k.a. avermectin B1)	Agri-mek, Epi-Mek (Syngenta), Abacus (Rotam), Reaper (Loveland), Temprano (Chemtura), Abba (Makhteshim Agan), Zoro (Cheminova)	Colorado potato beetle, psyllid, spider mite, thrips*	6	Warning	N	12 hr	14
F	acetamiprid	Assail 30SG, Assail 70WP, Intruder Max 70WP (United Phosphorus)	aphid, beetle, leafhopper, psyllid*	4A	Caution	N	12 hr	7
F	bifenazate	Acramite (Crompton)	spider mite	25	Caution	N	12 hr	14
IF, F	bifenthrin	Capture LFR, Brigade 2EC (FMC), Fanfare 2EC (Makhteshim Agan), Tundra EC (Winfield) BiFuture EC (United Phosphorus)	beetle, various soil grubs, wireworm. Lepidoptera*, spider mite*, leafhopper*, <i>Lygus</i> *, psyllid*	3	Warning	Y	12 hr	21
IF	carbaryl	Sevin 4F, Sevin 80S, Sevin XLR Plus (Bayer), Sevin 5 Bait (Wilbur Ellis)	beetle, Lepidoptera, stink bug, leafhopper, psyllid*; various soil-inhabiting arthropods (5 Bait)	1A	Caution or Warning depending on formulation	N	12 hr	7
F	chlorantraniliprole	Coragen (DuPont)	Colorado potato beetle, Lepidoptera	28	None	N	4 hr	14
F, IF	clothianidin	Belay 50WDG, Belay (Valent)	beetle, aphid, leafhopper, psyllid*	4A	Caution	N	12 hr	14
IF	cyantraniliprole	Verimark (DuPont)	Colorado potato beetle, Lepidoptera	28	Caution	N	4 hr	– <sup>2</sup>
F	cyfluthrin	Renounce (Bayer)	beetle, Lepidoptera, leafhopper*, psyllid,	3	Warning	Y	12 hr	0
F	beta-cyfluthrin	Baythroid XL (Bayer)	beetle, Lepidoptera, leafhopper, psyllid	3	Warning	Y	12 hr	0
F	lambda-cyhalothrin	Warrior, Warrior II (Syngenta), Province (Tenkoz), Silencer (Makhteshim Agan), Lambda-Cy (United Phosphorus)	aphid, beetle, grasshopper, leafhopper, Lepidoptera, psyllid, stink bug	3	Warning	Y	24 hr	7

**Table 1. Single active ingredient products**

Type	Active Ingredient	Trade Name	Target Pest(s)	Insecticide Group	Signal Word	Restricted Use?	REI	PHI (days)
F	gamma-cypermethrin	Respect, Respect EC (BASF), Mustang, Mustang Max, Mustang Max EC, Mustang Max EW (FMC)	beetle, grasshopper leafhopper, Lepidoptera	3	Warning or Caution	Y	12 hr	1
F	cyromazine	Trigard (Syngenta)	Colorado potato beetle, leafminer fly	17	Caution	N	12 hr	7
F	deltamethrin	Battalion 0.2, Battalion 1.5 (Arysta)	beetle, leafhopper, Lepidoptera,	3	Danger/Poison	N	12 hr	3
F	dimethoate	various brands, 2.67 and 4E formulations	aphid*, grasshopper, leafhopper, psyllid*	1B	Warning	N	48 hr	0
F, IF	dinotefuran	Scorpion 35 SL (Gowan), Venom (Valent)	beetle, leafhopper, psyllid	4A	Caution	N	12 hr	7
F	esfenvalerate	Asana (Valent), S-FenvaloStar (LG Lifesciences), Zyrate (Rotam)	beetle, grasshopper, leafhopper*, Lepidoptera, psyllid	3	Warning	N	12 hr	7
IF	ethoprop	Mocap 15G, Mocap EC (Bayer)	symphylan, wireworm	1B	Danger/Poison	Y	72 hr	— <sup>2</sup>
IF	fipronil	Regent 4SC (Bayer)	wireworm	2B	Warning	Y	0 hr	90
F	flonicamid	Beleaf 50 SG (FMC)	aphid, psyllid*, thrips*, whitefly	9C	Caution	N	12 hr	7
F	hexythiazox	Onager (Gowan)	psyllid*, spider mite,	10A	Caution	N	12 hr	21
IF, F, SP	imidacloprid	Many brands, and formulations,	aphid, beetle, leafhopper, psyllid, wireworm (seed piece damage)	4A	Caution	N	12 hr	7
F	indoxacarb	Avaunt (DuPont)	Lepidoptera, Colorado potato beetle	22	Caution	N	12 hr	7
F	malathion	many brands and formulations	aphid, blister beetle, grasshopper, leafhopper	1B	Warning or Caution	N	12 hr	0
F	methomyl	Lannate LV, Lannate SP (DuPont)	aphid, flea beetle, leafhopper, Lepidoptera, Colorado potato beetle*, <i>Lygus</i> *, psyllid*, thrips*	1A	Danger/Poison	Y	48 hr	6
F	novaluron	Rimon (Chemtura)	Colorado potato beetle, Lepidoptera, <i>Lygus</i> *, psyllid*, thrips*, whitefly	15	Warning		12 hr	14
F, IF	oxamyl	Vydate C-LV, Vydate L (DuPont)	aphid, beetle, leafhopper, psyllid, Lepidoptera*, <i>Lygus</i> *, thrips*	1A	Danger/Poison	Y	48 hr	7

**Table 1. Single active ingredient products**

Type	Active Ingredient	Trade Name	Target Pest(s)	Insecticide Group	Signal Word	Restricted Use?	REI	PHI (days)
F	permethrin	many brands	beetle, leafhopper, Lepidoptera, psyllid	3	Warning or Caution	Y	12 hr	14
IF	phorate	Thimet (Amvac), Phorate (various)	aphid, beetle, leafhopper, psyllid, wireworm	1B	Danger/Poison	N	72 hr	90
F	phosmet	Imidan 70-W (Gowan)	beetle, leafhopper, tuberworm, Lepidoptera*, psyllid	1B	Warning	N	5 days	7
F	propargite	Comite, Omite (MacDermidAg. Solutions)	spider mite	12C	Danger	N	2 days	14
F	pymetrozine	Fulfill (Syngenta, Adama)	aphid, psyllid*	9B	Caution	N	12 hr	14
F	spinetoram	Radiant SC (Dow)	Colorado potato beetle, Lepidoptera, thrips <i>Lygus</i> *, psyllid*	5	Caution	N	4 hr	7
F	spinosad	Success, Entrust, Blackhawk (Dow)	Colorado potato beetle, Lepidoptera, <i>Lygus</i> *, thrips*, psyllid*	5	Caution	N	4 hr	7
F	spiromesifen	Oberon 2SC, Oberon 4SC (Bayer)	mite, psyllid, whitefly	23	Caution	N	12 hr	7
F	spirotetramat	Movento (Bayer)	aphid, psyllid, whitefly,	23	Caution	N	24 hr	7
F	sulfoxaflor	Transform (Dow)	aphid, leafhopper, psyllid, whitefly, <i>Lygus</i> *	4C	Danger	N	24 hr	7
F, IF, SP	thiamethoxam	Actara, Cruiser 5FS, Platinum, Platinum 75SG (Syngenta)	aphid, beetle, leafhopper, psyllid, wireworm (seed piece protection)	4A	Caution	N	12 hr	14
F	tolfenpyrad	Torac (Nichino)	aphid, Colorado potato beetle, leafhopper, psyllid, thrips	21A	Warning	N	12 hr	14

All trade names may not be listed here. Product application codes: F = foliar; FU = fumigant; IF = in-furrow; SP = seed protectant. PHI = Pre-harvest interval. REI = Restricted entry interval. Insecticide Group codes refer to modes of action, and should be used in managing insecticide resistance; for more on insecticide codes and resistance management, see: <http://www.nwpotatoresearch.com/>. Always consult specific pesticide labels before making recommendations or deciding on a product and treatment.

\*The pesticide label does not list this pest, but the insecticide has been shown to be effective in its control.

<sup>1</sup> PennCap has a 5-day PHI.

<sup>2</sup> Some products do not list PHI specifically.

**Table 2. Package mixes of active ingredients.**

Type	Active Ingredient 1	Active Ingredient 2	Trade Name	Target Pest(s)	Signal Word	Restricted use?	REI	PHI (days)
FU	1,3 dichloropropene	chloropicrin	Telone C17 (Dow)	symphylan, wireworm	Danger	Y	5 days	NA
F	abamectin (a.k.a. avermectin B1)	bifenthrin	Athena (FMC)	aphid, beetle, grasshopper, Lepidoptera, <i>Lygus</i> psyllid, spider mite, thrips	Caution	Y	12 hr	21
F	bifenthrin	imidacloprid	Brigadier (FMC)	aphid, beetle, leafhopper, Lepidoptera, grasshopper, psyllid, whitefly	Warning	Y	12 hr	21
F	bifenthrin	gamma-cypermethrin	Hero (FMC)	aphid, beetle, grasshopper, leafhopper, Lepidoptera, spider mite	Caution	Y	12 hr	21
F	bifenthrin	gamma-cypermethrin	Hero EW (FMC)	aphid, beetle, grasshopper, leafhopper, Lepidoptera, spider mite	Warning	Y	12 hr	21
	bifenthrin	gamma-cypermethrin	Steed (FMC)	aphid, beetle, grasshopper, leafhopper, Lepidoptera	Warning	Y	12 hr	21
F	chlorantraniliprole	lambda-cyhalothrin	Besiege (Syngenta)	aphid, beetle, grasshopper, leafhopper, Lepidoptera, stink bug, psyllid	Warning	Y	24 hr	14
F	chlorantraniliprole	thiamethoxam	Voliam Flexi (Syngenta)	aphid, beetle, leafhopper, Lepidoptera	Caution	N	12 hr	14
F	beta-cyfluthrin	imidacloprid	Leverage 360 (Bayer)	aphid, beetle, Lepidoptera, psyllid, leafhopper, <i>Lygus</i>	Caution	Y	12 hr	7
F	lambda-cyhalothrin	thiamethoxam	Endigo ZC (Syngenta)	aphid, beetle, Lepidoptera, grasshopper, <i>Lygus</i> , stink bug, psyllid, leafhopper, whitefly	Warning	Y	24 hr	14
SP	thiamethoxam	fludioxonil, (fungicide)	Cruiser Maxx (Syngenta)	aphid, beetle, leafhopper, psyllid, whitefly	Caution	N	12 hr	??
SP	thiamethoxam	fludioxonil, difenoconazole (fungicide)	Cruiser Maxx Potato Extreme (Syngenta)	aphid, beetle, leafhopper, psyllid, whitefly	Caution	N	12 hr	??
SP	thiamethoxam	fludioxonil, difenoconazole, Sedaxane (fungicide)	CruiserMaxx Vibrance	aphid, beetle, leafhopper, psyllid, whitefly	Caution	N	12 hr	??

**Table 3. Biological insecticides, essential oils, etc.**

Type	Active Ingredient	Trade Name	Target Pest(s)	Insecticide Group	Signal Word	Restricted Use?	REI	PHI (days)
F	azadirachtin	Aza-Direct (Gowan), Azaguard (Biosafe), Ecozin Plus (Amvac), Neemix, (Certis)	various insects	-	Caution	N	4 hr	0
F	azadirachtin, pyrethrins	Azera (Valent)	various insects	3A,	Caution	N	12	0
F	<i>Bacillus thuringiensis</i> var. <i>aizawai</i>	XenTari (Valent)	Lepidoptera	11A	Caution	N	4 hr	-
F	<i>Bacillus thuringiensis</i> var. <i>kurstaki</i>	Dipel (Valent), Cryâmax, Deliver, Javelin, (Certis)	Lepidoptera	11A	Caution	N	4 hr	0
F	<i>Bacillus thuringiensis</i> var. <i>tenebrionis</i>	Novodor (Valent)	Colorado potato beetle	11A	Caution	N	4 hr	0
F	<i>Beauveria bassiana</i>	Botanigard, Mycotrol (Bioworks)	various insects	--	Caution	N	4 hr	0
F	extract of <i>Chenopodium ambrosioides</i>	Requiem (Bayer)	psyllid	--	Caution	N	4 hr	0
F	<i>Chromobacterium subtsugae</i> strain PRAA4-1T	Grandevo (Marrone Bio Innovations)	Lepidoptera, aphid, leafhopper, psyllid, whitefly	--	Caution	N	4 hr	0
F	rosemary oil, peppermint oil	Ecotrol EC (EcoSmart)	aphid, leafhopper, psyllid, thrips	--	Caution	N	0 hr	0
F	clove oil, thyme oil, cinnamon oil	Ecotrol G (EcoSmart)	aphid, leafhopper, <i>Lygus</i> , spider mite, thrips	--	Caution	N	0 hr	0
F	cryolite (Na aluminofluoride)	Kryocide (United Phosphorus)	Colorado potato beetle, tuberworm	8C	Caution	N	12 hr	0
F	kaolin	Surround (Novasource)	flea beetle, grasshopper, leafhopper	--	Caution	N	4 hr	0
F	neem oil	Trilogy (Thermo Trilogy)	mite	-	Caution	N	4 hr	0
F	paraffinic oil	JMS Stylet Oil (JMS Flower Farms)	leafhopper, mite, whitefly, aphid transmission of Potato Leafroll Virus and PVY	--	Caution	N	4 hr	0
F	petroleum oil	Biocover (Loveland), Suffoil X (Bioworks)	aphid, beetle larvae, leafhopper, mite, thrips, whitefly	--	Caution	N	4 hr	0
F	potassium salts of fatty acids	M-Pede (Gowan)	leafhopper, <i>Lygus</i> , thrips, mites, whitefly	--	Warning	N	12 hr	0
F	spinosad	Success, Entrust (Dow AgroSciences)	armyworm, Colorado potato beetle, looper, thrips, psyllid	5	Caution	N	4 hr	7

All trade names may not be listed here. In some cases the PHI is not specifically mentioned, but is implied to be 0 days. Product application codes: F = foliar; IF = in-furrow. Insecticide group codes refer to modes of action, and should be used in managing insecticide resistance; for more on insecticide codes and resistance management, see: <http://www.nwpotatoresearch.com/>. Always consult specific pesticide labels before making recommendations or deciding on a product and treatment.