

# IR-4 NEW PRODUCTS/TRANSITIONAL SOLUTION LIST - MARCH, 2001

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The following *New Pest Control Products/Transition Solutions List* contains brief description of numerous new pesticides that have been introduced over the last several years. Additionally, it contains information on some “older” pesticides which are believed to have room for new uses. Many of these pest control tools offer great promise to fill the pest management voids expected from the cancellation of pesticides/pesticide uses associated with the Food Quality Protection Act. Some of these new products have been classified by the EPA as reduced risk while others have characteristics which make them more desirable than some of the existing products. Several of the pesticides have been registered by the EPA for certain crops, while others have their initial registration pending. In most cases, the usefulness of these new pesticides on minor crops is still unknown.

## HERBICIDES

Herbicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
<i>Alternaria destruens</i> (SMOLDER)	UAP	<i>Microbial biopesticide</i>	<i>Controls Cuscuta spp. (AKA dodder, swamp dodder, largeseed dodder, field dodder or smallseed dodder)</i>	<i>Biopesticide. Pending use on cranberry. Potential use on tomato and pepper</i>
<i>alpha-metolachlor</i> (DUAL MAGNUM)	Syngenta	<i>Chloracetanilide</i>	<i>Same spectrum as metolachlor (DUAL)</i>	<i>Reduced Risk Pesticide. Registered on corn, cotton, peanuts, beans, peas, potato, safflower, sorghum, soybean, dry bulb onion, cabbage, celery, bell pepper and peach (NJ only). Pending use on tomato, non-bell pepper, grass seed, sunflower, sugar beets, carrot, horseradish, radish, spinach, rhubarb, swiss chard and asparagus. Potential use on garden beets, turnip greens, green onion, leek, parsley, broccoli, cauliflower, Chinese cabbage, collard, mustard greens, kale, melons, caneberry, blueberry, pumpkin and sesame.</i>
<i>Amicarbazone</i> (BAY MKH 3586)	Bayer	<i>Triazolinone</i>	<i>Applied at rates up to 500 g ai/ha (0.45 lb ai/A) to the soil preplant or pre-emergence. It also has burndown activity. Soil and burndown activity is primarily on broadleaf weed species.</i>	<i>Potential use in corn and sugarcane</i>
<i>Azafenidin</i> (MILESTONE)	DuPont	<i>Pyridinone (PPO Inhibitor)</i>	<i>Broad spectrum pre-emergence residual herbicide</i>	<i>Pending use on citrus, sugarcane, grape, pome fruit, stone fruit, and tree nuts/pistachio. Potential use on blueberry, asparagus, coffee and pineapple</i>
<i>Azimsulfuron</i> (GULLIVER)	DuPont		<i>Grasses and broadleaf weeds</i>	<i>Potential use on rice (international registrations approved)</i>
BAS 615 H.	BASF	<i>Isoindoldione (Inhibits protoporphyrinogen oxidase).</i>	<i>It is particularly active post-emergence on <u>Galium aparine</u>, among other broadleaf species, in small grains at 30 to 50 g ai/ha</i>	

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			(0.027 to 0.045 lb ai/A).	
<i>Beflubutamid</i> (UBH-820)	<i>Ube Industries</i>	<i>Phenoxybutanamide</i> (inhibits phytoene desaturase).	<i>Post-emergence control of broadleaf weeds at rates of 170 to 255 g ai/ha (0.15 to 0.23 lb ai/A)</i>	<i>Potential use on wheat, barley, rye, and triticale</i>
<i>Bensulfuron methyl</i> (LONDAX)	<i>DuPont</i>	<i>Sulfonylurea</i>	<i>Most broadleaf and sedge weeds</i>	<i>Registered on rice</i>
<i>Bispyribac sodium</i> (REGIMENT)	<i>Valent &amp; Kumiai</i>	<i>Sulfonylurea (ALS Inhibitor)</i>	<i>Annual/perennial grasses and broadleaf weeds including herbicide resistant barnyardgrass.</i>	<i>Candidate Reduced Risk Pesticide. Pending registration on rice</i>
<i>Carfentrazone-ethyl</i> (AFFINITY, AIM)	<i>FMC</i>	<i>Aryl triazolinone (PPO Inhibitor)</i>	<i>Numerous broadleaf weed, including cocklebur and water hemp.</i>	<i>Reduced Risk Pesticide. Registered on field corn, wheat, rice, sorghum, barley, sweet corn, oats and soybean. Pending use on potato and hop. Potential use on caneberry.</i>
<i>Cinidon-ethyl</i> (LOTUS)	<i>BASF</i>	<i>Isoindoldine (Protox inhibitor)</i>	<i>Post-emergence for control of problem broadleaf weeds.</i>	<i>Unknown status on wheat, barley, and oat. International registrations approved.</i>
<i>Clethodim</i> (SELECT) (PRISM)	<i>Valent</i>	<i>Cyclohexanone ACCase inhibitor</i>	<i>Activity only on grass weeds</i>	<i>Registered on cotton, soybean, sugar beet, garlic, tomato, alfalfa, dry bean, peanut, dry bulb onion, shallot, apple, grape root and tuber vegetables, sunflower, fruiting vegetables, carrots, radish, leaf petiole subgroup, melon subgroup, squash and cucumber subgroup, cranberry, strawberry, and clover. Pending use on beet, head and stem Brassica, other cucurbit vegetables, canola, and other bulb vegetables. Potential use on hop.</i>
<i>Clodinafop-propargyl</i> (DISCOVER)	<i>Syngenta</i>	<i>Pyridylory-phenoxy propionate (ACC ase)</i>	<i>Selective post-emergence of wild oats, annual grasses and other weeds. Must be combined with a safner.</i>	<i>Registered on wheat</i>
<i>Clomazone</i> (COMMAND)	<i>FMC</i>	<i>Isonazolidinone - Carotenoid biosynthesis inhibitor</i>	<i>Material controls a broad spectrum of grasses and broadleaf weeds.</i>	<i>Registered on soybean, cotton, pepper, succulent pea, cucurbit vegetables, cabbage, sweet potato, snap bean, tuberous and corm vegetables and rice. Pending use on mint, broccoli, and pea.</i>
<i>Cloransulam-methyl</i> (FIRSTRATE)	<i>Dow AgroSciences</i>	<i>Sulfonamide (ALS Inhibitor)</i>	<i>Can be applied pre-emergence or post-emergence to control broadleaf annual weeds</i>	<i>Registered on soybean (in combination with other products). Pending use on cotton.</i>
<i>Colletotrichum gloesporioides f. sp malvae</i> (MALLET WP)	<i>Encore Technologies</i>	<i>Fungus</i>	<i>It is pathogenic to round-leaved mallow, small flowered mallow, common mallow, and velvetleaf</i>	<i>Biopesticide. Pending use on all crops</i>
<i>Cyhalofop-butyl</i> (CLINCHER)	<i>Dow AgroSciences</i>	<i>Phenocy-propionate</i>	<i>Post-emergence graminicide</i>	<i>Reduced Risk Pesticide. Potential use on rice, oat, barley and wheat. (International registrations approved).</i>
<i>Diclosulam</i> (STRONGARM)	<i>Dow AgroSciences</i>	<i>Sulfonamide (ALS Inhibitor)</i>	<i>Can be applied pre- or post-emergence for broadleaf weeds such as morningglory, cocklebur,</i>	<i>Registered on peanuts and soybeans.</i>

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			<i>velvetleaf and nutsedge</i>	
<i>Diflufenzopyr (DISTINCT)</i>	<i>BASF</i>	<i>Pyridine (Auxin transport inhibitor)</i>	<i>Annual grasses and broadleaf weeds. Sold in a pre-mix with dicamba</i>	<i>Reduced Risk Pesticide. Registered on corn. Pending registrations on sweet corn and pasture grasses</i>
<i>Dimethenamid (FRONTIER) (OUTLOOK)</i>	<i>BASF</i>	<i>Chloroacetamide</i>	<i>Annual grasses, broadleaf weeds, yellow nutsedge</i>	<i>Registered on dry beans, field corn, sweet corn, popcorn, seed corn, peanut, grain sorghum, and soybean. Pending use on dry bulb onion, sugarbeet and garden beets.</i>
<i>Dimethenamid-P (FRONTIER X-2)</i>	<i>BASF</i>	<i>Chloroacetamide, single isomer of dimethenamid</i>	<i>Annual grasses, broadleaf weeds, yellow nutsedge</i>	<i>Reduced Risk Pesticide. Pending use on corn, peanut sugarbeet, potato, seed grass, soybean, and dry bulb onion. Potential on garden beets.</i>
<i>Drechslera monoceras (MTB-951)</i>	<i>Mitsui Chemical</i>	<i>Biopesticide</i>	<i>Barnyardgrass</i>	<i>Potential use on rice (international use pending).</i>
<i>Flazasulfuron (MISSION)</i>	<i>Syngenta &amp; ISK</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Active against many grasses and broadleaf weeds with pre- and post- emergence activity at 50 grams/ha</i>	<i>Potential use on grape and olive (international registrations approved).</i>
<i>Floransulam (PRIMUS) (BOXER)</i>	<i>Dow AgroSciences</i>	<i>Triazolopyrimidine sulfonanilide, (ALS inhibitor)</i>	<i>Herbicide for broadleaf weeds It provides post-emergence control of broadleaf weeds, particularly Galium aparine (catchweed bedstraw), at rates of 5 to 7.5 g ai/ha (0.0045 to 0.0067 lb ai/A).</i>	<i>Potential use on wheat, barley, and oat (international use approved).</i>
<i>Fluazolate JV 485</i>	<i>Bayer and Monsanto</i>	<i>Pyrazole Benzoae</i>	<i>Pre-emergence control of broadleaf weeds and grasses</i>	<i>Potential use on wheat (international use approved).</i>
<i>Flucarbazone-sodium (EVEREST 70 WG)</i>	<i>Bayer</i>	<i>Sulfonylaminocarbonyl- triazolinone, (ALS inhibitor)</i>	<i>Low rate post-emergence grass herbicides which manages Wild Oat and Green Foxtail, and certain broadleaf weeds at the suggested use rate of 30 g ai/ha (0.027 lb ai/A).</i>	<i>Reduced Risk Pesticide. Registered use on wheat.</i>
<i>Flufenacet (AXIOM)</i>	<i>Bayer</i>	<i>Oxyacetimide</i>	<i>Soil applied for annual grasses and some broadleaf weeds.</i>	<i>Registered on corn, soybean and grass seed as part of a premix herbicide. Potential use on potato, tomato, onion, pepper, and rice</i>
<i>Flufenpyr-ethyl S-3153</i>	<i>Valent</i>	<i>PPO Inhibitor</i>	<i>Excellent control of velvetleaf and morningglories.</i>	<i>Candidate Reduced Risk Pesticide. Pending registrations on corn, soybean, and sugarcane. Potential use on snap bean, lima bean and dry beans.</i>
<i>Flumetsulam (BROADSTRIKE)</i>	<i>Dow AgroSciences</i>	<i>Sulfonamide (ALS Inhibitor)</i>	<i>Controls broadleaf and grass weeds</i>	<i>Registered on corn and soybean (as part of a premix). Pending registrations on dry bean</i>
<i>Flumiclorac (RESOURCE)</i>	<i>Valent</i>	<i>N-phenylphthalimide derivative (PPO Inhibitor)</i>	<i>Post-emergence control of velvetleaf</i>	<i>Reduced Risk Pesticide. Registered on corn and soybean.</i>
<i>Flumioxazin (VALOR 50 WD)</i>	<i>Valent</i>	<i>N-phenylphthalimide derivative (PPO</i>	<i>Low use rate pre-emergence broadleaf herbicide with contact</i>	<i>Pending registration on cotton, peanut, soybean, sugarcane, grape and almond.. Potential uses on pome fruit, stone fruit, other tree nuts, carrot, tomato, dry bean</i>

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		<i>Inhibitor)</i>	<i>activity and residual soil activity.</i>	<i>and potato.</i>
<i>Fluroxypyr (STARANE F)</i>	<i>Dow AgroSciences &amp; UAP</i>	<i>Picolinic acid</i>	<i>Post-emergence applications to control annual and perennial broadleaf weeds, including vol. potato, kochia and nightshade</i>	<i>Registered for wheat, barley and oats. Pending use on bulb onion, sweet corn and sorghum. Potential uses on spinach, pome fruit, stone fruit, tree nuts, and grape.</i>
<i>Flurtamone</i>	<i>Aventis</i>	<i>Furanone</i>	<i>Used as a pre- and early post-emergence for control of annual broadleaf weeds and some grasses</i>	<i>Potential use on wheat, barley, oats, sunflower and pea (international registrations approved).</i>
<i>Fluthiacet-methyl (APPEAL)</i>	<i>Entek Kumiai</i>	<i>Protox Inhibitor</i>	<i>Post-emergence control for velvetleaf, lambsquarter and other broadleaf weeds.</i>	<i>Registered on soybean. Pending use on corn.</i>
<i>Foramsulfuron (AE F 130360)</i>	<i>Aventis</i>	<i>Sulfonyl urea (ALS inhibitor)</i>	<i>Post-emergence control of most annual and perennial grasses.</i>	<i>Pending registration on corn</i>
<i>Glufosinate (LIBERTY) (RELY)</i>	<i>Aventis</i>	<i>Butanoic acid</i>	<i>Broad spectrum, non-selective</i>	<i>Registered on apples, bananas, grapes, potatoes, field corn, soybean and tree nuts. Pending use on rice, sweet corn, canola, potato, sugarbeet.</i>
<i>Halosulfuron (PERMIT) (SEMPRA) (SANDEA)</i>	<i>Monsanto / Gowan</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Nutsedge, velvetleaf, cocklebur, other broadleaf weeds</i>	<i>Methyl Bromide Alternative. Registered on field and sweet corn, cotton, grain sorghum, rice, sugarcane, cucurbits and tree nuts/pistachio. Pending use on tomato. Potential use on snap/dry beans, and asparagus.</i>
<i>Imazamox (RAPTOR)</i>	<i>BASF</i>	<i>Imidazolinone (ALS inhibitor)</i>	<i>Annual grasses and some broadleaf</i>	<i>Reduced Risk Pesticide. Registered on soybean. Pending uses on grass, edible legumes, and canola. Potential use on sunflower, rice and wheat.</i>
<i>Imazapic (CADRE 2AS)</i>	<i>BASF</i>	<i>Imidazolinone (ALS inhibitor)</i>	<i>Pre- and post-emergence control of annual grasses and broadleaf weeds</i>	<i>Reduced Risk Pesticide. Registered on peanut. Pending uses on soybean, grass, and sugarcane.</i>
<i>Iodosulfuron (HUSAR) (AE-1715)</i>	<i>Aventis</i>	<i>Sulfonylurea,(ALS inhibitor)</i>	<i>Early to mid-POST applications for control of grass and broadleaf weeds. May be mixed with other materials to enhance activity.</i>	<i>Pending use on corn. Potential use on cereals (international registration approved)</i>
<i>Isoxaflutole (BALANCE)</i>	<i>Aventis</i>	<i>Isoxazole</i>	<i>Soil applied for many annual grasses and some broadleaf weeds</i>	<i>Registered on field corn (geographically restricted) Pending use on sweet corn, wheat, and barley. Potential use on potato,sweet potato, chickpea, GM soybeans and GM sugarcane.</i>
<i>Mesotrione (CALLISTO)</i>	<i>Syngenta</i>	<i>Cyclohexanedione, inhibits p-hydroxyphenylpyruvate dioxygenase (HPPD), ultimately disrupting</i>	<i>Pre-and post-emergence management of annual grasses and broadleaf weeds, including sulfonylurea resistant weeds.</i>	<i>Reduced Risk Pesticide. Pending use on field corn and sweet corn. (International registrations approved)</i>

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<i>Metosulam</i> (BARKO) <i>Oxadiazole</i> (TOPSTAR 80 WP)	<i>Dow AgroSciences</i> <i>Aventis</i>	<i>carotenoid biosynthesis</i>  <i>ALS inhibitor</i>  <i>Oxadiazole (ALS inhibitor)</i>	<i>Application rates will range from 100 to 225 g ai/ha (0.089 to 0.20 lb ai/A) pre-emergence, and 70 to 150 g ai/ha (0.063 to 0.13 lb ai/A) post-emergence. Will be marketed as a stand alone product, as well as a premix.</i>  <i>Preemergence control of broadleaf weeds</i>  <i>Broad spectrum weed control, similar to oxidiazinon</i>	<i>Potential in corn. (International registrations approved)</i>  <i>Potential use on rice, sugarcane, sunflower, vegetables and tree crops (international registrations approved)</i>
<i>Oxasulfuron</i> (DYNAM)	<i>Syngenta</i>	<i>Sulfonylurea, (ALS inhibitor)</i>	<i>Post-emergence for cocklebur, ragweed, and other broadleaf weeds</i>	<i>Potential use on soybean</i>
<i>Pelargonic Acid</i> (SCYTHE)	<i>Dow AgroSciences</i>	<i>Fatty acid</i>	<i>Contact, non-selective broad spectrum foliar applied material</i>	<i>Biopesticide Registered on all crops</i>
<i>Pethoxamid</i> (SUCCESSOR 600)	<i>Tokuyama</i>		<i>Selectively controls certain grasses and broadleaf weeds</i>	<i>Potential use in corn and soybean</i>
<i>Picolinafen</i> (PICO)	<i>BASF</i>	<i>Aryloxycolinamide (inhibits phytoene desaturase)</i>	<i>Post-emergence use to control annual broadleaf weeds.. The application rate will be 50 g ai/ha (0.045 lb ai/A). . It will be sold as a pre-mix</i>	<i>Potential use on wheat, barley, rye, and triticale (international registrations pending).</i>
<i>Profoxydim</i> (AURA) (TETRIS)	<i>BASF</i>	<i>Cyclohexanone graminicide, an ACCase inhibitor.</i>	<i>Controls grass weeds at use rates ranging from 50 to 200 g ai/ha (0.045 to 0.18 lb ai/ha)</i>	<i>Unknown status on rice. International registrations approved.</i>
<i>Prosulfuron</i> (PEAK)	<i>Syngenta</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Post-emergence for cocklebur, kochia, lambsquarter, pigweed, ragweed and velvetleaf</i>	<i>Registered on sorghum, wheat, and cereals. Potential use on sugarcane</i>
<i>Propoxycarbazone</i> <i>BAY MKH 6561</i> (OLYMPUS) (ATTRIBUTE)	<i>Bayer</i>	<i>Sulfonylaminocarbonyl triazolinone (ALS inhibitor)</i>	<i>Post-emergence grass weed control.. Application rates will be 30 to 70 g ai/ha (0.027 to 0.063 lb ai/A). Broadleaf weeds in the Cruciferae family are also controlled. Also controls <i>Bromus</i> sp. at 30 to 45 g ai/ha (0.027 to 0.040 lb ai/A).</i>	<i>Pending use on wheat, rye, and triticale</i>
<i>Pyraflufen-ethyl</i> (ECOPART)	<i>Nihon Nohyaku</i>	<i>Prototoxin inhibitor</i>	<i>Post-emergence herbicide for general non-selective control of weeds or use as desiccant. Low use rates, 1 g ai/A</i>	<i>Pending use on wheat, barley, corn, potato, and cotton.</i>
<i>Pyribenzoxium</i>	<i>Rohm and</i>		<i>Post emergence material with broad</i>	<i>Potential use on rice (international registrations approved).</i>

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<i>(PYANCHOR)</i>	<i>Haas</i>		<i>spectrum activity on annual and perennial weeds including grasses, broadleaves and sedges.</i>	
<i>Pyridate (TOUGH)</i>	<i>Syngenta</i>	<i>Phenylpyridazine</i>	<i>Controls some broadleaf weeds</i>	<i>Registered on corn, peanuts, chickpea, Head and Stem Brassica (broccoli, cabbage, cauliflower, collards, ect.) and mint. Potential on alfalfa.</i>
<i>Pyriftalid (CGA-279233)</i>	<i>Syngenta</i>		<i>Mainly a grass material</i>	<i>Pending use on rice.</i>
<i>Pyriithiobac-sodium (STAPLE)</i>	<i>DuPont</i>	<i>Benzoate (ALS inhibitor)</i>	<i>Controls a wide range of broadleaf weeds via pre- and post-emergence application</i>	<i>Registered on cotton</i>
<i>Quinclorac (FACET) (PARAMOUNT)</i>	<i>BASF</i>	<i>Quinoline carboxylic acid</i>	<i>Post-emergence management of annual grasses and certain broadleaf weeds</i>	<i>Registered on rice, sorghum and wheat. Pending use on cranberry.</i>
<i>Quizalofop-ethyl (ASSURE)</i>	<i>DuPont</i>	<i>Phenoxy propionic ester</i>	<i>Post emergence grass herbicide</i>	<i>Registered on cotton, beans, soybean, canola, mint, lupin, pea, sugar beet and lentil. Potential on pineapple and mustard seed</i>
<i>Rimsulfuron (MATRIX)</i>	<i>DuPont</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Annual grass and broadleaf weeds</i>	<i>Methyl Bromide Alternative. Registered on field corn (as part of a pre-mix) tomato and potato.</i>
<i>Sethoxydim (POAST)</i>	<i>BASF</i>	<i>Cyclohexanone (ACCCase inhibitor)</i>	<i>Post emergence grass herbicide</i>	<i>Registered on soybean, cotton, corn, stone fruit, beans, garden beets, caneberry, carrot, cilantro, cranberry, endive, artichoke, grape, horseradish, leafy vegetables, Brassica leafy vegetables, peppermint, spearmint, asparagus, tuberous and corn vegetables. Pending use on pistachio, safflower, buckwheat and sunflower. Potential use on radish, okra, grass seed, herbs, and tropical fruits.</i>
<i>Sulfentrazone (AUTHORITY)</i>	<i>FMC</i>	<i>Aryl triazinone (PPO inhibitor)</i>	<i>Controls both broadleaf and grass species.</i>	<i>Registered on soybean. Pending use on horseradish, lima bean, cowpea, sunflower and sugarcane. Potential use on cabbage.</i>
<i>Sulfosulfuron (MAVERICK)</i>	<i>Monsanto</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Grasses/ broadleaf weeds including quackgrass, bromes and mustards</i>	<i>Registered on wheat. Pending use on barley, oats &amp; cereals. Potential use on potato.</i>
<i>Tepraloxydim (EQUINOX) (ARAMO)</i>	<i>BASF</i>	<i>Cyclohexanedione, (ACCCase inhibitor)</i>	<i>Provides post-emergence grass weed control in broadleaf crops, at rates of 50 to 75 g ai/ha (0.045 to 0.067 lb ai/A). At rates of 100 g ai/ha (0.089 lb ai/A) it will control perennials such as johnsongrass, and suppress bermuda grass.</i>	<i>Pending use on soybean, cotton sugarbeet, and canola. Potential use on beans, peas, onion and leek</i>
<i>Thiazopyr (VISOR)</i>	<i>Rohm and Haas</i>	<i>Pyridine</i>	<i>Annual and perennial broadleaf weeds, including crabgrass and nutsedge</i>	<i>Registered on citrus. Potential use on tree fruit, berries, alfalfa, cranberry, olive.</i>

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<i>TM 435</i>	<i>Tomen</i>			<i>Potential use on wheat, small grains and corn</i>
<i>Tralkoxydim</i> ( <i>ACHIEVE</i> )	<i>Syngenta</i>	<i>Cyclohexandione</i> ( <i>ACCase inhibitor</i> )	<i>Post-emergence for grass weeds such as wild oats, green and yellow foxtail, and annual ryegrass.</i>	<i>Reduced Risk Pesticide. Registered on wheat and barley.</i>
<i>Triasulfuron</i> ( <i>AMBER</i> )	<i>Syngenta</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Broadleaf weeds</i>	<i>Registered on wheat, barley, pastures and rangeland.</i>
<i>Tribenuron-methyl</i> ( <i>EXPRESS</i> )	<i>DuPont</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Broadleaf weed</i>	<i>Registered on wheat and barley.</i>
<i>Trifloxysulfuron</i> ( <i>CGA-362622</i> )	<i>Syngenta</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Broadleaf weeds</i>	<i>Pending use on cotton and sugarcane.</i>
<i>Triflurosulfuron</i> ( <i>UPBEET</i> )	<i>DuPont</i>	<i>Sulfonylurea (ALS inhibitor)</i>	<i>Broadleaf weeds</i>	<i>Registered on sugar beet. Potential use on chicory.</i>

## PLANT GROWTH REGULATORS

Plant Growth Regulators (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
<i>Ammonium thiosulfate</i>	<i>Siemer</i>	<i>Ammonium thiosulfate</i>	<i>Active as blossom thinner</i>	<i>Pending on apple</i>
<i>AVG</i> ( <i>RETAIN</i> )	<i>Valent Bioscience</i>	<i>Lycine analog</i>	<i>Plant growth regulator which improves harvest management by inhibiting ethylene biosynthesis.</i>	<i>Registered on apple and pear. Pending use on stone fruit. Potential use on citron melon, cotton, melons, muskmelons, nectarine, tomato, watermelon and tropical fruits.</i>
<i>Bacillus cereus</i>	<i>Microflo</i>	<i>Biological</i>	<i>Growth regulator that assists in boll retention and larger bolls.</i>	<i>Biopesticide. Registered on cotton</i>
<i>Clofencet</i> ( <i>DETASSELOR</i> )	<i>Monsanto</i>	<i>Carboxylic acid</i>	<i>Hybridizing agent</i>	<i>Registered on barley, wheat, and soybean</i>
<i>Copper Ethylenediamine complex</i> ( <i>INFERNO</i> )	<i>Griffin</i>		<i>Dessiccant and harvest aid</i>	<i>Registered on potato</i>
<i>Diphenylamine</i>	<i>Syngenta</i>	<i>Diphenylamine</i>	<i>Protects the fruit from scald</i>	<i>Registered on apple. Pending use on pear</i>
<i>1,2,6-DIPN</i> ( <i>AMPLIFY</i> )	<i>UAP</i>	<i>Diisopropyl naphthalene</i>	<i>Controls sprouts on storage potatoes. Works in synergy with CIPC</i>	<i>Pending on potato.</i>
<i>GABA</i> ( <i>AUXI GRO</i> )	<i>Emerald Bioagriculture</i>	<i>Butanoic acid</i>	<i>Enhances crop growth and yield</i>	<i>Registered on broccoli, cabbage, cauliflower, cotton, bell peppers, lettuce, peanut, potato, snap bean, spinach and tomato</i>
<i>Lyso PE</i>	<i>JP</i>	<i>Phospholipid</i>	<i>Ripening and shelf life enhancement</i>	<i>Biopesticide. Pending on apple, citrus, cranberry, nectarine, peach, pear,</i>

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Plant Growth Regulators (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
	<i>Bioregulators</i>			<i>strawberry, tomato and grape</i>
<i>MBTA (ECOLYST)</i>	<i>Valent Bioscience</i>	<i>Substituted tertiary amine</i>	<i>Novel PGR that promotes sugar accumulation in processing oranges</i>	<i>Reduced Risk Pesticide. Registered on orange. Pending use on grapefruit.</i>
<i>1-MCP (ETHYLBLOC)</i>	<i>BioTechnologies for Horticulture</i>	<i>Cyclopropene</i>	<i>Inhibits the attachment of ethylene to ethylene receptor for a post-harvest storage extension</i>	<i>Biopesticide. Registered in numerous fruits and vegetables</i>
<i>Mepiquat Chloride (PIX)</i>	<i>BASF</i>	<i>Quaternary ammonium</i>	<i>Shortens plant internode and plant height</i>	<i>Registered on cotton. Pending use on grapes. Potential use on onion, garlic, melons, pecan, okra, pepper, and sweet potato.</i>
<i>Prohexadione Calcium (APOGEE)</i>	<i>BASF/Kumiai Chemical</i>	<i>Calcium Carboxylate</i>	<i>Reduces vegetative growth-better balance between canopy development and fruit production</i>	<i>Reduced Risk Pesticide. Registered on pome fruit, pea, seed grass, and peanut. Potential use on rice, sweet cherry, hop, mint, seed potato, strawberry, sweet potato, avocado, and mango.</i>
<i>Sodium nitrophenolate (ATONIK)</i>	<i>Asahi Mfg. Ltd.</i>	<i>Combination of NA nitrophenolates and nitroguatalolate</i>	<i>Increased nutrient uptake, resulting in improved yields</i>	<i>Potential use on all crops.</i>
<i>Trinexapac-methyl (PALISADE)</i>	<i>Syngenta</i>	<i>Cyclohexane carboxylic acid</i>	<i>Growth regulator with use resulting in less potential for lodging, more efficient seed harvest, and improved seed set.</i>	<i>Registered on ryegrass seed. Potential use on pome fruit, sugarcane, rice, onion, le, alfalfa, and citrus.</i>

## INSECTICIDES

Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
<i>Abamectin (AGRIMEK) (AVID) (ZEPHYR) (CLINCH)</i>	<i>Syngenta</i>	<i>Macrocylic lactone gluicosideAvermectin</i>	<i>Broad spectrum araricide with activity on leafminers, Colorado potato beetle, and pear psylla. Weak against sucking insects and thrips. Good IPM tool with short re-entry interval. Translaminar activity providing long residual activity.</i>	<i>Registered on cotton, citrus, potato, celery, tomato bell pepper, head lettuce, almond, walnut, pear, apple, hop, strawberry, cucurbit vegetables, grape, chili pepper, seed alfalfa and celeric. Pending use on avocado, basil, leaf lettuce, spinach, and other leafy vegetables, plum, Brassica leafy vegetables and other fruiting vegetables, onion, caneberry, papaya, tree nut/pistachio, tuberous and corm vegetables, stone fruit, guava, chives, and beans (dry, snap, lima).</i>
<i>Acetamiprid (ASSAIL)</i>	<i>Aventis</i>	<i>Chloronicotinyl</i>	<i>Broad spectrum control with contact and systemic activity via foliar applications. Excellent on sucking pests like aphids and whitefly.</i>	<i>Reduced Risk Pesticide and OP Alternative. Pending use on pome fruit, citrus fruit, grape, Brassica leafy vegetables, leafy vegetables, fruiting vegetables, and cotton. Potential use on eggplant, spinach, canola, and mustard seed.</i>

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<b>Insecticides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
<i>Azadirachtin (NEEMIX) (NIMBECIDINE)</i>	<i>Thermo Trilogy PBT International</i>	<i>Extract from neem oil which acts as a hormonal analog.</i>	<i>Disrupts insect molting. Target pests include whitefly, leafminer, and Lepidoptera</i>	<i>Biopesticide. Registered on citrus, pome, stone fruits, grape, berries, cranberry, strawberry, tree nuts, cucurbit vegetables, bulbs vegetables, Brassica leafy vegetables, legume vegetables, fruiting vegetables, root &amp; tuber vegetables, herbs/spices.</i>
<i>Bacillus sphaericus</i>	<i>Valent Bioscience</i>	<i>Bacteria</i>		<i>Biopesticide. Potential registration on all crops.</i>
<i>Bacillus thuringiensis</i>	<i>Numerous</i>	<i>Bacteria</i>	<i>New strains of Bt are being discovered that have activity against numerous pests.</i>	<i>Biopesticide. Potential registration on all crops as a spray, added into genetically modified cotton, potato, corn and sweet corn.</i>
<i>Beauveria bassiana (MYCOTROL) (NATURALIS)</i>	<i>Emerald Bioagriculture Troy Bio- Sciences</i>	<i>Bacteria</i>	<i>Corn borer, grasshopper, cricket, locust, aphids and whitefly</i>	<i>Biopesticide. Potential registration on all crops</i>
<i>Bifenazate (ACRAMITE) (FLORAMITE)</i>	<i>Uniroyal</i>	<i>Carbazate - New mode of action with no cross resistance</i>	<i>Controls spider mites, including eggs and motiles. Safe on predator mites</i>	<i>Reduced Risk Pesticide and OP Alternative. Pending use on pome fruit, stone fruit, grape, strawberry, hop, and cotton. Potential use on fruiting vegetables, cucurbit vegetables, caneberry, nut crops, wheat, and mint</i>
<i>Bifenthrin (CAPTURE) (BRIGADE)</i>	<i>FMC</i>	<i>Pyrethroid</i>	<i>Broad spectrum activity on aphids, armyworms, cutworms, flea beetles, mites, corn borers.</i>	<i>Registered on cotton, corn, strawberry, hops, artichoke, cucurbit vegetables, edible podded legumes, eggplant, canola, crambe, rapeseed, head and stem Brassica, succulent shelled beans/peas, caneberry, grape, head lettuce, bell pepper, non-bell pepper and seed alfalfa. Pending use on citrus, celery, tomato, potato and banana.</i>
<i>Bistrifluron (DBI-3204)</i>	<i>Dongbu Hannong Chemical</i>		<i>Controls lepidopteran pests</i>	<i>Potential use on vegetables and fruit</i>
<i>Buprofezin (APPLAUD)</i>	<i>Aventis &amp; Nihon Nohyaku</i>	<i>Thiadiazine - IGR, unique mode of action, inhibits chitin synthesis</i>	<i>Good activity for nymphal stages of leafhoppers, planthoppers, scales, and whiteflies.</i>	<i>Registered on lettuce and cucurbit vegetables . Pending use on almonds, banana, citrus, grape, tomato, cotton, peach, pear, snap bean, lychee, avocado and pistachio. Potential use on other stone fruit, other pome fruit, okra, and tropical fruit crops.</i>
<i>Canola oil</i>	<i>W. Neudorff</i>	<i>Natural Product</i>	<i>Mites, apple red bud, scale, aphid</i>	<i>Registered on alfalfa, almonds, pecans, apple, pear, apricot, cherry, nectarine, blueberry, cranberry, citrus, corn, cotton, cucurbit vegetables, eggplant, pepper, tomato, fig, grape, raspberry, strawberry, olive, sugar beets, sweet corn.</i>
<i>Chromafenozide (MATRIC)</i>	<i>Nippon Kayaku and Sankyo</i>	<i>Insect Growth Regulator</i>	<i>Specific to lepidopteran pests, novel ecodyosone agonist.</i>	<i>Potential use of apple, cotton, shallot, rice, tea, soybeans, and other fruit and vegetables.</i>
<i>Cinnamaldehyde (CINNACURE) (CINNAMITE)</i>	<i>Proguard</i>	<i>Natural Product</i>	<i>Aphids, mites and the diseases downy mildew, powdery mildew, botrytis, and brown rots.</i>	<i>Biopesticide. Registered on avocado, peppermint, spearmint, banana, dates, figs, mangoes, papayas, beet greens, chicory, artichokes, blueberry, raspberry, blackberry, gooseberry, currant, Brassica vegetables, bulb vegetables, cereal grains, citrus, cranberry, grape strawberry, cucurbit vegetable, fruiting vegetables, herbs and spice, hop, sweet corn, pop corn, kiwifruit, leafy vegetable, legume vegetables, pasture grass, alfalfa, pistachio, persimmon, pome fruit, soybean, stone</i>

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<b>Insecticides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
				<i>fruit, meadowfoam, safflower, and tree nuts.</i>
<i>Cinnamon Oil (VALERO)</i>	<i>Emerald Bioagriculture</i>	<i>Natural Product</i>	<i>Controls mites and other insects</i>	<i>Potential use on grapes, strawberry, and sweet potato.</i>
<i>Clofentezine (APOLLO)</i>	<i>Aventis</i>	<i>Tetrazine</i>	<i>Acaricide for eggs of <u>Panonychus ulmi</u> and <u>Tetranychus</u> spp.</i>	<i>Registered on apple, pear, apricot, cherry, peach, nectarine, almond, walnut. Pending use on grape.</i>
<i>Clothianidin V-10066</i>	<i>Valent and Takeda</i>	<i>Neo-nicotinoid</i>	<i>Contact and stomach activity</i>	<i>Pending use on apple and pea. Potential use on pear.</i>
<i>Cydia pomonella granulose virsu (VIROSOFT CP4) (GRANUPOM)</i>	<i>Biotepp and Biobest</i>	<i>Granulosis Virus</i>	<i>Controls Codling moth</i>	<i>Biopesticide. Registered on apple</i>
<i>Cyfluthrin (BAYTHROID)</i>	<i>Bayer</i>	<i>Pyrethroid</i>	<i>Controls cabbage looper, potato leafhopper, Colorado potato beetle, European corn borer, flea beetle, potato tuberworm, citrus thrips.</i>	<i>Registered on potato, sweet corn, pepper, tomato, citrus, cotton, alfalfa, radish, sorghum, sugarcane, carrot, sunflower and hop. Pending uses on Brassica leafy vegetables, soybean, field corn, cereals grains, garbanzo bean, dry pea and lentil.</i>
<i>Cypermethrin (AMMO)</i>	<i>FMC</i>	<i>Pyrethroid</i>	<i>Activity on cutworms, thrips, leaf hopper, weevils, armyworms, lygus bug, plant bugs, corn earworm, aphids, and beetles.</i>	<i>Registered on cotton, pecans, head lettuce, potato, bulb vegetables, and Brassica leafy vegetables</i>
<i>Cyromazine (TRIGARD)</i>	<i>Syngenta</i>	<i>Triazine with insecticide growth regulator activity</i>	<i>Leafminers, maggots, fungal gnats.</i>	<i>Registered on cotton, celery, cucurbit vegetables, leafy vegetables, mushroom, pepper, tomato, lima bean, bulb onion, green onion, potato, Chinese cabbage, Chinese mustard, radish, and sweet corn. Pending use on blackeye pea, and mango.</i>
<i>DBI-3204</i>	<i>Dongbu Hannong</i>	<i>Benzoylphenyl urea</i>	<i>Active against lepidopteran pests, whitefly. It acts by inhabiting chitin synthesis</i>	<i>Potential use on apple, Brassica leafy vegetables, tomato, persimmon and other fruit and vegetables.</i>
<i>Deltamethrin (DECIS)</i>	<i>Aventis</i>	<i>Pyrethroid</i>	<i>Beetles, bugs, Lepidoptera</i>	<i>OP Alternative. Registered on cotton. Pending use on bulb vegetables, barley, cucurbits, Brassica leaf vegetables, leafy vegetables, fruiting vegetables, root and tuber vegetables, artichoke, tree nuts, stone fruit, pome fruit, field corn, sorghum, soybean, sunflower, wheat, and popcorn.</i>
<i>Diiflubenzuron (DIMILIN)</i>	<i>Uniroyal</i>	<i>Substituted benzoylurea, Insect Growth Regulator</i>	<i>Wide range of leaf feeding insects.</i>	<i>Registered on citrus, artichoke, mushrooms, soybean, cotton, walnut, rice and rangegrass. Pending use on pear. Potential use on rhubarb, nut crops, and stone fruit.</i>
<i>Emamectin Benzoate (PROCLAIM) (STRATEGY)</i>	<i>Syngenta</i>	<i>Synthetic Avermectin analogue</i>	<i>Effective on larval Lepidoptera (Beet/fall armyworms, cabbage webworms, corn earworms, imported cabbage worm, cabbage looper) and leafminers</i>	<i>OP Alternative. Registered on stem and head Brassica, leafy Brassica, leafy vegetables. Pending use on fruiting vegetables and cotton. Potential use on cucurbit vegetables pome fruit and tree nuts.</i>
<i>Esfenvalerate</i>	<i>DuPont</i>	<i>Pyrethroid</i>	<i>Broad spectrum control on</i>	<i>Registered on cotton, field corn, pop corn, peanut, soybeanm sugarcane, sunflower,</i>

## IR-4 NEW PRODUCTS/TRANSITIONAL SOLUTION LIST - MARCH, 2001

Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
(ASANA)			numerous insect pests	apple, stone fruits, pear, almonds, filberts, pecans, walnut, artichoke, head and stem Brassica, carrot, collard, cucumbers, melons, pumpkin, squash, snap beans, dry beans, dry pea, lentil, eggplant, succulent pea, pepper, potato, radish, sweet corn, and tomato. Pending on pistachio, celery, Brussel sprouts, bok choy, sweet potatoes, cardoon, and canola.
<i>Etoxazole</i> (BAROQUE) (ZOOM)	Valent (Yashima)	Oxazoline	Insecticide/acaricide for control of <i>Panonychus</i> spp and <i>Tetranychus</i> spp, including hexythiazox resistant mite strains. Inhibition of molting, effective on eggs, larvae, & nymphs.	Pending use on cotton, strawberry, apple, pear, almond, pecan, and grape. Potential use on hop, seed alfalfa, beans, cucurbits, sweet corn, mint, tropical fruits and other tree nuts. Registered in Japan on fruit crops.
<i>Fenoxycarb</i> (COMPLY)	Syngenta	Non-neurotoxic carbamate - IGR	Fire ants and a wide range of other insects.	Pending use on pome fruits, tree nuts, pasture and citrus.
<i>Fenpropathrin</i> (DANITOL)	Valent	Pyrethroid	Aphids, whitefly, various worms, mites	Registered on cotton, tomato, strawberry, peanuts, squash, cucumbers, grape, pome fruit, citrus, melon, and head/stem Brassica. Pending use on currant and soybean. Potential use on pepper, eggplant, dry pea and succulent pea.
<i>Fenpyroximate</i> (AKARI)	Nihon Nohyaku	Phenoxypropylazoles	Controls mites, including two-spotted, European red and citrus rust.	Reduced Risk Pesticide. Pending use on cotton, apple, and grape. Potential use on grass, citrus, almond, strawberry, pear, peach, cherry, watermelon, melon, tomato and hop.
<i>Fipronil</i> (REGENT)	Aventis	Phenylpyrazole - A broad spectrum neurotoxin, unique mode of action	Controls Coleoptera, Lepidoptera, Diptera, Homoptera, Isoptera, and Thysanoptera. Systemic activity, with long residual.	Registered on rice (seed trt), and corn. Potential use on cotton, sweet potato, bulb onion and potato.
<i>Flufenzin</i> GALAXY V4C	Chinoin Analytica	Viral Insecticide	Acaricide	Unknown status on apple, grapes, citrus, cotton and vegetable crops. Pending use on Brassica leafy vegetables, soybeans, cotton and cereal grains
<i>Hexythiazox</i> (SAVEY)	Gowan	Carboxamide	Mites	Registered on apples, pears, hops, seed alfalfa, almond, stone fruits, strawberry, and cotton. Pending use on date, mint and caneberry
<i>Hydramethylnon</i> (AMDRO)	BASF	Amidinohydrazones	Slow acting insecticide, formulated as a bait that is effective on ants	Registered on grass. Pending use on pineapple.
IKI 220	ISK Biosciences	trifluoromethyl-nicotinamide	Effective against aphids and other sucking pests. Provides rapid anti-feeding activity	Potential use in potato, cereals, pome fruit, stone fruit and vegetables.
<i>Imidacloprid</i> (ADMIRE) (PROVADO) (GAUCHO)	Bayer	chloronicotinyl	Primarily effective against sucking insects (aphid, whitefly, scale, etc.) as well as beetles and grubs. Controls numerous pests which are resistant to insecticides.	OP Alternative. Registered on cotton, potato, fruiting vegetables, Brassica leafy vegetables, leafy vegetables, canola, grapes, hops, mango, pome fruit, cucurbit vegetables, tuberous and corm vegetables, upland watercress, corn, pecan, edible legumes, edible legumes, celery, citrus, cilantro, sweet corn, turnip greens, strawberry and beet greens. Pending use on peach, blueberry, and herbs. Potential use on avocado, carrot, coffee, okra, passion fruit, radish, rutabaga, banana,

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<b>Insecticides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
				<i>guava, and peanut</i>
<i>Indoxacarb (AVAUNT) (STEWARD)</i>	<i>DuPont</i>	<i>Oxadiazine- Unique mode of action</i>	<i>Controls most major Lepidopteran pest species. Possibly controls plant bugs. Soft on beneficials so it is a good fit with IPM.</i>	<i>Reduced Risk Pesticide. Registered on apple, pear, Brassica leafy vegetables, cotton, fruiting vegetables, lettuce, sweet corn.</i>
<i>Iron Phosphate (SLUGGO)</i>	<i>W. Neudoff</i>	<i>Iron salt</i>	<i>Slugs and snails</i>	<i>Biopesticide. Registered on strawberry, caneberry, cantaloupe, cucumbers, squash, eggplant, asparagus.</i>
<i>Jojoba Oil (DETUR/E-RASE)</i>	<i>IJO Products</i>	<i>Natural Product</i>	<i>Controls whitefly and powdery mildew</i>	<i>Registered on grape.</i>
<i>Kaolin (SURROUND)</i>	<i>Engelhard Corporation</i>	<i>Clay</i>	<i>Various insect and mite pest.</i>	<i>Biopesticide. Registered on apple, pear, stone fruit, citrus, caneberry, blueberry, grape, fruiting vegetables, onion, and cucurbit vegetables.</i>
<i>lambda-Cyhalothrin (KARATE) (WARRIOR)</i>	<i>Syngenta</i>	<i>Pyrethroid</i>	<i>Broad spectrum insect control</i>	<i>OP Alternative. Registered on Brassica leafy vegetables, field corn, pop corn, sweet corn, cotton, head lettuce, bulb vegetables, peanut, rice, sorghum, soybean, sunflower, tomato, tomatillos, wheat/triticale. Pending on alfalfa, avocado, beans, canola, chickpea, eggplant, flax, groundcherry, pea, pepper, small grains, sugarcane, stone fruit, pome fruit, and tree nuts.</i>
<i>Lufenuron (MATCH)</i>	<i>Syngenta</i>	<i>Benzoylurea (IGR chitin inhibitor)</i>	<i>Whitefly, thrips, Colorado potato beetle, and lepidopterous insects.</i>	<i>Potential use on vegetables and cotton. Registered in Japan and Italy.</i>
<i>Mamestra configurata (VIROSOFT BA4)</i>	<i>Biotepp</i>	<i>Granulosis Virus</i>	<i>Controls Bertha Armyworm.</i>	<i>Biopesticide. Registered on canola.</i>
<i>Metarhizium anisopliae (GREENGUARD)</i>	<i>Bio-Care</i>	<i>Metarhizium anisopliae</i>	<i>Locust</i>	<i>Biopesticide. Potential use on sugarcane</i>
<i>Metarhizium anisopliae (TAERAIN)</i>	<i>Taensa</i>	<i>Metarhizium anisopliae</i>	<i>Controls whitefly, thrips, and mites.</i>	<i>Potential use on vegetables, fruit and nut trees.</i>
<i>Methoxyfenozide (INTREPID) (RUNNER)</i>	<i>Rohm &amp; Haas</i>	<i>Diacylhydrazine - (Molt accelerating compound)</i>	<i>Similar to tebufenozide in that it only controls Lepidoptera larvae. Better on budworm/bollworm, leafminer and diamondback moth. Excellent fit with IPM programs.</i>	<i>Reduced Risk Pesticide and OP Alternative. Registered on pome fruits and cotton. Pending on Brassica leafy vegetables, field corn, fruiting vegetables, grape, leafy vegetables, and sweet corn. Potential use on cucurbits, stone fruit, citrus, rice, cranberry, artichoke, lychee, sugarbeet, cotton, radish, edible legumes, strawberry and mint.</i>
<i>Milbemectin (KOROMITE) (MILBEKNOCK)</i>	<i>Sankyo &amp; Gowan</i>	<i>Macrocylic lactone</i>	<i>Excellent miticide, also controls aphids, leafminers, thrips, leafhoppers</i>	<i>Reduced Risk Pesticide and OP Alternative. Pending use on pome fruit, citrus fruit, non-bearing stone fruit and strawberry. Potential use on tree nuts, bearing stone fruit, hops and cotton.</i>
<i>Novaluron (RIMON)</i>	<i>Makhteshim- Agan</i>	<i>Insect Growth Regulator, benzoylphenyl urea</i>	<i>Effective against immatures of Lepidoptera, Coleoptera, Homoptera and Diptera</i>	<i>Reduced Risk Pesticide. Potential use on cotton, pome fruit, stone fruit, potato, corn and citrus. Registered internationally.</i>
<i>PAVOIS Granulosis virus</i>	<i>Bayer</i>	<i>Carpocapsa spp.</i>	<i>Product controls two generations of susceptible insects</i>	<i>Potential use on pome fruit and walnut (international registrations approved)</i>

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<b>Insecticides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
<i>Pymetrozine (FULFILL)</i>	<i>Syngenta</i>	<i>Pyridine azomethine</i>	<i>Controls sucking insects (aphids/whiteflies). The product has a rapid knockdown on aphids if they are contacted by direct sprays.</i>	<i>Reduced Risk Pesticide and OP Alternative. Registered on fruiting vegetables, cucurbit vegetables and tuberous/corm vegetables. Pending use on leafy vegetables, hops, Brassica vegetables, cotton, and pecan.</i>
<i>Pyridaben (PYRAMITE)</i>	<i>BASF</i>	<i>Pyridazinone</i>	<i>Activity on mite, whiteflies, aphids, mealybugs, leafhoppers, and thrips. A new class of insecticide offering long term residual control. Good for IPM/ resistance management.</i>	<i>Registered on almonds, apples, citrus, pears, tree nuts/pistachio stone fruit, grape and cranberry. Potential use on guava, strawberry, papaya, and hops.</i>
<i>Pyriproxyfen (KNACK) (DISTANCE) (ESTEEM)</i>	<i>Valent</i>	<i>Pyridine (IGR-selective juvenile hormone analog)</i>	<i>Controls scales, whiteflies, thrips, pear psylla, codling moth, and ants. It is a juvenile hormone mimic that is slow acting with a long residual, safe to beneficial insects, non-toxic to man and wildlife. Effective on eggs and immature stages, not effective on adults. Excellent for IPM programs.</i>	<i>Reduced Risk Pesticide and OP Alternative. Registered on cotton, pome fruit, citrus, fruiting vegetables, and tree nuts. Pending use on stone fruit, cucurbit vegetables, Brassica vegetables, olives, edible legumes, blueberry, lychee, sugar apple, greenhouse tomato, okra and grape.</i>
<i>S-1812</i>	<i>Valent</i>	<i>Not disclosed</i>	<i>Good activity against lepidoptera. Effective against insecticide resistant insects. Safe on beneficials.</i>	<i>Potential use on cotton, fruiting vegetables and ornamentals (submission to EPA in 2001/ 2002).</i>
<i>Spinosad (SUCCESS) (SPINTOR)</i>	<i>Dow AgroSciences</i>	<i>Macrocyclic lactone</i>	<i>Controls Coleoptera, Diptera, Hymenoptera, Isoptera, Lepidoptera, Thysanoptera, Siphonoptera, and mites. Has low environmental impact, good residual activity, and is safe to many beneficial insects making it ideal for use in IPM programs.</i>	<i>Reduced Risk Pesticide and OP Alternative. Registered on cotton, almonds, pistachio, apple, cereal grains, citrus, fruiting vegetables, leafy vegetables, Brassica leafy vegetables, potato, tuberous and corm vegetables, edible legumes, soybean, cucurbit, stone fruit, corn, sweet corn, sorghum., beans, peas, tropical fruit, and ti palm. Pending on artichoke, asparagus, other pome fruit, other tree nuts, banana, coffee, grape, other root and tuber vegetables, bulb vegetables, berries, herbs, peanuts, strawberry, mint, grass, non-grass animal feeds, turnip greens, cilantro, and watercress.</i>
<i>Spirodiclofen (BAJ 2740) (ENVIDOR)</i>	<i>Bayer</i>	<i>Tetronic acid</i>	<i>Acaricide that is very active on eggs, larvae, and quiescent stage of <u>Panonychus</u>, <u>Phyllocoptuta</u>, <u>Brevipalpus</u>, <u>Aculus</u>, <u>Tetranychus</u> species. No evidence of potential for cross resistance.</i>	<i>Potential use on citrus fruit, pome fruit, stone fruit, grape, and tree nuts.</i>
<i>Sucrose Octanoate Esters</i>		<i>Sugar</i>		<i>Pending use on grape. Potential use on all crops.</i>
<i>Tebufenozide (CONFIRM)</i>	<i>Rohm and Haas</i>	<i>Diacylhydrazine - (Molt accelerating</i>	<i>Controls only Lepidoptera larvae. Safe to beneficial insects with low</i>	<i>Reduced Risk Pesticide and OP Alternative. Registered on pome fruit, cotton, walnuts, pecans, blueberries, caneberry, cranberries, mint, fruiting vegetables, leafy</i>

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Insecticides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
(RH-5992)		compound)	environmental impact. Excellent for IPM programs.	vegetables, Brassica leafy vegetables, sugarcane, turnips, canola, sugarcane, and tree nuts/pistachio. Pending use on grape, soybean, sweet potato, lychee, longan, peanuts, rice, sugar beet, grass, legume vegetables, sunflower, garden beets and non-grass animal feeds. Potential use on citrus.
Tebupirimphos (AZTEC*) *A combination product with cyfluthrin	Amvac	Organophosphate	A soil insecticide, active against a wide range of insects, including corn rootworm, wireworm, white grub and seed corn maggot.	Registered on field, sweet and pop corn. Potential use on sugarcane, sweet potato and cabbage
Tefluthrin (FORCE)	Syngenta	Pyrethroid	Controls a wide range of soil insects including rootworms, cutworms, wireworms and grubs.	Registered on field corn, pop corn and sweet corn
Thiamethoxam (ACTARA) (PLATINUM) (ADAGE 5 FS)	Syngenta	Second generation neonicotinoid. Systemic in plant by root uptake and transport in xylem	Broad-spectrum activity against soil dwelling pest, sucking pests and some chewing pests. Effective against aphids, whitefly, thrips, leafhopper and certain beetles. Will be marketed as seed treatment, soil and foliar insecticide.	OP Alternative. Seed treatment use registered on barley, cotton, wheat, canola, and sorghum, Pending use on pome fruit, citrus, tuberous and corm vegetables, Brassica vegetables, leafy vegetables, cucurbit vegetables, fruiting vegetables, corn, sunflower, peanut, cotton, and tomato. Potential use on grapes, strawberry, edible legume, carrot, radish, stone fruits, mint, blueberry and cranberry.
Thiacloprid (CALYPSO) (ALANTO)	Bayer	Second generation neonicotinoid.	Broad spectrum systemic control of sucking and chewing pests including aphids, whiteflies, leafhoppers, plant bugs, pear psylla, weevils, fruit flies, oriental fruit moth, leafminers and codling moth. <u>Very safe to bees.</u>	Pending use on cotton, apple and pear. Potential use on potato, grape, cucurbit vegetables, peppers, rice, and nut crops.
Tolylfluand (EUPAREN MULTI)	Bayer Tomen	Sulfenamide	Major targets are fungal pathogens (Fungicides). Also controls mites.	Potential use on apples, grapes and hops..
TM 413 (KANREMITE)	Tomen	Not disclosed	Broad spectrum mite control (no rust mite activity). Easy on beneficial with long residual activity	Candidate Reduced Risk Pesticide. Potential use on pome fruit, stone fruit, almonds, citrus, grape, strawberry, mint, hop, tomato and other miscellaneous vegetables.
Triazamate (APHISTAR)	Rohm & Haas	Carbamate	Controls resistant foliar and root aphids as well as aphids. Safe to beneficial insects and bees, and has good potential for use in IPM .	Pending use on pome fruit, leafy vegetables, cotton, Brassica leafy vegetables, sugarbeet and hop.
VIROSOFT Viral Insecticide	Biotepp	Mamestra configurata Granulosis virus	Can be applied as a preventative treatment at planting or a curative foliar treatment for bertha armyworm	Biopesticide. Pending use on canola.

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Zeta-cypermethrin (FURY) (MUSTANG)	FMC	Pyrethroid	Controls cutworms, thrips, armyworms, ect	OP Alternative. Pending use on sugar beet, sugarcane, field corn, pop corn, green onion, alfalfa, sweet corn, Brassica leafy vegetables, leafy vegetables, rice, wheat, sorghum, tomato, pepper, peas, beans, barley and soybeans.

## FUNGICIDES

Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
AC 382042	BASF	Phenoxyamide	Systemic protectent fungicide for control of rice blast	Unknown status on rice. Registration expected in Japan in 2001
Acibenzolar (ACTIGARD)	Norvartis	Benzothiadiazole, (Systemic Acquired Resistance Inducer)	Induces resistance to Blue mold, bacterial diseases, Downy Mildew, <u>Sclerotinia</u>	Reduced Risk Pesticide. Registered on fruiting vegetables, Brassica leafy vegetables, leafy vegetables and banana. Pending use on cucurbit vegetables and wheat.
<i>Ampelomyces quisqualis</i> isolate M-10 (AQ 10)	Ecogen	Fungus	Hyperparasite of Powdery mildew	Biopesticide. Pending registration on all crops.
<i>Aspergillus flavus</i> AF 36	USDA	Fungus	Competitive inhibition of aflatoxin. Production by natural <i>Aspergillus</i> strain	Biopesticide. Pending use on cotton
Azoxystrobin (HERITAGE) (QUADRIS) (ABOUND)	Syngenta	Strobilurin	Broad spectrum of pathogens of fungi: <u>Cladosporium</u> , <u>Venturia</u> , <u>Botryosphaeria</u> , <u>Mycosphaerella</u> , <u>Pyrenophora</u> , <u>Puccinia</u> , <u>Pyricularia</u> , <u>Plasmopara</u> , <u>Guignardis</u> , <u>Pseudopeziza</u> , <u>Alternaria</u> , <u>Sphaerotheca</u> , <u>Erysiphe</u> , <u>Leveillula</u> , <u>Septoria</u> , <u>Pythium</u> , <u>Uncinula</u> , <u>Didymella</u> , <u>Sclerotium</u> , <u>Colletotrichum</u> , <u>Mycosphaerella</u> , <u>Phytophthora</u> , <u>Rhynchosporium</u> , <u>cladosporium</u> , <u>Rhizoctonia</u> etc.	Reduced Risk Pesticide. Registered on Tree Nuts and pistachio, Cucurbit Vegetables, Stone Fruits, banana, canola, grape, peanut, pecan, potato, rice, tomato, wheat, barley, citrus, coriander leaves, field and sweet corn, cotton, dry bulb onion, green onion, peanut, soybean, leafy vegetables, and root and tuber vegetables. Pending use on strawberry, cranberry, Edible Legumes, Herbs, Brassica leafy vegetables, seed grass, watercress, pepper, blueberry, mint, caneberry, pistachio, artichoke, asparagus, avocado, guava, and other tropical fruit.
<i>Bacillus pumilus</i> strain 2808 (SONATA)	AgraQuest	Bacteria	<u>Botrytis</u>	Biopesticide.
<i>Bacillus subtilis</i> strain QST 713	AgraQuest	Bacteria	Protectent fungicide/bactericide with SAR activity. Broad	Biopesticide. Registered on grape, cucurbit vegetables, leafy vegetables, pepper, tomato, cherry, walnut, hop, peanut, and potato. Potential uses on other fruits, nut

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<b>Fungicides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
<i>(SERENADE) (RHAPSODY)</i>			<i>spectrum, controls <u>Botrytis</u>, powdery and downy mildews, early blight, bacterial spot.</i>	<i>and vegetables.</i>
<i>Bacillus subtilis (TAEGRO)</i>	<i>Taensa</i>	<i>Bacteria</i>	<i>Disease suppression</i>	<i>Potential use on vegetables and potato</i>
<i>Bacteriophages (AGRIPHAGE)</i>	<i>Agriphi</i>		<i>Manages bacteria spot and bacteria speck</i>	<i>Biopesticide. Pending use on tomato and pepper</i>
<i>BAS 510</i>	<i>BASF</i>	<i>Not disclosed</i>	<i>Primary activity on Botrytis, Sclerotinia and Monilinia.</i>	<i>Candidate Reduced Risk Pesticide. Pending use on beans, peanut, potato, fruiting vegetables, head and leaf lettuce, and canola.</i>
<i>BAS 516</i>	<i>BASF</i>	<i>Not disclosed</i>	<i>Broad spectrum activity on Anthracnose, Alternaria, downy mildew, powdery mildew, Botrytis, Sclerotinia and Monilinia.</i>	<i>Candidate Reduced Risk Pesticides. Pending use on grape, potato, carrot and other root vegetables, bulb vegetables, stone fruit, tree nuts/pistachio, strawberry and berry crops.</i>
<i>Candida oleophila</i>	<i>Ecogen</i>	<i>Fungus</i>	<i>Post-harvest diseases</i>	<i>Biopesticide. Potential use in fruit crops</i>
<i>Chitosan (ELEXA-4)</i>	<i>SafeScience</i>	<i>Carbohydrate-Chitin based product, plant defensive booster</i>	<i>Downy and powdery mildew, gray mold.</i>	<i>Biopesticide. Registered on grapes and strawberry. Pending use on fruiting vegetables, melon, cucumbers, pome fruit, and stone fruit.</i>
<i>Cinnamaldehyde (CINNACURE) (CINNAMITE)</i>	<i>Proguard</i>	<i>Natural Product</i>	<i>Downy mildew, powdery mildew, botrytis, brown rots, aphids and mites</i>	<i>Biopesticide. Registered on avocado, peppermint, spearmint, banana, dates, figs, mangoes, papayas, beet greens, chicory, artichokes, blueberry, raspberry, blackberry, gooseberry, currant, Brassica vegetables, bulb vegetables, cereal grains, citrus, cranberry, grape strawberry, cucurbit vegetable, fruiting vegetables, herbs and spice, hop, sweet corn, pop corn, kiwifruit, leafy vegetables, legume vegetables, pasture grass, alfalfa, pistachio, persimmon, pome fruit, soybean, stone fruit, meadowfoam, safflower, and tree nuts.</i>
<i><u>Coninthyrium minitans</u> (CONTANS)</i>	<i>Prophyta Encore Technologies</i>	<i>Fungus</i>	<i>Controls <u>Sclerotinia</u></i>	<i>Biopesticide. Pending use on peanut. Potential use on canola, lettuce, endive, celery, and beans.</i>
<i>Copper Octanoate (NEU 1140F)</i>	<i>W. Neudorff</i>	<i>Copper Octanoate</i>	<i>Downy mildew, powdery mildew, blue mold, white rust, anthracnose</i>	<i>Registered on beans, peas, beets, broccoli, Brussel sprouts, cantaloupes, cucumbers, pumpkins, squash, carrot, celeriac, celery chicory, chive, corn, currant, gooseberry, eggplant, pepper, tomato, endive, lettuce, garlic, leek, onion, shallots, ginseng, grape, hop, kale, kohlrabi, potato, quince, spinach, chard, strawberry, sunflowers, and turnip</i>
<i>Cyazofamid (IKF-916/BAS 545F)</i>	<i>ISK Biosciences and BASF</i>	<i>Cyanoimidazole - Inhibitor of mitochondrial electronic transport</i>	<i>Effective against Oomycete and Plasmodiophoromycetes fungi, especially late blight and downy mildew</i>	<i>Potential use on potato, grape, tomato, cucurbits, onions, lettuce, Chinese cabbage and rice</i>
<i>Cymoxanil</i>	<i>DuPont</i>	<i>Acetamide</i>	<i>Downy mildew, late blight,</i>	<i>Registered on potato and tomato. Pending use on hop.</i>

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<b>Fungicides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
(CURZATE)			<i>Phytophthora, Plasmopara, Pseudoperonospora Bremia, and Peronospora. Should be mixed with other fungicides for resistance management.</i>	
Cyproconazole (ALTO)	Syngenta	Triazole	Coffee rust	Registered on coffee
Cyprodinil (VANGARD)	Syngenta	Anilinopyrimidine	Ascomycetes and Deuteromycetes such as: <u>Botrytis, Alternaria, Monilinia, Venturia, Pseudocercospora, Pyrenophora, Septoria, Erysiphe, Erysiphe, Rhynchosporium Glomerella, Coccoyces, Colletotrichum</u>	Reduced Risk Pesticide. Registered on almonds, grapes, pome and stone fruit. Pending use on pistachio.
Cyprodinil/Fludioxonil (SWITCH)	Syngenta	Anilinopyrimidine and Phenylpyrrole	Controls Botrytis, Alternaria and brown rot	Reduced Risk Pesticide. Pending use on grape, strawberry, bulb onion, and green onion. Potential use on caneberry, carrot, Brassica leafy vegetables, pear, herbs, lychee, watercress, lettuce, beans (dry, snap, lima).
2DADS	UAP	Diallyl sulfides	White rot	Pending on onion, garlic and shallot
Difenoconazole (DIVIDEND)	Syngenta	Triazole	Smuts, bunts, <u>Aspergillus, Fusarium, Penicillium, Septoria, Cochliobolus, Pyrenophora, Pseudocercospora, and Gaeumannomyces</u>	Registered on banana, wheat, barley, and rye as seed treatment and canola. Pending use on sweet corn and yam (seed piece treatment).
Dimethomorph (ACROBAT)	BASF	Cinnamic acid derivative	Downy mildew, late blight, <u>Phytophthora, Plasmopara, Pseudoperonospora Bremia, and Peronospora. Should be mixed with other fungicides for resistance management.</u>	Registered on potato, hop, grape, and tomato. Pending use on lettuce, cucurbit vegetables, taro, onion, cereals, and pepper. Potential use on Brassica leafy vegetables.
Dithianon (DELAN)	BASF	Quinone	Scab, downy mildew, rust, leaf spot,	Pending on pome fruit and hop
Epoxiconazole (OPUS)	BASF	Triazole	Leaf spots, powdery mildew, black spots	Pending use on banana
Ethaboxam (GUARDIAN)	L G Chemicals	Thiazole carboxamide	Useful for grape downy mildew, potato and tomato late blight, pepper blight and cucumber downy mildew. Preventive and curative activity	Potential use on grapes, potato, fruiting vegetables, cucurbits vegetables, Brassica leafy vegetables, leafy vegetables, edible legumes and other crops.
Famoxadone (FAMOXATE) (CHARISMA)	DuPont	Oxazolidinedione	Broad spectrum fungicide, including Early blight, downy mildews and other ascomycetes. Can be combined	Candidate Reduced Risk Pesticide. Pending use on potato, fruiting vegetables, grapes, cereals, cucurbits, head lettuce, and hop. Potential use on leafy Brassicas and onion

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<b>Fungicides (TRADE)</b>	<b>Registrant</b>	<b>Chemistry</b>	<b>Pest Control Spectrum/Traits</b>	<b>Status</b>
			<i>with cymoxanil (marketed as TANOS) to pick up late blight.</i>	
<i>Fenamidone (REASON)</i>	<i>Aventis</i>	<i>Imidazolinone</i>	<i>Foliar protectant and curative activity against Oomycete fungi. Also effective against ascomycete and <u>Alternaria</u>. Inhibits electronic transport</i>	<i>Candidate Reduced Risk Pesticide. Potential use on fruiting vegetables, Brassica leafy vegetables, leafy vegetables, cucurbit vegetables, potato, grapes, and sunflower.</i>
<i>Fenbuconazole (INDAR) (ENABLE)</i>	<i>Rohm &amp; Haas</i>	<i>Triazole</i>	<i>Powdery mildew, rusts, apple scab, brown rot, cotton ball, mummy berry (<u>Monilinia spp.</u>), smuts, bunts, <u>Cladosporium</u>, <u>Myclospora</u>, <u>Cercospora</u>, <u>Septoria</u>, <u>Rhizoctonia</u>, <u>Pyrenophora</u>, <u>Helminthosporium</u> &amp; related genera, and a <u>Colletotrichum sp.</u> - in turf.</i>	<i>Registered on pecans, bananas and stone fruit (except plum). Pending use on grapefruit, blueberry, cranberry and pepper.</i>
<i>Fenhexamid (ELEVATE)</i>	<i>Tomen Agro</i>	<i>Hydroxyanilide</i>	<i>Non-systemic protectant fungicide that is effective against <u>Botrytis cinerea</u>, <u>Monilina</u>, <u>Sclerotinia sclerotiorum</u> of lettuce.</i>	<i>Reduced Risk Pesticide. Registered on grape, strawberry, almond and stone fruit. Pending use on fruiting vegetables, caneberry, blueberry, citrus, and post harvest uses on stone fruit, pome fruit, and kiwifruit.</i>
<i>Fenpropimorph</i>	<i>BASF</i>	<i>Morpholine</i>	<i>Controls powdery mildew, rust, <u>Helminthosporium</u>, <u>Rhyncosporium</u>, <u>Septoria</u>, etc.</i>	<i>Potential use on banana, sugar beet and cereals (international registrations)</i>
<i>Fluazinam (OMEGA)</i>	<i>Syngenta &amp; ISK</i>	<i>Pyridinamine</i>	<i>Broad spectrum disease control: <u>Alternaria</u>, <u>Botrytis</u>, <u>Cladosporium</u>, <u>Colletotrichum</u>, <u>Phytophthora</u>, <u>Plasmopara</u>, <u>Rhizoctonia</u>, <u>Sclerotinia</u>, <u>Venturia</u>, <u>Streptomyces</u>, and some mites.</i>	<i>Reduced Risk Pesticide. Pending use on peanut, potato and grape. Potential use on edible legumes, strawberry, lettuce, onion, citrus, and pome fruit</i>
<i>Fludioxonil (MAXIM) (SCHOLAR)</i>	<i>Syngenta</i>	<i>Phenylpyrrole</i>	<i><u>Fusarium</u>, <u>Helminthosporium</u>, <u>Rhizoctonia</u>, <u>Aspergillus</u>, <u>Alternaria</u>, <u>Ascochyta</u>, <u>Pyrenophora</u>, <u>Tilletia</u>, <u>Sclerotinia</u>, and <u>Septoria</u></i>	<i>Reduced Risk Pesticide. Registered on most crops as seed treatment. Pending use on stone fruit (post harvest) kiwifruit, pome fruit, citrus, cantaloup, and watermelon.</i>
<i>Fluquinconazole (JOCKEY) (CASTELLAN)</i>	<i>Aventis</i>	<i>Triazole</i>	<i>Controls Take-All, rust, and a wide range of Ascomycetes diseases.</i>	<i>Potential use in cereals (pending international use).</i>
<i>Flutolanil (MONCUT)</i>	<i>Gowan and Nihon Nohyaku</i>	<i>Benzamide</i>	<i>Rusts, sheath blight, damping off, and other diseases caused by <u>Rhizoctonia</u>, and <u>Verticillium</u></i>	<i>Registered on rice. Pending use on peanut and potato.</i>
<i>Fosetyl-AL</i>	<i>Aventis</i>	<i>Aluminum phosphate</i>	<i>Controls <u>Phytophthora</u> diseases,</i>	<i>Registered on asparagus, avocado, blueberry, Brassica leafy vegetables,</i>

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<i>(ALIETTE)</i>			<i>Alternaria diseases and Downy mildew.</i>	<i>caneberry, citrus, cucurbits, ginseng, hops, leafy vegetables, pineapple, bulb onions, pome fruit, strawberry, tomato, banana, grape cranberry and macadamia. Pending on pea, lingonberry, leek, green onion and turnip greens.</i>
<i>Gliocladium catenulatum Strain J1446 (PRESTOP)</i>	<i>Kemira Agro</i>	<i>Fungus</i>	<i>Recommended for control of <u>Pythium</u> and <u>Rhizoctonia</u></i>	<i>Biopesticide. Registered on numerous vegetable crops</i>
<i>Harpin Protein (MESSENGER)</i>	<i>Eden Bioscience</i>	<i>Protein which switches natural plant defenses in plant</i>	<i>Bacterial leaf spot, bacteria wilt, bacteria blight and certain fungal diseases</i>	<i>Biopesticide and Methyl Bromide Replacement. Registered on tomato, pepper, wheat, strawberry, grape, cucumber, melon, rice, and apple. Pending use on banana, cotton, peanut, and rice. Potential use on all other crops. Product is currently being marketed only in selective geographic regions until additional efficacy data are developed</i>
<i>Hexaconazole (PROSEED)</i>	<i>Syngenta</i>	<i>Triazole</i>	<i>Controls loose smut and common root rot via seed treatment</i>	<i>Potential use on wheat and barley (International registration)</i>
<i>Hydrogen peroxide (OXIDATE)</i>	<i>Bio Safe Systems</i>	<i>Hydrogen peroxide</i>	<i>Broad spectrum bactericide and fungicide</i>	<i>Pending use on beans, Brassica vegetables, citrus fruits, cucurbits, onions, peppers, tomato, apple, filbert, banana, grape, and stone fruit.</i>
<i>Hymexazol</i>	<i>Sankyo</i>	<i>Azole</i>	<i>Seed rot, <u>Aphanomyces</u></i>	<i>Registered on sugarbeet. Potential use on pea.</i>
<i>Iprovalicarb (MELODY)</i>	<i>Bayer/Tomen Agro</i>	<i>Amino-acid amide carbamate</i>	<i>Activity on oomycete fungi, downy mildew, and <u>Phytophthora</u></i>	<i>Potential use on grape, potato, tomato, cucumber, lettuce, avocado, citrus</i>
<i>Kresoxim-methyl (SOVRAN) (CYGNUS)</i>	<i>BASF</i>	<i>Strobilurin</i>	<i>Mildews, <u>Septoria</u>, <u>Rusts</u>, <u>Scab</u>, <u>Phomopsis</u>, <u>Black Rot</u>. Provides protectant, curative and eradicator control of powdery mildew</i>	<i>Registered on pome fruit, grapes, and pecans. Pending use on cucurbits, cereals, sugarbeet, and potato</i>
<i>Mefenoxam (RIDOMIL GOLD)</i>	<i>Syngenta &amp; Nufarm</i>	<i>Active isomer of metalaxyl</i>	<i>Same spectrum as metalaxyl</i>	<i>Reduced Risk Pesticide. Registered on alfalfa, almonds, apple, asparagus, avocado, beets, blueberry, Brassica leafy vegetables, cereals, citrus, clover, cotton, cranberry, cucurbits, fruiting vegetables, ginseng, grape, grass, hop, leafy vegetables, edible legumes, bulb onion, green onion, papaya, peanut, pineapple, raspberry, root and tuber vegetables, soybean, stone fruit, strawberry, sunflower, walnuts. Pending use on artichoke, atemoya, carambola, herbs, kiwifruit, lingonberry, fresh mint, sugar apple, custard apple, caimito, canistel, canola, mamey sapote, mango, sapodilla, black sapote, sweetsop, papaya and canola</i>
<i>Mepanipyrim (FRUPICA)</i>	<i>Kumiai Chemical</i>	<i>Anilinopyrimidine</i>	<i>Controls Botrytis. Mostly a preventive material, but has curative properties.</i>	<i>Potential use on grape, tomato and strawberry. (International registrations approved)</i>
<i>Metconazole (CARAMBA)</i>	<i>BASF Kureha</i>	<i>Triazole</i>	<i>Broad spectrum</i>	<i>Potential use on cereals and canola (international registrations approved)</i>
<i>MILSANA Bioprotectant</i>	<i>KHH BioScience</i>	<i>Extract from giant knotweed</i>	<i>Induces phytoalexins which confer resistance to powdery mildew and other diseases such as Botrytis.</i>	<i>Biopesticide. Pending use on cucurbit vegetables, lettuce, peppers, strawberry, and grapes.</i>
<i>Myclobutanil</i>	<i>Rohm &amp;</i>	<i>Triazole</i>	<i>Powdery mildews, rusts, apple scab,</i>	<i>Registered on apple, asparagus, caneberry, cucurbits, currant, stone fruit,</i>



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<i>Pseudomonas fluorescens</i> PRA-25	Good Bugs, Inc.	Bacteria	Controls <i>Pythium</i> seed rot and damping off.	Biopesticide. Registered on pea, snap bean and sweet corn
<i>Pseudomonas syringae</i> (BIOSAVE)	EcoScience	Bacteria	Controls <i>Fusarium</i> .	Biopesticide. Registered for seed/storage potato. Potential use on cranberry, banana, peach, plum and nectarine.
<i>Pseudozyma flocculosa</i> SPORODEX WP	Plant Products Ltd.	Bacteria	The product is for control of Powdery mildew	Biopesticide. Pending use on greenhouse cucumber
<i>Pyraclostrobin</i> (BAS 500F) (HEADLINE) (CABRIO)	BASF	Strobilurin- Mitochondrial Electron Transport Inhibitor	Broad spectrum activity on <i>Anthracnose</i> , <i>Alternaria</i> , downy mildew, <i>Cercospora</i> leaf spot, rust, powdery mildew, <i>Septoria</i> , <i>Phytophthora</i> , <i>Pythium</i> , <i>Rhizoctonia</i>	Reduced Risk Pesticide. Pending use on peanut, grape, potato and other tuberous and corm vegetables, cucurbit vegetables, fruiting vegetables, Brassica leafy vegetables, head and leaf lettuce, wheat, barley, rye, grass seed, sugar beet, carrot and other root vegetables, citrus, bulb vegetables, stone fruit, tree nuts/pistachio, strawberry and berry crops, dried shelled peas and beans . Potential on tropical fruits.
<i>Pyrimethanil</i> (SCALA)	Aventis	Anilinopyrimidine	Active against <i>Botrytis</i> spp., <i>Venturia</i> spp., <i>Alternaria solani</i> , <i>Alternaria mali</i> , <i>Sphaerotheca macularis</i> and <i>Monilinia</i> spp.	Potential use on grapes, pome fruit, strawberry, tomatoes, peas, beans, caneberries, onions, peppers, cucumbers, citrus, potatoes, banana and stone fruit.
<i>Quinoxifen/DE795</i> (ARIUS) (QUINTEC)	Dow AgroSciences	Quinoline-Distrutpts early cell signaling activities	Has shown activity against powdery mildew in a wide range of crops.	Candidate Reduced Risk Pesticide. Pending use on grape, hop, and cherry. Potential use on cereals, fruiting vegetables, cucurbit vegetables, apple, and other stone fruit.
<i>Simeconazole</i> (SANLIT)	Sankyo	Triazole	Effective as seed treatment against Basidiomycetes	Potential use on wheat, barley, corn, rice, apple and strawberry.
<i>Silthiophan</i> (LATITUDE)	Monsanto	Carboxamide	Control of Take-All via seed treatment.	Potential use on wheat and barley (international uses pending).
<i>Spiroxamine</i> (IMPULSE)	Bayer	Morpholine	Powdery mildew, most rusts, <i>Rhynchosporium</i> leaf blotch. Chemical shows protective, curative and eradicative effects	Pending registration on grape and hop.
<i>Streptomyces lydicus</i> WYEC 108 SYP-L190	Natural Industries Shenyang Reserch		Control of soil borne plant root and damping off fungi	Biopesticide. Pending use on all crops.
		Cinnamic acid derivative (analog of dimethomorph)	Effective against oomycete fungi, including downy mildew	Potential use on grape, Brassica leafy vegetables, cucurbit vegetables and tomato.
<i>Tebuconazole</i> (FOLICUR) (ELITE) (RAXIL)	Bayer	Triazole	Powdery mildew, rusts, smuts, bunts, apple scab, <i>Pyrenophora</i> , <i>Septoria</i> , <i>Coccomyces</i> , <i>Monilinia</i> , <i>Cercospora</i> , <i>Cercosporidium</i> , <i>Ceratocystis</i> , <i>Guignardia</i> , <i>Sclerotium</i> <i>Rhizoctonia</i> <i>Coccomyces</i> , <i>Rhynchosporium</i> , <i>Colletotrichum</i> , <i>Botrytis</i> , and <i>Rhizopus</i> .	Registered on banana, cherry, nectarine, grape, grass seed and peanut. Pending registrations on cucurbit vegetables, turnip roots and greens, garlic, hop, wheat, tree nuts, cherry mango, mustard greens, plums, barley, pistachio, sugarbeet, and sunflower . Potential registration on beans, coffee, asparagus, lychee, okra, sweet potato, and pome fruit.
<i>Tetraconazole</i>	Sipcam Agro	Triazole	Controls <i>Cercospora</i> leaf spot,	Pending use on sugarbeet and peanut. Potential use on blueberry.

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Fungicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum/Traits	Status
<i>(EMINENT 125SL)</i> (TM 415)	Tomen Agro		powdery mildew, leafspots, rusts, web blight, and others. New chemistry good for resistance management	
Thifluzamid (RH - 0753)	Rohm and Haas	Thiazole-carbomanilide - Inhibits succinic acid metabolism in fungi.	<u>Sclerotinia</u> and <u>Rhizoctonia</u> .	Potential use on peanut and rice.
Tolyfluanid (EUPAREN MULTI)	Bayer	Sulfenamide	Broad spectrum contact fungicide with good acaricidal effectiveness. Particularly suitable for control of resistant pathogen populations.	Potential use on apples, grapes and hops (international registrations pending).
<i>Trichoderma harzianum</i> T-39/(TRICHODEX) T-22 (ROOTSHIELD)	Makhteshim-Agan and Bioworks	Bacteria	Controls <u>Botrytis</u>	Biopesticide. Registered use on grapes and strawberry. Pending use on cabbage, garlic and soybean. Potential use on all other crops. ROOTSHIELD is being evaluated as part of IR-4's Methyl Bromide Alternative Program
Trifloxystrobin (FLINT) (TWIST) (STRATEGO*) *mix with propiconazole	Bayer	Strobilurin	Active against powdery mildew and leaf spot diseases. Also provides significant control of scab, rusts, downy mildew and other diseases.	Reduced Risk Pesticide. Registered on pome fruit, grape, cucurbits, peanut, banana, almond, sugar beet, potato, wheat, and hop. Pending uses on fruiting vegetables, carrot, celery, citrus, grass seed, and stone fruit.
Triflumizole (PROCURE) (TERRAGUARD)	Uniroyal	Triazole	Powdery mildew, rusts, apple scab, <u>Rhizoctonia</u> , <u>Cylindrocladium</u> , <u>Thielaviopsis</u> , <u>Myrothecium</u> , <u>Alternaria</u> , <u>Helminthosporium</u> and related genera.	Registered on apple, grape and pear. Pending registration on cherry. Potential use on cucurbits, strawberry and filbert.
Zoxamide (GAVEL)	Rohm and Haas	Amide (Inhibits mitosis by binding to fungal tubulin proteins)	Control of foliar phycamycetes and <u>albugo</u> . Also protectant against Oomycete fungi. Will be mixed with mancozeb for broader activity.	Reduced Risk Pesticide. Pending use on potato, grape, tomat/fruiting vegetables and curcurbit vegetables, (will be reviewed under NAFTA joint data review). Potential use on spinach.

## NEMATOCIDES

Nematicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
<u>Bacillus firmus</u> (BIONEM) (BIOSAFE)	Minrav Infrastructure	Bacterial nematicide	Controls root knot and other nematodes including <u>Heterodera avenae</u>	Potential use on tomato, cucumber, and pepper. International registration (Israel) approved.
Benzaldehyde				
Dazomet	BASF	Thiadiazine (carbon disulfide generator)	Similar to metam sodium	Partial Methyl Bromide Alternative. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato

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Nematicides (TRADE)	Registrant	Chemistry	Pest Control Spectrum	Status
<i>(BASAMID)</i>				
<i>DiTera</i> ( <i>Myrothecium</i> <i>virrucaria</i> strain AARC-0255)	Valent Bioscience	Biopesticide	Controls root knot, cyst, lesion, citrus, stubby root, pin, reniform, dagger, sting, ring, stunt, lance, spiral, burrowing and other plant parasitic nematodes.	Partial Methyl Bromide Alternative. Registered on citrus, broccoli, cabbage, cauliflower, Brussel sprouts, and grapes. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato
<i>DMDP</i>	BTG	Derived from the Costa Rican tree <i>Lonchocarpus felipei</i>	DMDP is phloem mobile, making it suitable for foliar applications	Biopesticide. Potential use on banana and potato
<i>Fosthiazate</i>	ISK/Syngenta	OP	Controls nematodes	Partial Methyl Bromide Alternative. Pending use on potatoes, banana, tomato, vegetables and peanut. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in tomato.
<i>Iodomethane</i>	Tomen Agro	Methyl Iodide	Similar to Methyl Bromide	Potential Methyl Bromide Alternative. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato
<i>NEMASYS</i> ( <i>Steinernema feltiae</i> )	Emerald Bioagriculture	Biopesticide		
<i>NEMASYS H</i> ( <i>Heterohababditis</i> <i>megidis</i> )	Emerald Bioagriculture	Biopesticide		
<i>NEMATAC C</i> ( <i>Steinernema</i> <i>carpocapsae</i> )	Emerald Bioagriculture	Biopesticide		Pending use on cranberry
<i>PLANTPRO 45</i>	Ajay N.A.	Iodine Complex	Many pests controlled by Methyl Bromide	Partial Methyl Bromide Alternative. Being evaluated as part of IR-4's Methyl Bromide Alternative Program.
<i>Propargyl Bromide</i>	Abermarle	Propargyl bromide	Similar to Methyl Bromide	Potential Methyl Bromide Alternative. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato
<i>PROPOXIDE</i>	Aberco	Propylene oxide	Fumigant for stored nuts and spices	Potential Methyl Bromide Alternative. Registered on nut crops. Being evaluated as part of IR-4's Methyl Bromide Alternative Program
<i>Sodium</i> <i>Tetrathiocarbonate</i> ( <i>ENZONE</i> )	Entek Corporation	<i>Sodium</i> <i>Tetrathiocarbonate</i> (carbon disulfide generator)	Water soluble soil fumigant for management of, plant parasitic nematodes, various soil borne pathogens and other soil pests.	Potential Methyl Bromide Alternative. Registered on grape and citrus. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato
<i>TELONE</i> ( <i>INLINE Formulation</i> )	Dow AgroSciences	1,3,dichloropropene + chloropicrin	Many soil insects, nematodes and plant diseases	Partial Methyl Bromide Alternative. Being evaluated as part of IR-4's Methyl Bromide Alternative Program in strawberry and tomato
<i>TERRAPY</i>  ZA 3274	Cognis Deutschland Syngenta	Fatty acid preparation in alkyl(poly)glycoside Novel mode of action	Shown to significantly reduce Meloidogyne infestations	Biopesticide. Potential use on tomato, carrot cucumber, sugar beet, and potato  Unknown status/early development stage. International use only

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