

Insecticides Registered for Use on Saskatoon Berries in Michigan - 2017

The pesticide product descriptions that follow are modified excerpts from the 2017 Michigan Fruit Management Guide, Extension Bulletin E-154, with additional information from product labels. Numbers in parentheses () after product names correspond to the numbering system used for recommendation tables in the E-154 bulletin. Brand names are provided only for reference, and no endorsement of specific products is implied.

There have been no studies to determine the efficacy of these products against the principle pests of saskatoons in Michigan. The products listed here were chosen based on their known performance in the control of related insects on other fruit crops.

Some products listed in this document may be of interest to organic growers or growers who wish to use a more environmentally friendly approach to fruit production. A "reduced-risk" (RR) designation indicates that the product has relatively low toxicity to mammals. Products listed by the Organic Materials Review Institute (OMRI) for use in organic production are noted. Restricted Use Pesticides (RUP), which are generally more hazardous to applicators or to the environment are also noted.

In an ongoing effort to protect bees and other pollinators, the U.S. Environmental Protection Agency (EPA) has developed new pesticide labels that prohibit use of some neonicotinoid pesticide products where bees are present. Look for special bee advisory sections on pesticide label, usually accompanied by this special graphic.



Several alternative products with equivalent active ingredients may be available; only common or representative products are given for the sake of brevity. Be sure to check all product labels carefully to verify their legality for use on saskatoons in Michigan (if Juneberry is listed on the label the product may be used on saskatoons) and possible differences in application rates.

Actara (59)

thiamethoxam

Group 4A

REI 12 hours

PHI 3 days

3-4 oz./acre/application, max 12 oz./acre/year, 7 day min. interval

Actara belongs to a class of insecticides called neonicotinoids (thianicotinyl subclass). Actara is registered for use targeting aphids, leafhoppers, plant bugs, leafminers, psylla, Japanese beetle and plum curculio. This translaminar (locally systemic) material has long residual inside the plant and is particularly effective on piercing/sucking insect pests as well as the sap-feeding stage of leafminers. Because most of Actara's surface residue is quickly absorbed into the plant, negative impact on natural enemies is minimized. Actara is highly toxic to bees exposed to direct treatment or residues on

blooming crops. The application of all thiamethoxam-containing products is limited to 0.188 lb a.i./acre/year.

Admire Pro (76)

imidacloprid Group 4A RR REI 12 hours PHI 3 days
1-2.8 fl.oz./acre/application, max. 5 app./year, max. 14 fl.oz./acre/year, 7 day min. int.

Admire Pro is a "thyxatropic gel" formulation which may be foliar or soil-applied. It is registered for control of aphids, leafhoppers, scale insects, and Japanese beetles. With soil application it is labeled for control of aphids, leafhoppers, mealybug, phylloxera and the white grub complex. When Admire Pro is soil-applied the soil should be moist and irrigated in with 0.5 to 1 inch of irrigation within 24 hours of treatment, or by chemigation to the root zone.

Alternative products with the same active ingredient: Advise, Alias, Amtide Imidicloprid, Couraze, Macho, Malice, Midash, Montana, Nuprid, Pasada, Prey and Wrangler. Check the labels carefully to see if they are registered for use on saskatoons or if their application rates differ.

Altacor (88)

chlorantraniliprole Group 28 RR REI 4 hours PHI 1 day
3-4.5 fl.oz./acre/application, max. 9 fl.oz./acre/year, 7 day min. interval

Altacor belongs to a class of insecticides called the diamides, which work on the insect by activating ryanodine receptors, thus depleting internal calcium and preventing muscle contraction. Altacor is registered for control of a range of pests including leafrollers and fruitworms, and is also active on leafhoppers. Altacor has shown to be relatively safe on most beneficials.

Assail 30SG (60)

acetamiprid Group 4A RR REI 12 hours PHI 1 day
2.5-5.3 fl.oz./acre/application, max. 5 app./year, max. 26.7 fl.oz./acre/year, 7 day min. int.

Assail belongs to a new class of insecticides called neonicotinoids (chloronicotinyl subclass). Assail is registered for use targeting aphids, leafhoppers, leafminers, plum curculio, leafhoppers, rose chafer, and Japanese beetles. This translaminar (locally systemic) material has long residual inside the plant. Because most of Assail's surface residue is quickly absorbed into the plant, negative impact on natural enemies is minimized.

Avaunt (55)

indoxacarb Group 22A RR REI 12 hours PHI 7 days
3.5-6 oz./application, max. 4 app./year, max. 24 fl.oz./acre/year, 7 day min. interval

Avaunt is a member of the new oxadiazine class of insecticides with a novel mode of action: inhibiting sodium ion entry into nerve cells, resulting in paralysis and death of the

pest species. Avaunt is registered for control of redbanded leafroller, plum curculio, Japanese beetle, tarnished plant bug, leafhoppers and fruitworms. The primary route of entry into the target pest is by ingestion, although the product is also absorbed through the insect cuticle. Because of this, thorough coverage of the crop is critical for good pest control. Avaunt is relatively short-lived in the environment but has particularly good rainfast characteristics.

Aza-Direct (54)

azadirachtin (neem oil)

OMRI

REI 4 hours

PHI

1.0-3.5 pints/acre/application

Neem-based products are available for use on most Michigan fruit crops for a wide range of pests. The active ingredient was originally derived from extracts of the neem tree, a native plant of India. This compound controls insects in the larval, pupal and nymphal stages by interfering with the metabolism of ecdysone, therefore preventing normal development. It also works as a repellent and feeding deterrent on the adult stage of many insect pests. Because of its short residual life, it may need to be reapplied every 5 to 10 days if pest populations persist. This pesticide is toxic to fish and aquatic invertebrates and to bees exposed to direct treatment or residues on blooming crops or weeds. The recommended tank water pH range is between 5.5 and 6.5. Some of these products are listed by the Organic Materials Review Institute (OMRI) for use in organic production.

Alternative products with the same active ingredient: AzaGuard, Azatrol, Ecozin Plus, Molt-X.

Danitol (44)

fenpropathrin

Group 3

RUP

REI 24 hours

PHI 3 days

10.6-16 fl.oz./acre/application, max. 2 app./year, max. 32 fl.oz./acre/year, 14 day min. int.

Danitol is a pyrethroid insecticide/miticide registered for control of a broad spectrum of insects, including leafrollers, plant bugs, leafhoppers, plum curculio, fruitworms, Japanese beetles and certain mites. To reduce the risk of resistance to this product developing and to conserve natural enemies, restrict postbloom applications to a single spray. Successive sprays against the same pest should be alternated to a different insecticide class. This material is also highly toxic to mite predators and should be used carefully to prevent mite population buildup. Danitol is a restricted use pesticide (RUP).

Delegate (85)

spinetoram

Group 5

RR

REI 4 hours

PHI 3 days

3-6 oz./acre/application, max. 6 app./year, max. 19.5 oz./acre/year, 6 day min. interval

Delegate is a new compound in the spinosyn insecticide class registered for control of leafrollers, fruit worms, and thrips. The active ingredient of spinetoram, containing spinosyns J & L, is a waste metabolite produced during the growth of a bacterium. The primary route of entry into the target insects is through ingestion, although the product is

also absorbed through the cuticle. Delegate provides up to 14 days of residual control, depending on the target pest, but good coverage will increase consistency of crop protection. No more than 2 consecutive group 5 insecticides should be applied. Delegate has shown good safety to many beneficials but is highly toxic to bees exposed to direct treatment on blooming crops or weeds.

DiPel DF (43)

Bacillus thuringiensis* subspecies *kurstaki OMRI REI 4 hours PHI 0 days
0.5-2.0 lb/acre/application

Bacillus thuringiensis products are bioinsecticides. Only certain strains or subspecies are effective against lepidopteran larvae. They must be ingested by susceptible larvae to be effective. Time applications for early egg hatch; 2 or 3 applications are generally required. Effectiveness varies depending on thoroughness of coverage, rate applied, weather conditions and plant vigor. B.t. can be used during bloom and does not affect most natural enemies. B.t. is most effective when applied when daily highs are in the 70s F.

Alternative products with the same active ingredient: Javelin, Agree, Biobit, Deliver and Crymax.

Entrust SC (64)

spinosad Group 5 RR, OMRI REI 4 hours PHI 3 days
4-6 fl.oz./acre/application, max. 9 fl.oz./acre/year

Entrust is registered for control of leafrollers, green fruitworm, spotted tentiform leafminer, and thrips. A supplemental label is available for suppression of spotted wing drosophila. Entrust is listed by the Organic Materials Review Institute (OMRI) for use in organic production. The active ingredient, spinosad, is a waste metabolite produced during the growth of a bacterium and belongs to the Naturalyte class of insecticides. The primary route of entry into the target insects is through ingestion, although the product is also absorbed through the cuticle. Entrust provides 7 to 10 days of residual control, depending on the target pest, and good coverage will increase consistency of crop protection. The use of an adjuvant can enhance coverage and penetration of leaf surfaces. Entrust has shown good safety to many beneficials but can be toxic to bees before sprays are dried.

Alternative products with the same active ingredient: SpinTor.

Esteem (52)

pyriproxifen Group 7C RR REI 12 hours PHI 7 days
16 fl.oz./acre/application, max. 2 app./year, max. 32 fl.oz./acre/year, 14 day min. interval

Esteem is an insect growth regulator (IGR) insecticide that acts by suppressing embryogenesis within the insect egg and by inhibiting metamorphosis and adult emergence of target insects. Esteem has no activity on adult insects, but suppresses hatching of eggs laid by treated adults. Esteem is registered for the control of rosy apple

JMS Stylet Oil**paraffinic oil****RR****REI 4 hours****PHI 0 days***3-6 qt./acre/application, per 100 gal. water*

JMS Stylet-Oil is a contact protectant registered for disease, insect and mite control. Applications made on a 10- to 14-day schedule and good spray coverage is necessary for effective control. Do not spray JMS Stylet Oil on sensitive varieties - it can burn the foliage. JMS Stylet Oil is a reduced-risk product.

Knack**Pyriproxyfen****Group 7D****REI 12 hours****PHI 7 days***16 fl.oz./acre/application, 32 fl.oz./acre/year maximum, 14 day minimum interval*

Knack is an insect growth regulator, with activity against lepidopteran caterpillars and lecanium scale.

Alternative products with the same active ingredient: Pitch.

M-Pede (14)**potassium salts of fatty acids****OMRI****REI 12 hours****PHI 0 days***1-2 % v/v solution, 7 day min. interval*

M-Pede is an insecticidal fatty acid (soap) concentrate that controls soft-bodied adult insects such as aphids and leafhoppers, and mite adults and eggs. Good coverage is necessary for effective control. Use rates are based on a volume 10 volume basis, and growers must be careful to use the correct concentration to prevent phytotoxicity. This insecticide penetrates the insect cuticle and kills by allowing body fluids to evaporate quickly.

Platinum 75 SG (77)**thiamethoxam****Group 4A****REI 12 hours****PHI 75 days***1.66-4.01 oz./acre/application, max. 1 app/year, max. 4.01oz./acre/year*

Platinum is a soil-applied insecticide that belongs to a new class of insecticides called neonicotinoids (thianicotinyl subclass). Platinum is registered for use targeting aphids, Japanese beetles and leafhoppers. This product should be applied to moist soil in the root zone, then followed with 0.5 to 1 inch of water to be properly translocated into the plant. A systemic material, it has long residual inside the plant and is particularly effective on piercing/ sucking insect pests with minimal negative impact on natural enemies. Platinum 2 SC is restricted to 1 application per season, and all thiamethoxam-containing product use is limited to 0.188 lb a.i./acre/year.

Alternative products with the same active ingredient: Actara.

Purespray Green**Mineral oil***1.5- 3.0 gal/acre***REI 4 hours****PHI 0 days**

Labeled for use against mites, sawfly eggs, scales, aphids and mealybugs, but no efficacy data is available. Should be applied with a minimum of 50 gal. water per acre.

PyGanic (57)**pyrethrins****Group 3A****OMRI****REI 12 hours****PHI***16-64 fl.oz./acre/application*

PyGanic contains a botanical insecticide produced primarily in the flowers of *Tanacetum cinerariaefolium*, a species of the chrysanthemum plant family. Pyrethrum is an *ancient* insecticide that is still used to control insects because of its benefits - being non-persistent and decomposing rapidly in the environment. Pyrethrum is low in acute toxicity to humans and other vertebrate animals, is non-carcinogenic, causes no adverse reproductive effects and is non-mutagenic. PyGanic is listed by *the* Organic Materials Review Institute (OMRI) for use in organic production. Evergreen, another pyrethrum-based compound, includes piperonyl butoxide (PSO) to enhance its insecticidal activity, but this consequently results in exclusion from the OMRI listing. PyGanic has the typical pyrethrum flush, rapid knockdown and pest kill attributes that are characteristic of pyrethrin-based compounds. The pests controlled by PyGanic include leafhoppers, stink bugs, aphids, thrips, Japanese beetles, multicolored Asian ladybeetles and loopers.

Sevin 4F (23)**carbaryl****Group 1A****REI 12 hours****PHI 7 days***1-2 qts./acre/application, max. 5 app./year, max. 10 qts./acre/year, 7 day min. interval*

Sevin is formulated as an 80 S and a 4 lb/gal flowable (XLR Plus) and is labeled for use in nearly every fruit crop grown in Michigan. Its residual effectiveness varies from 3 to 10 days, depending on the target pest to control. Sevin may encourage aphid buildups and is toxic to bees. This material is toxic to mite predators and should be used carefully to prevent flaring mite populations. It is compatible with most other pesticides and offers a high degree of safety to animals and plants. There is the added advantage of its low toxicity to humans and fish, lessening the hazards from spray drift that are associated with many pesticide chemicals. **WARNING** - Carbaryl is a strong fruit-thinning agent if used on saskatoons within 30 days after full bloom.

Alternative products with the same active ingredient: Carbaryl in a number of formulations.

Sivanto (15)**Flupyradifurone****Group 4D****REI 4 hours****PHI 3 days***7.0 – 14 fl.oz/acre/application, 28 fl.oz./acre/year limit, 7 day minimum intervals*

Sivanto is a new product labeled for use against thrips and fruit flies.

SpinTor (46)**spinosad****Group 5****RR****REI 4 hours****PHI 3 days***4-6 fl.oz./acre/application, max. 6 app./year, max. 29 fl.oz./acre/year, 6 day min. interval*

SpinTor is registered for control of leafrollers, green fruitworm, spotted tentiform leafminer, and thrips. The active ingredient, spinosad, is a waste metabolite produced during the growth of a bacterium, therefore belongs to the spinosyn class of insecticides. The primary route of entry into the target insects is through ingestion, although the product is also absorbed through the cuticle. Spin Tor provides 7 to 14 days of residual control, depending on the target pest, but good coverage will increase consistency of crop protection. SpinTor should be applied no more than 4 times per season. The use of a penetrating or silicone surfactant can enhance coverage and penetration of leaf surfaces. SpinTor applications should not be made with less than a 1- to 2-hour rain-free period. SpinTor has shown good safety to many beneficials but can be toxic to bees if contacted before sprays are dried.

SuffOil-X**Mineral Oil****OMRI****REI 4 hours****PHI 0 days***1-2 gallons/acre in a minimum of 100 gal. water/acre*

SuffOil-X is registered as an insecticide, miticide and fungicide.

Compiled March 2017 by:

Erwin 'Duke' Elsner, Ph.D.

Small Fruit Educator

Michigan State University Extension

520 W. Front Street, Suite A, Traverse City, MI 49684

phone: 231 922-4822 fax: 231-947-6783 email: elsner@anr.msu.edu

Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status.

El Servicio de Extensión (Extension Service) de MSU ofrece programas educativos, actividades, y materiales sin discriminación basada sobre edad, color, incapacidades, identidad o expresión de identidad sexual, información genética, estado matrimonial, origen nacional, raza, religión, sexo, orientación sexual, o estado de veterano.