

## STRAWBERRY INSECT CONTROL SPRAY GUIDE

Insect	Insecticide and Formulation	Rate/50 gals	Cutoff Date	Restrictions or Limitations
<b>Aphids</b>	Malathion 5 lbs EC	1.0-1½ pts	3 days	Toxic to fish and highly toxic to bees. Observe label. Do not use when cyclamen mites are a problem.
	<b>or</b> Malathion 25% WP	3 lbs	3 days	
	<b>or</b> Provado 1.6F	3¾ fl. ozs/acre	7 days	Allow 5 days between applications. Toxic to bees; do not apply during bloom. Use spreader sticker to improve coverage. Apply before heavy infestations get established.
	<b>or</b> Thiodan 2 lbs EC	1-2 pts	4 days	Do not re-apply within 15 days or more than twice within a 35-day period when fruit is present. Limit to 3 applications/year. Use with care; this product is very toxic.
	<b>or</b> Thiodan 50% WP	0.5-1.0 lb (or 2 lbs/acre)	4 days	
<b>Strawberry weevils</b>	Carbaryl 80% S	1¼-2½ lbs/acre	7 days	A dilute spray of 100-200 gals/acre is suggested. Read label for susceptibility of some varieties; highly toxic to bees. Repeated use may cause spider mite problems.
<b>Strawberry leaf rollers</b>	Malathion 5 lbs EC	1.0-1½ pts	3 days	See preceding remarks on Malathion. Observe label.
	<b>or</b> Malathion 25% WP	3 lbs	3 days	
	<b>or</b> Carbaryl 80% S	1¼ lbs	7 days	See preceding remarks on Carbaryl. Observe label.
	<b>or</b> SpinTor 2SC	4-6 fl ozs/acre	1 day	SpinTor is toxic to bees exposed to treatment within 3 hours of spray; toxic to aquatic invertebrates. Rotate product after 2 continuous applications. Limit to 29 fl. ozs/acre/season.
<b>Armyworms</b>	SpinTor 2SC	4-6 fl ozs/acre	1 day	See preceding remarks on SpinTor.
	<b>or</b> Carbaryl 4L	1-2 qts/acre	7 days	See preceding remarks on Carbaryl.
<b>Flea beetles</b>	Thiodan 2 lbs EC	2 pts	4 days	See preceding remarks on Thiodan.
	<b>or</b> Thiodan 50% WP	1.0 lb (2 lb/acre)	4 days	Apply when small shot holes in leaves first appear.

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<b>Lygus bugs and leafhoppers</b>	Malathion 5 lbs EC	1.0-1½ pts	3 days	See preceding remarks on Malathion.
	<b>or</b> Malathion 25% WP	3 lbs	3 days	See preceding remarks on Malathion.
<b>Lygus and tarnished plant bugs</b>	Danitol 2.4 EC	10⅔ fl. ozs/acre	2 days	Allow 30 days between treatments. Use only when mite populations are low. Add spreader sticker. Limit to 2 applications/year.
	<b>or</b> Brigade WSB	24 ozs/acre (3 soluble bags)	0 days	Highly toxic to bees and extremely toxic to fish and aquatic invertebrates. May not be used if endangered species could get in contact with treatment. Read label. Consult local agents.
<b>Snails and Slugs</b>	Metaldehyde bait		Per label.	Apply to soil around plants. Do not contaminate edible parts.
<b>Two-spotted mites</b>	Agri-Mek 0.15 EC	16 fl ozs/acre	3 days	<b>See footnotes for important mite-resistance management plans.</b> A more effective mite control program is accomplished if treatments are conducted when mites first appear before populations build up. Do not apply more than 64 fl. ozs/acre. Do not apply within 3 days of harvest. Allow 21 days between treatments.
	<b>or</b> Zeal	2-3 oz/acre	1 day	Apply when populations are low. Works better against eggs and larvae (immature mites). Limit to 1 application/season.
	<b>or</b> Acramite 50WS	0.75-1.0 lb/acre	1 day	Each bag contains 2 water soluble bags of ½ lb each. Limit to 2 applications/season and a minimum of 21 days between applications.
	<b>or</b> Vendex 50WP	6-8 ozs (1½-2 lbs/acre)	1 day	Do not apply more than 2 times/season. Efficacy of Vendex is reduced when daily temperatures are below 70°F. Toxic to birds, mammals, and fish.
	<b>or</b> Omite 30WP	6 lbs/acre	See remarks next	Transplant and non-bearing use only; some leaf damage may occur when mixed with adjuvants or when temperatures exceed 75°F.
	<b>or</b> Kelthane 50WP	1-2 lbs/acre	3 days	Limit to 2 applications/season; toxic to fish.

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<b>Two-spotted mites (cont'd)</b>	<b>or</b> Savey 50DF	6.0 oz/acre	3 days	Limit to 1 application/year. Apply as soon as mites are detected. Savey is predominantly an ovicide/larvicide and will not control adult mites.
	<b>or</b> Danitol 2.4EC	16-21½ fl. ozs/acre	2 days	See preceding remarks on Danitol. Observe label.
	Insecticidal soap (M-Pede)	1 gal	0 days	Thorough coverage needed.
<b>Spittle bugs</b>	Malathion 5 lbs EC	1.0-1.5 pts	3 days	See preceding remarks on Malathion.
	<b>or</b> Malathion 25% WP	2-4 lbs	3 days	See preceding remarks on Malathion.
	<b>or</b> Thiodan 2 lbs EC	1-2 pts	4 days	See preceding remarks on Thiodan.
	<b>or</b> Thiodan 50% WP	0.5-1.0 lb (or 2 lbs/acre)	4 days	See preceding remarks on Thiodan.
	<b>or</b> Danitol 2.4EC	10⅔ fl. ozs/acre	2 days	See preceding remarks on Danitol.
	<b>or</b> Carbaryl 80% S	1¼ lbs	7 days	See preceding remarks on Carbaryl.
<b>Crickets and mole crickets</b>	Malathion 5 lbs EC	Bait		Mix as a bait and apply to row middles. Mix 50 lbs. laying mash + 2 qts. 50% Malathion + 3 pts. crude cottonseed oil + 6 lbs. table sugar. Use at a rate of 3 lbs/acre. Apply in late afternoon when mole crickets are active.
	<b>or</b> Carbaryl 80WP	2½ lbs/acre	1 day	See preceding remarks on Carbaryl.
	<b>or</b> Danitol 2.4EC	10⅔ fl. ozs/acre	2 days	See preceding remarks on Danitol.
<b>Fire ants</b>	Extinguish IGR	1.0-1.5 lbs/acre		Apply to row middles in April when ants are actively foraging and in October prior to cool weather. Do not allow contact with fruit. Do not use when soil is too wet.

**Mite-Resistance Management Plan:** Repeated use of the same miticide is documented to result in rapid buildup of miticide-resistant strains of mites. To reduce the potential risk of developing resistant mite populations, miticides should be alternated as part of a mite-resistance management plan. If more than one application is needed to control heavy and prolonged mite infestations, always alternate to products with different mode of action. Observe the minimum required spray intervals and restrictions on amount of product and numbers of applications/area/season. Closely monitor mite populations to determine species, infestation levels, and presence of predatory organisms. Use miticide sprays only when needed.

**Recommended miticide rotation:** If you follow this rotation of miticides you should be able to decrease the spider mite population while conserving predatory mites. Scout for mites using a 10X hand lens before you spray. Treat when you see more than 5 mites per leaflet on young plants. A balance of natural control (predatory mites and other insects that eat the mites) and miticides is the best way to control mites. It may be possible that predatory mites can keep your mites in check, but only if you don't kill them by using a broad spectrum product that will kill the predators. If you use the wrong product at the beginning of the season (e.g. Brigade), then the entire season could be worse because all the natural enemies were killed by that first spray. In general, mites can become a huge problem if they are sprayed on a schedule. We recommend rotating the following three miticides in the order they are listed.

- 1) Acramite – limit to 1 application per season. This is a contact miticide, meaning that it kills mites that come into contact with the miticide. It also has long residual activity so larvae that hatch out of eggs will also be killed from the first application.
- 2) Agri-mek – If mites are still present, apply this product 21 days after the acramite application. This is best when applied in a paired application; two applications spaced 7-10 days apart. This product moves in the leaf from the top to the bottom and will remain in the leaf for a period of time. It is less effective when used in cold weather because it does not move in the leaf as well as in warm weather. Combine Agri-mek with a horticultural oil to help movement in the leaf except in extremely hot weather because the oil may burn the leaf. Do not exceed 16 fl. ozs./application or 64 fl. ozs. (4 applications)/acre in a growing season. Do not apply in less than 100 gals. water/acre (200 gals./acre is optimal). Do not repeat treatment within 21 days of second application.
- 3) Savey – This is a growth regulator that kills eggs, young nymphs (immature mites), and sterilized females. This should also be limited to 1 application per season.

In general, be sure to include enough water to adequately cover your strawberry plants since most of these are contact miticides. It is important to make sure there is good spray coverage on your plants.

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**Note:** Add a spreader sticker or liquid soap to spray mixture to obtain better coverage. Follow the manufacturer's recommendations.

**Warning:** Always wear appropriate Personal Protective Equipment when handling and spraying pesticides.

**Warning:** Re-entry times for workers entering treated fields should be strictly observed. Be sure to check the label for this information.

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