



This is a section from the

2020/2021

Mid-Atlantic

Commercial Vegetable

Production Recommendations

The recommendations are **NOT** for home gardener use.

The **full manual**, containing recommendations specific to New Jersey, can be found on the Rutgers NJAES website in the Publications section: <http://njaes.rutgers.edu/pubs/publication.asp?pid=E001>.

This manual will be revised biennially. In January 2021, a **critical update** with important updates to the 2020/2021 manual will be communicated through local Extension Agents and Vegetable Specialists.

The **label** is a legally-binding contract between the user and the manufacturer. The user must follow all rates and restrictions as per label directions. The use of any pesticide inconsistent with the label directions is a violation of Federal law.

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

F. Commodity Recommendations

Pesticide Use Disclaimer

THE LABEL IS THE LAW

Before using a pesticide, check the label for up to date rates and restrictions.

Labels can be downloaded from: <http://www.cdms.net/>, <https://www.greenbook.net/> or <http://www.agrian.com/labelcenter/results.cfm>

For more information on Pesticide Safety and the Pesticide Label see chapter D.

Guide to the Recommended Pesticide Tables in the Following Crop Sections:

1. Pesticides are listed by group or code number based on chemical structure and mechanism of action, as classified by the Weed Science Society of America (WSSA) for herbicides, the Insecticide Resistance Action Committee (IRAC) for insecticides, and the Fungicide Resistance Action Committee (FRAC) for fungicides.

If the number is in bold font, the product may have resistance concerns.

2. For restricted use pesticides, the restricted active ingredients are labeled with a *. (See section D 3.2.1 “Restricted Use Classification Statement” for more information).

3. In addition to the pesticides listed below, other formulations or brands with the same active ingredient(s) may be available. ALWAYS CHECK THE LABEL:

- a) to ensure a pesticide is labeled for the same use,**
- b) to ensure the pesticide is labeled for the desired crop, and**
- c) for additional restrictions.**

4. All pesticide recommendations are made for spraying a broadcast area of 1 acre (43,560 square feet). **Adjust the rate for banded applications** (for more information, see section E 1.3 Calibrating Granular Applicators).

5. Check the label for the maximum amount of pesticide per application and the maximum number of applications per year.

6. Bee Toxicity Rating (Bee TR): N=nontoxic; L=minimum impact on bees; M=moderately toxic, can be used if dosage, timing and method of application are correct, but should NOT be applied directly to the crop if bees are present; H=highly toxic, severe losses expected, -- = data not available.

F Strawberries

1.B. New Planting: Postemergence, Select, Fusilade, Poast - continued

<p>-Do not tank-mix with or apply within 2 to 3 days of any other pesticide, unless labeled, as this may increase the risk of crop injury or reduce the control of grasses.</p> <p>-Do not apply more than 8 fl oz of Select 2EC in a single application and do not exceed 32 fl oz/A for the season; do not apply more than 16 fl oz of Select Max in a single application and do not exceed 64 fl oz/A for the season.</p> <p>-Do not apply more than 16 fl oz/A of Fusilade DX in a single application and do not exceed 1 pt/A per year.</p> <p>-Do not apply more than 2.5 pt/A Poast in single application and do not exceed 2.5 pt/A for the season.</p>						
5	Sinbar 80WDG	2 to 6 oz/A	terbacil	0.1 to 0.3 lb/A	110	12
<p>-Apply in late summer or early fall to control winter annual broadleaf weeds. If the crop is not dormant at the time of application, the spray must be followed immediately by 0.5-1.0 inches of irrigation or rainfall to rinse the strawberry foliage, or unacceptable crop injury may result. Controls many annual broadleaf weeds, but may be weak on pigweed species.</p> <p>-Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Do not apply Sinbar to soils with less than 0.5% organic matter.</p> <p>-Do not add surfactant, oil concentrate, or any other spray additive, or tank-mix with any other pesticide unless the mixture is approved on the Sinbar label. Maximum Sinbar application per season: 8.0 oz/A, unless otherwise directed on the label.</p>						

1.C. New Planting: Late Fall Dormant

Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Select 2EC	6 to 8 fl oz/A	clethodim	0.094 to 0.13 lb/A	4	24
	Select Max 0.97EC	12 to 16 fl oz/A				
	Fusilade DX 2EC	8 to 12 fl oz/A	fluazifop	0.125 to 0.188 lb/A	14	12
	Poast 1.5EC	1 to 2 pt/A	sethoxydim	0.19 to 0.38 lb/A	7	12
-See Select 2EC / Select Max 0.97EC / Fusilade 1.5EC / Poast 1.5EC in listing under "New Planting-Postemergence"						
3	Dacthal 6F Dacthal W-75	8 to 12 pt/A 6.0 to 14 lb/A	DCPA	6 to 9 lb/A	--	12
<p>-Apply to weed-free soil in the fall and repeat in early spring. Dacthal will not control emerged weeds; apply to weed-free soils. Primarily controls annual grasses and a few broadleaf weeds, including common purslane.</p> <p>-Results have been most consistent when used in fields with coarse-textured soils low in organic matter, and when the application is followed by rainfall or irrigation. -Maximum applications per season: not specified</p>						
5	Sinbar 80WDG	2 to 4 oz/A	terbacil	0.1 to 0.2 lb/A	110	12
<p>-Apply just prior to mulching in late fall to extend weed control through harvest the following spring. Controls many annual broadleaf weeds, but may be weak on pigweed species. Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Do not apply Sinbar to soils with less than 0.5% organic matter.</p> <p>-Do not add surfactant, oil concentrate, or any other spray additive, or tank-mix with any other pesticide unless the mixture is approved on the Sinbar label. Maximum Sinbar application per season: 8.0 oz/A, unless otherwise directed on the label.</p>						
15	Devrinol 2-XT 2EC Devrinol DF-XT 50DF	8 qt/A 8 lb/A	napropamide	4 lb/A	--	24
<p>-Apply in late fall through early winter (not on frozen ground) or in early spring. Activate with ½ inch sprinkler irrigation within 24hr after application. Irrigation moves the herbicide into the soil and prevents breakdown of Devrinol by the sun.</p> <p>-Primarily controls annual grasses and suppresses or controls certain annual broadleaf weeds.</p> <p>-Maximum for Devrinol 2-XT 2EC: 8 qt/A per season. Maximum Devrinol DF-XT 50DF: 8 fl oz/A per season.</p>						

2.A. Bearing Year: Late Winter or Early Spring

Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Select 2EC	6 to 8 fl oz/A	clethodim	0.094 to 0.125 lb/A	4	24
	Select Max 0.97EC	12 to 16 fl oz/A				
	Fusilade DX 2EC	8 to 12 fl oz/A	fluazifop	0.125 to 0.188 lb/A	14	12
	Poast 1.5EC	1 to 2 pt/A	sethoxydim	0.2 to 0.4 lb/A	7	12
-See Select 2EC / Select Max 0.97EC / Fusilade 1.5EC / Poast 1.5EC in listing under "New Planting-Postemergence"						
3	Dacthal 6F Dacthal W-75	8 to 12 pt/A 6.0 to 14 lb/A	DCPA	6 to 9 lb/A	--	12
<p>-Apply anytime to weed-free soil in the early spring.</p> <p>-Do not apply after first bloom through harvest. Dacthal will not control emerged weeds; apply to weed-free soils. Primarily controls annual grasses and a few broadleaf weeds, including common purslane.</p> <p>-Results have been most consistent when used in fields with coarse-textured soils low in organic matter, and when the application are followed by rainfall or irrigation. Maximum application per season not specified on label.</p>						
4	Weedar 64	1 to 1.5 qt/A	2,4-D amine	1 to 1.5 lb/A	--	48
<p>-Apply to established stands in late winter or early spring when the strawberries are dormant.</p> <p>-Do not apply 2,4-D between mid-August and winter dormancy, as it may affect flower bud formation, resulting in distorted berries.</p> <p>-Do not apply unless possible injury to the crop is acceptable. Controls many broadleaf weeds.</p> <p>-Rainfastness is 6 to 8 h.</p> <p>-Maximum number of applications per year is 1 and do not exceed 1.5 qt/A per application.</p>						

2.A. Bearing Year: Late Winter or Early Spring - continued on next page

2.A. Bearing Year: Late Winter or Early Spring - continued

4	Stinger 3A	2 to 10.5 fl oz/A	clopyralid	0.047 to 0.25 lb/A	30	12
<p>-A Special Local Needs Label 24(c) has been approved for the use of Stinger 3A to control broadleaf weeds in strawberries in NJ, MD, PA and VA.</p> <p>-Apply in 1 or 2 applications. When 2 applications are used to control susceptible hard-to-kill perennial weeds, spray the first application at least 30 days before harvest and the second application at renovation, after harvest</p> <p>-Controls weeds in the Composite and Legume families, including annuals (galinsoga, ragweed species, common cocklebur, groundsel, pineappleweed, clover, and vetch) and perennials (Canada thistle, goldenrod species, aster species, and mugwort).</p> <p>-Use 2 to 4 fl oz/A to control annual weeds less than 2 inches tall. Increase the rate to 4 to 8 fl oz/A to control larger annual weeds. Apply the maximum rate of 10.5 fl oz/A (in 1 or split into 2 applications) to suppress or control perennial weeds.</p> <p>-Do not tank-mix Stinger with other herbicides registered for use in strawberries. Do not use Stinger with surfactants.</p> <p>-Stinger is a postemergence herbicide with residual soil activity. Observe crop restrictions or injury may occur from carryover.</p> <p>-Rainfastness is 6 h. Maximum Stinger application per year: 10.5 fl oz/A.</p>						
14	Chateau 51WDG	3 oz/A	flumioxazin	0.096 lb/A	--	12
<p>-Apply to established stands of matted row strawberries in late winter or early spring when strawberries are dormant, or as a hooded or shielded spray between the rows of strawberries on plastic mulch before fruit set.</p> <p>-Controls many annual broadleaf weeds, and suppresses or controls wild pansy.</p> <p>-Tank-mix with 2,4-D to improve the spectrum of weeds controlled when treating dormant matted row strawberries, or tank-mix with Gramoxone when applying a hooded or shielded spray between the rows of strawberries grown on plastic mulch. Crop oil concentrate at 1% v/v or nonionic surfactant at 0.25% v/v may be added to improve the control of emerged weeds, but may also increase the risk of crop injury. Maximum for Chateau: 3 oz/A per application, 3 oz/A per season.</p>						
15	Devrinol 2-XT 2EC Devrinol DF-XT 50DF	8 qt/A 8 lb/A	napropamide	4 lb/A	--	24
<p>-Apply in late fall through early winter (not on frozen ground) or in early spring. Do not apply from bloom through harvest. Activate with ½ inch sprinkler irrigation within 24 hr after application. Irrigation moves the herbicide into the soil and prevents breakdown of Devrinol by the sun. Primarily controls annual grasses and suppresses or controls certain annual broadleaf weeds; will not control emerged weeds. Maximum for Devrinol 2-XT 2EC: 8 qt/A per season. Maximum Devrinol DF-XT 50DF: 8 fl oz/A per season.</p>						

2.B. Bearing Year: Renovation-Summer

Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Select 2EC	6 to 8 fl oz/A	clethodim	0.094 to 0.125 lb/A	4	24
	Select Max 0.97EC	12 to 16 fl oz/A				
	Fusilade DX 2EC	8 to 12 fl oz/A	fluazifop	0.125 to 0.188 lb/A	14	12
	Poast 1.5EC	1 to 2 pt/A	sethoxydim	0.2 to 0.4 lb/A	7	12
-See Select 2EC / Select Max 0.97EC / Fusilade 2EC / Poast 1.5EC in listing under "New Planting - Postemergence"						
3	Dacthal 6F	8 to 12 pt/A	DCPA	6 to 9 lb/A	--	12
	Dacthal W-75	6.0 to 14 lb/A				
<p>-Apply any time after harvest to weed-free soil. Dacthal will not control emerged weeds; apply to weed-free soils. Primarily controls annual grasses and a few broadleaf weeds, including common purslane.</p> <p>-Results have been most consistent when used in fields with coarse-textured soils low in organic matter, and when the application are followed by rainfall or irrigation. Maximum application not addressed on label</p>						
4	Weedar 64	1 to 1.5 qt/A	2,4-D amine	1.0 to 1.5 lb/A	--	48
<p>-Do not apply 2,4-D between mid-August and winter dormancy, as it may affect flower bud formation, resulting in distorted berries.</p> <p>-Do not apply unless possible injury to the crop is acceptable. Controls many broadleaf weeds. Rainfastness is 6 to 8 h.</p> <p>-Maximum number of applications per year is 1 and do not exceed 1.5 qt/A per application.</p>						
4	Stinger 3A	2 to 10.5 fl oz/A	clopyralid	0.047 to 0.25 lb/A	30	12
<p>-A Special Local Needs Label 24(c) has been approved for the use of Stinger 3A to control broadleaf weeds in strawberries in NJ, MD, PA and VA. Apply in 1 or 2 applications. When 2 applications are used to control susceptible hard-to-kill perennial weeds, spray the first application at least 30 days before harvest and the second application at renovation, after harvest</p> <p>-Controls weeds in the Composite and Legume families, including annuals (galinsoga, ragweed species, common cocklebur, groundsel, pineappleweed, clover, and vetch) and perennials (Canada thistle, goldenrod species, aster species, and mugwort).</p> <p>-Use 2 to 4 fl oz/A to control annual weeds less than 2 inches tall. Increase the rate to 4 to 8 fl oz/A to control larger annual weeds. Apply the maximum rate of 10.5 fl oz/A (in 1 or split into 2 applications) to suppress or control perennial weeds.</p> <p>-Do not tank-mix Stinger with other herbicides registered for use in strawberries. Do not use Stinger with surfactants.</p> <p>-Stinger is a postemergence herbicide with residual soil activity. Observe crop restrictions or injury may occur from carryover.</p> <p>-Rainfastness is 6 h. Maximum Stinger application per year: 10.5 fl oz/A.</p>						
5	Sinbar 80WDG	4 to 8 oz/A	terbacil	0.2 to 0.4 lb/A	110	12
<p>-Apply at postharvest renovation after old leaves have been removed but before new growth begins. -Controls many annual broadleaf weeds, but may be weak on pigweed species. Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Do not apply Sinbar to soils with less than 0.5% organic matter.</p> <p>-Do not add surfactant, oil concentrate, or any other spray additive, or tank-mix with any other pesticide unless the mixture is approved on the Sinbar label. Maximum Sinbar application per season: 8.0 oz/A, unless otherwise directed on the label.</p>						

2.B. Bearing Year: Renovation-Summer - continued on next page

F Strawberries

2.B. Bearing Year: Renovation-Summer - continued

22	Gramoxone 2SL	2 pt/A	paraquat*	0.5 lb/A	21	24
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-Apply as a directed shielded spray to control emerged weeds between the rows after crop establishment. Add nonionic surfactant to be 0.25% of the spray solution (1.0 qt/100 gal of spray solution). **Do not** allow spray or spray drift to contact the crop (use shields) or injury may result. **Do not** exceed a spray pressure of 30 psi. See the label for additional information and warnings.

-Rainfastness 30 min. A maximum of 3 application per year are allowed.

-**Restricted-use pesticide.** Only certified applicators, who successfully complete the paraquat-specific training, can mix, load or apply paraquat. Application of paraquat "under the direct supervision" of a certified applicator is no longer allowed. Required training link (<http://usparaquattraining.com>); certified applicators must repeat training every three years.

2.C. Established Planting: Late Fall Dormant

Group	Product Name	Product Rate	Active Ingredient (*=Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Select 2EC	6 to 8 fl oz/A	clethodim	0.094 to 0.125 lb/A	4	24
	Select Max 0.97EC	12 to 16 fl oz/A				
	Fusilade DX 2EC	8 to 12 fl oz/A	fluazifop	0.125 to 0.188 lb/A	14	12
	Poast 1.5EC	1 to 2 pt/A	sethoxydim	0.2 to 0.4 lb/A	7	12
-See Select 2EC / Select Max 0.97EC / Fusilade 1.5EC / Poast 1.5EC in listing under "New Planting - Postemergence"						
3	Dacthal 6F	8 to 12 pt/A	DCPA	6 to 9 lb/A	--	12
	Dacthal W-75	6.0 to 14 lb/A				
-Apply to weed-free soil in the fall and repeat in early spring. Do not apply after first bloom through harvest.						
-Dacthal will not control emerged weeds; apply to weed-free soils. Primarily controls annual grasses and a few broadleaf weeds, including common purslane. Results have been most consistent when used in fields with coarse -textured soils low in organic matter, and when the application are followed by rainfall or irrigation. Maximum application not addressed on label.						
5	Sinbar 80WDG	4 to 8 oz/A	terbacil	0.2 to 0.4 lb/A	110	12
-Apply just prior to mulching in late fall to extend weed control through harvest the following spring. Controls many annual broadleaf weeds, but may be weak on pigweed species. Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Do not apply Sinbar to soils with less than 0.5% organic matter.						
- Do not add surfactant, oil concentrate, or any other spray additive, or tank-mix with any other pesticide unless the mixture is approved on the Sinbar label. Maximum Sinbar application per season: 8.0 oz/A, unless otherwise directed on the label.						
15	Devrinol 2-XT 2EC	8 qt/A	napropamide	4 lb/A	--	24
	Devrinol DF-XT 50DF	8 lb/A				
-Apply in late fall through early winter (not on frozen ground) or in early spring. Do not apply from bloom through harvest						
-Activate with ½ inch sprinkler irrigation within 24 hr after application. Irrigation moves the herbicide into the soil and prevents breakdown of Devrinol by the sun. Primarily controls annual grasses and suppresses or controls certain annual broadleaf weeds.						
-Maximum for Devrinol 2-XT 2EC: 8 qt/A per season. Maximum Devrinol DF-XT 50DF: 8 fl oz/A per season.						

3. Other Labeled Herbicides These products are labeled but limited local data are available; and/or are labeled but not recommended in our region due to potential crop injury concerns.

Group	Product Name	Active Ingredient (*=Restricted Use)
3	Prowl H2O	pendimethalin
14	Ultra Blazer	acifluorfen
14	Aim	carfentrazone
14	Spartan	sulfentrazone

Insect Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of chapter F. Recommended Insecticides

Aphids, Spittlebugs Aphids can vector viruses into a planting, thus tolerance for this pest is low. Spittlebugs are primarily a nuisance for harvesters.

Apply one of the following formulations 10 days after new growth begins:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Diazinon AG500 (aphids)	1.0 pt/A	diazinon*	5	36	H
1B	Malathion 57EC	1.5 to 3.0 pt/A	malathion	3	12	H
3A	Brigade WSB	6.4 to 32 oz/A	bifenthrin*	0	12	H
3A	Danitol 2.4EC (spittlebugs)	10.67 fl oz/A	fenpropathrin*	2	24	H
3A + 4A	Brigadier	5.1 to 6.14 fl oz/A	bifenthrin*+imidacloprid - foliar	7	12	H
4A	Actara 25WDG (aphids)	1.5 to 3.0 oz/A	thiamethoxam	3	12	H

Aphids, Spittlebugs - continued on next page

Aphids, Spittlebugs - continued

4A	Admire Pro (aphids)	10.5 to 14 fl oz/A	imidacloprid - soil	14	12	H
4A	Admire Pro (aphids, spittlebugs)	1.3 fl oz/A	imidacloprid - foliar	7	12	H
4A	Assail 30SG	1.9 to 4.0 oz/A	acetamiprid	1	12	M
4A + 15	Cormoran	9.0 to 12.0 fl oz/A	acetamiprid + novaluron	1	12	M
4A + 28	Voliam Flexi (aphids)	2.0 to 4.0 oz/A	thiamethoxam + chlorantraniliprole	3	12	H
4D	Sivanto Prime or 200SL (aphids)	7.0 to 14.0 fl oz/A	flupyradifurone	0	4	M
21A + 39	Apta (aphids)	27 fl oz/A	tolfenpyrad	1	12	H
29	Beleaf 50SG (aphids)	2.8 oz/A	flonicamid	0	12	L
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L
UN	Trilogy (aphids) (OMRI)	1.0 to 2.0% solution	neem extract	0	4	H
n/a	Ecotec Plus (OMRI)	1.0 to 4.0 pt/A	rosemary oil + geraniol + peppermint oil	0	0	L

Leafrollers Leafrollers are a sporadic pest in most of the region. Treatment is usually not required.

The following formulations are available. Apply one spray 10 days after full bloom:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Diazinon AG500	1.0 pt/A	diazinon*	5	36	H
3A	Brigade WSB	6.4 to 32.0 oz/A	bifenthrin*	0	12	H
4A	Assail 30SG	4.0 to 6.9 oz/A	acetamiprid	1	12	M
5	Radiant SC	6.0 to 10.0 fl oz/A	spinetoram	1	4	M
3A	PyGanic EC 5.0 II (OMRI)	4.5 to 15.6 fl oz/A	pyrethrins	0	12	H
5	Entrust SC (OMRI)	4.0 to 6.0 fl oz/A	spinosad	1	4	M
21A + 39	Apta	27 fl oz/A	tolfenpyrad	1	12	H
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L
UN+3A	Azera (OMRI)	2.0 to 3.0 pt/A	azadirachtin + pyrethrins	0	12	H

Potato Leafhoppers

Potato leafhoppers cause leaf yellowing and distortion. There are no effective cultural controls, though damage may be worse after neighboring fields or weedy patches are mowed as leafhoppers will move to strawberry plants.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Malathion 57EC	1.5 to 3.0 pt/A	malathion	3	12	H
3A	Danitol 2.4 EC	16.0 to 21.3 fl oz/A	fenprothrin*	2	24	H
3A + 4A	Brigadier	5.1 to 6.14 fl oz/A	bifenthrin*+imidacloprid - foliar	7	12	H
4A	Actara 25WDG	1.5 to 3.0 oz/A	thiamethoxam	3	12	H
4A	Assail 30SG	1.9 to 4.0 oz/A	acetamiprid	1	12	M
4A + 15	Cormoran	9.0 to 12.0 fl oz/A	acetamiprid+novaluron	1	12	M
4A + 28	Voliam Flexi	2.0 to 4.0 oz/A	thiamethoxam + chlorantraniliprole	3	12	H
3A	PyGanic EC 5.0 II (OMRI)	4.5 to 15.6 fl oz/A	pyrethrins	0	12	H
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L
UN+3A	Azera (OMRI)	2.0 to 3.0 pt/A	azadirachtin + pyrethrins	0	12	H

Root Weevils

Several species can damage strawberry plants; damage is often worst near wooded field edges. Watch for characteristic leaf notching as a sign of active adults. Larvae should be targeted starting in mid-summer.

Apply one of the following formulations (note: foliar sprays target adults, soil applications target larvae):						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
n/a	Entomopathogenic nematodes ¹	see footnote	see footnote	--	--	--
1B	Malathion 57EC	1.5 to 3.0 pt/A	malathion	3	12	H
3A	Brigade WSB	8.0 to 32.0 oz/A	bifenthrin*	0	12	H
4A	Actara 25WDG	4.0 oz/A	thiamethoxam	3	12	H
4A	Platinum 75SG	1.70 to 4.01 oz/A	thiamethoxam	75	12	H

¹Entomopathogenic nematodes (use *Heterorhabditis bacteriophora*). Apply 1-2 billion/A during evening or early morning when soil temperatures are at or above 60°F (16°C), then irrigate them into the soil.

F Strawberries

Sap Beetles

Sap beetles are attracted to ripe, decaying fruit and bore into berries. They are a nuisance, especially in Pick-Your-Own fields with rotting, over-ripe berries abound. Preventing the accumulation of decaying fruit on or between beds is one way of avoiding beetle buildup. Sprays may not reach adults which are protected under the berries. Sprays that target larvae should be applied when adults are first noticed.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
3A	Brigade WSB	6.4 to 32.0 oz/A	bifenthrin*	0	12	H
3A	Danitol 2.4 EC	16.0 to 21.3 fl oz/A	fenpropathrin*	2	24	H
4A	Assail 30SG	4.0 to 6.9 oz/A	acetamiprid	1	12	M
4A + 15	Cormoran	12.0 fl oz/A	acetamiprid+novaluron	1	12	M
15	Rimon 0.83EC (only affects larvae)	6 to 12.0 fl oz/A	novaluron	1	12	M
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L

Slugs

Slugs prefer a cool, wet, dark environment, and mulch, weeds, and other plant trash in beds during a wet spring provide the perfect setting. Mulch removal and adequate weed control help reduce the slug population.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
n/a	Sluggo (OMRI)	20.0 to 44.0 lb/A	iron phosphate	0	0	N
n/a	Deadline Bullets	up to 25 lb/A	metaldehyde	0	12	N

Spittlebugs See Aphids, Spittlebugs above.

Spotted Wing Drosophila

Sporadically problematic on day-neutral strawberries during late summer and fall, but not earlier in the season.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
3A	Danitol 2.4 EC	16.0 to 21.3 fl oz/A	fenpropathrin*	2	24	H
5	Radiant SC	6 to 10 fl oz/A	spinetoram	1	4	M
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
3A	PyGanic EC 5.0 II (OMRI)	4.5 to 15.6 fl oz/A	pyrethrins	0	12	H
UN + 3A	Azera (OMRI)	2.0 to 3.0 pt/A	azadirachtin + pyrethrins	0	12	H

Strawberry Rootworms Use of broad-spectrum insecticides for other pests will aid in controlling rootworms.

Strawberry Weevils (Strawberry Clippers)

Apply one of the following formulations after new growth starts and before fruit buds are visible. Repeat 10 days later:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Sevin XLR Plus	1.0 to 2.0 qt/A	carbaryl	7	12	H
1B	Lorsban Advanced	1.0 qt/A	chlorpyrifos* - prebloom only	21	24	H
3A	Brigade WSB	6.4 to 32 oz/A	bifenthrin*	0	12	H
3A	Danitol 2.4 EC	16.0 to 21.3 fl oz/A	fenpropathrin	2	24	H
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L

Tarnished Plant Bugs

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Malathion 57EC	1.5 to 3.0 pt/A	malathion	3	12	H
3A	Brigade WSB	6.4 to 32.0 oz/A	bifenthrin*	0	12	H
3A	Danitol 2.4EC	10.67 fl oz/A	fenpropathrin	2	24	H

Tarnished Plant Bugs - continued on next page

Tarnished Plant Bugs - continued

3A + 4A	Brigadier	5.1 to 6.14 fl oz/A	bifenthrin*+imidacloprid - foliar	7	12	H
4A	Assail 30SG	4.0 to 6.9 oz/A	acetamiprid	1	12	M
4A+15	Cormoran	12.0 fl oz/A	acetamiprid+novaluron	1	12	M
4C	Transform WG	1.5 to 2.25 oz/A	sulfoxaflor	7	24	H
4C	Closer SC	2.75 to 4.5 oz/A	sulfoxaflor	7	24	H
21A + 39	Apta	27 fl oz/A	tolfenpyrad	1	12	H
29	Beleaf 50SG	2.8 oz/A	flonicamid	0	12	L
3A	PyGanic EC 5.0 II (OMRI)	4.5 to 15.6 fl oz/A	pyrethrins	0	12	H
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L
UN+3A	Azera (OMRI)	2.0 to 3.0 pt/A	azadirachtin + pyrethrins	0	12	H
n/a	Ecotec Plus (OMRI)	1.0 to 4.0 pt/A	rosemary oil + geraniol + peppermint oil	0	0	L

Thrips

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
4A	Assail 30SG	4.0 to 6.9 oz/A	acetamiprid	1	12	M
4A + 15	Cormoran	12.0 fl oz/A	acetamiprid+novaluron	1	12	M
5	Radiant SC	6.0 to 10.0 fl oz/A	spinetoram	1	4	M
21A + 39	Apta	27 fl oz/A	tolfenpyrad	1	12	H
5	Entrust SC (OMRI)	4.0 to 6.0 fl oz/A	spinosad	1	4	M
3A	PyGanic EC 5.0 II (OMRI)	4.5 to 15.6 fl oz/A	pyrethrins	0	12	H
UN	Azatin O, Aza-Direct, Ecozin, Neemix (OMRI)	Refer to individual labels for rates	azadirachtin	0	4	L
UN + 3A	Azera (OMRI)	2.0 to 3.0 pt/A	azadirachtin + pyrethrins	0	12	H
n/a	Trilogy (OMRI)	1.0 to 2.0% solution	neem extract	0	4	H
n/a	Ecotec Plus (OMRI)	1.0 to 4.0 pt/A	rosemary oil+geraniol+peppermint oil	0	0	L

Cyclamen Mites

Thorough coverage in the crown area is necessary. Sprays are best applied when foliage is minimal (early spring or renovation), and in high volumes of water. Predatory mites are effective if released when cyclamen mite populations are still low and confined to “hot spots”, and before cool temperatures occur in Fall.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
6	Agri-Mek SC	3.5 fl oz/A	abamectin*	3	12	H
21A	Portal XLO	2.0 pt/A	fenpyroximate	1	12	L

Two-Spotted Spider Mites (TSSM)

For best results, control TSSM early in the spring before eggs are laid. Thorough underleaf spray coverage is necessary. For resistance management, alternate materials with different modes of action.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*= Restricted Use)	PHI (d)	REI (h)	Bee TR
6	Agri-Mek SC	3.5 fl oz/A	abamectin*	3	12	H
6 + 28	Minecto Pro	10.0 fl oz/A	abamectin* + cyantraniliprole	3	12	H
10A	Savey 50DF	6.0 oz/A	hexythiazox	3	12	L
10B	Zeal Miticide ¹	2.0 to 3.0 oz/A	etoxazole	1	12	L
12B	Vendex 50WP	1.5 to 2.0 lb/A	fenbutatin-oxide*	1	48	L
20B	Kanemite 15SC	21.0 to 31.0 fl oz/A	acequinocyl	1	12	L
20D	Acramite 50WS	0.75 to 1.0 lb/A	bifenazate	1	12	M
21	Nexter	4.4 to 10.67 oz/A	pyridaben	1	12	H
21A	Portal XLO	2.0 pt/A	fenpyroximate	1	12	L
23	Oberon 2SC	12.0 to 16.0 fl oz/A	spiromesifen	3	12	M
25	Nealta	13.7 fl oz/A	cyflumetofen	1	12	L
UN	Trilogy (OMRI)	1.0 to 2.0% solution	neem extract	0	4	H
n/a	Ecotec Plus (OMRI)	1.0 to 4.0 pt/A	rosemary oil + geraniol + peppermint oil	0	0	L

Gray Mold (*Botrytis* Fruit Rot)

Start spraying at 5-10% bloom, because most fruit infections occur through the flower. Repeat every 7-10 days. Spray less frequently during prolonged dry periods, but spray every 5-7 days during very wet periods. For season-long control it is usually sufficient to spray once a week for 4 weeks. Base resistance management on protectants captan and thiram and add in rotation FRAC 7 (e.g., Kenja, Fontelis, Merivon, or Luna series), or FRAC 12 (Switch) to the protectants when weather conditions turn favorable for disease. **Do not** use the same FRAC code more than twice per season. FRAC 2 products (e.g., Rovral) needs to be applied before first fruiting flower and can only be applied once per season. Risk of resistance to FRAC 17 (Elevate) and 2 (e.g., Rovral) is high. High risk of *Botrytis* infection is estimated with weather-based models recommended by the Strawberry Advisory System (<http://agroclimate.org/tools/strawberry/>).

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
Apply Captan or Thiram solely when disease pressure is low to moderate. Captan is a better choice if anthracnose is a concern or present.						
M03	Thiram Granuflo	4.4 lb/A	thiram	3	24	N
M03	Thiram 24/7	2.6 qt/A	thiram	1	24	N
M03	Thiram SC	2.6 qt/A	thiram	1	24	N
M04	Captan 50W	6.0 lb/A	captan	0	24	N
M04	Captan 80WDG	3.7 lb/A	captan	0	24	N
M04	Captan 4L	3.0 qt/A	captan	0	24	N
M04+17	Captevate 68WDG ¹	3.5 to 5.25 lb/A	captan + fenhexamid	0	24	N
Tank mix Captan or Thiram with one of the following fungicides ONLY when disease pressure is high. NEVER apply the following fungicides solely during critical periods (i.e., blooming and maturing) due to high resistance risk. Do not apply the same FRAC code more than twice in a row or in a season.						
2	Meteor ²	1.5 to 2.0 pt/A	iprodione	n/a	24	N
2	Nevado 4F ²	1.5 to 2.0 pt/A	iprodione	n/a	24	N
2	Rovral 4F ²	1.5 to 2.0 pt/A	iprodione	n/a	24	N
7	Fontelis 1.67SC	16 to 24 fl oz/A	penthiopyrad	0	12	L
7	Kenja 400SC	13.5 to 15.5 fl oz/A	isofetamid	0	12	--
7 + 9	Luna Tranquility 4.16SC	16 to 27 fl oz/A	fluopyram + pyrimethanil	1	12	--
7 + 11	Luna Sensation 4.25SC	6 to 7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
7 + 11	Merivon 2.09SC	8 to 11 fl oz/A	fluxapyroxad + pyraclostrobin	0	12	N
9 + 12	Switch 62.5WG	11 to 14 oz/A	cyprodinil + fludioxonil	0	12	L
17	Elevate 50 WDG	1.5 lb/A	fenhexamid	0	12	N

¹Do not tank mix Captevate with Elevate. ²Do not make more than 1 application/season. Do not apply these products after first fruiting flower.

Powdery Mildew

Unless symptoms are severe, crop losses are rare in the fall and the disease may not reappear in the spring. Check both sides of leaves in the spring for disease pressure. Severe disease during spring may justify fungicide application on a 14-21 day interval. Do not apply FRAC code 11 fungicides (i.e., Cabrio or Pristine) more than twice in a row. Switch to another product to reduce the chance of fungicide resistance development.

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
Rotate between the following fungicides with different modes of action (FRAC code):						
U06	Torino 0.85SC	3.4 oz/A	cyflufenamid	0	4	--
3	Mettle 125ME	3.0 to 5.0 fl oz/A	tetraconazole	0	12	--
3	Procure 480SC	4.0 to 8.0 oz/A	triflumizole	1	12	N
3	Rally 40WSP	2.5 to 5.0 oz/A	myclobutanil	0	24	N
3 + 9	Inspire Super 2.82EW	16.0 to 20.0 fl oz/A	difenoconazole + cyprodinil	0	12	--
7	Fontelis 1.67SC	16 to 24 fl oz/A	penthiopyrad	0	12	L
7	Kenja 400SC	13.5 to 15.5 fl oz/A	isofetamid	0	12	--
7 + 9	Luna Tranquility 4.16SC	16 to 27 fl oz/A	fluopyram + pyrimethanil	1	12	--
7 + 11	Luna Sensation 4.25SC	4 to 7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
7 + 11	Merivon 2.09SC	4 to 7 fl oz/A	fluxapyroxad + pyraclostrobin	0	12	N
7 + 11	Pristine 38WG	18.5 to 23.0 oz/A	boscalid + pyraclostrobin	0	12	--
11	Cabrio 20EG	12.0 to 14.0 oz/A	pyraclostrobin	0	12	N
11	Flint Extra 500SC	2.5 to 3.0 fl oz/A	trifloxystrobin (Do not apply near Concord grapes, see label)	0	12	--
13	Quintec 2.08SC	4.0 to 6.0 fl oz/A	quinoxifen	1	12	--

For Immediate Medical Attention

Call 911

For a Pesticide Exposure Poisoning

Emergency Call



For All States

This number will automatically connect you to the poison center nearest to you.

Anyone with a poisoning emergency can call the toll-free telephone number for help.

Personnel at the Center will give you first-aid information and direct you to local treatment centers if necessary.

For Pesticide Spills

Small Spills: See the product label for cleanup advice.

Large spills: Call the National Response Center at 1-800-424-8802 or CHEMTREC at 800-424-9300 (24 hours) - Industry assistance with emergency response cleanup procedures for large, dangerous spills.

Be aware of your responsibility to report spills to the proper state agency.