RUTGERS
New Jersey Agricultural Experiment Station

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.

1. Soil-Applied - continued

3	Treflan 4EC	1 to 2 pt/A	**trifluralin**	0.5 to 1 lb/A	30	12
-**Plasticulture**: row middles only: apply as a directed spray after emergence when plants have reached the 3 to 4 true leaf stage of growth. Not labeled for bareground production. Primarily controls annual grasses with a few broadleaf weeds. -**Do not** use (or reduce the rate) when cold, wet soil conditions are expected, or crop injury may result**.** -Maximum applications per season: not specified.						
3 + 13	Strategy 2.1SC	1.5 to 6 pt/A	**ethalfluralin *plus* clomazone**	0.39 to 1.58 lb/A	45	24
-**Plasticulture**: row middles application. **Bareground**: apply broadcast just before planting or after planting but before crop emergence. -Strategy is a prepackage mixture of Curbit 3EC and Command 3ME. -Clomazone spray or vapor drift may injure susceptible crops and other vegetation, refer to Command 3ME for comments. -**Do not** apply prior to planting crop. **Do not** soil incorporate. Refer to individual products for comments. -Maximum applications per season: not specified.						
8	Prefar 4E	5 to 6 qt/A	**bensulide**	5 to 6 lb/A	--	12
-**Plasticulture** under plastic: apply in a band under the plastic, immediately before laying the mulch. Allow 7 day before making transplant holes to allow condensation to incorporate the herbicide. Plasticulture: row middles application is labeled. -**Bareground**: apply preemergence or preplant incorporated. -Preemergence applications should be followed by irrigation within 36 h (apply enough water to wet the soil at least 2 to 4 inches deep). Preplant incorporated applications should be incorporated 1 to 2 inches deep (deeper than 2 inches will result in reduced weed control). -Prefar provides control/suppression of some annual grass weeds and some broadleaves including pigweeds, purslane, and lambsquarters. -**Do not** apply more than 6 lb ai/A per season.						
13	Command 3ME	0.4 to 0.67 pt/A	**clomazone**	0.15 to 0.25 lb/A	--	12
-**Plasticulture**: row middles application only. -**Bareground**: apply broadcast just before planting or after planting but before crop emergence. Use the lower rate when used on coarse-textured soils low in organic matter, when weed pressure is light, or to minimize herbicide carryover that could affect subsequent crops. -Controls annual grasses and many broadleaf weeds including common lambsquarters, velvetleaf, spurred anoda, and jimsonweed. Carpetweed, morningglory sp., pigweed sp., and yellow nutsedge will not be controlled. Higher rates will improve control (or expand number of species controlled) such as common cocklebur, common ragweed, or jimsonweed (refer to label for specific weeds and rates). -**WARNINGS**: Command spray *or* vapor drift may injure sensitive crops and other vegetation up to several hundred yards from the point of application. **Do not** apply adjacent to sensitive crops (see label) or vegetation, or under unfavorable wind or weather conditions. Command may limit subsequent cropping options, see the label. -Available as a pre-mix herbicide Strategy: Strategy at 3 pt/A= Command at 8 fl oz (0.188 lb ai) and Curbit at 26 fl oz (0.6 lb ai) -Maximum number of Command applications per year: 1.						

2. Postemergence

Group	Product Name	Product Rate	Active Ingredient (*=Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Select 2EC Select Max 0.97EC	6 to 8 fl oz/A 12 to 16 fl oz/A	**clethodim**	0.094 to 0.13 lb/A	14	24
	Poast 1.5EC	1 to 1.5 pt/A	**sethoxydim**	0.19 to 0.28 lb/A	3	12
-**Select 2EC**: use crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution). **Select Max**: use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal of spray solution). **Poast**: use COC at 1.0% v/v. -**The use of COC may increase the risk of crop injury when hot or humid conditions prevail.** To reduce the risk of crop injury, omit additives or switch to NIS when grasses are small and soil moisture is adequate. -Use lower labeled rates for annual grass control and higher labeled rates for perennial grass control. -Yellow nutsedge, wild onion, wild garlic, and broadleaf weeds will not be controlled. -Controls many annual and certain perennial grasses, including annual bluegrass, but Poast is preferred for goosegrass control. For best results, treat annual grasses when they are actively growing and before tillers are present. Control may be reduced if grasses are large or under hot or dry weather conditions. -Repeated applications may be necessary to control certain perennial grasses. If repeat applications are necessary, allow 14 days between applications. -Rainfastness is 1 h. -**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. **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; d**o 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. -**Do not** apply more than 1.5 pt/A Poast in single application and **do not** exceed 3 pt/A for the season.						
2	Sandea 75DF	0.5 to 1 oz/A	**halosulfuron**	0.023 to 0.047 lb/A	57	12
-**Labeled for use on cantaloupes, honeydew melons, and Crenshaw melons.** -**Plasticulture**: broadcast (over the top) or directed to row middles; broadcast for bareground. -**Bareground**: apply Sandea after the crop has at least 3 to 5 true leaves but before first female flowers appear and no sooner than 14 days after transplanting. If weeds have emerged, use a non-ionic surfactant at 0.25% v/v (1 qt/100 gal). -Suppresses or controls yellow nutsedge and certain broadleaf; control of weeds taller than 3 inches may not be adequate. Sandea will not control common lambsquarters or eastern black nightshade if applied postemergence; for row middle application, tankmix with a non-selective herbicide to increase spectrum of control.						

2. Postemergence, Sandea - continued on next page

2. Postemergence, Sandea - continued

-Sandea provides both residual and postemergence control of susceptible weed species. Sandea is an ALS inhibiting herbicide and resistant weed populations are common in the region. -**Do not** use Group 2 herbicides repeatedly in the same field. **Do not** apply Sandea to crops treated with a soil applied organophosphate insecticide, or use a foliar applied organophosphate insecticide within 21 days before or 7 days after a Sandea application. -Rainfastness is 4 h. Maximum number of Sandea applications per year is 2 and **do not** exceed 2 oz/A during the crop season						
22	Gramoxone SL 2.0	1.95 pt/A	**paraquat***	0.49 lb/A	14	24
-**A Supplemental Label has been approved for the use of Gramoxone 2SL for postemergence weed control in DE, MD, NJ, PA, and VA.** Row middles as a shielded application. -Apply as a directed spray in a minimum of 20 gal/A of spray mix to control emerged weeds between the rows after crop establishment. Include a nonionic surfactant at 0.25% v/v. Use shields or hoods to prevent spray contact with the crop and low spray pressure (maximum of 30 psi) to reduce small droplets that are prone to drift. See the label for additional information and warnings. -Rainfastness is 30 min. A maximum of 3 applications 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.						

3. Postharvest

Group	Product Name	Product Rate	Active Ingredient (*=Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
22	Gramoxone SL 2.0	2.25 to 3 pt/A	**paraquat***	0.56 to 0.75 lb/A	14	24
-A **Special Local Needs Label 24(c) has been approved in VA (expires 12/31/2022) and a Supplemental Label in DE for the use of Gramoxone SL 2.0 for postharvest application to desiccate the crop.** -Apply after the last harvest for bareground or plasticulture. Always include an adjuvant. -Spray coverage is essential for optimum effectiveness. See the label for additional information and warnings. -Rainfastness 30 min. A maximum of 2 applications for crop desiccation 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.						

4. 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)
2	League	**imazosulfuron**
3	Dacthal	**DCPA**
14	Aim	**carfentrazone**

Insect Control

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

Seedcorn Maggot

To prevent **seedcorn** maggot damage to transplants, a banded application of a soil-incorporated neonicotinoid (Group 4A) insecticide may be needed at planting. See also Maggots in section E 3.1 Soil Pests - Detection and Control.

Aphids Note. Aphids transmit multiple viruses.

Apply one of the following formulations:

Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Lannate LV	1.5 to 3.0 pt/A	methomyl* - **melon aphid only**	1-3	48	H
1B	Dimethoate 400	1.0 pt/A	dimethoate*	3	48	H
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4D	Sivanto Prime or 200SL	21.0 to 28.0 fl oz/A	flupyradifurone - **soil/drip**	21	4	M
9B	Fulfill 50WDG	2.75 oz/A	pymetrozine	0	12	L
9B	PQZ	2.4 to 3.2 fl oz/A	pyrifluquinazon	1	12	L
9D	Sefina	3.0 fl oz/A	afidopyropen	0	12	L

Aphids - continued on next page

Aphids - continued

21A	Torac	17.0 to 21.0 fl oz/A	tolfenpyrad	1	12	H
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
28	Verimark	6.75 to 13.5 fl oz/A	cyantraniliprole	1	4	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28 + 6	Minecto Pro	10.0 fl oz/A	cyantraniliprole + abamectin*	7	12	H
29	Beleaf 50SG	2.0 to 2.8 oz/A	flonicamid	0	12	L

Armyworms and Cabbage Loopers

Apply one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV	1.5 to 3.0 pt/A	methomyl*	1-3	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
3A + 4A	Endigo ZC	4.0 to 4.5 fl oz/A	lambda-cyhalothrin* + thiamethoxam	1	24	H
5	Entrust SC (OMRI)	4.0 to 8.0 fl oz/A	spinosad	3	4	M
5	Radiant SC	5.0 to 10.0 fl oz/A	spinetoram	3	4	M
11A	Dipel DF, others (OMRI)	0.5 to 2.0 lb/A	*Bacillus thuringiensis kurstaki*	0	4	N
11A	XenTari (OMRI) (armyworms)	0.5 to 2.0 lb/A	*Bacillus thuringiensis aizawai*	0	4	N
11A	XenTari (OMRI) (cabbage loopers)	0.5 to 1.0 lb/A	*Bacillus thuringiensis aizawai*	0	4	N
18	Intrepid 2F	4.0 to 10.0 fl oz/A	methoxyfenozide	3	4	L
22	Avaunt 30WDG, Avaunt eVo	2.5 to 6.0 oz/A	indoxacarb	3	12	H
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole - **soil**	1	4	L
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L
28	Exirel (armyworms)	7.0 to 13.5 fl oz/A	cyantraniliprole	1	12	H
28	Exirel (cabbage looper)	10.0 to 17.0 fl oz/A	cyantraniliprole	1	12	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28	Verimark	6.75 to 13.5 fl oz/A	cyantraniliprole	1	4	H
28 + 4A	Voliam Flexi (cabbage looper only)	4.0 to 7.0 oz/A	thiamethoxam + chlorantraniliprole	1	12	H
28 + 6	Minecto Pro	5.5 to 10.0 fl oz/A	cyantraniliprole + abamectin*	7	12	H

Cucumber Beetles

Cucumber beetles transmit bacterial wilt, and most varieties of muskmelons are highly susceptible to this disease. Adult beetles can also cause direct feeding injury to young plants. Control adults before they feed extensively on the cotyledons and first true leaves. If foliar insecticides are used, begin spraying shortly after plant emergence and repeat applications at weekly intervals if new beetles continue to invade fields. Treatments may be required until vines begin to run. Management of adult cucumber beetles early in the season may help reduce damage to rinds later in the season. Seeds pretreated with a neonicotinoid such as Farmore DI-400 should provide up to 14 days of control of cucumber beetle. Otherwise, apply one of the following formulations:

Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV	1.5 to 3.0 pt/A	methomyl*	1-3	48	H
1A	Sevin XLR Plus	1.0 qt/A	carbaryl	3	12	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
28	Exirel	20.5 fl oz/A	cyantraniliprole	1	12	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H

Cutworms See also section E 3.1. Soil Pests - Detection and Control.

Apply one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV (variegated cutworm)	1.5 pt/A	methomyl*	1	48	H
1A	Lannate LV (granulate cutworm)	1.5 to 3.0 pt/A	methomyl*	1-3	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					

Leafhoppers High numbers cause leaf yellowing (chlorosis) known as hopper burn, and yield loss.

Apply one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400	1.0 pt/A	dimethoate*	3	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4D	Sivanto Prime or 200SL	21.0 to 28.0 fl oz/A	flupyradifurone - **soil/drip**	21	4	M
9B	PQZ	3.2 fl oz/A	pyrifluquinazon	1	12	L
21A	Torac	14.0 to 21.0 fl oz/A	tolfenpyrad	1	12	H

Leafminers

Apply one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400	1.0 pt/A	dimethoate*	3	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
5	Entrust SC (OMRI)	6.0 to 8.0 fl oz/A	spinosad	3	4	M
5	Radiant SC	6.0 to 10.0 fl oz/A	spinetoram	3	4	M
6	Agri-Mek SC	1.75 to 3.5 fl oz/A	abamectin*	7	12	H
17	Trigard 75WSP	2.66 oz/A	cyromazine	0	12	H
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole - **soil**	1	4	L
28	Coragen 1.67SC	5.0 to 7.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
28	Verimark	6.75 to 13.5 fl oz/A	cyantraniliprole	1	4	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28 + 6	Minecto Pro	5.5 to 10.0 fl oz/A	cyantraniliprole + abamectin*	7	12	H

Mites

Infestations generally begin around field margins and grassy areas. **DO NOT** mow or maintain these areas after midsummer since this forces mites into the crop. Localized infestations can be spot treated. Begin treatment when 10-15% of the crown leaves are infested early in the season.

Apply one of the following formulations. Note: Continuous use of carbaryl or pyrethroids may result in mite outbreaks.						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
6	Agri-Mek SC	1.75 to 3.5 fl oz/A	abamectin*	7	12	H
10B	Zeal Miticide	2.0 to 3.0 oz/A	etoxazole	7	12	L
20B	Kanemite 15SC	31.0 fl oz/A	acequinocyl	1	12	L
21 A	Magister SC	24.0 to 36.0 fl oz/A	fenazaquin	3	12	H
21A	Portal XLO	2.0 pt/A	fenpyroximate	3	12	L
23	Oberon 2SC	7.0 to 8.5 fl oz/A	spiromesifen	7	12	M
28 + 6	Minecto Pro	5.5 to 10.0 fl oz/A	cyantraniliprole + abamectin*	7	12	H
20D	Acramite 50WS	0.75 to 1.0 lb/A	bifenazate	3	12	M

Melonworms and Pickleworms

Apply one of the following formulations. If foliar materials are used, make one treatment prior to fruit set, and then treat weekly. If soil or drip applications are used, check the label for additional instructions.						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV	1.5 to 3.0 pt/A	methomyl*	1-3	48	H
1A	Sevin XLR Plus	0.5 to 1.0 qt/A	carbaryl	3	12	H
3A	Pyrethroid insecticides registered for use on musk melons: see table at the end of Insect Control.					
3A+4A	Endigo ZC	4.0 to 4.5 fl oz/A	lambda-cyhalothrin* + thiamethoxam	1	24	H
5	Entrust SC (OMRI)	4.0 to 8.0 fl oz/A	spinosad	3	4	M
5	Radiant SC	5.0 to 10.0 fl oz/A	spinetoram	3	4	M
18	Intrepid 2F	4.0 to 10.0 fl oz/A	methoxyfenozide	3	4	L
22	Avaunt 30WDG, Avaunt eVo	2.5 to 6.0 oz/A	indoxacarb	3	12	H
28	Coragen 1.67SC	2.0 to 7.5 fl oz/A	chlorantraniliprole - **soil**	1	4	L

Melonworms and Pickleworms - continued on next page

Melonworms and Pickleworms - continued

28	Coragen 1.67SC	2.0 to 3.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L
28	Exirel	7.0 to 13.5 fl oz/A	cyantraniliprole	1	12	H
28	Verimark	5.0 to 10.0 fl oz/A	cyantraniliprole	1	4	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H
28+4A	Durivo	10.0 to 13.0 fl oz/A	thiamethoxam + chlorantraniliprole	30	12	H
28+4A	Voliam Flexi	4.0 to 7.0 oz/A	thiamethoxam + chlorantraniliprole	1	12	H
28+6	Minecto Pro	5.5 to 10.0 fl oz/A	cyantraniliprole + abamectin*	7	12	H

Rindworms

For Lepidopteran rindworms, use one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
5	Entrust SC (OMRI)	4.0 to 8.0 fl oz/A	spinosad	3	4	M
5	Radiant SC	5.0 to 10.0 fl oz/A	spinetoram	3	4	M
18	Intrepid 2F	4.0 to 10.0 fl oz/A	methoxyfenozide	3	4	L

Thrips

Apply one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400	1.0 pt/A	dimethoate*	3	48	H
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
5	Entrust SC (OMRI)	6.0 to 8.0 fl oz/A	spinosad	3	4	M
5	Radiant SC	6.0 to 10.0 fl oz/A	spinetoram	3	4	M
21A	Torac	21.0 fl oz/A	tolfenpyrad	1	12	H
28	Harvanta 50SL	10.9 to 16.4 fl oz/A	cyclaniliprole	1	4	H

Whiteflies

Apply one of the following formulations:						
Group	**Product Name**	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
3A	Pyrethroid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Musk and Mixed Melons: see table at the end of Insect Control.					
4D	Sivanto Prime or 200SL	21.0 to 28.0 fl oz/A	flupyradifurone - **soil/drip**	21	4	M
7C	Knack	8.0 to 10.0 fl oz/A	pyriproxyfen	7	12	L
9B	Fulfill 50WDG	2.75 oz/A	pymetrozine	0	12	L
9B	PQZ	2.4 to 3.2 fl oz/A	pyrifluquinazon	1	12	L
9D	Sefina	14.0 fl oz/A	afidopyropen	0	12	L
21A	Portal XLO	2.0 pt/A	fenpyroximate	3	12	L
23	Oberon 2SC	7.0 to 8.5 fl oz/A	spiromesifen	7	12	M
28	Exirel	13.5 to 20.5 fl oz/A	cyantraniliprole	1	12	H
28	Verimark	6.75 to 13.5 fl oz/A	cyantraniliprole	1	4	H
28 + 6	Minecto Pro	10.0 fl oz/A	cyantraniliprole + abamectin*	7	12	H
29	Beleaf 50SG	2.8 oz/A	flonicamid	0	12	L

Group 3A Pyrethroid Insecticides Registered for Use on Musk and Mixed Melons

Apply one of the following formulations (check if the product label lists the insect you intend to spray; the label is the law):

Product Name	**Product Rate**	**Active Ingredient(s) (*=Restricted Use)**	**PHI (d)**	**REI (h)**	**Bee TR**
Asana XL	5.8 to 9.6 fl oz/A	esfenvalerate*	3	12	H
Baythroid XL	0.8 to 2.8 fl oz/A	beta-cyfluthrin*	0	12	H
Bifenthrin 2EC, others	2.6 to 6.4 fl oz/A	bifenthrin*	3	12	H
Danitol 2.4EC	10.67 to 16.0 fl oz/A	fenpropathrin*	7	24	H
Hero EC	4.0 to 10.3 fl oz/A	zeta-cypermethrin* + bifenthrin*	3	12	H
Lambda-Cy 1EC, others	2.56 to 3.84 fl oz/A	lambda-cyhalothrin*	1	24	H
Mustang Maxx	1.28 to 4.0 fl oz/A	zeta-cypermethrin*	1	12	H

Group 3A Pyrethroid Insecticides Registered for Use on Musk and Mixed Melons - continued on next page

Group 3A Pyrethroid Insecticides Registered for Use on Musk and Mixed Melons - continued

Permethrin 3.2EC, others	4.0 to 8.0 fl oz/A	permethrin*	0	12	H
Tombstone, others	0.8 to 2.8 fl oz/A	cyfluthrin*	0	12	H
Warrior II	1.28 to 1.92 fl oz/A	lambda-cyhalothrin*	1	24	H
Combo products containing a pyrethroid					
Gladiator	19.0 fl oz/A	zeta-cypermethrin* + abamectin* (Group 6)	7	12	H
Endigo ZC	4.0 to 4.5 fl oz/A	lambda-cyhalothrin* + thiamethoxam (Group 4A)	1	24	H
Besiege	6 .0 to 9.0 fl oz/A	lambda-cyhalothrin* + chlorantraniliprole (Group 28)	1	24	H

Group 4A Neonicotinoid Insecticides Registered for Use on Musk and Mixed Melons

Apply one of the following formulations (check if the product label lists the insect you intend to spray; the label is the law):

Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
Admire Pro	7.0 to 10.5 fl oz/A	imidacloprid - **soil**	21	12	H
Assail 30SG	2.5 to 5.3 oz/A	acetamiprid	0	12	M
Actara 25WDG	1.5 to 5.5 oz/A	thiamethoxam	0	12	H
Platinum 75SG	1.66 to 3.67 oz/A	thiamethoxam	30	12	H
Belay 2.13SC	9.0 to 12.0 fl oz/A	clothianidin - **soil/drip**	21	12	H
Belay 2.13SC	3.0 to 4.0 fl oz/A	clothianidin - **foliar** (note: PHI: do not make application after 4th true leaf has unfolded)	see note	12	H
Scorpion 35SL	9.0 to 10.5 fl oz/A	dinotefuran - **soil/drip**	21	12	H
Scorpion 35SL	2.0 to 7.0 fl oz/A	dinotefuran - **foliar**	1	12	H
Venom 70SG	5.0 to 7.5 oz/A	dinotefuran - **soil/drip**	21	12	H
Venom 70SG	1.0 to 4.0 oz/A	dinotefuran - **foliar**	1	12	H
Combo products containing a neonicotinoid					
Durivo	10.0 to 13.0 fl oz/A	thiamethoxam + chlorantraniliprole (Group 28)	30	12	H
Voliam Flexi	4.0 to 7.0 oz/A	thiamethoxam + chlorantraniliprole (Group 28)	1	12	H
Endigo ZC	4.0 to 4.5 fl oz/A	thiamethoxam + lambda-cyhalothrin* (Group 3A)	1	24	H

Disease Control

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

Nematode Control Use fumigants listed in section E 1.5 Soil Fumigation, or one of the nematicides listed below.

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Vydate L	0.5 to 1.0 gal/A Incorporate into top 2-4 inches of soil, ***OR*** 2.0 to 4.0 pt/A apply 2 w after planting and repeat 2-3 w later.	oxamyl*	1	48	H
7	Velum Prime 4.16SC	6.5 to 6.84 fl oz/A	fluopyram	0	12	--
--	Nimitz 4EC	3.5 to 5.0 pt/A Incorporate or drip-apply 7 d before planting.	fluensulfone	n/a	12	N

Seed Treatment If seed has not been treated with a fungicide and insecticide, use a mixture of thiram 480DP (4.5 fl oz/100 lb) and an approved commercially available insecticide.

Damping-Off caused by Phytophthora, Pythium, and Rhizoctonia

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
Apply one of the following at-planting (see label for application timing, methods, and restrictions):						
Phytophthora and Pythium root rot						
4	Ridomil Gold 4SL	0.5 to 1.0 pt/A	mefenoxam	AP	48	N
4	Ultra Flourish 2E	2.0 to 4.0 pt/A	mefenoxam	AP	48	N
4	MetaStar 2E AG	4.0 to 8.0 pt/A	metalaxyl	AP	48	N
Phytophthora, Pythium, and Rhizoctonia root rot						
4 + 11	Uniform 3.66SE	0.34 fl oz/1000 ft row. Avoid direct seed contact, which may cause delayed emergence.	mefenoxam + azoxystrobin	AP	0	N

Damping-Off caused by Phytophthora, Pythium, and Rhizoctonia - continued on next page

Damping-Off caused by Phytophthora, Pythium, and Rhizoctonia - continued

Rhizoctonia root rot						
11	azoxystrobin 2.08F	0.40 to 0.80 fl oz/1000 ft row	azoxystrobin	AP	4	N
Pythium root rot only						
28	Previcur Flex 6F	1.2 pt/A in transplant water, drip irrigation, or direct spray at base of plant and soil	propamocarb HCl	2	12	N

Bacterial and Fungal Diseases

Alternaria Leaf Blight

Rotate muskmelons with unrelated crops. Begin sprays when vines begin to run, or earlier if symptoms are detected.

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
Begin sprays when vines begin to run. ALTERNATE one of the following:						
M03	mancozeb 75DF[1]	2.0 to 3.0 lb/A[1]	mancozeb	5	12,24	N
M05	chlorothalonil 6F	2.0 to 3.0 pt/A	chlorothalonil	0	12	N
WITH A TANK MIX of one of the following fungicides PLUS chlorothalonil 6F 2.0 to 3.0 pt/A every 14 days. Materials with different modes of action (FRAC codes) should always be alternated.						
7 + **11**	Pristine 38WG	12.5 to 18.5 oz/A	boscalid + pyraclostrobin	0	12	--
3 + 9	Inspire Super 2.82EW	16.0 to 20.0 fl oz/A	difenoconazole + cyprodonil	7	12	--
3 + **11**	Quadris Top 1.67SC	12.0 to 14.0 fl oz/A	difenoconazole + azoxystrobin	0	12	--
7 + **11**	Luna Sensation 4.25SC[1]	7.6 fl oz/A	fluopyram + trifloxystrobin	0	12	--
3 + 7	Aprovia Top 1.62EC	10.5 to 13.5 fl oz/A	difenoconazole + benzovindiflupyr	0	12	--
7 + **11**	Merivon 2.09SC[1]	4.0 to 5.5 fl oz/A	fluxapyroxad + pyraclostrobin	0	12	N
3 + **11**	Topguard 4.29SC	5.0 to 8.0 fl oz/A	flutriafol + azoxystrobin	1	12	--
11	azoxystrobin 2.08F	11.0 to 15.5 fl oz/A (**do not** apply near apples, see label)	azoxystrobin	0	12	N
11	Cabrio 20EG	12.0 to 16.0 oz/A	pyraclostrobin	0	12	N
11	Reason 500SC	5.5 fl oz/A	fenamidone	14	12	--

[1]The varieties 'Harvest Queen', 'Gold Star', 'Super Star', 'Sweet and Early', and 'Saticoy' are sensitive to mancozeb.

Angular Leaf Spot and Bacterial Leaf Spot

At first sign of disease, apply the labeled rates of fixed copper plus mancozeb. Some coppers are OMRI-approved and can be used in organic systems to help suppress Angular leaf spot and other fungal diseases. Repeat every 7 d. Avoid overhead irrigation when symptoms are present and working in field while foliage is wet.

Bacterial Wilt

Controlling striped and spotted cucumber beetles is essential for preventing bacterial wilt. See preceding "Cucumber Beetle" section under Insect Control for specific recommendations. Insecticide applications made at seeding may not prevent beetle damage all season; additional foliar insecticide applications may be necessary.

Downy Mildew

Scout fields for disease incidence beginning in early summer. Strains of downy mildew that infect one cucurbit crop may not affect other cucurbit crops. Unnecessary fungicide applications can be avoided by not spraying until disease is predicted in the region on melon or cucumber (check the Cucurbit Downy Mildew Forecasting website at: *http://cdm.ipmpipe.org*). **Preventative applications are much more effective than applications made after detection.** Materials with different modes of action (FRAC codes) should always be alternated. Tank mix with protectant if not included in the product.

Code	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
The following are the most effective products. Sprays should be applied on a 7-day schedule. Under severe disease conditions spray interval may be reduced IF the label allows.						
49 + 40	Orondis Ultra 2.33SC	5.5 to 8 fl oz/A	oxathiapiprolin + mandipropamid	0	4	--
21	Ranman 400SC	2.10 to 2.75 fl oz/A (**do not apply with copper**; see label for details)	cyazofamid	0	12	L
Other materials for use in rotation as tank mix partners with a protectant:						
M03+22	Gavel 75DF	1.5 to 2.0 lb/A **contains protectant**	mancozeb + zoxamide (**note**: some cultivars are sensitive to mancozeb)	5	48	--
M05+22	Zing! 4.9SC	36 fl oz/A **contains protectant**	chlorothalonil + zoxamide	0	12	N

Downy Mildew- continued on next page

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.