

F  
E  
E  
D  
B  
E  
A  
S  
T  
T  
H  
E

**MAX-IN**<sup>®</sup>  
By WINFIELD  
UNITED

GIVE YOUR PLANTS  
WHAT THEY'RE  
HUNGRY FOR.

Satisfy your plants' growing appetites throughout the season with MAX-IN<sup>®</sup> micronutrients. Tissue test between V4 and V8 to determine nutrient needs, then we'll provide a customized recommendation to feed the hidden hunger and help optimize yield potential.

# HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES

VEGETABLE WEEDS

- E** EXCELLENT (≥91%)
- G** GOOD (81-90%)
- F** FAIR (65-80%)
- P** POOR (<65%)
- N** NONE
- U** UNKNOWN

## GRASSES

### PREPLANT or PREEMERGENCE\*

	SITE OF ACTION <sup>A</sup>	Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Goosegrass	Johnsongrass (Seedling)	Purple nutsedge	Quackgrass	Sandbur	Shattercane	Volunteer grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge
Aim EC (carfentrazone)	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Chateau WDGR <sup>B</sup> (flumioxazin)	14	F	G	F	G	F	G	F	G	P	N	N	P	P	P	P	N	P
Command 3ME (clomazone)	13	G	E	G	E	G	E	G	E	F	N	N	G	F	P	F	F	P
Devrinol (napropamide)	15	E	E	E	E	E	E	G	E	P	N	P	U	U	U	U	U	N
Dimetric EXT <sup>R</sup> (metribuzin)	5	F <sup>R</sup>	F	G	F	G	F	G	F	P	N	P	F	P	P	P	P	P
Dual II Magnum/Charger MAX or Dual Magnum/Charger Basic (s-metolachlor)	15	G	E	E	E	E	E	G	E	P	N	N	F	P	P	F	N	F
Eptam (EPTC)	8	E	E	G	E	E	E	G	E	F	G	F	G	F	G	F	P	F
Framework/Prowl (pendimethalin)	3	G	E	E	E	G	E	G	E	P	N	P	G	E	G	P	F	P
Goal/Goaltender (oxyfluorfen)	7	P	F	F	P	F	P	F	P	P	N	P	N	N	U	P	P	P
Karmex <sup>R</sup> (diuron)	7	G	E	G	F	G	E	G	G	F	N	P	F	U	U	F	U	P
Kerb SC (pronamide)	7	G	G	F	F	F	G	G	G	U	N	F	F	U	U	G	U	P
Lorox DF/Linex 4L <sup>R</sup> (linuron)	15	F	G	G	G	G	G	F	G	P	N	N	P	P	P	P	N	P
Nortron (ethofumesate)	8	P	G	G	F	F	U	U	N	U	P	F	P	U	F	G	U	U
Prefar (bensulide)	3	E	E	G	E	E	G	F	F	P	F	F	U	U	U	U	U	F
Pyramin (pyrazon)	5	F	F	F	P	F	P	F	U	P	N	P	P	P	P	P	P	P
Sinbar <sup>R</sup> (terbacil)	5	G <sup>R</sup>	G	E	G	F	G	F	G	U	N	P	F	F	F	U	F	P
Solicam (norflurazon)	12	G	G	G	G	G	G	U	G	F	U	U	U	U	U	U	U	F
Surflan (oryzalin)	3	E	E	E	E	E	U	U	N	P	G	G	P	F	F	F	U	N
Tillam (pebulate)	8	E	E	E	E	E	U	U	G	U	F	F	G	G	F	U	G	G
Trust/Treflan HFP (trifluralin)	3	E	E	E	E	E	G	E	G	N	P	E	G	P	F	F	P	P
Vida (pyraflufen)	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

\*Some products may not be labeled to control rated weeds. See current labels.

<sup>A</sup> Site of action, described on page 759.

<sup>R</sup> No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the technical section.

# HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES

## BROADLEAVES

VEGETABLE WEEDS

	Bindweed, field	Bindweed, hedge	Buffalobur	Burcucumber	Canada thistle	Cocklebur	Hairy gallsoga	Horsenettle	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard	Nightshade, black	Pigweed	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Spurge, prostrate	Sunflower	Velvetleaf	Waterhemp spp.	Wild buckwheat				
	PREPLANT or PREEMERGENCE																														
● Aim EC	FG	P	GE	F	N	FG	G	PF	U	G	FG	E	GE	GE	FG	G	G	GE	PF	N	E	GE	FG	GE	E	FG	G				
● Chateau WDG <sup>R</sup>	P	P	F	N	P	P	FG	N	N	G	GE	G	GE	G	GE	GE	GE	GE	F <sup>R</sup>	G	F	F	E	P	G	G <sup>R</sup>	P	F			
● Command 3ME	P	P	P	P	N	P	F	F	N	P	G	U	GE	G	P	P	P	F	G	G	P	F	G	F	P	GE	P	P			
● Devrinol	U	U	U	U	U	P	P	U	U	N	U	U	FG	N	P	N	G	G	P	N	U	P	P	U	N	U	U				
● Dimetric EXT <sup>R</sup>	P	P	F	P	P	F <sup>R</sup>	GE	N	P	G <sup>R</sup>	P	G <sup>R</sup>	E <sup>R</sup>	P	GE	P	E <sup>R</sup>	GE	E <sup>R</sup>	P	F	G	G <sup>R</sup>	E	G	F	G <sup>R</sup>	G <sup>R</sup>	F		
● Dual II Magnum	N	N	P	P	N	P	G	N	N	P	F	P	F	P	P	G	G	F	P	P	P	P	G	P	P	G	P				
● Eptam	P	P	F	P	P	P	PF	P	P	P	P	F	FG	F	P	F	FG	PF	F	P	P	P	P	P	P	F	F	P			
● Framework/Prowl	P	P	P	P	N	P	P	N	N	P	P	G	G	P	P	P	G	FG	P	P	F	P	F	G	P	P	G	P			
● Goal/Goaltender	P	P	U	U	P	F	FG	P	P	G	P	F	P	F	G	F	F	G	GE	G	G	U	P	F	G	F	P	F	F	G	F
● Karmex <sup>R</sup>	P	P	U	U	P	F <sup>R</sup>	G	U	U	F <sup>R</sup>	U	E <sup>R</sup>	E <sup>R</sup>	G	G	F	G <sup>R</sup>	E	G <sup>R</sup>	U	U	G	F	U	F	U	U				
● Kerb SC	P	P	U	U	P	P	P	U	U	U	U	P	F	P	P	F	F	G	F	U	U	P	F	U	P	U	U				
● Lorox DF/Linex 4L <sup>R</sup>	P	P	P	P	N	P	G	N	N	G <sup>R</sup>	U	F <sup>R</sup>	E <sup>R</sup>	P	E	F	GE <sup>R</sup>	G <sup>R</sup>	G <sup>R</sup>	P	U	G	G	P	F <sup>R</sup>	G <sup>R</sup>	G				
● Nortron	P	U	G	U	P	P	U	U	U	P	P	F	FG	PF	P	PF	F	G	U	P	U	F	G	U	P	P	U	F			
● Prefar	U	U	U	U	U	P	P	U	U	N	U	U	F	N	P	N	FG	FG	N	N	U	N	P	U	N	U	U				
● Pyramin	P	P	U	U	P	P	F	F	U	U	P	P	F	G	P	G	G	G	FG	U	P	F	FG	F	P	F	U	P	F		
● Sinbar <sup>R</sup>	P	P	U	U	P	G	G	U	U	G	U	G <sup>R</sup>	E <sup>R</sup>	FG	GE	GE	G <sup>R</sup>	G	G <sup>R</sup>	U	F	G	F	G	G <sup>R</sup>	G <sup>R</sup>	U				
● Solicam	U	U	U	U	U	U	G	U	U	N	U	U	F	N	G	F	F	F	G	G	U	FG	G	U	F	U	F				
● Surflan	U	U	U	U	U	F	U	U	N	U	U	G	F	F	PF	G	G	PF	P	U	PF	F	U	P	F	U	U				
● Tillam	U	U	U	U	U	U	U	U	N	U	U	F	N	U	N	F	P	P	P	U	P	U	U	N	U	U	U				
● Trust/Treflan HFP	P	P	P	P	N	P	P	N	N	P	U	G	G	P	P	P	G	G	P	P	F	P	P	P	P	G	P				
● Vida	FG	P	GE	F	N	FG	G	PF	U	G	FG	E	GE	GE	FG	G	G	GE	PF	N	E	GE	FG	GE	E	FG	G				

# HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES

VEGETABLE WEEDS

- E** EXCELLENT (≥91%)
- G** GOOD (81-90%)
- F** FAIR (65-80%)
- P** POOR (<65%)
- N** NONE
- U** UNKNOWN

## GRASSES

### POSTEMERGENCE\*

	SITE OF ACTION <sup>A</sup>	Barnyardgrass	Crabgrass	Fall panicum	Foxtail, gi/gr	Foxtail, yellow	Goosegrass	Johnsongrass (Seedling)	Purple nutsedge	Quackgrass	Sandbur	Shattercane	Volunteer grain	Wild oat	Wild proso millet	Wirestem muhly	Woolly cupgrass	Yellow nutsedge		
Aim EC (carfentrazone)	14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Assure II/Targa <sup>R</sup> (quizalofop)	1	G	E	G	E	G	E	G	E	P	G	E	E <sup>R</sup>	E	E <sup>R</sup>	E	G	E	P	
Basagran (bentazon)	6	N	N	N	N	N	N	N	P	F	N	N	N	N	N	N	N	N	G	
Cornerstone 5 Plus/glyphosate <sup>R**</sup> (glyphosate)	9	E	E	E	E	E	G	E	P	F	G	E	E	E	E	E	G	E	F	
Dimetric EXT <sup>R</sup> (metribuzin)	5	F <sup>R</sup>	F	F	F <sup>R</sup>	F <sup>R</sup>	F <sup>G</sup>	P	P	P	P	F	P	P	P	P	P	P	P	
Fusilade DX <sup>R</sup> (fluazifop)	1	G	E	G	E	G	E	E	P	G	E	E <sup>R</sup>	E	E <sup>R</sup>	E	G	G	P		
Goal/Goaltender (oxyfluorfen)	14	P	P	P	P	P	G	U	F	G	P	P	U	U	U	U	U	N		
Gramoxone SL/SL 2.0 (paraquat)	22	E	E	E	E	E	G	F	G	N	G	F	F	G	G	E	G	P	G	F
Moxy (bromoxynil)	6	N	N	N	N	N	N	P	N	G	N	N	N	N	N	N	N	N	N	
Poast <sup>R</sup> (sethoxydim)	1	E	E <sup>R</sup>	E	E <sup>R</sup>	E	G	E	G	N	F	E	E <sup>R</sup>	E	G	E	E	G	E	P
Pursuit <sup>R</sup> (imazethapyr)	2	F	G	F	G	F	G	F	G	G	P	E	E <sup>R</sup>	P	P	P	F	F	P	G
Section Three <sup>R</sup> /Select 2 EC <sup>R</sup> (clethodim)	1	E	G	E	E	E	G	E	E	P	G	E	E <sup>R</sup>	E	E <sup>R</sup>	E	G	E	E	P
Sterling Blue/Banvel/Clarity (dicamba)	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
Stinger (clopyralid)	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	
2,4-D (2,4-D)	4	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	

\* Some products may not be labeled to control rated weeds. See current labels.  
 \*\*May use other glyphosate herbicides such as Cornerstone brands, Roundup brands, Durango DMA/Duramax, Abundit Extra at labeled rates.  
<sup>A</sup> Site of action, described on page 759.  
<sup>R</sup> No control of herbicide resistant weed biotypes. See the list of known resistant weeds on the second page of the technical section.

# HERBICIDE PERFORMANCE RATINGS FOR VEGETABLES

## BROADLEAVES

	Bindweed, field	Bindweed, hedge	Buffalobur	Burcucumber	Canada thistle	Cocklebur	Hairy gallsoga	Horsenettle	Jerusalem artichoke	Jimsonweed	Knotweed	Kochia	Lambsquarters, common	Morningglory, annual	Mustard	Nightshade, black	Pigweed	Purslane	Ragweed, common	Ragweed, giant	Russian thistle	Smartweed, annual	Sunflower	Velvetleaf	Waterhemp spp.	Wild buckwheat				
	FG	P	GE	F	N	FG	G	P	F	U	G	FG	E	GE	GE	FG	G	G	GE	P	F	N	E	GE	GE	E	FG	G	● Aim EC	
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	● Assure II/Targa <sup>R</sup>	
	P	P	F	P	G	E	G	P	F	E	P	F	F	F	G	P	P	G	G	P	F	P	GE	GE	GE	P	FG	● Basagran		
	FG	G	G	G	G	E	GE	G	G	E	G	G	GE	F	G	G	E	E	GE	GE	FG	GE	GE	G	G <sup>R</sup>	F	● Comerstone 5 Plus/glyphosate <sup>R**</sup>			
	P	P	E	F	P	E <sup>R</sup>	E	G	G	E <sup>R</sup>	E	G <sup>R</sup>	GE <sup>R</sup>	P	GE	P	GE <sup>R</sup>	G	GE <sup>R</sup>	GE	F	E	E	G <sup>R</sup>	G <sup>R</sup>	G	● Dimetric EXT <sup>R</sup>			
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	● Fusilade DX <sup>R</sup>		
	U	U	U	U	U	G	FG	U	U	G	U	U	FG	F	F	FG	GE	G	FG	F	P	E	G	P	F	FG	G	U	● Goal/Goaltender	
	P	P	P	P	P	F	G	P	P	F	P	FG	GE	G	E	FG	G	G	G	G	G	FG	P	G	G	F	● Gramoxone SL/SL 2.0			
	P	P	G	F	F	E	P	F	F	P	E	G	G	GE	G	FG	GE	FG	P	GE	F	G	GE	E	G	P	GE	● Moxy		
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	● Poast <sup>R</sup>		
	P	P	F	P	P	GE <sup>R</sup>	U	F	FG	G	U	G <sup>R</sup>	P	F	FG	E <sup>R</sup>	E <sup>R</sup>	E <sup>R</sup>	P	F	F <sup>R</sup>	F <sup>R</sup>	G <sup>R</sup>	G	G <sup>R</sup>	G	P	P	F	● Pursuit <sup>R</sup>
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	● Section Three <sup>R</sup> /Select 2 EC <sup>R</sup>		
	F	F	F	F	G	E	GE	F	FG	E	E	G	E	E	F	G	E	E	E	E	G	E	E	FG	E	E	● Sterling Blue/Banvel/Clarity			
	P	P	P	P	E	E	G	F	E	G	F	P	P	P	P	F	P	P	E	E	P	FG	E	P	P	FG	● Stinger			
	F	F	P	P	F	E	G	F	FG	F	P	F	G	E	E	F	G	P	G	G	F	P	FG	G	G	P	● 2,4-D			

## POSTEMERGENCE

VEGETABLE WEEDS

# HERBICIDES LABELED FOR VEGETABLES

VEGETABLE WEEDS

**L** LABELED\*  
**■** NOT LABELED

		Aim EC	Callisto/Incinerate	Caparol	Command 3ME	Cornerstone 5 Plus	Devrinol 50-DF	Dimetric EXT/Metriclude	Diquat 2L/Reglone	Dual Magnum or Dual II Magnum <sup>1</sup>	Engenia	Envoke	Eptam 7E or 20G	Framework/Prowl H2O	Fusilade DX	Goal/Goaltender	Gramoxone SL/SL 2.0	Karmex DF	Kerb SC	League	Lorox DF/LineX 4L	Matrix SG	Moxy	Outlook
<b>Asparagus</b>		●	L			L	L	L	L	L <sup>10</sup>	L			L <sup>2</sup>	L		L	L			L			
<b>Cole (Brassica) Crop</b>	Broccoli	●	L <sup>2</sup>			L	L			L <sup>10</sup>				L <sup>2</sup>	L	L	L							
	Brussels Sprouts	●	L <sup>2</sup>			L								L <sup>2</sup>										
	Cabbage	●	L <sup>2</sup>			L	L	L		L <sup>10</sup>				L <sup>2</sup>	L <sup>10</sup>	L	L							
	Cauliflower	●	L <sup>2</sup>			L	L							L <sup>2</sup>		L	L							
<b>Cucurbits</b>	Cucumber	●	L <sup>2</sup>			L	L							L <sup>2</sup>			L							
	Muskmelon	●	L <sup>2</sup>			L	L			L <sup>10</sup>				L <sup>2</sup>			L							
	Pumpkin	●	L <sup>2</sup>			L	L			L				L <sup>2</sup>			L							
	Squash	●	L <sup>2</sup>			L	L							L <sup>2</sup>			L							
	Watermelon	●	L <sup>2</sup>			L	L			L <sup>10</sup>				L <sup>2</sup>			L							
<b>Leafy Vegetable (incl. Brassica)</b>	Celery	●	L <sup>2</sup>	L																				
	Chicory, red (radicchio)	●				L																		
	Collards	●	L			L				L <sup>10</sup>							L							
	Endive	●	L <sup>2</sup>			L								L			L		L					
	Escarole	●	L														L		L					
	Kale	●	L			L				L <sup>10</sup>				L <sup>10</sup>										
	Lettuce	●	L <sup>2</sup>			L											L		L					
	Fennel, Florence	●	L	L		L																		
	Mustard	●	L			L				L <sup>10</sup>														
	Parsley	●	L	L		L																L		
	Rhubarb	●	L	L		L				L							L		L <sup>4</sup>					
	Spinach	●	L			L				L <sup>10</sup>					L <sup>10</sup>									
<b>Onion &amp; Garlic</b>	Onion	●	L			L				L <sup>10</sup>				L	L	L	L						L	L
	Garlic	●	L			L								L	L	L	L						L	L
<b>Root Crop</b>	Beet	●	L			L				L <sup>10</sup>			L		L <sup>10</sup>									L
	Carrot	●	L	L		L	L <sup>3</sup>			L <sup>10</sup>				L <sup>7</sup>	L		L				L			
	Horseradish	●	L			L				L						L								L
	Parsnip	●	L			L																L		
	Potato	●	L			L		L	L	L			L	L			L				L	L		L
	Radish	●	L			L				L <sup>10</sup>														
	Sweet Potato	●				L	L			L <sup>10</sup>				L			L <sup>10</sup>							L
	Turnip	●	L <sup>2</sup>			L				L <sup>10</sup>														
<b>Solanaceous</b>	Eggplant	●	L			L	L										L							
	Pepper	●	L <sup>2</sup>			L	L	L		L <sup>10</sup>				L <sup>7</sup>			L				L			
	Tomato	●	L <sup>2</sup>			L	L	L		L <sup>10</sup>		L	L	L <sup>7</sup>			L			L		L		

\* Label changes may have occurred since printing. See current labels for verification.

\*\* Or equivalent products such as Cornerstone brands or Durango DMA/Duramax.

<sup>1</sup> Dual II Magnum is not labeled on sugarbeet, horseradish, pumpkin, rhubarb, or tomato. Equivalent products: Charger Basic and Charger Max.

<sup>2</sup> State-specific restrictions may apply; see label.

<sup>3</sup> Do not apply to carrots grown from seed.

<sup>5</sup> Processing only cabbage.

<sup>6</sup> Supplemental labels.

<sup>7</sup> Prowl H2O only.

<sup>9</sup> Transplanted.

<sup>10</sup> 24c, 2ee or Supplemental label.

# HERBICIDES LABELED FOR VEGETABLES

**L** LABELED\*  
**■** NOT LABELED

	Poast	Prefar 4E	Raptor	Reflex	Roundup PowerMAX**	Rugged	Section Three	Select 2 EC/Cleanse/Select Max	Sequence	Sinbar	Solicam	Spartan	Spartan Charge	Starane Ultra	Sterling Blue/Clarifier/Dicamba Max	Stinger	Targa	Tillam	Trust/Treflan HFP	Valor	Vida	2, 4-D/2, 4-D Amine 4
<b>Asparagus</b>	L				L	L	L	L		L	L				L				L	L	L	L
<b>Cole (Brassica) Crop</b>																						
Broccoli	L	L			L	L	L	L							L				L	L	L	L
Brussels Sprouts	L	L			L	L	L	L							L				L	L	L	L
Cabbage	L	L			L	L	L	L				L <sup>5</sup>	L		L				L	L	L	L
Cauliflower	L	L			L	L	L	L							L				L	L	L	L
<b>Cucurbits</b>																						
Cucumber	L	L			L	L	L	L											L	L	L	L
Muskmelon	L	L			L	L	L	L											L	L	L	L
Pumpkin	L	L			L <sup>10</sup>	L	L	L											L	L	L	L
Squash	L	L			L <sup>10</sup>	L	L	L											L	L	L	L
Watermelon	L	L			L <sup>10</sup>	L	L	L	L	L									L	L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																						
Celery																						L
Chicory, red (radicchio)	L		L		L	L	L	L											L	L	L	L
Collards	L	L			L	L	L	L								L			L	L	L	L
Endive	L	L			L	L	L	L											L	L	L	L
Escarole						L	L	L											L	L	L	L
Kale	L	L			L	L	L	L								L			L	L	L	L
Lettuce	L	L			L	L	L	L											L	L	L	L
Fennel, Florence		L			L	L	L	L											L	L	L	L
Mustard	L	L			L	L	L	L								L			L	L	L	L
Parsley	L	L			L	L	L	L											L	L	L	L
Rhubarb	L				L	L	L	L											L	L	L	L
Spinach	L				L	L	L	L								L	L		L	L	L	L
<b>Onion &amp; Garlic</b>																						
Onion	L	L			L	L	L	L						L <sup>6</sup>			L		L	L	L	L
Garlic	L	L			L	L	L	L									L		L	L	L	L
<b>Root Crop</b>																						
Beet	L				L	L	L	L								L	L		L	L	L	L
Carrot	L				L	L	L	L									L		L	L	L	L
Horseradish	L				L	L	L	L			L	L							L	L	L	L
Parsnip	L				L	L	L	L											L	L	L	L
Potato	L				L	L	L	L											L	L	L	L
Radish	L				L	L	L	L									L		L	L	L	L
Sweet Potato	L				L	L	L	L											L	L	L	L
Turnip	L				L	L	L	L								L			L <sup>3</sup>	L	L	L
<b>Solanaceous</b>																						
Eggplant	L	L			L	L	L	L											L	L	L	L
Pepper	L	L			L <sup>10</sup>	L	L	L					L <sup>6</sup>						L	L	L	L
Tomato	L				L <sup>10</sup>	L	L	L	L			L <sup>9</sup>						L	L	L	L	L

VEGETABLE WEEDS

# INSECTICIDES LABELED FOR VEGETABLES\*

VEGETABLE INSECTS

**L** LABELED  
**■** NOT LABELED

	Actara	Admire Pro	Advise Four	Agri-Mek 0.15 EC/SC	Arctic	Asana XL	Assail	Athena	Avaunt	Bacillus thuringiensis	Battery	Baythroid XL	Belay 2.13SC	Beleaf	Besiege	Blackhawk	Bracket 97/Orthene 97	Brigade 2EC	Brigadier	Capture LFR	Certador	Closer SC	Cobalt Advanced	Comite	Confirm 2F	Coragen	Danitol	Declare	Delta Gold
<b>Asparagus</b>					L					L																L		L	
<b>Cole (Brassica) Crop</b>																													
Broccoli	L	L	L		L	L	L		L	L	L	L	L	L	L			L	L	L	L	L				L	L	L	L
Brussels Sprouts	L	L	L		L		L		L	L	L	L	L	L	L			L	L	L	L	L	L			L	L	L	L
Cabbage	L	L	L		L	L	L		L	L	L	L	L	L	L			L	L	L	L	L				L	L	L	L
Cauliflower	L	L	L		L	L	L		L	L	L	L	L	L	L			L	L	L	L	L				L	L	L	L
<b>Cucurbits</b>																													
Cucumber	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
Muskmelon	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
Pumpkin	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
Squash	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
Watermelon	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																													
Celery	L	L	L	L	L		L		L	L		L	L	L	L			L	L		L	L				L	L		
Chicory, red (radicchio)		L	L	L										L		L		L			L	L				L			L
Collards	L	L	L		L	L			L	L	L	L	L	L	L			L	L	L	L	L				L	L		
Endive	L	L	L	L	L		L		L	L		L	L	L	L			L			L	L				L	L		
Escarole		L	L	L	L							L	L	L	L			L			L	L				L			
Kale	L	L	L			L			L	L	L	L	L	L	L			L	L		L	L				L	L		
Lettuce	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L				L	L		L
Fennel, Florence	L	L	L	L	L		L		L			L	L	L	L			L			L	L				L	L		
Mustard	L	L	L		L	L			L	L	L	L	L	L	L			L	L	L	L	L				L	L		
Parsley	L	L	L	L	L		L		L	L		L	L	L	L			L			L	L				L	L		L
Rhubarb	L	L	L	L	L		L		L			L	L	L	L			L			L	L				L	L		
Spinach	L	L	L	L	L		L		L	L	L	L	L	L	L			L	L	L	L	L				L	L		
<b>Onion &amp; Garlic</b>																													
Onion		L	L	L	L		L			L	L																L		L
Garlic		L	L	L	L					L	L																L		L
<b>Root Crop</b>																													
Beet	L	L	L						L		L		L		L			L				L					L		L
Carrot	L	L	L		L				L		L		L		L			L				L			L <sup>1</sup>		L		L
Horseradish	L	L	L	L	L				L			L		L				L				L					L		L
Parsnip	L	L	L									L		L				L				L					L		L
Potato	L	L	L	L	L	L	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L			L <sup>2</sup>		L		L
Radish	L	L	L		L				L			L		L				L				L					L		L
Sweet Potato	L	L	L	L		L			L			L	L	L	L			L	L	L	L	L				L		L	L
Turnip	L	L	L	L					L <sup>3</sup>	L		L		L		L		L			L	L				L	L		L
<b>Solanaceous</b>																													
Eggplant	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
Pepper	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L
Tomato	L	L	L	L	L	L	L	L	L	L		L	L	L	L			L	L	L	L	L				L	L	L	L

\* Label changes may have occurred since printing. See current labels for verification.  
<sup>1</sup> For seed crop only.  
<sup>2</sup> In certain states only.  
<sup>3</sup> Tops only.  
<sup>7</sup> 24c, 2ee or Supplemental label.



# INSECTICIDES LABELED FOR VEGETABLES\*

**L** LABELED  
**■** NOT LABELED

	Diazinon AG500	Dibrom	Dimate 4 E / Dimethoate 4E	Dipel DF	Durivo	Endigo ZC	Entrust SC	Exirel	Fastac EC / Fastac CS	Fulfill	Gladiator	Grizzly Too	Hero	Intrepid 2F	Karate Z	Lambda-Cy Ag	Lamdate	Leverage 360	Lorsban Advanced	Malathion 5/5EC	Malathion 8 Flowable	Microthiol Dispers	Minecto Pro	Mocap EC / Mocap 15% Granular	Movento / Movento HL	MSR	Mustang Maxx	Nealta	Neemix
<b>Asparagus</b>	●		L	L						L						L	L		L	L	L	L							
<b>Cole (Brassica) Crop</b>																													
Broccoli	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Brussels Sprouts	●	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Cabbage	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Cauliflower	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>Cucurbits</b>																													
Cucumber	●	L			L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Muskmelon	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Pumpkin	●				L	L	L		L	L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L
Squash	●	L	L		L	L	L		L	L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L
Watermelon	●	L	L	L		L	L		L	L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																													
Celery	●		L	L	L	L		L	L	L	L	L	L	L	L			L		L	L	L	L	L	L	L	L	L	L
Chicory, red (radicchio)	●						L	L	L	L			L	L			L	L		L	L	L	L	L	L	L	L	L	L
Collards	●	L	L	L	L	L		L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
Endive	●	L		L	L	L		L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
Escarole	●	L		L	L	L		L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
Kale	●	L	L	L	L	L		L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
Lettuce	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Fennel, Florence	●				L	L	L	L	L	L	L	L	L	L	L					L	L	L	L	L	L	L	L	L	L
Mustard	●	L		L	L	L		L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
Parsley	●	L		L			L	L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
Rhubarb	●				L	L		L	L	L	L	L	L	L	L					L	L	L	L	L	L	L	L	L	L
Spinach	●	L		L	L	L		L	L	L	L	L	L	L	L			L	L	L	L	L	L	L	L	L	L	L	L
<b>Onion &amp; Garlic</b>																													
Onion	●	L			L		L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Garlic	●				L		L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>Root Crop</b>																													
Beet	●	L			L		L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Carrot	●				L		L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Horseradish	●						L		L	L	L	L	L	L	L			L		L	L	L	L	L	L	L	L	L	L
Parsnip	●	L					L		L	L	L	L	L	L	L			L		L	L	L	L	L	L	L	L	L	L
Potato	●	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Radish	●	L					L		L	L	L	L	L	L	L			L		L	L	L	L	L	L	L	L	L	L
Sweet Potato	●	L					L	L	L	L	L	L	L	L	L			L		L	L	L	L	L	L	L	L	L	L
Turnip	●	L		L			L	L	L	L	L	L	L	L	L			L		L	L	L	L	L	L	L	L	L	L
<b>Solanaceous</b>																													
Eggplant	●		L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Pepper	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Tomato	●	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

\* Label changes may have occurred since printing. See current labels for verification.

<sup>1</sup> For seed crop only.

<sup>2</sup> In certain states only.

<sup>4</sup> Mocap 15% Granular only.

<sup>7</sup> 24c, 2ee or Supplemental label.

# INSECTICIDES LABELED FOR VEGETABLES\*

VEGETABLE INSECTS

**L** LABELED  
**■** NOT LABELED

	Oberon	Onager	Paradigm	Platinum	Platinum 75 SG	Proclaim	Pyrethrum	Radiant SC	Requiem EC	Rotenone	Sevin XLR Plus	Sequoia	Sivanto prime	Stallion Brand	Steed	Telone II	Thimet 20G/Phorate 20G	Thionex 3EC <sup>2</sup>	Transform WG	Trigard	Tundra/Bifen 2 AG Gold	Venom	Verimark	Voliam Flexi	Voliam Xpress	Vydate L	Warrior II	Xentari	Yuma 4E	Zeal/Zeal SC		
<b>Asparagus</b>	●						L	L		L	L																				L	
<b>Cole (Brassica) Crop</b>																																
Broccoli	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L	L	L	L	L	L	L	
Brussels Sprouts	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L	L	L	L	L	L	L	
Cabbage	●	L	L	L	L	L	L	L	L		L	L	L	L	L			L <sup>2</sup>			L	L	L	L	L	L	L	L	L	L	L	
Cauliflower	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L	L	L	L	L	L	L	
<b>Cucurbits</b>																																
Cucumber	●	L	L	L	L		L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	
Muskmelon	●	L	L	L	L		L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	L
Pumpkin	●	L	L	L	L		L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	L
Squash	●	L	L	L	L		L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	L
Watermelon	●	L	L	L	L		L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																																
Celery	●		L	L	L	L	L	L	L	L	L	L	L	L	L			L <sup>2</sup>			L	L	L	L	L	L	L <sup>2</sup>		L			
Chicory, red (radicchio)	●			L			L	L		L	L	L	L	L					L		L											
Collards	●			L	L	L	L	L	L	L	L	L	L	L	L						L	L		L	L				L	L		
Endive	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L				L			
Escarole	●	L	L			L	L	L	L	L	L	L	L	L	L						L	L	L	L	L							
Kale	●			L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L	L			L	L	L	
Lettuce	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	
Fennel, Florence	●	L	L	L		L	L	L	L	L	L	L	L	L	L						L	L	L	L	L							
Mustard	●	L			L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L				L			
Parsley	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L			L	L			
Rhubarb	●		L	L		L	L	L		L	L	L	L	L	L						L	L	L	L	L							
Spinach	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L	L			L			
<b>Onion &amp; Garlic</b>																																
Onion	●		L				L	L	L						L	L <sup>2</sup>					L						L	L	L	L	L	
Garlic	●		L				L	L	L	L	L				L						L						L	L	L	L		
<b>Root Crop</b>																																
Beet	●			L	L		L	L	L	L	L	L	L	L	L						L	L							L			
Carrot	●			L	L		L	L	L	L	L	L	L	L	L			L <sup>2</sup>			L	L					L	L	L			
Horseradish	●			L	L		L	L	L	L	L	L	L	L	L						L	L										
Parsnip	●			L	L		L	L	L	L	L	L	L	L	L						L	L					L					
Potato	●	L	L	L	L		L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	
Radish	●			L			L	L	L	L	L	L	L	L	L						L	L									L	
Sweet Potato	●	L	L	L			L	L	L	L	L	L	L	L	L						L	L	L	L	L	L	L	L	L	L	L	
Turnip	●			L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L				L	L		
<b>Solanaceous</b>																																
Eggplant	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L						L	L	L	L	L	L	L	L	L	L	L	L <sup>8</sup>
Pepper	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	L <sup>8</sup>
Tomato	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L			L			L	L	L	L	L	L	L	L	L	L	L	

\* Label changes may have occurred since printing.  
 See current labels for verification.  
<sup>1</sup> For seed crop only.  
<sup>2</sup> In certain states only.  
<sup>7</sup> 24c, 2ee or Supplemental label.

# FUNGICIDES LABELED FOR VEGETABLES\*

**L** LABELED

NOT LABELED

	Actigard 50WG	Aliette	Aprovia Top	Badge SC/Badge X2	Bio-Tam	Blocker 4F/Blocker 10G	Botran 75W	Bravo Ultrex/Weatherstik	Bravo ZN	Cabrio	Cannonball WG	Cannonball WP	Cercobin	Chloronil 720 /Praiz	Contans WG	Copper	Cuprofix Ultra 40 Dispers	Curzate 60DF	Dithane F-45 Rain shield	Endura	Evito 480SC	Flint	Fontelis	Fracture	Gavel 75 DF	Gem 500 SC/Flint Extra	Heritage	Indar 2F	Inspire Super
<b>Asparagus</b>	●	L		L	L			L			L								L		L					L			
<b>Cole (Brassica) Crop</b>																													
Broccoli	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L	L	L	L	L	L	L	L	L	L
Brussels Sprouts	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L	L	L	L	L	L	L	L	L	L
Cabbage	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L	L	L	L	L	L	L	L	L	L
Cauliflower	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L	L	L	L	L	L	L	L	L	L
<b>Cucurbits</b>																													
Cucumber	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Muskmelon	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>3</sup>	L	L	L	L	L	L	L	L	L	L
Pumpkin	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Squash	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Watermelon	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																													
Celery	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Chicory, red (radicchio)	●														L							L	L			L			
Collards	●	L	L	L	L	L <sup>6</sup>								L	L	L	L	L	L <sup>5</sup>						L	L	L	L	L
Endive	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>				L		L	L	L	L	L
Escarole	●			L																					L				
Kale	●	L	L	L	L	L <sup>6</sup>								L	L	L	L	L	L <sup>5</sup>			L			L	L	L	L	L
Lettuce	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L			L		L	L	L	L	L
Fennel, Florence	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Mustard	●	L	L	L	L	L <sup>6</sup>				L				L	L	L	L	L	L <sup>5</sup>			L			L	L	L	L	L
Parsley	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>			L	L		L	L	L	L	L
Rhubarb	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Spinach	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>			L			L	L	L	L	L
<b>Onion &amp; Garlic</b>																													
Onion	●	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L			L		L	L	L	L	L
Garlic	●			L	L <sup>7</sup>	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>Root Crop</b>																													
Beet	●			L	L					L				L	L	L	L	L	L <sup>5</sup>			L	L	L	L	L	L	L	L
Carrot	●			L	L		L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>	L		L	L	L	L	L	L	L	L
Horseradish	●			L										L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Parsnip	●			L			L	L	L	L	L	L	L	L	L	L	L	L	L <sup>5</sup>			L	L	L	L	L	L	L	L
Potato	●			L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Radish	●			L	L				L					L	L	L	L	L	L <sup>5</sup>			L	L	L	L	L	L	L	L
Sweet Potato	●		L				L							L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Turnip	●			L	L				L					L	L	L	L	L	L <sup>5</sup>			L	L	L	L	L	L	L	L
<b>Solanaceous</b>																													
Eggplant	●		L	L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Pepper	●		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Tomato	●	L	L	L	L	L <sup>7</sup>	L	L	L	L	L	L	L	L	L	L	L	L	L <sup>4</sup>	L	L	L	L	L	L	L	L	L	L

\* Label changes may have occurred since printing. See current labels for verification.

<sup>4</sup> 24c, 2ee or Supplemental label.

<sup>5</sup> Dithane F-45. 24c SLN crops grown for seed (lettuce also a crop on specimen label).

See label for specific seed crop diseases controlled. Expires December 31, 2019.

<sup>6</sup> Blocker use on collards, kale and mustard restricted to GA.

<sup>7</sup> Blocker 10G not labeled for garlic or tomato.

# FUNGICIDES LABELED FOR VEGETABLES\*

**L** LABELED  
**■** NOT LABELED

VEGETABLE WEEDS

	Kocide 3000	Koverall	Luna Experience	Luna Sensation	Luna Tranquility	Manikocide	Manzate Max	Mentor	Merivon	Mettle 125 ME	Microthiol Disperss	Mural	Omega 500F	Onset 3.6L	Orondis Gold 200	Orondis Gold B	Orondis Opti	Orondis Opti A, Opti B	Orondis Ultra A, Ultra B	Ph-D	Presidio	Previcour Flex	Previsto	Pristine	Priaxor	Procare 480SC	Quadris Opti	Quadris Top	Quash	Quilt/Quilt Xcel	
<b>Asparagus</b>	●						L				L		L																		
<b>Cole (Brassica) Crop</b>																															
Broccoli	●	L	L	L							L		L	L	L		L <sup>4</sup>	L	L			L	L			L <sup>4</sup>	L		L		
Brussels Sprouts	●	L		L									L	L	L		L <sup>4</sup>	L	L			L	L			L <sup>4</sup>	L		L		
Cabbage	●		L	L									L	L	L		L <sup>4</sup>	L	L			L	L			L <sup>4</sup>	L		L		
Cauliflower	●	L		L									L	L	L		L <sup>4</sup>	L	L			L	L			L <sup>4</sup>	L		L		
<b>Cucurbits</b>																															
Cucumber	●	L	L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Muskmelon	●	L	L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Pumpkin	●	L	L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Squash	●		L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Watermelon	●		L	L	L		L	L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																															
Celery	●	L		L					L		L		L									L	L						L		
Chicory, red (radicchio)	●				L				L		L											L									
Collards	●			L	L								L	L												L <sup>4</sup>	L		L	L <sup>6</sup>	
Endive	●	L		L					L		L		L	L	L				L			L					L				
Escarole	●			L																											
Kale	●	L		L	L								L	L								L				L <sup>4</sup>	L		L		
Lettuce	●	L	L		L			L		L			L	L	L	L			L			L	L	L			L				
Fennel, Florence	●			L				L		L			L									L									
Mustard	●			L	L								L	L								L	L			L <sup>4</sup>			L	L <sup>6</sup>	
Parsley	●	L		L	L				L						L	L			L			L					L				
Rhubarb	●			L					L		L											L									
Spinach	●	L		L					L		L				L	L			L			L									
<b>Onion &amp; Garlic</b>																															
Onion	●	L		L		L	L	L		L		L	L	L			L <sup>4</sup>	L	L	L	L	L	L		L			L	L		
Garlic	●	L		L		L	L	L		L		L	L	L			L <sup>4</sup>	L	L	L	L	L	L		L			L	L		
<b>Root Crop</b>																															
Beet	●	L			L				L				L									L									
Carrot	●	L			L				L		L		L	L									L					L	L		
Horseradish	●				L				L		L		L									L									
Parsnip	●				L						L											L									
Potato	●		L		L	L	L				L						L	L	L	L	L	L	L				L	L	L <sup>4</sup>		
Radish	●				L				L		L		L									L								L <sup>6</sup>	
Sweet Potato	●				L						L											L						L	L <sup>4</sup>		
Turnip	●				L				L		L											L	L								
<b>Solanaceous</b>																															
Eggplant	●	L			L					L		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Pepper	●	L	L		L					L	L	L	L				L					L	L	L	L	L	L	L	L	L	L
Tomato	●		L		L	L	L	L		L	L	L			L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

\* Label changes may have occurred since printing. See current labels for verification.  
<sup>4</sup> 24c, 2ee or Supplemental label.  
<sup>6</sup> Quilt only.

# FUNGICIDES LABELED FOR VEGETABLES\*

**L** LABELED\*

NOT LABELED

	Quintec	Rally 40WSP	Ranman	Reason 500 SC	Revus	Revus Top	Rhyme	Ridomil Gold SL	Ridomil Gold Bravo	Ridomil Gold Copper	Ridomil Gold GR	Ridomil Gold MZ WG	Rovral	Scala	Scholar SC	Serenade ASO	Switch 62.5 WG	Taegro ECO	Tanos	Tetran	Topguard EQ	Topaz/Tilt/Propimax	Topsin M WSB	Torino	Uniform	Vanguard WG	Voliam Flexi	Voliam Xpress	Zapro	Zing!
<b>Asparagus</b>									L							L				L										
<b>Cole (Brassica) Crop</b>																														
Broccoli				L	L		L	L	L				L			L	L			L	L								L	L
Brussels Sprouts				L	L		L	L	L							L	L			L	L								L	L
Cabbage				L	L		L	L	L							L	L			L	L								L	L
Cauliflower					L		L	L	L							L	L			L	L								L	L
<b>Cucurbits</b>																														
Cucumber			L	L	L		L	L	L	L		L				L	L	L	L	L	L		L	L	L		L	L	L	L
Muskmelon		L	L	L	L		L	L	L	L		L				L	L			L	L	L	L	L			L	L	L	L
Pumpkin	L	L	L	L	L		L	L	L	L		L				L	L			L	L	L	L	L	L			L	L	L
Squash	L	L	L	L	L		L	L	L	L		L				L	L	L	L	L	L		L	L	L			L	L	L
Watermelon	L	L	L	L	L		L	L	L	L		L				L	L	L	L	L	L		L	L	L			L	L	L
<b>Leafy Vegetable (incl. Brassica)</b>																														
Celery	L				L		L	L			L					L		L		L	L	L							L	
Chicory, red (radicchio)								L								L	L			L										
Collards					L		L	L								L	L			L	L				L		L		L	
Endive					L		L	L		L						L	L	L	L	L		L								
Escarole																L				L										
Kale					L	L	L	L								L	L			L	L				L				L	
Lettuce		L	L		L		L	L		L		L				L	L	L	L	L	L				L			L	L	
Fennel, Florence					L		L	L		L						L				L	L	L	L						L	
Mustard					L	L	L	L								L	L			L	L						L		L	
Parsley					L	L	L	L	L		L					L	L	L	L	L	L	L	L <sup>1</sup>			L			L	
Rhubarb					L	L	L	L		L						L				L	L	L	L			L			L	
Spinach			L	L	L		L	L	L	L						L		L		L	L	L			L				L	
<b>Onion &amp; Garlic</b>																														
Onion	L				L	L <sup>6</sup>		L	L	L		L	L	L		L	L		L	L		L	L		L	L		L	L	
Garlic	L				L			L	L	L		L	L	L		L	L			L		L		L	L		L	L	L	
<b>Root Crop</b>																														
Beet								L								L	L			L		L								
Carrot	L				L			L	L	L		L		L		L	L			L		L								
Horseradish								L								L	L			L										
Parsnip					L			L								L	L			L										
Potato			L	L		L		L	L	L		L	L	L		L			L	L							L	L	L	L
Radish								L		L						L	L			L					L					
Sweet Potato					L			L							L	L	L	L <sup>1</sup>		L					L			L		
Turnip					L			L								L	L			L					L					
<b>Solanaceous</b>																														
Eggplant				L	L	L		L	L							L				L	L								L	L
Pepper	L <sup>4</sup>	L	L	L	L		L	L	L	L						L			L	L	L	L						L	L	
Tomato	L <sup>4</sup>	L	L	L	L		L	L	L	L	L	L		L	L	L	L	L	L	L	L	L						L	L	L

\* Label changes may have occurred since printing. See current labels for verification.

<sup>1</sup> Tilt and Topaz only.

<sup>4</sup> 24C, 2ee or Supplemental label.

<sup>6</sup> Quilt only.

## FUMIGANT/NEMATICIDE

### METHYL BROMIDE

Primarily a plant bed treatment. Preplant treatment only. Generally applied as gas under gas-proof tarps. Expose soil to fumigation for 24 - 48 hours. Aerate soil and wait 2-14 days before planting. Follow manufacturer's directions. Approved for vegetable plant beds (production of transplants only) and preplant treatment of tomato acreage. Gives excellent control of severe root-knot nematode infested soil. Label uses have changed. See current labels.

### MOCAP; ETHOPROP (NON-FUMIGANT)

Soil treatment only. Registered for use on cabbage, cucumbers, lima beans, potatoes, snap beans sweet corn and sweet potatoes.

### SMDG; SODIUM METHYLDITHIOCARBAMATE (VAPAM, ETC.)

Preplant soil treatment only. Used alone or in water as a soil fumigant. May be applied by soil injection, through sprinkler system, in check or flood irrigation water. Also may be applied uniformly over soil surface with sprinkling can, hose proportioner, or sprayed and then watered in. Apply gas-proof plastic cover or use water seal. Aerate 5-7 days after application and allow an additional 7-14 days before planting; up to 30 days may be required if soil temperature below 60°F. Follow manufacturer's directions. Using 20 gal/A under plastic will give good control of heavily infested root-knot nematode soil.

### TELONE II; 1, 3 DICHLOROPROPENE AND CHLOROPICRIN

Soil treatment only. Registered for use on many vegetables. See current label.

## DISEASE AND NEMATODE CONTROL

### SOIL TREATMENTS

Seedling diseases, root diseases and vascular wilts caused by soilborne fungi and nematodes can be destructive problems in the field and greenhouse. In many cases, soil applied fumigants or nematicides can help prevent serious losses to soilborne disease when used in conjunction with long-term disease management practices. Soil fumigants have been tested on several Iowa vegetable crops, but unlike Illinois and Indiana, have not been consistently beneficial. For Iowa, crop rotation, particularly with field corn and soybeans, is very effective.

Soil fumigants are chemicals that, when injected into the soil, emit toxic fumes that penetrate air space in soil in sufficient concentration to kill microorganisms. They must be sealed into the soil with water or a plastic tarp to ensure that a lethal concentration and exposure time is reached. Because fumigants are harmful to all living plants, a period of 2 weeks to 2 months must be allowed between treatment and planting in order to avoid crop damage. Several non-fumigant nematicides are available for several vegetable crops. These generally are systemic compounds that also may provide good insect control.

A number of different factors affect the performance of these products, including soil temperature, soil moisture, soil tilth, organic matter, soil type, and time of application. Consult the product label for specific details on safe handling and application rates.

# ASPARAGUS WEED CONTROL

Seedbed and Early Establishment Herbicides		
Herbicide	Rate/Acre	Comments/Restrictions
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	Up to 24 fl oz or Up to 32 fl oz + 8.5-11.7 lb AMS/100 gal <sup>a</sup>	Apply prior to planting. Do not apply within 1 week before the first spears emerge. Spot treatment during season - apply immediately after cutting but prior to emergence of new spears. Do not treat more than 10% of total field to be harvested. Also labeled for postharvest applications. PHI 5 days. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DUAL MAGNUM</b>	1.33-2 pt	24c ME and WA (indemnified; exp. 12/2019).
<b>FUSILADE DX</b>	6-16 fl oz + 1 pt HSOC-COC <sup>1</sup> /100 gal	Apply POST to non-bearing crop only. Provides control of actively growing annual and perennial grass. See label for specific species and rate. Do not apply to grasses that have tillered, formed seed heads, or exceeded recommended growth stages. Do not apply to grasses which are drought stressed. Do not apply more than 48 fl oz/A/year to bearing asparagus. Do not apply more than 24 oz/A in a single application. Allow a minimum of 14 days between applications. Do not harvest asparagus sooner than 1 day after application.
<b>GRAMOXONE SL/SL 2.0</b>	2.5-4 pt + 1 pt NIS/100 gal	Apply for control of annual broadleaf weeds and grasses. Weeds should not exceed 6 inches in height. Apply before asparagus emerges. Seeding or transplanting should be done with a minimum of soil disturbance. May also be applied postharvest. PHI 6 days.
<b>LOROX DF</b>	2-4 lb: PRE 1-2 lb : POST	Apply PRE to direct seeded or newly planted crowns. Apply after planting seed 0.5 inches deep in coarse soils and 1 inch deep in fine soils and spraying a 1" band of activated charcoal on the soil surface directly over the row at the rate of 300 lb/A (equivalent to 15 lb/A of crop with 20" row spacing). Weed control may be reduced in soils with high organic matter (greater than 5%). Apply POST at 1-2 lb to 6-18" ferns and ≤ 4" weeds. For established beds use PRE at 2-4 lb; POST at 1-2 lb to ≤ 4" weeds. Apply before cutting season or immediately after cutting. Directed POST at 4 lb/A for dudain melon control. See label for details. PHI 1 day.
<b>POAST</b>	0.5-1.25 pt + 1 pt HSOC-COC <sup>1</sup>	Apply POST to actively growing annual or perennial grasses. See label for rates for specific weeds. Do not apply to asparagus within one day of harvest.
<b>REGLONE/DIQUAT 2L</b>	1.5-2 pt	Use as POST directed spray. Do not use plants for food for 1 year.
<b>ROUNDUP POWERMAX/ WEATHERMAX** or TOUCHDOWN TOTAL</b>	11-32 fl oz or 12-48 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply prior to crop emergence for control of emerged weeds. Do not apply within a week before the first spears emerge. See label for perennial rates. Spot treatment during season - apply immediately after cutting but prior to emergence of new spears. Do not treat more than 10% of total field to be harvested. Also postharvest label. PHI 5 days. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>SANDEA</b>	0.5-1.5 oz	Apply to nursery or transplanted crowns. Apply no sooner than 6 weeks after fern emergence on first-year transplants. PHI 1 day.
<b>SECTION THREE</b>	4-5.33 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 1 day.
<b>SELECT 2 EC/CLEANSE</b>	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Do not apply more than 8 fl oz/A in a single application. For repeat applications make on a minimum 14-day interval. PHI 1-day.
<b>SELECT MAX</b>	9-16 fl oz + 1 qt NIS/100 gal	Maximum 1 POST application. PHI 1 day.
<b>SOLICAM DF</b>	2.5-5 lb	PRE in MI and WA only. Apply in minimum of 20 gal water PRE. See label for tank mixes. PHI 14 days.

Established Planting Herbicides		
Herbicide	Rate/Acre	Comments/Restrictions
<b>CALLISTO/ INCINERATE</b>	3-7.7 fl oz	Broadcast or band in spring prior to spear emergence or post-harvest. Apply post-harvest as a directed spray to reduce contact with spears or ferns to avoid crop injury. Include NIS or COC with UAN/AMS if weeds are emerged.
<b>DEVIRINOL 50-DF</b>	8 lb	Apply either before harvest in early spring or during winter dormancy to weed-free soil. May be applied to established crop only. Rainfall or sprinkler irrigation or shallow mechanical incorporation immediately after application will enhance weed control.

\*May use other glyphosate herbicides: Roundup brands, Cornerstone brands, Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# ASPARAGUS WEED CONTROL

## Established Planting Herbicides (continued)

Herbicide	Rate/Acre	Comments/Restrictions
<b>DIMETRIC EXT/ METRICLUDE EXT</b>	1.33-2.67 lb	Apply one time per season or split treatment PRE and POST-harvest. PRE application can be made up to 14 days before harvest. POST application can be made after last harvest, but before emergence. Do not use on newly seeded asparagus nor on young plants during the first growing season after setting crowns. Do not exceed 2.67 lb/A in one crop season. See label for details.
<b>ENGENIA</b>	6.4-12.8 fl oz	May be applied immediately after cutting but at least 24 hours before next cutting. PHI 24 hours. To improve Canada thistle and field bindweed control, apply in combination with glyphosate or 2,4-D.
<b>KARMEX 80WP or DF</b>	1-2 lb: low organic matter soils 2-4 lb: high organic matter soils	Apply either one time within 4 weeks before spear emergence and no later than the early cutting period, or in split application with the second immediately before final harvest. If irrigated in WA, apply a single treatment of 4 lb per acre. Do not exceed 3 lb/A per application with split treatment.
<b>POAST</b>	0.5-1.25 pt + 1 pt HSOC-COC <sup>1</sup>	Apply POST to actively growing annual or perennial grasses. See label for specific weeds. PHI 1 day.
<b>ROUNDUP POWERMAX/ WEATHERMAX*</b>	11-32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply at least one week before spear emergence or after final harvest and removal of all spears, or until ferns develop and apply as directed or shielded application. Direct contact with the asparagus may result in serious crop injury. For specific rates and instruction for control of annual and perennial weeds, see label. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>RUGGED</b>	3-4 pt	Apply in spring on actively growing weeds before spears are present. If spears are present, treat after cutting using drop nozzles to avoid spraying the fern. PHI 3 days.
<b>SANDEA</b>	0.5-1.5 oz	Apply before or during harvest season. Apply post-harvest with NIS or COC; drop nozzles recommended to reduce crop injury. PHI 1 days.
<b>SECTION THREE</b>	4-5.33 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 1 day.
<b>SELECT 2 EC/CLEANSE</b>	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Do not apply more than 8 fl oz/A in a single application. For repeat applications make on a minimum 14-day interval. PHI 1-day.
<b>SELECT MAX</b>	9-16 fl oz + 1 qt NIS/100 gal	Maximum 1 POST application. PHI 1 day.
<b>SHREDDER E-99</b>	SEE 2,4-D	
<b>SOLICAM</b>	2.5-5 lb	For use PRE in WA and MI only. Apply in minimum of 20 gpa as a broadcast treatment. Solicam must be moved into weed seed zone within four weeks of application to be effective. Allow newly planted fields to be established for one season before use. See label for rotational crops. PHI 14 days.
<b>STERLING BLUE/CLARIFIER/ CLARITY or BANVEL/ DICAMBA MAX</b>	0.5-1 pt	Banvel is labeled only in CA, OR and WA. Apply POST to emerged and actively growing weeds in 40-60 gpa immediately after cutting the field, but at least 24 hours before the next cutting. If spray contacts emerged spears, crooking (twisting) of some spears may result. If such crooking occurs, discard affected spears.
<b>TRUST/TREFLAN HFP</b>	2-4 pt	Incorporate within 24 hr. Apply either total amount before first harvest or after final harvest, or use split treatments and apply half before first harvest and half after final harvest. Will provide control of some annual grasses and broadleaves. Use rates depend on soil type and OM. Refer to label for specific application rates.
<b>2,4-D AMINE 4</b>	3-4 pt	Apply to actively growing weeds before, during, or after the harvest season: April or May is preferable. If spears are present, apply after cutting to minimize injury. Use drop nozzles for postharvest spraying to avoid spray contact with ferns. PHI 3 days. Limit 2 applications per crop.

\*May use other glyphosate herbicides: Roundup brands, Cornerstone brands, Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.



# ASPARAGUS INSECT CONTROL

## Labeled Insecticides

INSECT*	INSECTICIDE												
	Arctic	Coragen	Declare	Dimate 4E/Dimethoate 4E	Dipel DF	Entrust SC	Fulfill	Lannate LV	Lambda-Cy Ag	Lorsban Advanced	Radiant SC	Sevin XLR Plus	Yuma 4E
Aphid			●	●			●		●				
Armyworm		●	●		●				●	●			●
Asparagus Aphid									●	●			●
Asparagus Beetle	●			●		●		●	●	●	●	●	●
Cutworm	●		●					●	●	●		●	●
Diamondback Moth													

\*Many other insects may be controlled, see label.

☀️ See Insecticide Resistance Management in the TECHNICAL INFORMATION section

## Insect Treatment Guidelines

Insecticide	Rate/Acre	PHI	Comments/Restrictions
<b>ARCTIC</b>	2-4 fl oz	1	Apply by ground equipment in enough water to obtain good coverage. Note 1.
<b>CORAGEN</b>	3-5 fl oz	1-3	Apply between bud formation and harvest in minimum 50-200 GPA (ground) or 10 GPA (air). Make no more than 4 applications/A/crop. Do not apply at <14 day intervals or >15.4 fl oz/A/crop.
<b>DECLARE</b>	1.02-1.54	7	Apply in min of 2 gal of water/A from air and min 7 gal of water/A from ground.
<b>DIMATE 4E</b>	1 pt	180	Do not use in CA or AZ.
<b>DIPEL DF</b>	0.5-2 lb	0	Bacillus thuringiensis insecticide. Apply in minimum of 20 gpa water by ground or 3 gpa by air. Repeat as necessary. Re-entry - when spray dries.
<b>ENTRUST SC</b>	4-6 fl oz	60	Apply only to ferns in sufficient water to obtain good coverage. Do not apply more than 18 fl oz of Entrust SC per acre per season. 2ee (exp. date not given) in various states for overhead sprinkler chemigation use.
<b>FULFILL</b>	2.75 oz	170	Apply only to ferns. Apply in sufficient water to ensure coverage. Use a penetrating surfactant for optimum results.
<b>LANNATE LV</b>	1.5-3 pt	1	
<b>LAMBDA-CY AG</b>	1.92-3.84	7	When applying by air, apply in a minimum of 2 gal of water/A.
<b>LORSBAN ADVANCED</b>	2 pt	1	Apply in sufficient water to obtain good coverage. Do not make more than one preharvest application per season. Do not make more than 2 post-harvest applications during the fern stage. Labeled in AZ, CA, ID, IN, IL, IA, KS, MI, MN, MO, NE, ND, OH, OR, SD, WA, and WI.
<b>RADIANT SC</b>	4-8 fl oz	60	Post-harvest for ferns only.
<b>SEVIN XLR PLUS</b>	1 qt or 2 qt (post harvest)	1	Lower rate for spears and ferns. Higher rate for ferns or brush growth following harvest. Do not apply >3 qt/A before harvest of spears. Do not apply >5 qt/A/year. Bee caution: Do not apply to target crops or weeds in bloom.
<b>YUMA 4E</b>	2 pt	1	Apply in sufficient water to obtain good coverage. Do not make more than one preharvest application per season. Do not make more than 2 post-harvest applications during the fern stage.

PHI – preharvest interval in days.

**Note 1:** See label for insecticide rate for each insect.

# ASPARAGUS DISEASE CONTROL

## Labeled Fungicides

ASPARAGUS	FUNGICIDE	Aliette WDG	Badge SC/Badge X2	Bravo Ultrex or Weather Stik	Chloronil 720/Praiz	Dithane F-45	Flint	Heritage	Manzate MAX/Pro-Stick or Penncozeb 75DF	Onset 3.6L	Penncozeb 75DF	Rally 40 WSP	Ridomil Gold SL	Tetraban
<b>DISEASE*</b>														
Cercospora Blight				●	●									
Cercospora Leaf Spot						●			●		●			
Crown Rot (Phytophthora sp.)		●											●	
Purple Spot				●	●		●	●						●
Rust		●	●	●	●	●			●	●	●	●		
Spear Rot													●	

☀ See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

\*Other diseases may be controlled, see label.

## Disease Treatment Guidelines

Fungicide	Rate/Acre	PHI	Comments/Restrictions
<b>ALIETTE WDG</b>	5 lb	110	Apply once per season. Apply to fully expanded ferns. Do not apply to ferns that are beginning to senesce. Thorough coverage is required. CA only. Maximum 7 applications/season.
<b>BADGE SC OR BADGE X2</b>	1-2.5 pt or 1-2.5 lb	0	Minimum retreatment interval 10 days. Add a spreader/sticker. Apply higher rates when conditions favor disease development.
<b>BRAVO ULTREX or WEATHER STIK</b>	1.8-3.6 lb or 2-4 pt	190	Apply on ferns after spears have been harvested. Repeat at 14-28 days. Do not exceed 9 lb a.i./season.
<b>CANNONBALL WG</b>	7 oz	7	Labeled for white and gray mold. Apply by ground only prior to onset of disease and repeat on 7-day interval. Maximum 28 oz/A. Do not apply more than 0.9 lb ai/A/season fludioxonil products.
<b>CANNONBALL WP</b>	7 oz	7	Labeled for white and gray mold. Apply by ground only. Maximum 28 oz/A. 24c MI (exp. 12/2018) label for Fusarium crown and root rot. Crown-dip prior to planting at 0.5 oz/100 gal in MI with 365 day PHI.
<b>CHLORONIL 720/PRAIZ</b>	2-4 pt	190	Begin application following the final harvest of spears. Repeat at 14-28 day intervals. Maximum 9 lb a.i./A/season. PHI 120 days in CA and AZ.
<b>DITHANE F-45</b>	1.6 qt	180	Start applications at first sign of disease and repeat at 10 day intervals. Apply only on asparagus ferns after spears have been harvested. Maximum 8 lb per acre per season. Do not apply more than 6.4 qt F-45 per acre per season. PHI 120 days in CA, AZ.
<b>FLINT</b>	3-4 oz	180	Begin application prior to disease development and continue at 14 day intervals. Maximum 2 sequential applications. Apply to fern stage. PHI in CA 90 days.
<b>HERITAGE</b>	3.27-7.84 fl oz	100	Can apply through chemigation. Apply prior to disease environment.
<b>MANZATE MAX OR MANZATE PRO-STICK</b>	1.6 qt or 2 lb	180	Start applications when rust threatens. Repeat every 10 days as needed. Apply only on ferns after spears have been harvested. Maximum 6.4 qt/A/season or 8 lb/A/season. PHI 120 days in CA and AZ.
<b>ONSET 3.6L</b>	4-6 fl oz	180	Use as a foliar spray on developing ferns after spear harvest is completed. Apply at earliest sign of rust pustules. Repeat on 14 day interval. PHI 100 days in CA. Maximum 3 applications or 18 fl oz/A/season.
<b>PENNCOZEB 75DF</b>	2 lb	180	Begin applications when rust first appears and repeat at 10 day intervals as needed. Use only on ferns after spears have been harvested. Maximum 8 lb per acre per season.
<b>RALLY 40 WSP</b>	5 oz	180	Do not apply to harvestable spears. Begin application to developing ferns after harvest. Maximum 6 applications or 30 oz/A/season. See label for CA PHIs.
<b>RIDOMIL GOLD SL</b>	0.5-1 pt	1	Apply in a minimum of 10 gpa. Cutting Beds: Apply 30-60 days before the first cutting. Apply again just before the beginning of harvest.
<b>TETRABAN</b>	6-15.5 fl oz	100	Apply by ground, air or irrigation prior to disease development, continue on 7- to 14-day schedule.

PHI – preharvest interval in days.

# COLE CROP WEED CONTROL

## Direct Seeded or Transplanted Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	B, BS, C, CL	1-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST, hooded or shielded sprayers only for broadleaf weeds in row middles. Do not allow spray to contact any part of plants. Do not spray if there is a chance for drift; keep sprayer travel speeds less than 5 mph. 0 day PHI when Aim is used alone. May be tankmixed with other herbicides, such as Poast or Section Three/Select 2 EC/Cleanse to broaden weed spectrum controlled.
<b>COMMAND 3ME</b>	C	0.67 pt: direct seeded 0.67-1.3 pt: transplant	PPI, PRE. Controls annual broadleaves and grasses. Apply before planting and incorporate immediately to 1" 45 day PHI.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	B, BS, C, CL	Up to 24 fl oz or Up to 32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	PP, PRE, POSTD. Apply prior to planting, preemergence, at-planting, or through directed application postemergence. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DACTHAL W-75</b>	B, BS, C, CL	6-14 lb	Apply at seeding or transplanting prior to weed seed germination. Can be incorporated.
<b>DEVIRINOL 50-DF</b>	B, BS, C, CL	2 lb	PPI or PRE inc. Controls annual grasses and some broadleaves. Apply before seeding or transplanting and incorporate 1-2 inches. May be applied after planting. Irrigate within 24 hours and soak soil 2-4 inches. Most effective in combination with Goal.
<b>DUAL MAGNUM</b>	B, C	0.5-1.33 pt	24c ME (indemnified; exp. 12/2019) and TX (indemnified; exp. 12/2018) for cabbage; TN (indemnified; exp. 12/2021) for broccoli; OR (indemnified; exp. 12/2020) for transplanted cabbage; OH (indemnified; exp. 12/2021) for broccoli (raab) and transplanted cabbage.
<b>FUSILADE DX</b>	C	12-16 fl oz	24c for grassy weeds in cabbage grown for seed: WA (exp. 12/2020); 12-16 fl oz/A, do not apply >32 fl oz/A/year.
<b>GOAL 2XL</b>	B, C, CL	1-2 pt	PP. Transplanted Only: Controls germinating broadleaves. Apply to soil after final tillage but before transplanting. Do not use on direct seeded cole crops. Use low rate on coarse, sandy soil. If plants contact treated soil, some foliar burn may occur, but plants generally outgrow the symptoms rapidly. Do not use on brussels sprouts. A wider spectrum of weed control will be obtained if Goal is used with a PPI application of trifluralin or a post-transplant application of Devrinol 50-DF.
<b>GOALTENDER</b>	B, C, CL	0.5-1 pt	PP. Transplanted Only: Controls germinating broadleaves. Apply to soil after final tillage before transplanting. Do not use on direct seeded cole crops. Use low rate on coarse, sandy soil. If plants contact treated soil, some foliar burn may occur, but plants generally outgrow the symptoms. Do not use on brussels sprouts. 24c for POST at 4-6 fl oz/A. AZ, NJ, NY, PA, TX (exp. date not given), DE (exp. 3/2023), MI (5/2019) in B, C, CL; ME (exp. 12/2021) in B; CA (exp. date not given) in B, C.
<b>GRAMOXONE SL/SL 2.0</b>	B, C, CL	2-4 pt + 1 pt NIS/100 gal	Apply before transplanting or before/after seeding, but before crop emergence. Supplemental label FL, OH (exp. date not given) for SL 2.0 for directed spray in cabbage.
<b>POAST</b>	B, BS, C, CL	1-1.5 pt + 1 pt HSOC-COC <sup>1</sup>	POST. Controls emerged grasses. Apply to actively growing grasses. Use high rate on perennial grasses. Maximum of 3 pt per acre. 30 day PHI.
<b>PREFAR 4E</b>	B, BS, C, CL	5-6 qt	PRE. Controls annual broadleaves and grasses. Apply before seeding and incorporate 1-2 inches. Apply PRE and irrigate with one inch of water.
<b>ROUNDUP POWERMAX/ WEATHERMAX**</b>	B, BS, C, CL	11-32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Controls emerged annuals. Apply to emerged perennials before planting in the spring or after harvest in the fall. Check label for best time of year, stage of growth, and rate for each problem perennial weed. Allow 7 or more days before tilling. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>SELECT 2 EC/CLEANSE</b>	B, BS, C, CL	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST to actively growing grasses. PHI 30 days.
<b>SELECT MAX</b>	B, BS, C, CL	9-16 fl oz 1 pt NIS/100 gal	Do not apply >16 fl oz/A in a single application or >64 fl oz/A/season. For repeat applications make on a minimum 14 day interval.
<b>SPARTAN CHARGE</b>	C	2.9-15.2 fl oz	Use in transplanted cabbage only. Apply PP 60 days prior to planting up to planting. May be applied PPI in spring prior to transplanting. Do not incorporate more than 2" deep.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

\*\*May use other glyphosate herbicides: Roundup brands, Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# COLE CROP WEED CONTROL

## Direct Seeded or Transplanted Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>STINGER</b>	B, BS, C, CL	0.25-0.5 pt	POST. For AR, AZ, CA, CO, CT, DE, FL, GA, MA, MD, ME, MI, MO, NJ, NH, NM, NY, NC, OH, OK, PA, RI, SC, TX, VA, VT, WI, and WV. Controls wild buckwheat, chamomile, clover, cocklebur, dandelion, galinsoga, prickly lettuce, pineappleweed, ragweed, smartweed; suppresses annual sowthistle and Canada thistle at 0.33-0.5 pt/A. Make 1-2 broadcast applications per crop year not to exceed 0.5 pt/acre per year (max. 0.66 pt/A in NY or CA). PHI 30 days. Refer to for important crop rotational interval restrictions in sensitive crops.
<b>TRUST/TREFLAN HFP</b>	B, BS, C, CL	1-2 pt	Apply before seeding or transplanting. Use 1-1.5 pt on direct-seeded crops. Incorporate 2-3 inches soon after spraying. Use rates depend on soil type and OM. Refer to label for specific application rates. Not effective on muck soils. Controls annual grasses and some broadleaves. May stunt transplanted crops or delay emergence of seeded crops when soil temperature is below 60°F.
<b>VIDA</b>	B, BS, C, CL	0.5-2 fl oz	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

\*\*May use other glyphosate herbicides: Roundup brands, Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# COLE CROP INSECT CONTROL

## Labeled Insecticides

INSECT*	INSECTICIDE	Actara	Admire Pro	Advise Four	Agree WG	Arctic	Asana XL	Assail 70WP/30SG	Avaunt	Battery 2.5EC	Baythroid XL	Belay	Beleaf	Besiege	Bracket 97/Orthene 97	Brigadier	Capture LFR	Certador	Closer SC	Cobalt Advanced	Confirm 2E	Coragen	Danitol 2.4 EC	Declare	Diazinon AG500	Dimate 4E	Dipel DF	Durivo	Endigo ZC	Entrust SC	Exirel	Fastac EC/Fastac CS	Fulfill	Grizzly Too	
Cabbage Aphid		●	●	●				●		S		●	●	S		●		S	●	●				S	●	●	●				●		●	S	
Cabbage Looper				●		●	●	●	●	●	●			●	●	●				●	●	●	●	S	●	●	●	●	●	●	●	●	●	●	●
Cabbage Maggot																	●																		
Diamondback Moth						●		S	●		●			●	●	●							●	●	●	●	●	●	●	●	●	●	●	●	●
Flea Beetle		●	● <sup>3</sup>	● <sup>3</sup>		● <sup>1</sup>	●				●	●	●	●	●	●	S	●							●	●	●	●	●	S	●	●	●	●	●
Imported Cabbageworm						●	●		●	●	●	●	●	●	●	●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stink Bug										●	●	● <sup>3</sup>		●	●	●		●						●					●	●	●	●	●	●	●
Thrips		●	● <sup>4</sup>			● <sup>2</sup>		●		●	●	● <sup>4</sup>		S		●			S					S			●	S	●	S	●	●	●	S	

## Labeled Insecticides (continued)

INSECT*	INSECTICIDE	Hero	Intrepid 2F	Lambda-Cy Ag	Lannate LV	Leverage 360	Lorsban Advanced	Malathion 8 Flowable	Movement/Movement HL	MSR	Mustang Maxx	Oberon 25C	Paradigm	Platinum	Platinum 75 SG	Proclaim	Radiant SC	Sequoia	Sevin XLR Plus	Sivanto prime	Stallion Brand	Steed	Tundra/Bifen 2 AG Gold/Brigade 2EC	Venom 70SG	Verimark	Voliam Flexi	Voliam Xpress	Warrior II	Xentari	Yuma 4E					
Cabbage Aphid		●		S		●		●	●	●	S		S	●	●			●		●	●	●	●	S	●	●	●	S		●					
Cabbage Looper		●	●	●	●	●	●	●			●		●			●	●				●	●	●	●	●	●	●	●	●	●	●	●	●		
Cabbage Maggot							●																												
Diamondback Moth		●	S	●	●				S		●		●			●	●					●	●	●	●	●	●	●	●	●	●	●	●	●	
Flea Beetle		●	●	●	●	●	●	●			●		●		●							●	●	●	●	●	●	●	●	●	●	●	●	●	●
Imported Cabbageworm		●	●	●	●	●	●	●			●	●	●			●	●					●	●	●	●	●	●	●	●	●	●	●	●	●	●
Stink Bug		●		●							●	●	●									●	●	●	●	●	●	●	●	●	●	●	●	●	●
Thrips		●	S		●				S	● <sup>1</sup>	●	S	●	●	●	●	●	S			S		●	●	S	●	S	S	S	●	●	●	●	●	

S – Suppression. \* Many other insects may be controlled, see label.

<sup>1</sup> Cabbage only <sup>2</sup> Broccoli, Brussels Sprouts, and Cauliflower <sup>3</sup> Foliar only <sup>4</sup> Soil applied only

☀️ – See Insecticide Resistance Management in the TECHNICAL INFORMATION section.

## Insect Management Thresholds

<b>APHIDS</b>	<b>Broccoli and Cauliflower:</b> Treat if more than 100 aphids/plant before heading or 5/plant after heading. <b>Cabbage:</b> Treat when 1-2% of plants are infested.		
<b>NEMATODES</b>	<b>Broccoli, Brussel Sprouts, Cabbage, Cauliflower:</b> Apply Mocap or comparable products.		
<b>THRIPS</b>	Plant resistant cabbage varieties.		
<b>CATERPILLARS, LOOPERS</b>	See table below.		
	<b>Crop</b>	<b>Growth Stage</b>	<b>Threshold (% infestation)</b>
	<b>Cabbage</b>	Seedbed	10%
		Transplant to cupping	30%
		Cupping to early head	20%
		Mature head	10%
	<b>Broccoli</b>	Seedbed	10%
		Transplant to first flower	50%
		Flower bud to harvest	10%
	<b>Cauliflower</b>	Seedbed	10%
		Transplant to first curd	50%
		Curd present	10%

## Insect Treatment Guidelines

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTARA</b>	B, BS, C, CL	1.5-5.5 fl oz	0	Note 1.
<b>ADMIRE PRO</b>	B, BS, C, CL	4.4-10.5 fl oz	7, 21	See label for soil application instructions. Use 1.3 fl oz/A for foliar. PHI 7 days foliar.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

# COLE CROP INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ADVISE FOUR</b>	B, BS, C, CL	5-12 fl oz: soil 1.5 fl oz: foliar	7, 21	See label for soil application instructions. PHI 7 days foliar. Cabbage foliar only.
<b>AGREE WG</b>	B, BS, C, CL	0.5-2 lb	0	
<b>ARCTIC</b>	B, BS, C, CL	2-4 fl oz 2-8 fl oz	1	Note 1.
<b>ASANA XL</b>	B, C, CL	2.9-9.6 fl oz	3	Repeat as needed for control. Do not exceed 0.4 lb a.i./A/season. Note 1.
<b>ASSAIL 70WP/30SG</b>	B, BS, C, CL	0.8-1.7/2-4 oz	7	Aphids may differ in susceptibility. Do not exceed 5 applications or 8.5/20 oz/A per crop. Note 1.
<b>AVAUNT</b>	B, BS, C, CL	2.5-3.5 fl oz	3	Add a wetting agent to improve coverage. Note 1.
<b>BATTERY 2.SEC</b>	B, BS, C, CL	2.5-5 fl oz	1	Use a minimum of 5 GPA by air or 15 GPA by ground. Do not apply less than 7 day intervals. Note 1.
<b>BAYTHROID XL</b>	B, BS, C, CL	0.8-3.2 fl oz	0	Use a minimum of 5 GPA by air or 10 GPA by ground. Apply at 7 day intervals. Note 1.
<b>BELAY</b>	B, BS, C, CL	9-12 fl oz: soil 3-4 fl oz: foliar	21	See label for soil application instructions.
<b>BELEAF 50SG</b>	B, BS, C, CL	2-2.8 oz	0	Note 1.
<b>BESIEGE</b>	B, BS, C, CL	5-9 fl oz	3	Maximum 31 fl oz/A or 0.24 lb a.i./A/year lambda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day minimum application interval.
<b>BRACKET 97/ORTHENE 97</b>	BS, CL	0.5-1 lb	14	Do not apply more than 2.125 lb/A per season. Note 1.
<b>BRIGADIER</b>	B, BS, C, CL	3.8-6.1 fl oz	7	Note 1.
<b>CAPTURE LFR</b>	B, BS, C, CL	3.4 to 6.8 oz		Apply either In-Furrow or T-Band at transplanting/setting. May be tankmixed with liquid fertilizers and amendments.
<b>CERTADOR</b>	B, BS, C, CL	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21, 1	Use only one application method. Apply as foliar when pests appear, as needed but not more than every 7 days. See label for row spacing rates.
<b>CLOSER SC</b>	B, BS, C, CL	1.5-5.75 fl oz	3	Do not make more than 4 applications/crop, 2 consecutively, or <7 days apart, and more than 17 fl oz/A/season. Do not apply anytime 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 feet out from the downwind edge of the field, a downwind 12-ft on-field buffer must be observed. Note 1.
<b>COBALT ADVANCED</b>	BS	11-38 fl oz	21	Note 1.
<b>CONFIRM 2E</b>	B, BS, C, CL	6-8 FL OZ	7	Rate dependent on target pest; see label. 10- to 14-day application interval.
<b>CORAGEN</b>	B, BS, C, CL	3.5-5 fl oz	3	At-planting or foliar. Include an adjuvant. Do not exceed 15.4 fl oz/A/crop.
<b>DANITOL</b>	B, BS, C, CL	10.67-16 fl oz	7	Do not exceed 2.67 pt/A per season.
<b>DIAZINON AG500</b>	B, BS, C, CL	1-4 pt	7	Note 1.
<b>DECLARE</b>	B, BS, C, CL	0.77-1.28 fl oz	1	Apply in a minimum of 2 gal/A by air or 10 gal/A by ground. Note 1.
<b>DIMATE 4E</b>	B, C, BS	0.5-1 pt 1-2 pt	7, 10	Brussels sprouts in CA only. PHI 10 days brussels sprouts.
<b>DIPEL DF</b>	B, BS, C, CL	0.25-2 lb	0	Bt insecticide. Note 1.
<b>DURIVO</b>	B, BS, C, CL	10-13 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Maximum 1 soil application/season.
<b>ENDIGO ZC</b>	B, BS, C, CL	4-4.5 fl oz	1	Note 1.
<b>ENTRUST SC</b>	B, BS, C, CL	0.5-3 fl oz/1.5-10 fl oz	1	Do not make applications less than 4 days apart. Do not make more than six application per calendar year. Do not apply more than 9 oz/29 fl oz per acre per season. 2ee (exp. date not given) in various states for overhead sprinkler chemigation .

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

# COLE CROP INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>EXIREL</b>	B, BS, C, CL	7-20.5 fl oz	1	Apply foliar with an effective adjuvant. Do not apply sooner than every 5 days. Do not apply more than 0.4 lb a.i./A cyantranilprole/crop/season. A pH of 4-6 is recommended. Note 1.
<b>FASTAC EC/FASTAC CS</b>	B, BS, C, CL	2.2-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply more than 11.4 fl oz/A/season. Minimum 15 GPA ground and 5 GPA air.
<b>FULFILL</b>	B, BS, C, CL	2.75 oz	7	Do not exceed 5.5 oz/A/season. Allow ≥ 7 days between applications. 24c for BS,C,CL grown for seed in WA (exp. 12/2020).
<b>GRIZZLY TOO</b>	B, BS, C, CL	0.96-1.92 fl oz	1	Do not apply more than 0.96 pt/A/season. Note 1.
<b>HERO</b>	B, BS, C, CL	4-10.3 fl oz	7	Note 1.
<b>INTREPID 2F</b>	B, BS, C, CL	4-10 fl oz	1	Use 4-8 oz/A for early season applications only and 8-10 oz/A for mid- to late-season applications or for heavy infestations or applications when coverage is difficult. Do not exceed 64 fl oz/A per season. Note 1.
<b>LAMBDA-CY AG</b>	B, BS, C, CL	1.92-3.84	1	Apply in a minimum of 2 gal/A by air.
<b>LANNATE LV</b>	B, C, CL BS	0.75-3 pt 1.5-3 pt	1,3	PHI is 1 day for cabbage and 3 days for other crops. Note 1.
<b>LEVERAGE 360</b>	B, BS, C, CL	3 fl oz	7	Maximum 12.8 fl oz/A/season. Minimum 1 week between applications. 2ee AZ, CA, WA (exp. date not given) for use on cabbage maggot, garden symphylan, and seed corn maggot.
<b>LORSBAN ADVANCED</b>	B, C BS CL	1.2-2.75 fl oz/1000' row 1.6-2.75 fl oz/1000' row 1.6-2.4 fl oz/1000' row	30	For direct seeded crops, apply as 4" band over row at planting. For transplants direct at base. Also labeled for foliar use at 4-4.5 pt/A. Do not apply more than once per season. For control of cabbage aphid in broccoli and cabbage, apply 1.2 fl oz/1000' row (or 2.4 fl oz/1000' double row plantings) in water or with liquid fertilizer injected as a sidedress on each side of the row into established plantings. Preplant Incorporation Application for Direct Seeded or transplanted crops use at 4-5.5 pt/A. Note 1.
<b>MALATHION 8 FLOWABLE</b>	B, BS, C, CL	1.25 PT	2,7	Maximum number of applications/year is 2 for B,BS,CL, 6 for C. PHI 2 days for C.
<b>MOVENTO/MOVENTO HL</b>	B, BS, C, CL	4-5 fl oz/1.5-2.5 fl oz	1	Maximum 10 fl oz/A/season Movento, 5 fl oz/A/season Movento HL. Add a spreading/penetrating adjuvant known to be safe to the target crop. Suppression of onion thrips and diamondback moth.
<b>MSR</b>	B, BS, CL C	1.5-2 pt 1.5-3 pt	7,10	PHI 7 days for broccoli, cabbage and cauliflower and 10 days for brussels sprouts. Do not apply more than 3 times per season. Note 1.
<b>MUSTANG MAXX</b>	B, BS, C, CL	2.24-4 fl oz	1	Note 1.
<b>OBERON 2SC</b>	B, BS, C, CL	7-8.5 fl oz	7	White fly control.
<b>PARADIGM</b>	B, BS, C, CL	1.92-3.84 fl oz	7	Do not apply more than 1.92 pt/A/season. Note 1.
<b>PLATINUM</b>	B, BS, C, CL	5-11 fl oz	30	Soil application.
<b>PLATINUM 75 SG</b>	B, BS, C, CL	1.66-3.67 oz	30	Apply in-furrow, drench, drip, or shanked (See label). Do not exceed 3.67 oz/A/season.
<b>PROCLAIM</b>	B, BS, C, CL	2.4-4.8 oz	7	Apply when larvae are first observed and repeat application as necessary to maintain control. See label for other labeled brassica vegetables. Note 1.
<b>RADIANT SC</b>	B, BS, C, CL	5-10 fl oz	1	Does not include yellow- or western-striped armyworms. Note 1.
<b>REQUIEM EC</b>	B, BS, C, CL	2-4 qt	0	For whiteflies, apply before damaging levels and repeat as needed. Note 1.
<b>SEQUOIA</b>	B, BS, C, CL	1.5-5.75 fl oz	3	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. Do not apply any time 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 ft out from the downwind edge of the field, a downwind 12 ft on field buffer must be observed. 24c CA (exp. 3/2022) for control or suppression of foxglove and lettuce aphid. Note 1.
<b>SEVIN XLR PLUS</b>	B, BS, C, CL	0.5-2 qt	3, 14	Do not apply more than 4 times per crop. Do not apply more than 6 qt/A/year. PHI 14 days for Chinese cabbage. Apply within 30 days of crop emergence or transplanting. Bee caution: Do not apply to target crops or weeds in bloom. Note 1.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

# COLE CROP INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>SIVANTO PRIME</b>	B, BS, C, CL	7-14 fl oz	1	Foliar: Rate is pest-dependent, 7 day minimum application interval. Ground minimum 10 GPA, air minimum 2 GPA.
<b>STALLION BRAND</b>	BS	6.5-11.75 fl oz	21	Note 1.
<b>STEED</b>	B, BS, C, CL	3.5-4.7 fl oz	7	Apply in minimum 5 GPA (air) or 15 GPA (ground). Do not make applications <7 days apart or >28.1 fl oz/A/season. Note 1.
<b>TRIGARD</b>	B, BC, C, CL	2.66 fl oz	7	Leaf miner control. No more than 6 applications/crop. Maximum of 1 lb/A/season.
<b>TUNDRA/BIFEN 2 AG GOLD/BRIGADE 2EC</b>	B, BS, C, CL	2.1-6.4 fl oz	7	Note 1.
<b>VENOM 70SG</b>	B, BS, C, CL	3-4 oz	1, 21	PHI 21 days for soil application. May use 5-6 oz/A soil applied. Note 1.
<b>VERIMARK</b>	B, BS, C, CL	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. Do not apply more than 13.5 fl oz at planting. Do not apply more than 0.4 lb ai cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>VOLIAM FLEXI</b>	B, BS, C, CL	4-7 oz	3	Maximum 14 oz/A/season. See for most states (exp. date not given) label for brown marmorated stink bug at 6-7 oz/A/application.
<b>VOLIAM XPRESS</b>	B, BS, C, CL	5-9 fl oz	3	Maximum 31 oz/A/season. Note 1.
<b>WARRIOR II</b>	B, BS, C, CL	0.96-1.92 fl oz	1	Do not apply more than 0.96 pt/A per season. Note 1.
<b>XENTARI</b>	B, BS, C, CL	0.5-2 lb	0	Bt insecticide. Note 1.
<b>YUMA 4E</b>	B, C BS CL	1.2-2.75 fl oz/1000' row 1.6-2.75 fl oz/1000' row 1.6-2.4 fl oz/1000' row	30	For direct seeded crops, apply as 4" band over row at planting. For transplants direct at base. Also labeled for foliar on brussel sprouts at 1-2 pt/A. Do not apply more than once per season. Note 1.

PHI – preharvest interval in days.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

**Note 1:** See label for insecticide rate for each insect.



# COLE CROP DISEASE CONTROL

## Labeled Fungicides

COLE CROP	FUNGICIDE																																
DISEASE*	Actigard 50WG	Aliette WDG	Badge SC/Badge X2	Bravo Ultrex/Weather Stik	Bio-Tam	Blocker 4F	Blocker 10G	Cabrio	Chloronil 720/Praiz	Contans WG	Cuprofix Ultra 40 Dispers <sup>1</sup>	Dithane F-45	Endura	Fontelis	Gem 500 SC/Flint Extra	Inspire Super	Kocide 3000	Manzate Pro-Stick	Luana Experience	Luana Sensation	Orondis Optri	Orondis Opti A, Ultra A, Ultra B	Orondis Opti B	Presidio	Previsto	Priaxor	Procure 480 SC	Quadris Top	Reason 500SC	Revus	Rhyme 2.08 SC		
Alternaria Blight													●	●		●			●														
Alternaria Leaf Spot			●	●				●	●		●	● <sup>3</sup>		●	●	●	●	●		●	●		●				●	●	●	●		●	
Anthracnose								●								●										●		●					
Basal Stem Rot																																	
Black Leg								●																			●						
Black Rot	S		●			●					●					●										●							
Cercospora Leaf Spot								●				● <sup>3</sup>				●				●	●						●		●	S		●	
Damping Off																									●								
Downy Mildew	●	●	●	●				●	●		●	● <sup>3</sup>	●			●	●			S		●	●	●	●	●	S			●	●		
Fusarium					●																												
Gray Mold													●	●		●				●	●												
Phytophthora					●																			●									
Powdery Mildew								●					S	●	●	●				●	●						●	●	●			●	
Pythium					●																							●	●	●			
Rhizoctonia					●																												
Rhizoctonia Blight								●																				●					
Rhizoctonia Bottom Rot							●						●							S													
Rust																																	
Sclerotinia Stem Rot					●				●			●	●							●	●												
White Leaf Spot								●																			●						
White Rust								●																		●			●				

SO- Soil application.



See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

S - Suppression

\*Other diseases may be controlled, see label.

<sup>1</sup>Copper sulfate. <sup>3</sup>See 24c for OR and WA crops grown for seed.

# COLE CROP DISEASE CONTROL

## Labeled Fungicides

DISEASE*	FUNGICIDE	Ridomil Gold SL	Rovral 4	Serenade ASO	Switch 62.5WG	Tetraban/ Heritage	Tilt	Topguard EQ	Zampro
Alternaria Blight					●				
Alternaria Leaf Spot				●	●	●			
Anthracnose									
Basal Stem Rot		SO							
Black Leg			●						
Black Rot									
Cercospora Leaf Spot					S		●	●	
Damping Off		SO							
Downy Mildew		●	●	●	●			●	
Fusarium									
Gray Mold				●					
Phytophthora									
Powdery Mildew			●	●	●	●	●		
Pythium		SO							
Rhizoctonia			●						
Rhizoctonia Blight									
Rhizoctonia Bottom Rot									
Rust									
Sclerotinia Stem Rot									
White Leaf Spot									
White Rust							●		

SO- Soil application.



See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

S - Suppression

\*Other diseases may be controlled, see label.

<sup>1</sup>Copper sulfate. <sup>3</sup>See 24c for OR and WA crops grown for seed.

## Disease Management Guidelines

Disease	Labeled Crops*	Comments/Restrictions
<b>ALTERNARIA LEAF SPOT AND DOWNY MILDEW</b>	B, BS, C, CL	Use fungicides containing chlorothalonil, fluopicolide, maneb, mefenoxam/chlorothalonil or copper.
<b>BLACK ROT AND BLACK LEG</b>	B, BS, C, CL	Use western grown seed and hot water treatment. Careful handling, sanitation, crop rotation and resistant varieties are recommended. Use fungicides containing iprodione or chlorothalonil.
<b>CLUBROOT</b>	B, BS, C, CL	Apply PCNB in transplant water or as a band or broadcast at planting.
<b>INTERNAL TIPBURN</b>	B, BS, C, CL	Plant resistant cultivars and avoid excess N fertilization.
<b>SEED ROT</b>	B, BS, C, CL	Maintain disease-free beds and use sanitation measures.
<b>WIRESTEM (RHIZOCTONIA)</b>	B, BS, C, CL	Use PCNB as a broadcast drench.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

# COLE CROP DISEASE CONTROL

## Disease Treatment Guidelines

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTIGARD 50WG</b>	B, BS, C, CL	0.5-1 oz	7	Apply preventatively, up to 4 applications on a 7 day schedule. Begin 7-10 days after thinning. Maximum 4 oz/A/year.
<b>ALIETTE WDG</b>	B, BS, C, CL	2-5 lb	3	Apply when conditions favor disease development and continue on 7-21 day intervals. Maximum 7 applications/season.
<b>BIO-TAM</b>	B, BS, C, CL	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
<b>BADGE SC OR BADGE X2</b>	B, BS, C, CL	0.5-1.8 pt or 0.5-1.8 lb	0	Apply at 7- to 10-day intervals. Begin after transplants are set in the field or shortly after emergence. The addition of spreader/sticker may enhance spray deposition. Reddening of older leaves may occur on B and flecking of wrapper leaves may occur on C.
<b>BLOCKER 4F</b>	B, BS, C, CL	3 pt/100 gal (transplant) up to 5.62 gal (band, broadcast, drench)	–	See label for specific crop diseases and associated transplant, band, broadcast and drench application rates and instructions. Do not exceed 22.5 lb a.i./A in any one season.
<b>BLOCKER 10G</b>	B, BS, C, CL	3.4-5.15 lb/1000' row 225 lb/A	–	See label for specific crop diseases and associated rates and instructions. Apply and roto-till (pre-transplant band) or disc (broadcast) granules to specific depths based on crop and disease. See label. Do not exceed 22.5 lb a.i./A in any one season.
<b>BRAVO ULTREX/ WEATHER STIK</b>	B, BS, C, CL	1.4 lb or 1.5 pt	7	Begin after transplants are set or shortly after emergence of field-seeded. Repeat at 7-10 day intervals. Do not apply more than 12 lb a.i./season. See label for ring spot in CA.
<b>CABRIO</b>	B, BS, C, CL	12-16 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Maximum 2 applications/season.
<b>CHLORONIL 720/PRAIZ</b>	B, BS, C, CL	1.5 pt	7	Begin after transplants are set or shortly after emergence of field-seeded. Repeat at 7-10 day intervals. See label for ring spot in CA. Do not apply more than 12 lb a.i./season.
<b>CONTANS WG</b>	B, BS, C, CL	1-4 lb	0	Apply prior to disease infection.
<b>CUPROFIX ULTRA 40 DISPERS</b>	B, BS, C, CL	0.75-1.25 lb	–	Begin after transplants are set or emergence of field-seeded crop and continue on a 7-10 day interval. Broccoli or cabbage may show injury.
<b>DITHANE F-45</b>	B, BS, C, CL	1.2-1.6 qt	7	24c in OR (exp. 12/2019) and WA (exp. 12/2018) for BS,C,CL grown for seed 1.5 qt/A.
<b>ENDURA</b>	B, BS, C, CL	6-9 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Maximum 2 applications/season.
<b>FONTELIS</b>	B, BS, C, CL	14-30 fl oz	0	Begin applications prior to disease development and continue on 7-14 day schedule. Maximum 2 sequential applications between switching to different mode of action. Maximum 72 fl oz/A/year. Use 16-30 fl oz for control of Sclerotinia stem rot.
<b>GEM 500 SC/FLINT EXTRA</b>	B, BS, C, CL	3-3.8 fl oz	0	Apply on a 5- to 10-day interval if needed. Maximum 7.6 fl oz/A/year.
<b>HERITAGE</b>	B, BS, C, CL	3.48 - 7.84 fl oz	0	Application may be foliar or chemigation. Use a minimum of 10 gallons per acre of water.
<b>INSPIRE SUPER</b>	B, BS, C, CL	16-20 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 80 fl oz/A/season.
<b>KOCIDE 3000</b>	B, BS, C, CL	0.5-0.75 lb	–	Begin application after transplants have been set in the ground or shortly after emergence of field seeded crops. Apply at 7-10 day intervals or as needed.
<b>LUNA EXPERIENCE</b>	B, BS, C, CL	6-8.6 fl oz	7	Apply using ground, aerial or chemigation. Apply on a 7-14 day interval. When disease pressure is severe, use the higher rates and/or shorter intervals.
<b>LUNA SENSATION</b>	B, BS, C, CL	5-7.6 fl oz	0	Apply using ground, aerial or chemigation. Apply on a 7-14 day interval. When disease pressure is severe, use the higher rates and/or shorter intervals. Do not make more than 2 applications per year.

PHI- preharvest interval in days.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

**Note 1:** See label for fungicide rate for each disease.

# COLE CROP DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>MANZATE PRO-STICK</b>	B, C	1.6-2.1 lb	7	Apply prior to disease development and repeat on 7-10 day intervals. Maximum 12.8 lb/A/season.
<b>OMEGA 500F</b>	B, BS, C, CL	6.45 fl oz/ 100 gal (transplant) 2.6 pt (soil)	20, 50	For use on club root. Apply transplant soil drench immediately after planting at 3.4 fl oz/plant. Soil incorporation in 9 inch band to depth of 6 to 8 inches with minimum 50 GPA. Do not apply more than 3.85 pt/A/season. PHI 20 days leafy greens and 50 days heading vegetables. Turnip roots may not be used for human or livestock consumption.
<b>ORONDIS OPTI</b>	B, BS, C, CL	1.75-2.5 pt	7	Supplemental label (exp. 4/2020): Do not make >2 sequential applications before rotating to fungicide with different mode of action. Do not exceed 6 applications/year. Do not follow soil applications of a.i. with foliar applications of Orondis Opti.
<b>ORONDIS OPTI A, ULTRA A</b>	B, BS, C, CL	2-4.8 fl oz	5	Begin ground, air-assisted or aerial applications prior to disease development and on a 5- to 10-day interval. Maximum 2 sequential applications before rotating to different mode of action. Do not use for >33% of total foliar fungicide applications or make >4 applicaitons/crop. Do not exceed 6 foliar applications/A/year. 2ee for tank mix Opti A/Opti B in TX, OR (exp. 2/2018), RI (exp. 6/2018); Ultra A/Ultra B in TX (exp. 3/2018), AL, CT, KY, MA, NJ (exp. 6/2018), RI (exp. 11/2018), OR (exp. 12/2018). 2ee for tank mix Opti A/Opti B (exp. 12/2018) and Ultra A/Ultra B (exp. 11/2018) in AR, AZ, CO, DE, FL, GA, IA, ID, IL, IN, KS, LA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NM, NV, OH, OK, PA, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY.
<b>ORONDIS OPTI B</b>	B, BS, C, CL	1.5 pt	7	Begin ground, air or chemigation applications after transplants are set or shortly after field-seeded crop emergence, or when conditions favor disease development. Repeat at 7- to 10-day intervals. Also see Orondis Opti A 2ee recommendations.
<b>ORONDIS ULTRA B</b>	B, BS, C, CL	8 pt	1	Begin ground, aerial or chemigation applications prior to disease development, then at 7- to 10-day intervals. Maximum 2 consecutive applications before switching to another non-Group 40 fungicide. Must use silicone-based adjuvant, NIS, COC or blend when applying by ground/air. Also see Orondis Ultra A 2ee recommendations.
<b>PRESIDIO</b>	B, BS, C, CL	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Maximum of 2 sequential applications before alternating mode of action. Maximum 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
<b>PREVISTO</b>	B, BS, C, CL	0.75-2 qt	0	Apply at 7- to 10-day intervals. Begin after transplants are set in the field or shortly after emergence. The addition of spreader/sticker may enhance spray deposition. Reddening of older leaves may occur on B and flecking of wrapper leaves may occur on C.
<b>PRIAXOR</b>	B, BS, C, CL	6-8.2 fl oz	3	Apply prior to onset of disease and continue on a 7-14 day interval. Do not apply more than 3 times/season or 24.6 fl oz/A/season. Do not make more than two sequential applications before rotating to non group 7 or non group 11 fungicide.
<b>PROCURE 480SC</b>	B, BS, C, CL	6-8 fl oz	1	Begin applications at the first indication of disease. Continue on a 14 day schedule.
<b>QUADRIS TOP</b>	B, BS, C, CL	12-14 fl oz + 1 pt NIS/100 gal	1	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 56 fl oz/A/year.
<b>REASON 500SC</b>	B, BS, C, CL	5.5-8.2 fl oz	2	Apply prior to when conditions favor disease development and continue on a 5-10 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 24.6 fl oz/A/season. Note 1.
<b>REVUS</b>	B, BS, C, CL	8 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 32 fl oz/A/season. See supplemental label for new use expiring December 19, 2016.
<b>RHYME 2.08 SC</b>	B, BS, C, CL	5-7 fl oz	7	Apply preventively or when conditions favor disease development on a 7-day interval as needed. Do NOT make more than 4 applications per year or apply more than 28 fl oz/A/year.
<b>RIDOMIL GOLD SL</b>	B, BS, C, CL	0.125-0.25 pt	7	Apply in a tank mix before disease infection, continue on a 14 day schedule. See label for soil applications.
<b>ROVRAL 4</b>	B	2 pt	0	Apply immediately after thinning (2-4 leaf stage) as directed basal spray. Maximum 2 applications/crop.

PHI- preharvest interval in days.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

**Note 1:** See label for fungicide rate for each disease.

# COLE CROP DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>SERENADE ASO</b>	B, BS, C, CL	2-6 qt	0	Begin application soon after emergence or transplant. Repeat on a 3-10 day interval or as needed. Supplemental label (exp. date not given) for soil surface application.
<b>SWITCH 62.5WG</b>	B, BS, C, CL	10-14 fl oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 56 oz/A/season. 24c for brassica grown for seed: OR (exp. 12/2020), WA (exp. 12/2019).
<b>TETRABAN</b>	B, BS, C, CL	6-15.5 fl oz	0	Apply by ground, air or irrigation prior to disease development and continue on 7- to 14-day schedule.
<b>TILT</b>	C	3-4	7	Apply before disease is present.
<b>TOPGUARD EQ</b>	B, BS, C, CL	5-8 fl oz	7	Apply preventatively or when conditions are favorable for disease development.
<b>ZAMPRO</b>	B, BS, C, CL	14 fl oz	7	Begin applications prior to disease development and continue on 7 day interval. Maximum 2 applications before rotating to another mode of action. Maximum 42 fl oz/A/season.

PHI- preharvest interval in days.

\* B – Broccoli, BS – Brussels Sprouts, C – Cabbage, CL – Cauliflower

**Note 1:** See label for fungicide rate for each disease.

# CUCURBIT WEED CONTROL

## Preplant, Preemergence, or Postemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	C, M, P, S, W	1-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PRE for transplants no closer than 1 day before transplanting and burndown no later than 7 days before planting.
<b>CLEANSE</b>		SEE SELECT 2 EC	
<b>COMMAND 3ME</b>	C M, W P, S	0.4-1 pt 0.4-0.67 pt 0.67-2 pt: winter squash 0.67-1.33 pt: summer squash	PRE prior to seeding or transplant. May be applied after planting but before crop emergence in cucumber, muskmelon, and watermelon. Labeled for use in squash and processing pumpkins. Do not apply to jack-o-lantern pumpkins. Some varieties are sensitive. See label for variety restrictions. May be tank mixed with other labeled herbicides.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	C, M, P, S, W	Up to 24 fl oz or Up to 32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	PP. Apply at least 3 days before planting. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DACTHAL W75</b>	C, M, W	6-14 lb	Apply when plants have 4-5 true leaves and are well-established, and favorable growing conditions. Application rate depends on soil type and OM. Refer to label for specific application rates.
<b>DUAL MAGNUM</b>	M, W	0.67-1.27 pt	24c (indemnified) in ME (exp. 12/2019) for pumpkin; in GA (exp. 12/2019) for summer squash and P; in MO (exp. 12/2021) for cantaloupe and watermelon; in DE (exp. 2/2021) for row middles in watermelon; in OH (exp. 12/2021) for C, M, S, W; in VA (exp. 12/2021) for W.
<b>GRAMOXONE SL/SL 2.0</b>	C, M, P, S, W	2-4 pt + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Apply PP or PRE. Apply to emerged weeds before or after seeding but before crop emerges. Supplemental label CA, DE, GA, MD, ME, NJ, OH, TN, VA (exp. date not given) for between row directed spray. Supplemental label FL (exp. date not given) for between row directed spray for melons only.
<b>OPTIFY</b>	C, M, P, S, W	5-12 fl oz	Plant Growth Regulator. At planting: 5 fl oz/A apply with liquid fertilizer. Broadcast, side or top dress 8-12 fl oz/A. Via irrigation: Apply at 8 fl oz/A. Foliar: Apply directly to foliage of actively growing plants ≥6 fl oz/A in minimum 5 GPA. Best results when applied with nutrients. Repeat application ≥7 days. Do not apply >24 oz/A/season.
<b>POAST</b>	C, M, P, S, W	0.5-1.5 pt + 1 pt HSOC-COC <sup>1</sup>	POST. Controls emerged grasses. Apply up to 3 pt/A per season. Rate depends on weed species and geographic location. PHI 14 days. Cantaloupe PHI 3 days.
<b>PREFAR 4E</b>	C, M, P, S, W	5-6 qt	PPI. Controls annual grasses in flat planted or bedded crops. Apply PP and incorporate 1-2". Apply PRE only when followed by immediate irrigation.
<b>PROWL H2O</b>	M, W	2.1 pt	Apply between rows with shielded sprayer in sequential applications of 2.1 pt/A. Do not apply >4.2 pt/A/season. Do not apply <21 days apart. Do not apply within 35 days of melon harvest. Do not feed forage or graze in treated fields.
<b>REFLEX</b>	P, S, W	8-12 fl oz	24c in GA (exp. 12/2018) and NY (exp. 12/2019): Apply within 24 hours of planting. PHI 32-35 days crop dependent. See label specific directions. 24c in SC (indemnified, exp. 12/2019), MO (indemnified, exp. 12/2021, watermelon only) and OR (indemnified; exp. 12/2019) in summer/winter squash.
<b>ROUNDUP POWERMAX/ WEATHERMAX**</b>	C, M, P, S, W	11-32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply prior to planting and wait 3 days before planting. Controls emerged annuals. Rate depends on weed species and size. See label for perennials. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>SECTION THREE</b>	C, M, P, S, W	4-5.33 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 1 day.
<b>SELECT 2 EC/CLEANSE</b>	C, M, P, S, W	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST. Controls many emerged grasses. PHI 14 days.
<b>SELECT MAX</b>	C, M, P, S, W	9-16 oz + 1 qt NIS/100 gal	Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a minimum 14 day interval. PHI 14 days.
<b>SINBAR</b>	W	2-4 oz	PRE. Direct seeded or transplant. Apply after planting but before crop emerges. See label for plastic mulch instructions. PHI 70 days.

# CUCURBIT WEED CONTROL

## Preplant, Preemergence, or Postemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>TRUST/TREFLAN HFP</b>	C, M, P, S, W	1-1.5 pt: coarse 1.25-1.5 pt: medium 1.5-2 pt: fine	POST inc. Apply after crop emergence when plants are at 3-4 true leaves. Apply between rows to avoid foliage contact and incorporate. Controls grasses and broadleaves. PHI 30 days for cucumbers and muskmelon and 60 days for watermelon. Use rates depends on soil type and OM. Refer to label for specific application rates.
<b>VIDA</b>	C, M, P, S, W	0.5-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

\* C – Cucumber, M – Muskmelon, P - Pumpkin, S- Squash, W – Watermelon

\*\* May use other glyphosate herbicides: Roundup brands, Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# CUCURBIT INSECT CONTROL

## Labeled Insecticides

CUCURBIT		INSECTICIDE																										
INSECT*		Actara	Admire Pro	Advise Four	Agree WG	Agri-Mek 0.15 EC/SC	Arctic	Asana XL	Assail 30SG	Athena	Avaunt	Baythroid XL	Belay	Beleaf 50SG	Besiege	Capture LFR	Certador	Coragen	Danitol 2.4 EC	Declare	Delta Gold	Diazinon AG500	Dimate 4E/Dimethoate 4E	Durivo	Endigo ZC	Fastac EC/Fastac CS	Fulfill	
Aphid		●	●	●			●		●	●			●	●	S		S			●		●	●	●	●	●	●	●
Cucumber Beetle		S	●	●			●	●	●	●		●	●	●					●	●	●	●	●	S	●	●	●	●
Cutworm							●	●	●	●		●			●	●				●	●	●			●	●	●	●
Seed Corn Maggot																●							●					
Squash Bug							●	●	●	●			●		●					●					●	●	●	●
Squash Vine Borer							●	●	●	●					●					●					●	●	●	●
Whitefly		●	●	●					●	●		S	S	●	S		●	S		S	S			●	S		S	S
Wireworm										●						●						●						

## Labeled Insecticides (continued)

CUCURBIT		INSECTICIDE																										
INSECT*		Gladiator	Grizzly Too	Hero	Intrepid	Karate Z/Warrior II	Lambda-Cy Ag	Lannate LV	Malathion 5/5EC	Malathion 8 Flowable	Mimecto Pro	MSR	Mustang Maxx	Oberon 2SC	Platinum	Platinum 75SG	Radiant SC	Requiem EC	Sevin XLR Plus	Sivanto prime	Steed	Tundra/Bifen 2 AG Gold/Brigade 2EC	Venom 70SG	Vollam Flexi	Vollam Xpress	Vydate L	Xentari	Zeal/Zeal SC
Aphid		●	●	●		●	●	●	●	●		●			●	●				●	●	●	S	●	S	●		
Cucumber Beetle		●	●	●		●	●	●	●	●		●	●		S	S			●		●	●	●	S	●	●		
Cutworm		●	●	●		●	●	●	●	●		●	●								●	●	●	●	●	●		●
Seed Corn Maggot																												
Squash Bug		●	●	●		●	●						●							●	●	●	●	●	●			
Squash Vine Borer		●	●	●		●	●		1	●			●								●	●	●	●	●	●		
Whitefly				●		S	S				●			●	●	●		●		●	●	●	●	●	●	S		
Wireworm			S	●																								

\* Many other insects may be controlled, see label. S – Suppression. 1 Cucumber, pumpkin, and squash only. 2 Adult only.

☀ See Insecticide Resistance Management in the TECHNICAL INFORMATION section.

## Insect Management Thresholds

<b>CUCUMBER BEETLE</b>	Treat when there are 4-5 or more beetles per 50 plants.
<b>CUTWORM</b>	Treat when there are 1-2 or more cutworms per 100 plants.
<b>SEED CORN MAGGOT</b>	Treatment is strongly recommended for fields where manure or cover crops have been partially buried by recent tillage. Treated seed is recommended.
<b>SQUASH BUGS</b>	Check underside of leaf for rows of eggs. Treat when bugs are young. Destroy crop residue in fall to reduce over-wintering.
<b>SQUASH VINE BORER</b>	Treat when adults are seen when runners are <2'. Sawdust-like excrement by holes in stems confirms borer presence. Repeat applications every 5-7 days throughout 3 weeks of egg laying.
<b>WIREWORMS</b>	Treatment recommended if bait captures average more than 1 per trap.

## Insect Treatment Guidelines

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTARA</b>	C, M, P, S, W	1.5-5.5 fl oz	0	Note 1.
<b>ADMIRE PRO</b>	C, M, P, S, W	7-10.5 fl oz	21	See label for soil application instructions.
<b>ADVISE FOUR</b>	C, M, P, S, W	8-12 fl oz	21	Soil application. See label for soil application instructions.
<b>AGREE WG</b>	C, M, P, S, W	0.5-2 lb	0	Bt insecticide. Controls loopers, armyworms, diamondback moth, melonworms, and light brown apple moth. Certified for organic use.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

PHI – preharvest interval in days.



# CUCURBIT INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>AGRI-MEK SC or 0.15 EC</b>	C, M, P, S, W	1.75-3.5 or 8-12 fl oz	7	For spider mite and leafminers. Use $\geq$ 20 gpa. Do not exceed 10.25 fl oz/A/season. Allow $\geq$ 7 days between applications. No more than 2 sequential applications.
<b>ARCTIC</b>	C, M, P, S, W	4-8 fl oz	0	Do not apply more than 48 fl oz/A per year on everything except cantaloupe. Do not apply more than 32 fl oz/A per year on cantaloupe. Apply 8 fl oz/A for control of aphids.
<b>ASANA XL</b>	C, M, P, S, W	5.8-9.6 fl oz	3	Repeat as necessary to maintain control. Do not exceed 0.25 lb a.i./A per season.
<b>ASSAIL 30SG</b>	C, M, P, S, W	2.5-5.3 fl oz	0	Note 1.
<b>ATHENA</b>	C, M, P, S, W	7-17 fl oz	7	Apply in minimum of 5 GPA air, 20 GPA ground. Do not apply more than 51 fl oz/A/season. Do not make more than 2 applications after bloom. Do not make applications less than 7 days apart. Note 1.
<b>AVAUNT</b>	C, M, P, S, W	2.5-6 fl oz	3	Controls cabbage looper, melonworm, pickleworm, and beet armyworm. Note 1.
<b>BAYTHROID XL</b>	C, M, P, S, W	0.8-2.8 fl oz	0	Do not apply > 11.2 fl oz/A/season. Note 1.
<b>BELAY</b>	C, M, P, S, W	9-12 fl oz: soil 3-4 fl oz: foliar	21	See label for soil application instructions.
<b>BELEAF 50SG</b>	C, M, P, S, W	2.8- 4.28 fl oz	0	Note 1.
<b>BESIEGE</b>	C, M, P, S, W	6-9 fl oz	1	Maximum 31 fl oz/A or 0.18 lb a.i./A/year lamda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day minimum application interval.
<b>CAPTURE LFR</b>	C, M, S, P, W	3.4 to 6.8 oz		Apply either In-Furrow or T-Band at transplanting/setting. May be tankmixed with liquid fertilizers and amendments.
<b>CERTADOR</b>	C, M, P, S, W	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21, 1	Use only one application method. Apply as foliar when pests appear, as needed but not more than every 7 days. See label for row spacing rates.
<b>CORAGEN</b>	C, M, P, S, W	3.5-7.5 fl oz: soil at planting 2-7.5 fl oz: drip chemigation 2-7 fl oz: foliar	1	Suppression of silverleaf whitefly nymphs. See label for directions for soil application and through drip chemigation. Note 1.
<b>DANITOL 2.4 EC</b>	C, M, P, S, W	10.67-16 fl oz	7	Do not apply more than 2.67 pt/A per season. Tank mix with endosulfan for control of aphid, silverleaf whitefly, sweetpotato whitefly, and thrips.
<b>DECLARE</b>	C, M, P, S, W	1.02-1.54 fl oz	1	Apply by ground or air. Must be mixed with a vegetable oil like HSOC-COC or HSOC-MSO <sup>1</sup> and at a rate of at least 1 quart of finished spray/A.
<b>DELTA GOLD</b>	C, M, P, S, W	1-2.4 fl oz	3	Do not apply more than 14.4 fl oz/A per season. Note 1.
<b>DIAZINON AG500</b>	M, W	0.5-8 pt	3	Broadcast 2-4 qt/A before planting and immediately incorporate into the soil in melons and watermelons. Apply 0.5-1.5 pt/A when infestation occurs in honeydew melon. Note 1.
<b>DIMATE 4E/ DIMETHOATE 4E</b>	M W	1 pt 0.5-1 pt	3	Do not apply more than 2 pt/A/year.
<b>DURIVO</b>	C, M, P, S, W	10-13 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Maximum 1 soil application/season.
<b>ENDIGO ZC</b>	C, M, P, S, W	4-4.5 fl oz	1	Note 1.
<b>EXIREL</b>	C, M, P, S, W	7-20.5 fl oz	1	Apply foliar with an effective adjuvant. Do not apply sooner than every 5 days. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>FASTAC EC/FASTAC CS</b>	C, M, P, S, W	1.4-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply >11.4 fl oz/A/season. Minimum 15 GPA ground and 2 GPA air.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon      PHI – preharvest interval in days.

**Note 1:** See label for insecticide rate for each insect.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# CUCURBIT INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>FULFILL</b>	C, M, P, S, W	2.75 fl oz	0	Apply when aphids first appear. Suppresses whiteflies. Do not exceed 5.5 oz/A/season.
<b>GLADIATOR</b>	C, M, P, S, W	6-19 fl oz	7	Maximum 57 fl oz/A/year. Note 1.
<b>GRIZZLY TOO</b>	C, M, P, S, W	1.28-1.92 fl oz	1	Note 1.
<b>HERO</b>	C, M, P, S, W	4-10.3 fl oz	3	Apply in minimum of 5 GPA by air and 20 GPA by ground. Do not apply more than 41.2 fl oz/A/season. Do not make more than 2 applications after bloom. Do not make applications less than 7 days apart. Note 1.
<b>INTREPID</b>	C, M, P, S, W	4-10 fl oz	3	Maximum 64 fl oz/A/year.
<b>KARATE Z/WARRIOR II</b>	C, M, P, S, W	1.28-1.92 fl oz	1	Note 1.
<b>LAMBDA-CY AG</b>	C, M, P, S, W	2.56-3.84	1	Apply by ground in minimum of 10 gal of water/A and by air in a minimum of 2 gal of water/A.
<b>LANNATE LV</b>	C, M, S, W	1.5-3 pt	1, 3	Do not apply more than 18 pt/A/crop. PHI 1 for 1.5 pt/A and 3 if more than 1.5 pt/A. Labeled for use in summer squash. Note 1.
<b>MALATHION 5 OR 5EC</b>	C M P S W	1.5-2.75 pt or 1.5-2.8 pt 1.6 pt 1.5 pt 1.5-2.75 pt or 1.6-2.8 pt 1.5-2 pt or 1.5-2.5 pt	1	Note 1.  S-summer: 1.5-2.75 pt/A or 2-2.8 pt/A. S-winter: 1.5 pt/A or 1.6 pt/A.
<b>MALATHION 8 FLOWABLE</b>	C S	1.75 pt 1-1.75 pt	1	C: Do not exceed 2 applications/year; do not apply unless plants are dry. S-summer: 1.75 pt/A, do not exceed 3 applications/year. S-winter: 1 pt/A, do not exceed 3 applications/year.
<b>MINECTO PRO</b>	C, M, P, S, W	10 fl oz	7	Foliar application soon after emergence or transplant to control whiteflies and vectored diseases.
<b>MSR</b>	C, M, P, S, W	1.5-2 pt	3, 7, 14	PHI 3 days cucumber and summer squash, 7 days watermelon, 14 days melon, pumpkin, winter squash.
<b>MUSTANG MAXX</b>	C, M, P, S, W	1.28-4 fl oz	1	Note 1.
<b>OBERON 25C</b>	C, M, P, S, W	7-8.5 fl oz	7	White fly and two-spotted spider mite control.
<b>PLATINUM</b>	C, M, P, S, W	5-11 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into the root zone.
<b>PLATINUM 75 SG</b>	C, M, P, S, W	1.66-3.67 oz	30	Apply in-furrow, drench, drip, or shanked (See label). Do not exceed 3.67 oz/A/season.
<b>RADIANT SC</b>	C, M, P, S, W	5-10 fl oz	1, 3	PHI 1 day cucumbers. Note 1.
<b>REQUIEM EC</b>	C, M, P, S, W	2-3 qt	0	For thrips, apply as soon as seen in crop. For whiteflies, apply before damaging levels are reached. Note 1.
<b>SEVIN XLR PLUS</b>	C, M, P, S, W	0.5-1 qt	3	Do not apply > 6 qt/A/year. Bee caution: do not apply to target crops or weeds in bloom. Note 1.
<b>SIVANTO PRIME</b>	C, M, P, S, W	7-28 fl oz	1, 21	Foliar: 7-14 fl oz/A (pest-dependent), 7 day minimum application interval. PHI 1 day. Ground minimum 10 GPA, air minimum 2 GPA. Soil: 21-28 fl oz/A. PHI 21 days.
<b>STEED</b>	C, M, P, S, W	3.5-4.7 fl oz	3	Apply in minimum 5 GPA (air) or 20 GPA (ground). Do not make applications <7 days apart or >28.1 fl oz/A/season. Note 1.
<b>TRIGARD</b>	C, M, P, S, W	2.66 oz	0	Leafminer control. Do not make more than 6 applications per season.
<b>TUNDRA/BIFEN 2 AG GOLD/BRIGADE 2EC</b>	C, M, P, S, W	2.6-6.4 fl oz	3	Make applications at least 7 days apart. Do not exceed 19.2 fl oz/A per season. Note 1.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon      PHI – preharvest interval in days.

**Note 1:** See label for insecticide rate for each insect.

**Note 2:** Do not apply when bees are active, e.g., before 7 AM or after 7 PM or when the temperature is below 55°F will minimize risk.

# CUCURBIT INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>VENOM 70SG</b>	C, M, P, S, W	1-4 oz: foliar 5-6 oz: soil	1, 21	PHI 21 days for soil application. Note 1.
<b>VERIMARK</b>	C, M, P, S, W	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. Do not apply more than 13.5 fl oz/A at planting. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>VOLIAM FLEXI</b>	C, M, P, S, W	4-7 oz	1	Maximum 14 oz/A/season. See for most states (exp. date not given) for brown marmorated stink bug at 6-7 oz/A/application.
<b>VOLIAM XPRESS</b>	C, M, P, S, W	6-9 fl oz	1	Use 9 fl oz for aphids and white flies.
<b>VYDATE L</b>	C, M, P, S, W	1-2 gal: soil 2-4 pt: foliar	1	See label for soil, foliar, and drip chemigation application instructions and geographic restrictions. Soil applications control certain nematodes and foliar treatments control leafminers, aphids, and thrips. Note 1.
<b>XENTARI</b>	C, M, P, S, W	0.5-2 lb	0	Bt insecticide. Certified for organic use. Note 1.
<b>ZEAL/ZEAL SC</b>	C, M, P, S, W	2-3 oz/4-6 fl oz	7	For certain mites.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon      PHI – preharvest interval in days.

**Note 1:** See label for insecticide rate for each insect.

**Note 2:** Do not apply when bees are active, e.g., before 7 AM or after 7 PM or when the temperature is below 55°F will minimize risk.

# CUCURBIT DISEASE CONTROL

## Labeled Fungicides

CUCURBIT DISEASE*	FUNGICIDE																																					
	Actigard 50WG	Aliette WDG	Aprovia Top	Badge SC/ Badge X2	Bio-Tam	Bravo Ultrex/Weather Stik	Bravo Zn	Cabrio	Cannonball/WG/WP 1	Cercobin	Chloronil 720/Praiz	Cuprofix Ultra 40 Dispers <sup>5</sup>	Curzate 60DF	Dithane F-45	Endura	Evito 480SC	Flint	Fontelis	Forum	Gavel 75 DF	Gem 500 SC/Flint Extra	Heritage	Inspire Super	Kocide 3000	Koverall	Luna Experience	Luna Sensation	ManKocide	Manzate Max	Manzate Pro-Stick/Penncozeb 75DF	Mettle 125 ME	Merivon	Mural	Omega 500F				
Alternaria Leaf Blight			●			●	●	●			●				●	●		●					●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Alternaria Leaf Spot			●			●	●	●			●	●			●			●			●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Angular Leaf Spot	S			●							●																											
Anthracoze			●	●		●	●	●			●	●	●		●								●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Bacterial Fruit Blotch	S			S																																		
Belly Rot			●							●						●							●				●											
Cercospora Leaf Spot			●			●	●	●			●				●								●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Charcoal Rot										●												●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Damping Off																																						
Downy Mildew	S	●		●		●	●	●			●	●	●	●		●	S			●	●	S	●		●			●	●	●	●	●	●	S	●	●		
Fruit and Stem Rot																																						
Fusarium					●																																	
Fusarium Wilt																																						
Gummy Stem Blight			●	●		●	●	●		●	●	●		●	●	●	●	●					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Myrothecium Canker																●							●												S	●	●	
Phytophthora					●																																	
Phytophthora Blight or Crown Rot																				●	●																	
Phytophthora Root and Fruit Rot		●																																				
Plectosporium Blight (microdochium)								●						7		●	●					●	●	●												●		
Powdery Mildew	S		●	●		●	●	●		●	●	●				S	●	●	●			●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	
Pythium					●																																	
Rhizoctonia					●																																	
Root Rot (Pythium)																																						
Scab	S	●				●	●			●				●												●			●	●	●	●	●	●	●	●	●	●
Seed Rot and Damping Off																																						
Target Spot			●			●	●	●		●	●					●																					●	
Vine Decline						●			S <sup>1,3</sup>	S	●																											
Watermelon Bacterial Fruit Blotch				●								S													S			●										

S – Suppression.

So - soil application.

\*Other diseases may be controlled, see label.

<sup>1</sup> Melons only. <sup>2</sup> Cucumber only. <sup>3</sup> Watermelon only. <sup>4</sup> Phytophthora blight only. <sup>5</sup> Copper sulfate. <sup>6</sup> Sulfur.

<sup>7</sup> Not labeled for control in pumpkin. <sup>8</sup> Not labeled for cucumber.

☀ See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

(continued on next page)

# CUCURBIT DISEASE CONTROL

## Labeled Fungicides (continued)

DISEASE*	FUNGICIDE	CUCURBIT																																		
		Onset 3.6L	Orondis	Orondis Gold 200	Orondis Gold B	Orondis Opti-A, Ultra A, Ultra B	Orondis Opti B	Ph-D	Presidio	Previcur Flex	Previsto	Pristine	Procuire 480SC	Quadris Opti	Quadris Top	Quintec	Rally 40WSP	Reason 500SC	Revus	Rhyme 2.08 SC	Ridomil Gold Copper	Ridomil Gold SL	Serenade ASO	Sovran	Switch 62.5WG	Tanos	Taegro ECO	Tetraban	Topguard	Topguard EQ	Topsin MWSB	Torino	Uniform	Zampro	Zing!	
Alternaria Leaf Blight			●				●				●			●	●										●	●									●	
Alternaria Leaf Spot			●				●				●			●	●			●							●										●	
Angular Leaf Spot										●				●	●																				●	
Anthrachnose			●				●				●	●		●	●											●	●								●	
Bacterial Fruit Blotch																									S											
Belly Rot														●	●													●								
Cercospora Leaf Spot			●				●							●	●																					
Charcoal Rot																											●									
Damping Off				●																															So	
Downy Mildew			●				●	●		●	●	●	●	●	●		●	S		●	S	●			●	●								So	●	
Fruit and Stem Rot																																				
Fusarium																																				
Fusarium Wilt																											S, So									
Gummy Stem Blight		S <sup>8</sup>	●				●	●		●	●		●	●										●	●		●	●								
Myrothecium Canker														●	●													●								
Phytophthora									●																		S, So									
Phytophthora Blight or Crown Rot				●		●		● <sup>4</sup>										S			S				S										●	
Phytophthora Root and Fruit Rot																																				
Plectosporium Blight (microdochium)															●												●									
Powdery Mildew		●	●				●	●		●	●	●	●	●	●	●	●		●				●	●	●	S, So	●	●	●	●	●	●	●	●	●	
Pythium									●													So				S, So		●	●						So	
Rhizoctonia																											S, So	So							So	
Root Rot (Pythium)									●													So														
Scab			●				●	●																												
Seed Rot and Damping Off								●																											●	
Target Spot			●																																●	
Vine Decline																																			●	
Watermelon Bacterial Fruit Blotch																																			●	

S – Suppression. So - soil application.

\*Other diseases may be controlled, see label.

<sup>1</sup> Melons only. <sup>2</sup> Cucumber only. <sup>3</sup> Watermelon only. <sup>4</sup> Phytophthora blight only. <sup>5</sup> Copper sulfate. <sup>6</sup> Sulfur. <sup>7</sup> Not labeled for control in pumpkin. <sup>8</sup> Not labeled for cucumber.

☀ See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

## Disease Management Guidelines

Disease	Labeled Crops*	Comments/Restrictions
<b>ALTERNARIA LEAF BLIGHT</b>	C, M, P, S, W	Use products containing chlorothalonil, coppers, famoxadone + cymoxanil, fenamidone, maneb, mancozeb, or pyraclostrobin.
<b>ANGULAR LEAF SPOT</b>	C, M, P, S, W	Use crop rotation and disease-free seeds. Apply fixed coppers.
<b>ANTHRACNOSE</b>	C, M, P, S, W	Apply products containing azoxystrobin, chlorothalonil, coppers, famoxadone + cymoxanil, maneb, mancozeb, pyraclostrobin, or thiophanate-methyl.
<b>BACTERIAL WILT</b>	C, M, P, S, W	Control cucumber beetles that carry the disease.
<b>BLACK ROT</b>	C, M, P, S, W	Use disease-free seed and destroy infected crop residue. Use long crop rotations without cucurbits. Apply products containing fixed copper, benomyl, chlorothalonil, maneb, mancozeb or thiofanate-methyl.
<b>DOWNY MILDEW</b>	C, M, P, S, W	Use crop rotation and disease-free seed. Apply products containing azoxystrobin, coppers, cyazofamid, famoxadone + cymoxanil, fenamidone, fluopicolide, fosetyl-aluminum, mancozeb, mefenoxam, pyraclostrobin, trifloxystrobin or fixed copper.
<b>FUSARIUM CROWN AND ROOT ROT</b>	P, S	Use long crop rotations without melons and clean seed. Do not precede pumpkin or squash with grain crop.
<b>FUSARIUM WILT</b>	C, M, P, S, W	Use long crop rotations without melons and use resistant varieties.
<b>GUMMY STEM BLIGHT</b>	C, M, P, S, W	Use products containing azoxystrobin, coppers, mancozeb, chlorothalonil, chlorothalonil + mefenoxam, pyraclostrobin, or thiophanate methyl.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

# CUCURBIT DISEASE CONTROL

## Disease Management Guidelines (continued)

Disease	Labeled Crops*	Comments/Restrictions
<b>MOSAIC</b>	C, M, P, S, W	Use resistant varieties and isolate from alternate host plants. Control aphids that carry the disease.
<b>POWDERY MILDEW</b>	C, M, P, S, W	Use products containing azoxystrobin, coppers, myclobutanil, pyraclostrobin, sulfurs, trifloxystrobin, triflumizole or thiophanate methyl.
<b>SCAB</b>	C, M, P, S, W	Use products containing chlorothalonil or mefenoxam.
<b>SEED ROT AND DAMPING-OFF</b>	C, M, P, S, W	Use seed treatments containing captan or thiram. Plant into disease-free soil and water in the morning.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

## Disease Treatment Guidelines

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTIGARD 50WG</b>	C, M, S, W	0.5-1 oz	0	Suppression of labeled diseases. Apply preventatively. Maximum 8 oz/A/year.
<b>ALIETTE WDG</b>	C, M, P, S, W	2-5 lb	0	Apply when conditions favor disease development and continue on 7-14 day intervals. Maximum 7 applications/season.
<b>APROVIA TOP</b>	C, M, P, W	10.5-13.5 fl oz	0	Begin applications prior to disease onset when conditions are conducive for disease, on a 7-14 day schedule. No more than two applications in a 7 day interval, with remaining applications no closer than a 14 day interval. See label for annual maximums, resistance management, and belly rot control.
<b>BADGE SC OR BADGE X2</b>	C, M, P, S, W	0.5-2.5 pt or 0.5-2.5 lb	0	Repeat sprays at 5- to 7-day intervals. Crop injury may occur from application at higher rates and shorter intervals. Use higher rates when conditions favor disease development.
<b>BIO-TAM</b>	C, M, P, S, W	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
<b>BRAVO ULTREX/ WEATHER STIK</b>	C, M, P, S, W	1.4-2.7 lb or 1.5-3 pt	0	Begin applications at first true leaf stage or when conditions are favorable for disease and continue at 7 day intervals. Maximum 15.75 lb a.i./A/season. Note 1.
<b>BRAVO ZN</b>	C, M, P, S, W	2.25-4.25 pt	0	Begin ground, air or chemigation applications when plants are in first true leaf stage or when conditions are favorable for disease development. No more than 2 apps may be applied on a 7 day interval. All other application must be applied no closer than a 14 day interval. Do not apply >30 pt/A/season. See label for special notes on watermelon.
<b>CABRIO</b>	C, M, P, S, W	8-16 oz	0	Use 8-12 oz/A for downy mildew and 12-16 oz/A for other diseases. Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >1 applications before rotating mode of action. Maximum 4 applications/season. Note 1.
<b>CANNONBALL WG</b>	M, W	4-8 oz	14	Apply prior to planting or transplanting. See label for specific application methods. Maximum 0.75 lb ai/24 oz/A/season.
<b>CANNONBALL/WP</b>	M, W	0.25-0.5 lb/4-8 oz	14	Apply prior to planting or transplanting. See label for specific application methods. Maximum 1.5 lb/24 oz/A/season.
<b>CERCOBIN</b>	C, M, P, S, W	10.9 fl oz	1	Do not apply more than 65.4 fl oz/A/year.
<b>CHLORONIL 720</b>	C, M, P, S, W	1.5-3 pt	0	Begin applications at first true leaf stage or when conditions are favorable for disease and continue at 7 day intervals. Maximum 15.75 lb a.i./season. Note 1.
<b>CUPROFIX ULTRA 40 DISPERSS</b>	C, M, P, S, W	1-2 lb	–	Begin when conditions are favorable for disease and continue on a 5-7 day interval. Crop injury may show with short intervals.
<b>CURZATE 60DF</b>	C, M, P, S, W	3.2-5 oz	3	Tank mix with a protectant fungicide. Apply on a 5-7 day schedule. Maximum 30 oz/A/year.
<b>DITHANE F-45</b>	C, M, P, S	1.6-2.4 qt	5	Start when plants are 2 leaf and continue on a 7-10 day interval. Maximum 19.2 qt/A/crop.
<b>ENDURA</b>	C, M, P, S, W	6.5 oz	0	Maximum of 4 applications/season; 1 application before alternating MOA.

PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

# CUCURBIT DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>EVITO 480SC</b>	C, P,S	3-5.7 oz	1	Apply prior to disease development and continue on a 7-14 day schedule. For Rhizoctonia root rot control, apply 0.16-0.24 fl oz/1000 ft row to the soil. Note 1.
<b>FLINT</b>	C, P,S,W	1.5-2 oz	0	Begin applications preventatively when conditions favor disease development and continue on a 7-14 day schedule. Use 4 fl oz for downy mildew suppression. Alternate with at least 1 application of another mode of action. Maximum 4 applications and 16 oz/A/season. Note 1.
<b>FONTELIS</b>	C, M, P,S, W	12-16 fl oz	1	Begin applications prior to disease development and continue on 5-14 day schedule. Labeled for use in greenhouse production. Maximum 2 sequential applications before switching to a different mode of action. Maximum 67 fl oz/A/year.
<b>FORUM</b>	C, M, P,S, W	6 oz	0	Apply in a tank mix with a fungicide with a different mode of action. Begin when conditions favor disease development and continue on a 5+ day schedule. Maximum 2 sequential applications before rotating to another mode of action. Maximum 30 oz/A/season.
<b>GAVEL 75 DF</b>	C, M, P,S, W	1.5-2 lb	5	Start applications when plants are in 2-leaf stage and continue on 7-10 day interval. Some cantaloupe varieties are sensitive: consult state extension guides. Do not make more than 8 applications or apply more than 16 lb/A/season.
<b>GEM 500 SC/FLINT EXTRA</b>	C, M, P,S, W	2-3.8 fl oz	7	Apply on a 7- to 14-day interval if needed. Maximum 15.2 fl oz/A/year.
<b>HERITAGE</b>	C, M, P,S, W	3.48 - 7.84 fl oz	1	Apply by foliar or chemigation. Do not tank mix with COC, MSO or silicone adjuvants. Apply before the presence of disease.
<b>INSPIRE SUPER</b>	C, M, P,S, W	16-20 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 80 fl oz/A/season.
<b>KOCIDE 3000</b>	C, M, P,S, W	0.5-1.25 lb	-	Apply prior to disease development and continue on a 5-7 day schedule or as needed.
<b>KOVERALL</b>	C, M, P,S, W	2-3 lb	5	Do not apply more than 25.76 lb/A/year. Do not make more than 8 applications per year.
<b>LUNA EXPERIENCE</b>	W	6-17 fl oz	7	Begin applications preventatively and continue on 10-14 day schedule. Maximum 34 fl oz/A/season. See various states (exp. date not given) for reduced rates for gummy stem blight, belly rot, and anthracnose.
<b>LUNA SENSATION</b>	W	4-7.6 fl oz	0	Begin applications preventatively on 7-14 day schedule. Maximum 27.1 fl oz/A/season. Maximum 4 applications/season.
<b>MANZATE MAX/ MANZATE PRO-STICK, PENNCOZEB 75DF</b>	C, M, P,S, W	1.6-2.4 qt/2-3 lb	5	Begin applications when plants are in the two-leaf stage; repeat at 7-10 day intervals. Maximum 19.2 qt/A/yr for Manzate Max; 24 lb/A/yr (cucumber), 22.5/A/yr (other cucurbits) for Manzate Pro-Stick, Penncozeb 75DF. Some melon varieties are sensitive; consult Extension.
<b>MANKOCIDE</b>	C, M, P,S, W	2-3 lb	5	Start when plants are 2 leaf (melons) and repeat at 7-10 day intervals. Maximum 24 lb/A/season.
<b>MERIVON</b>	C, M, P,S, W	4-5.5 fl oz	0	Apply prior to disease development.
<b>METTLE 125 ME</b>	C, M, P,S, W	8 fl oz	0	Minimum 7-day retreatment interval. Do not make >5 applications/A/year. For powdery mildew, apply on a 7- to 10-day protectant schedule, making no more than 2 sequential applications before alternating to another fungicide with a different mode of action. See FL (exp. date not given) 6-8 fl oz/A.
<b>MURAL</b>	C, M, P,S, W	5.23-6.97 oz	0	Apply prior to disease development.
<b>OMEGA 500F</b>	M, W	0.75-1.5 pt	30	Apply on 7-10 day schedule. Do not apply more than 9 pt/A/year. REI 12 hours.
<b>ONSET 3.6L</b>	C, M, P,S, W	4-8 fl oz	7	Use 4-6 fl oz/A for powdery mildew and 8 fl oz/A for gummy stem blight. Apply as protective spray. Repeat on 10-14 day intervals. Maximum 24 fl oz/A/season. Note 1.
<b>ORONDIS GOLD 200</b>	C, M, P,S, W	2.4-19.2 fl oz	0	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. No more than 4 applications per crop; do not use for >33% of total soil fungicide applications. 7-day minimum application interval. See for tank mix with Ridomil Gold SL in most states (exp. 1/2020). See for tank mix with Orondis Gold B in TX, OR (exp. 2/2018).

PHI – preharvest interval in days.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

**Note 1:** See label for fungicide rate for each disease.

# CUCURBIT DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ORONDIS GOLD B</b>	C, M, P, S, W	1-2 pt	–	PPI (broadcast or band), apply with liquid fertilizer, incorporate in top 2" of soils; Soil spray (broadcast or band) in water or liquid fertilizer at planting; Injection (drip irrigation). For banded applications use a 7" band. Also see Orondis Gold 200 for 2ee recommendations.
<b>ORONDIS OPTI A, ULTRA A</b>	C, M, P, S, W	2-4.8 fl oz	0	Begin ground, air-assisted or aerial applications prior to disease development and on a 5- to 14-day interval for downy mildew and a 3- to 14-day interval for Phytophthora blight. See label for pickle fruit protection. Maximum 2 sequential applications before rotating to different mode of action. Do not exceed 6 foliar applications/A/year; do not use for >33% of total foliar fungicide applications. 24c MI (exp. 12/2021) additional resistance management guidelines for downy mildew control. 2ee for tank mix Opti A/Opti B in TX, OR (exp. 2/2018), RI (exp. 6/2018); Ultra A/Ultra B in TX (exp. 3/2018), AL, CT, KY, MA, NJ (exp. 6/2018), RI (exp. 11/2018), OR (exp. 12/2018). 2ee in most states for tank mix Opti A/Opti B (exp. 12/2018) and Ultra A/Ultra B (exp. 11/2018).
<b>ORONDIS OPTI</b>	C, M, P, S, W	1.75-2.5 pt	7	Application interval of 7-14 days. Do not make >2 sequential applications before rotating to fungicide with different mode of action. Do not exceed 6 applications/year. Do not follow soil applications of a.i. with foliar applications of Orondis Opti.
<b>ORONDIS OPTI B</b>	C, M, P, S, W	2 pt	0	Begin ground, air or chemigation applications when plants are in first true leaf stage or when conditions favor disease development. Repeat at 7-day intervals. See label for special notes on watermelon. Also see Orondis Opti A 2ee recommendations.
<b>ORONDIS ULTRA B</b>	C, M, P, S, W	8 pt	0	Begin ground, aerial or chemigation applications prior to disease development, then at 7- to 10-day intervals. No more than 1 consecutive application to suppress downy mildew before switching to another non-Group 40 fungicide, and must use silicone-based adjuvant, NIS, COC or blend when applying by ground/air. For Phytophthora blight, apply with a copper-based fungicide and alternate with another fungicide on a 7- to 14-day interval. Also see Orondis Ultra A 2ee recommendations.
<b>PH-D</b>	C, M, P, S, W	6.2 oz	0	Apply preventatively and continue on a 10-14 day interval. Alternate with different modes of action. Maximum 5 applications.
<b>PRESIDIO</b>	C, M, P, S, W	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Maximum of 2 sequential applications before alternating mode of action. Maximum 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
<b>PREVICUR FLEX</b>	C, M, P, S, W	1.2 pt	2	Apply as a preventative. See label for pythium control. Maximum of 6 pt/A/season.
<b>PREVISTO</b>	C, M, P, S, W	0.75-2 qt	0	Repeat sprays at 5- to 7-day intervals. Crop injury may occur from application at higher rates and shorter intervals. Use higher rates when conditions favor disease development.
<b>PRISTINE</b>	C, M, P, S, W	12.5-18.5 oz	0	Begin applications prior to disease and continue on a 7-14 day interval. Maximum of 1 application before alternating mode of action. Maximum 4 applications or 74 oz/A/season. Note 1.
<b>PROCURE 480SC</b>	C, M, P, S, W	4-8 fl oz	0	Apply at the start of vining or first indication of disease.
<b>QUADRI OPTI</b>	C, M, P, S, W	3.2 pt	1	Apply prior to disease development and continue on a 7-14 day schedule for most diseases. See label for belly rot. Maximum 1 application before rotating to another mode of action. Maximum 1 lb a.i./A/season.
<b>QUADRI TOP</b>	C, M, P, S, W	12-14 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule for most diseases. See label for belly rot. Maximum 1 application before rotating to another mode of action. Maximum 56 fl oz/A/year.
<b>QUINTEC</b>	M, P, S, W	4-6 fl oz	3	Apply before symptoms appear.
<b>RALLY 40WSP</b>	C, M, P, S, W	2.5-5 oz	0	Begin at the first sign of disease and continue on a 7-10 day interval. Maximum 1.5 lb/A/season. Observe 30 day plant back for all new crops at site.
<b>REASON 500SC</b>	C, M, P, S, W	5.5 fl oz	14	Apply prior to when conditions favor disease development and continue on a 5-10 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 22 fl oz/A/season.
<b>REVUS</b>	C, M, P, S, W	8 fl oz	0	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 32 fl oz/A/season. See supplemental label for new use expiring December 19, 2016.

PHI – preharvest interval in days.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

**Note 1:** See label for fungicide rate for each disease.



# CUCURBIT DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>RHYME 2.08 SC</b>	M	5-7 fl oz	7	Apply preventively or when conditions favor disease development on a 7-day interval as needed. Do NOT make more than 4 applications per year or apply more than 28 fl oz/A/year.
<b>RIDOMIL GOLD SL or RIDOMIL GOLD COPPER</b>	C, M, P, S, W	0.25-2 pt or 1 pack/2.5 A	5	Ridomil Gold SL use directed spray at plant base and incorporate or drip irrigation, or see label for use in transplant water. Apply 1-2 pt/A Ridomil Gold SL for control of damping off. Ridomil Gold Copper as foliar spray controls downy mildew. See label for soil applications of Ridomil Gold SL. See label for maximum amount of a.i.s from all sources.
<b>SERENADE ASO</b>	C, M, P, S, W	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Sup. label for soil drench, shanked-In, Injected and in-furrow.
<b>SOVRAN</b>	C, M, P, S, W	3.2-4.8 fl oz	0	Do not apply more than 4.8 fl oz product/A/application. Do not apply more than 19.2 fl oz/A/season.
<b>SWITCH 62.5WG</b>	C, M, P, S, W	11-14 oz	1	Begin prior to or at the onset of disease and repeat applications on 7-10 day intervals.
<b>TAEGRO ECO</b>	C, S, W	2.6-5.2 oz		See label.
<b>TANOS</b>	C, M, P, S, W	8 oz	3	Tank mix with a contact fungicide with a different mode of action. Use 8-10 oz/A for fruit blotch and phytophthora suppression. Apply prior to disease development and continue on a 5-7 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 4 applications/crop.
<b>TETRABAN</b>	C, M, P, S, W	6-15.5 fl oz	1	Apply by ground, air or irrigation. For downy and powdery mildews apply on a 5- to 7-day schedule. For belly rot control make first application at 1- to 3-leaf crop state, with 2nd application just prior to vine tip over or 10-14 days later, whichever comes first. For all other applications, apply prior to disease development and continue on 7- to 14-day schedule. See label tank mixes restrictions. See label for application instructions and in-furrow or banded rates for soilborne diseases.
<b>TOPGUARD</b>	C, P, S, W	10-14 fl oz	0	Do not apply more than 14 fl oz product/A/application. Do not apply more than 56 fl oz/A/year. Do not make more than 4 applications per year.
<b>TOPGUARD EQ</b>	C, M, P, S	5-8 fl oz	1	Apply preventatively or when conditions are favorable for disease development. See label for disease specific application directions. An adjuvant like NIS, Interlock or Masterlock may be applied. Do not apply a COC, MSO, silicone base adjuvant.
<b>TOPSIN M WSB</b>	C, M, P, S, W	0.5 lb	1	Application method and timing depend on specific disease.
<b>TORINO</b>	C, M, P, S, W	3.4 fl oz	0	No more than 2 applications/year. Do not apply more than once every 7 days.
<b>UNIFORM</b>	C, P, S, W	0.34 fl oz/1000' row	–	Apply in-furrow.
<b>ZAMPRO</b>	C, M, P, S, W	14 fl oz	0	Begin application prior to disease development and continue on 5-7 day interval. Maximum 2 sequential applications before switching to a different mode of action. Maximum 42 fl oz/A/season.
<b>ZING!</b>	C, M, P, S, W	36 fl oz	0	Begin applications at two leaf stage and repeat at 7-10 day intervals or when conditions favor disease. Minimum re-treatment interval is 7 days. See label for watermelon treatment.

PHI – preharvest interval in days.

\* C – Cucumber, M – Muskmelon, P – Pumpkin, S – Squash, W – Watermelon

**Note 1:** See label for fungicide rate for each disease.



# LEAFY VEGETABLE WEED CONTROL

Preemergence Herbicides			
Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	C, E, L, M, P, S	1-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PRE for transplants no closer than 1 day before transplanting and burndown no later than 7 days before planting. Tankmix with glyphosate for faster weed control.
<b>CAPAROL 4L</b>	P	1 pt	PRE. Apply up to 14 days after planting.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	C, E, L, M, P, S	Up to 24 fl oz or Up to 32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	PP, PRE. Apply prior to planting, preemergence, or at-planting. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DACTHAL W-75</b>	C, M	6-14 lb	Apply at seeding or transplanting prior to weed seed germination. Can be incorporated.
<b>DUAL MAGNUM</b>	C, M, S	0.33-0.67 pt	24c ME, WA (indemnified; exp. 12/2019) for spinach grown for seed. 24c TN (indemnified; exp. 12/2021) for weed control in C, M; OH (indemnified; exp. 12/2021) for C, M, S.
<b>GRAMOXONE SL/SL 2.0</b>	C, E, L	2-4 pt + 1 pt NIS/100 gal	PP or PRE.
<b>KERB SC</b>	E, L	2.5-5 pt	2.5-5 pt/A on coarse or medium soils, 3.5-5 pt/A on fine soils. Apply before or after seeding and before weeds germinate. Do not apply POST to lettuce. Must be incorporated or irrigated into soil. Do not exceed 5 pt/A. PHI 55 days. Supplemental label AZ, CA (exp. date not given) for aerial in head lettuce at 1.2-2.4 qt/A. See label for all restrictions and uses.
<b>LOROX DF</b>	P	1-3 lb	PRE. Apply east of Mississippi river and in TX (mineral soils only). May apply POST on muck soils at 1 lb/A after crop has three true leaves. PHI 30 days.
<b>PREFAR 4-E</b>	C, E, L, M, P, S	5-6 qt	Apply before seeding and incorporate lightly.
<b>TRUST/TREFLAN HFP or TREFLAN TR-10</b>	C, M	1-1.5 pt or 5-7.5 lb	1 pt/A on light colored soils- less than 2% organic matter, 1.5 pt/A on darker colored soils, 2 lb/A on light colored soils to 4 lb/A on dark colored soils with 4% or less organic matter. Apply before planting and incorporate immediately into soil by double discing or with other equipment, to give thorough mixing 3-4 inches deep. Not effective on muck and other high organic soils.
<b>VIDA</b>	C, E, L, M, P, S	0.5-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

Postemergence Herbicides			
Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>CAPAROL 4L</b>	P	1 pt	Apply up to 30 days prior to harvest. Another application can be made to regrowth up to 30 days prior to second cutting. Maximum 3 applications/year. PHI 30 days.
<b>CORNERSTONE 5 PLUS</b>	C, E, L, M, P, S	Up to 24 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	POSTD. Apply through directed application postemergence. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>FUSILADE DX</b>	E, S	6-16 fl oz + 1-2 qt HSOC-COC <sup>1</sup> /100 gal	Endive: Apply to actively growing grasses see label for specific rates by grass species. Do not apply more than 48 oz/A/year. PHI 28 days. 24c for grassy weeds in spinach grown for seed: WA (exp. 12/2020); 12-16 fl oz/A, do not apply >32 fl oz/A/year.
<b>POAST 1.5E</b>	C, L, M, P, S	1-1.5 pt + 1 pt HSOC-COC <sup>1</sup>	Apply to actively growing grasses. Do not apply more than 3 pt/A per season. 15 day PHI for leaf lettuce and spinach; 30 day PHI for mustard, collards, kale and head lettuce.
<b>SELECT 2 EC/CLEANSE</b>	C, E, L, M, S	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Apply to actively growing grasses. PHI 14 days.
<b>SELECT MAX</b>	C, E, L, M, P, S	9-16 fl oz + 1 qt NIS/100 gal	Apply POST once per season. PHI 14 days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

\*\*May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# LEAFY VEGETABLE WEED CONTROL

## Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>STINGER</b>	C, M, S	0.17-0.33 pt	Applications to S in all states except CA,FL. Apply in 2-5 leaf stage of crop growth. PHI 21 days. Applications to C,M for use and distribution only in AZ, AR, CA, CO, CT, DE, GA, ME, MA, MI, MO, NH, NJ, NM, NY, NC, OH, OK, PA, RI, SC, TX, VT, VA, WV, WI. PHI 30 days. See label for state-specific maximums.
<b>TARGA</b>	S	4-12 fl oz	S grown under contract as non-food/non-feed crop for seed production in ID, MT, OR, WA, WY. Controls annual and perennial grasses. Ground application only. See label for other important restrictions.
<b>UPBEET</b>	E	0.5 oz	Apply when 80% of plants have at least 1 true leaf developed. Maximum 1.5 oz/A/season. PHI 60 days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

\*\*May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

## Stale Seedbed Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>GRAMOXONE SL/SL 2.0</b>	C, L	2-4 pt + 1 pt NIS/100 gal	Apply to emerged weeds before or after seeding but before crop emerges. 24c in weed control in row middles in L applied at 1.5 pt/A in MI (exp.6/2021).
<b>ROUNDUP POWERMAX/ WEATHERMAX**</b>	C, E, L, M, P, S	11-44 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply to emerged weeds before or after planting but before crop emerges. Check label for specific weeds controlled and rates for perennials. <sup>a</sup> Or WC+NIS <sup>2</sup> .

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

\*\*May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.



# LEAFY VEGETABLE INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>AVAUNT</b>	L C M E, L, P S	4.8-9.6 fl oz 2.5-3.5 fl oz 2.5-6 fl oz 3.5 fl oz	3	Note 1.
<b>BATTERY 2.5EC</b>	C, L, M	2.5-5 fl oz	1,5	Head lettuce only. PHI 1 day collards, mustard and 5 days lettuce. Note 1.
<b>BAYTHROID XL</b>	C, E, L, M, P, S	0.8-3.2 fl oz	0	Note 1.
<b>BELAY</b>	C, E, L, M, P, S	9-12 fl oz: soil 3-4 fl oz: foliar	21 7	For foliar, do not apply treatments <10 days apart; do not apply during bloom or when bees are foraging.
<b>BELEAF 50SG</b>	E, L, M, P, S	2.8-4.28 fl oz	0	Note 1.
<b>BESIEGE</b>	L	5-9 fl oz	1	Maximum 31 fl oz/A or 0.3 lb a.i./A. year lamda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day minimum application interval.
<b>BRACKET 97/ORTHENE 97</b>	L	0.5-1 lb	21	Do not apply more than 2.125 lb a.i./A per season. Crisp head lettuce only. Note 1.
<b>BRIGADIER</b>	C L M S	3.8-6.1 fl oz 3.8-6.14 fl oz	7 40	Head lettuce only. Note 1.
<b>CAPTURE LFR</b>	C, M, S	3.4-8.5 fl oz	-	Apply directed to furrow or seed bed.
<b>CERTADOR</b>	E, L, P, S	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21,1	Use only one application method. Apply as foliar when pests appear, as needed but not more than every 7 days. See label for row spacing rates.
<b>CLOSER SC</b>	C, E, L, M, P, S	1.5-5.75 fl oz	3	Do not make >4 applications/crop, 2 consecutively, or <7 days apart, and >17 fl oz/A/season. Do not apply anytime 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 feet out from the downwind edge of the field, a downwind 12-ft on-field buffer must be observed. Note 1.
<b>CONFIRM 2F</b>	C, E, L, M, P, S	6-8 fl oz	7	Rate dependent on target pest; see label. 10- to 14-day application interval.
<b>CORAGEN</b>	C, E, L, M, P, S	3.5-5 fl oz	1,3	At-planting or foliar. PHI 3 days for collard and mustard. Note 1.
<b>DECLARE</b>	L	0.77-1.54 fl oz	1	Apply every 5 days when required by scouting. When applying by air use a min. of 2 gal of water/A.
<b>DIAZINON AG500</b>	C, E, L, M, S	1-4 qt 2-4 qt	14	PHI 14 days lettuce. Note 1.
<b>DIMATE 4E</b>	C, E, L, M, P, S	0.5 pt	14	Leaf lettuce only.
<b>DIPEL DF</b>	C, E, L, M, P, S	0.25-2 lb	0	Bt insecticide. Note 1.
<b>DURIVO</b>	C, E, L, P, S	10-13 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Maximum 1 soil application/season.
<b>ENDIGO ZC</b>	L	4-4.5 fl oz	7	Note 1.
<b>ENTRUST SC</b>	C, E, L, M, P, S	1.5-10 fl oz	1	Do not make applications less than 4 days apart. Do not make more than 6 applications per calendar year. Do not apply more than 9 oz/29 fl oz/A/year. See various states (exp. date not given) for overhead sprinkler chemigation use. Note 1.
<b>EXIREL</b>	C, E, L, M, P, S	7-20.5 fl oz	1	Apply foliar with an effective adjuvant, except do not include adjuvant on spinach. Do not apply sooner than every 5 days. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>FASTAC EC/FASTAC CS</b>	C, E, L, M, P, S	2.2-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply >11.4 fl oz/A/season. Minimum 10 GPA ground and 5 GPA air.
<b>FULFILL</b>	C, E, L, M, P, S	2.75 oz	7	Do not exceed 5.5 oz/A/season. Allow ≥ 7 days between applications. 24c for C,E,L,M,P grown for seed in WA (exp. 12/2020).
<b>GLADIATOR</b>	E, L, P, S	10-19 fl oz	7	Maximum 57 fl oz/A/year. Note 1.
<b>GRIZZLY TOO</b>	L	0.96-1.92 fl oz	1	Do not exceed 0.64 pt/A/season. Note 1.
<b>HERO</b>	C, L, M, P, S	4-10.3 fl oz	7	Note 1.
<b>INTREPID 2F</b>	C, E, L, M, P, S	4-10 fl oz	1	Use 4-8 oz/A for early season applications only and 8-10 oz/A for mid- to late-season applications or for heavy infestations or applications when coverage is difficult. Do not exceed 64 fl oz/A/year. Note 1.

PHI – preharvest interval in days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

SEE NOTES AT END OF SECTION.

# LEAFY VEGETABLE INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>LAMBDA-CY AG</b>	L	1.92-3.84 fl oz	1	When applying by air apply in a minimum of 2 gal of water/A
<b>LANNATE LV</b>	C, E, M, P, S L	1.5-3 pt 0.75-3 pt	7, 10	Fresh market collards only. PHI 7 for up to 1.5 pt/A on lettuce; 10 day PHI for > 1.5 pt/A. 7 day PHI for spinach. 10 day PHI for collard, endive, mustard, parsley. Note 1.
<b>LEVERAGE 360</b>	C, E, L, M, S	3 fl oz	7	
<b>MALATHION 5/SEC</b>	C E L M P S	1-1.6 pt or 1.5 pt 1.5-2 pt 2-3 pt 1-1.6 pt or 1.6 1-2 pt or 1.5-2.4 1.6 pt	7, 14, 21	14 day PHI for leaf lettuce. Note 1.
<b>MALATHION 8 FLOWABLE</b>	C, M, S E L P	1 pt 1.25 pt 1.88 pt 1.5 pt	7 7 14 7	C, M: Maximum of 3 applications/year. E, L, P, S: Maximum of 2 applications/year.
<b>MINECTO PRO</b>	E, L, P	7.5-10 fl oz	7	Best control achieved with ground application. Do not make more than 2 sequential applications. Cabbage looper: 7.5-10 fl oz/A. Green peach aphid: 10 fl oz/A.
<b>MOVENTO/MOVENTO HL</b>	C, E, L, M, P, S	4-5 fl oz/1.5-2.5 fl oz	3	Maximum 10 fl oz/A/season for Movento, 5 fl oz/A/season for Movento HL.
<b>MSR</b>	L	2 pt	14, 21	Head lettuce. PHI 21 days except AZ, CA: 14 days for 1 application and 21 days for two.
<b>MUSTANG MAXX</b>	C, E, L, M, P, S	2.24-4 fl oz	1	Note 1.
<b>NEEMIX 4.5</b>	C, E, L, M, P, S	4-16 fl oz	0	Note 1.
<b>OBERON 25C</b>	C, L, M, P, S	7-8.5 fl oz	7	White fly control.
<b>PLATINUM</b>	C, E, L, M, P, S	5-11 fl oz	30	Soil application.
<b>PLATINUM 75 SG</b>	C, E, L, M, P, S	1.66-3.67 oz	30	Apply in-furrow, drench, drip, or shanked (See label). Do not exceed 3.67 oz/A/season.
<b>PROCLAIM</b>	C E, L, P, S	2.4-4.8 oz 3.2-4.8 oz	7, 14	PHI 7 days for E, L, P, S and 14 days for C. Note 1.
<b>RADIANT SC</b>	C, E, L, M, P, S	5-10 fl oz	1	Note 1.
<b>REQUIEM EC</b>	C, L, M, P, S	2-4 qt	0	For whiteflies (2-3 qt/A), apply before damaging levels and repeat as needed. For leafminer suppression (3-4 qt/A), apply before thresholds have been reached. Note 1.
<b>SEQUOIA</b>	C, E, L, M, P, S	1.5-5.75 fl oz	3	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. Do not apply any time 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 ft out from the downwind edge of the field, a downwind 12 ft on field buffer must be observed. 24c CA (exp. 3/2022) for control or suppression of foxglove and lettuce aphid. Note 1.
<b>SEVIN XLR PLUS</b>	C, E, L, M, P, S	0.5-2 qt	14	Do not apply >6 qt/A/year. Bee caution: do not apply to target crops or weeds in bloom. Note 1.
<b>SIVANTO PRIME</b>	C, E, L, M, P, S	7-14 fl oz	1	Foliar: Rate is pest-dependent, 7 day minimum application interval. PHI 1 day. Ground minimum 10 GPA, air minimum 2 GPA.
<b>STEED</b>	C, L, M P	3.5-4.7 fl oz 2.5-3.5 fl oz	7 21	Head lettuce only. Apply in minimum 5 GPA (air) or 15 GPA (ground). Do not make applications <7 days apart or >28.1 fl oz/A/season. Note 1.

PHI – preharvest interval in days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

**Note 1:** See label for insecticide rate for each insect.

# LEAFY VEGETABLE INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>TRIGARD</b>	C, E, L, M, P, S	2.66 oz	7	Leafminer control. Up to 6 applications for celery, mustard, and lettuce and 5 for other leafy vegetable.
<b>TUNDRA/BIFEN 2 AG GOLD/BRIGADE 2EC</b>	C, L, M, S	2.1-6.4 fl oz	7, 40	Head lettuce only. PHI 7 days for lettuce and 40 days for spinach. Note 1.
<b>VENOM 70SG</b>	E, L, P, S	1-3 oz	7, 21	Use 5-6 oz soil applied. PHI 21 days for soil application. Note 1.
<b>VERIMARK</b>	C, E, L, M, P, S	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. Do not apply more than 13.5 fl oz at planting. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>VOLIAM FLEXI</b>	C, E, L, M, P, S	4-7 oz	7	Maximum 14 oz/A/season. See for most states (exp. date not given) for brown marmorated stink bug at 6-7 oz/A/application.
<b>VOLIAM XPRESS</b>	L	5-9 fl oz	1	Note 1.
<b>WARRIOR II</b>	L P	0.96-1.92 fl oz 1.28-1.92 fl oz	1 NL	Do not exceed 1.2 pt/A/season. Note 1. 24c OR (exp. 12/2020) for control of lygus bug in P grown for seed.
<b>XENTARI</b>	C, E, L, M, P, S	0.5-2 lb	0	Bt insecticide. Note 1.

PHI – preharvest interval in days.


\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

**Note 1:** See label for insecticide rate for each insect.



# LEAFY VEGETABLE DISEASE CONTROL

Labeled Fungicides	
LEAFY VEGETABLE	FUNGICIDE
DISEASE*	Actigard 50WG Aliette WDG Badge SC or Badger X2 Bio-Tam Cabrio <sup>3</sup> Cannonball WG/WP Contans WG Cuprofix Ultra 40 Dispers <sup>7</sup> Curzate 60DF <sup>4</sup> Dithane F-45 <sup>4,10</sup> Endura Flint Fontelis Forum Gem 500SC/Flint Extra Heritage Kocide 3000 Koverall Luna Sensation Manzate Max Manzate Pro-Stick/Pemcozeb 75DF Merivon Omega 500F
Alternaria Leaf Blight	
Alternaria Leaf Spot	
Anthraco nose	
Ascochyta Leaf Spot	
Black Rot	
Black Spot	
Blue Mold	
Botrytis Rot	
Bottom Rot	
Cercospora Leaf Spot	
Damping Off	
Downy Mildew	
Fusarium	
Gray Mold	
Lettuce Drop	
Phoma Basal Rot	
Phytophthora	
Powdery Mildew	
Pythium	
Rhizoctonia	
Rhizoctonia Bottom Rot	
Sclerotinia Stem Rot	
Septoria Leaf Spot	
White Rust	

So- Soil application. S - Suppression.  See Fungicide Resistance Management in the TECHNICAL INFORMATION section.  
 \*Other diseases may be controlled, see label.  
<sup>1</sup> Spinach only. <sup>2</sup> Collard and mustard only. <sup>3</sup> Endive, lettuce, parsley and spinach only. <sup>4</sup> Lettuce only.  
<sup>5</sup> Endive, lettuce and parsley only. <sup>6</sup> All but mustard. <sup>7</sup> Copper sulfate. <sup>8</sup> All but spinach. <sup>9</sup> Supplemental label.  
<sup>10</sup> See 24c for leafy vegetable diseases in OR and WA crops grown for seed. <sup>11</sup> Spinach, lettuce and endive. <sup>12</sup> Lettuce and endive. <sup>13</sup> Collard, lettuce and mustard.

# LEAFY VEGETABLE DISEASE CONTROL

## Labeled Fungicides (continued)

LEAFY VEGETABLE	FUNGICIDE	Onset 3.6L	Orodis Gold 200	Orodis Gold B	Orodis Ultra A	Orodis Ultra B	Precivur Flex	Presidio <sup>3</sup>	Previsto	Pitaxor	Procuire 480SC <sup>8</sup>	Quilt	Quintec <sup>4</sup>	Rally 40WSP	Reason 500SC	Revus	Rhyme 3.08 SC	Ridomil Gold Copper	Ridomil Gold SL	Rovral 4	Serenade ASO	Scholar	Switch 62.5WG	Tanos <sup>6</sup>	Taegro ECO	Tetranban	Topaz/Tilt	Topguard EQ	Uniform	Zampro
Alternaria Leaf Blight										●													● <sup>2</sup>			●				
Alternaria Leaf Spot		●							● <sup>2</sup>			●					●				●						●	●		
Anthracnose								● <sup>1</sup>	●			●					●									●		●		
Ascochyta Leaf Spot																														
Black Rot								● <sup>2</sup>																						
Black Spot												●																		
Blue Mold						●		● <sup>1</sup>								● <sup>3</sup>														
Botrytis Rot																														
Bottom Rot																				●										
Cercospora Leaf Spot		●						● <sup>1</sup>	●		●			S <sup>2</sup>			●					S <sup>2</sup>				●	●	●		
Damping Off			●																											So
Downy Mildew		●	●	●	●	●	●	● <sup>13</sup>	S					●	●		●	● <sup>10</sup>		●			●	S, So	●	●	●		●	
Fusarium																								S, So						
Gray Mold																				●			● <sup>5</sup>							
Lettuce Drop																				●										
Phoma Basal Rot																							● <sup>5</sup>							
Phytophthora																														
Powdery Mildew		●							●		●	● <sup>4</sup>	●				●			●			● <sup>2</sup>				●	●		
Pythium										●																				So
Rhizoctonia									●															S, So						So
Rhizoctonia Bottom Rot																										So				
Sclerotinia Stem Rot																				● <sup>9</sup>			● <sup>5</sup>	S, So						
Septoria Leaf Spot																	●					● <sup>5</sup>				●	●			
White Rust							●	● <sup>1</sup>	●					● <sup>3</sup>				● <sup>10</sup>					● <sup>5</sup>			●	●			

So - Soil application. S - Suppression.



See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

\*Other diseases may be controlled, see label.

<sup>1</sup> Spinach only. <sup>2</sup> Collard and mustard only. <sup>3</sup> Endive, lettuce, parsley and spinach only. <sup>4</sup> Lettuce only.

<sup>5</sup> Endive, lettuce and parsley only. <sup>6</sup> All but mustard. <sup>7</sup> Copper sulfate. <sup>8</sup> All but spinach. <sup>9</sup> Supplemental label.

<sup>10</sup> See 24c for leafy vegetable diseases in OR and WA crops grown for seed.

## Disease Management Guidelines

Disease	Labeled Crops*	Comments/Restrictions
<b>BOTTOM ROT AND DROP</b>	C, E, L, M, P, S	Avoid wet fields with a history of disease.
<b>DAMPING OFF</b>	C, E, L, M, P, S	Plant only western-grown, hot-water treated seed with thiram or captan for spinach, collard and mustard greens. Treat with captan or thiram for lettuce.
<b>DOWNY MILDEW</b>	C, E, L, M, P, S	Plant downy mildew resistant spinach.
<b>SEED ROT</b>	C, E, L, M, P, S	Treat lettuce seed with captan or thiram.

## Disease Treatment Guidelines

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTIGARD 50WG</b>	L, S	0.5-0.75 oz	7	Apply preventatively, begin applications at first to second true leaf or after thinning. Continue on a 7-10 day schedule. Maximum 2.25 oz/A/year for "B" and 4 oz/A/year for "L".

PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

# LEAFY VEGETABLE DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ALIETTE WDG</b>	E, L, P, S	2-3 lb	7	Apply when conditions favor disease and continue at 7-14 day intervals. Do not mix with copper fungicides. Maximum 7 applications/season.
	C, M	2-5 lb	3	Apply when conditions favor disease development and continue on 7-21 day intervals. Maximum 7 applications/season.
<b>BADGE SC OR BADGE X2</b>	C, E, L, M, P, S	0.5-2.5 pt or 0.5-2.5 lb	0	0.75-1.5 pt/A or 0.75-1.5 lb/A for L,E; 1-2.25 pt/A or 1-2.25 lb for S. Application intervals: 7- to 10-days on C,M,P,S; Badge SC 5- to 10-days or Badge X2 7- to 10-days on L,E. Flecking may occur on spinach leaves, on other crops injury may occur from application at higher rates and shorter intervals. Use higher rates when conditions favor disease development.
<b>BIO-TAM</b>	C, E, L, M, P, S	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
<b>BRAVO WEATHERSTIK</b>	S	3 fl oz	–	Seed crop only. Maximum 12 pt/A/year. 24c WA (exp. 12/2020).
<b>CABRIO</b>	E, L, P, S	8-16 oz	0	Use 8-12 oz/A for white rust, 16 oz for lettuce downy mildew, and 12-16 oz/A for other label diseases.
<b>CANNONBALL WG</b>	E, L, P, S	7 oz	0	Begin prior to onset of disease and continue on a 7-10 day interval. Apply by ground only. Do not apply more than 28 oz/A/season. Do not apply more than 0.9 lb ai/A/season fludioxonil product.
<b>CANNONBALL WP</b>	E, L, P	7 oz	0	Begin prior to disease development and continue on a 7-10 day interval.
<b>CONTANS WG</b>	C, E, M, P, S L	1-4 lb 2 lb	0	Apply prior to disease infection.
<b>CURZATE 60DF</b>	L	3.2-5 oz	3	Tank mix with a protectant fungicide. Apply on a 5-7 day schedule. Maximum 30 oz/year.
<b>CUPROFIX ULTRA 40 DISPERSS</b>	C, M S	0.75-1.25 lb 1.25-2 lb		Begin prior to disease development and continue on a 7-10 day interval. Leaf flecking may occur.
<b>DITHANE F-45</b>	L	1.2-1.6 qt	10, 14	Begin applications when disease appears and reapply on a 7-10 day schedule. Do not apply PHI 10 for head lettuce. PHI 14 for leaf lettuce. See label for PHIs specific to CA. 24c OR (exp. 12/2019), and WA (exp. 12/2018): crops grown for seed.
<b>ENDURA</b>	L	8-11 oz	14	For direct seeded lettuce, apply immediately after emergence or prior to disease development. For transplanted, apply immediately after transplanting or prior to disease development. NIS at 0.25% v/v may improve performance. Maximum 2 applications/season. Note 1.
	C, M	6-9 oz		
<b>FLINT</b>	P	2-3 oz		Begin preventatively and continue on a 14 day interval.
<b>FONTELIS</b>	C, E, L, M, P, S	14-24 fl oz	3	Begin applications prior to disease development and continue on a 7-14 day schedule. Maximum 2 sequential applications before switching to a different mode of action. Maximum 72 fl oz/A/year. Apply 14-30 fl oz/A for collards and mustard.
<b>FORUM</b>	C, M	6 fl oz	7 0	Begin applications prior to disease development and continue on a 7 day schedule, but rotate to non-Group 40 fungicide at least once. Do not make more than 3 applications/season or exceed 18 fl oz/A/season. Do not use less than 20 GPA by ground or 5 GPA by air. Use of spreading/penetrating adjuvant recommended.
	E, L, P, S	6 fl oz		
<b>GEM 500 SC/FLINT EXTRA</b>	C, E, L, M, P, S	3-3.8 fl oz	0	Apply on a 5- to 10-day interval if needed. Maximum 7.6 fl oz/A/year.
<b>HERITAGE</b>	C, E, L, M, P, S	3.2-8 oz	0	Apply prior to disease development and continue on a 7-14 day schedule. Do not make >2 sequential applications before switching to a different mode of action. Maximum 3 applications and 1.5 lb/A/season. Note 1.
<b>KOCIDE 3000</b>	E, L	0.75-1.5 lb	0	Begin when disease symptoms first appear or when conditions favor disease development. Continue at 5-10 day intervals if needed. Maximum 26.6 lb/A per season. Supplemental label all states except AZ, CA (exp. date not given) for downy mildew control on lettuce.
<b>KOVERALL</b>	L	2 lb	14	Do not apply more than 8.5 lb/A/crop in CA, 12.8 lb/A in other states. 10 day minimum retreatment interval.
<b>LUNA SENSATION</b>	C, E, L, M, P, S	5-7.6 fl oz	0	Apply using ground, aerial or chemigation. Apply at 7-14 day interval. Do not make more than 2 sequential applications.

PHI – preharvest interval in days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

**Note 1:** See label for fungicide rate for each disease.

# LEAFY VEGETABLE DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>MANZATE MAX/ MANZATE PRO-STICK, PENNCOZEB 75DF</b>	L	1.2-1/6 qt/1.6-2.1 lb	10	Apply prior to disease development and continue on 7-10 day interval. Maximum 6.4 qt/A/yr for Manzate Max, 12.8 lb/A/crop for Manzate Pro-Stick, Penncozeb 75DF. PHI 14 days CA.
<b>MERIVON</b>	E, L, P, S	4-11 fl oz	1	Apply before disease is present.
<b>OMEGA 500F</b>	C, M, S  L	6.45 fl oz/100 gal (transplant) 2.6 pt (soil)  1-1.5 pt	20, 50  30	For use on club root. Apply transplant soil drench immediately after planting at 3.4 fl oz/plant. Soil incorporation in 9 inch band to depth of 6-8 inches with minimum 50 GPA. Do not apply >3.85 pt/A/season. PHI 20 days leafy greens and 50 days heading vegetables. Turnip roots may not be used for human or livestock consumption. For use only in AZ and Imperial Valley of CA. Apply as foliar band, broadcast, or soil drench in minimum of 50 GPA. Do not apply more than 1.5 pt/A/year. Do not use an adjuvant.
<b>ONSET 3.6L</b>	C, M	3-4 fl oz	7	Apply as protective spray. Maximum 16 fl oz/A/season.
<b>ORONDIS GOLD 200</b>	E, L, P, S	4.8-19.2 fl oz	0	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. No more than 4 applications per crop; do not use for >33% of total soil fungicide applications. 7-day minimum application interval. 2ee for tank mix with Ridomil Gold SL in AL, AR, AZ, CO, DE, FL, GA, IA, ID, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, OH, OK, PA, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY (exp. 1/2020). 2ee for tank mix with Orondis Gold B in TX, OR (exp. 2/2018).
<b>ORONDIS GOLD B</b>	E, L, P, S	1-2 pt	7,3,21	PPI (broadcast or band), apply with liquid fertilizer, incorporate in top 2" of soils; Soil spray (broadcast or band) in water or liquid fertilizer at planting. Maximum 1 soil application/year. PHI 7 days except for spinach (3 or 21 days depending on application method, sequence and a.i.s totals). See label for vegetable-specific maximum a.i./year. Also see Orondis Gold 200 for 2ee recommendations.
<b>ORONDIS ULTRA A</b>	E, L, P, S	2-4.8 fl oz	0	Begin foliar ground, air-assisted or aerial applications prior to disease development and on a 3- to 14-day interval for downy mildew <i>Bremia lactucae</i> , and a 3- to 10 day interval for downy mildew <i>Peronospora farinosa</i> . Maximum 2 sequential applications before rotating to different mode of action. Do not exceed 6 foliar applications/A/year; do not use for >33% of total foliar fungicide applications. 2ee for tank mix with Ultra B in TX (exp. 3/2018); AL, CT, KY, MA, NJ (exp. 6/2018); AR, AZ, CO, DE, FL, GA, IA, ID, IL, IN, KS, LA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NM, NV, OH, OK, PA, RI, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY (exp. 11/2018); OR (exp. 12/2018).
<b>ORONDIS ULTRA B</b>	E, L, P, S	8 pt	1	Begin ground, aerial or chemigation applications prior to disease development, then at 7- to 10-day intervals. No more than 2 consecutive applications before switching to another non-Group 40 fungicide. Use of NIS, COC or blend is recommended. Also see Orondis Ultra A 2ee recommendations.
<b>PRESIDIO</b>	E, L, P, S	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Maximum of 2 sequential applications before alternating mode of action. Maximum 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
<b>PREVICUR FLEX</b>	L	2 pt	2	Apply when conditions favor disease development.
<b>PREVISTO</b>	C, L, M, P, S	0.75-2 qt	0	C, L, M, S: 0.75-2 qt, 7- to 10-day application interval. P: 1-3 qt, 10- to 14-day application interval under light disease pressure, 7-day interval under heavy disease pressure.
<b>PRIAXOR</b>	C, M	6-8.2 fl oz	3	Apply prior to onset of disease and continue on a 7-14 day interval. Do not apply more than 3 times/season or 24.6 fl oz/A/season. Do not make more than two sequential applications before rotating to non group 7 or non group 11 fungicide.
<b>PROCURE 480SC</b>	C, E, L, M, P	6-8 fl oz	0,1	PHI 1 day for collards, 0 for the rest. Begin applications at the first indication of disease. Continue on a 14 day schedule.
<b>QUILT</b>	C, M	10.5-14 fl oz	7	Begin applications at first sign of disease. Repeat on a 7- to 10-day interval. Switch to another fungicide with a different mode of action if disease levels continue to increase or after 2 applications.
<b>RALLY 40WSP</b>	L	5 oz	3	Begin applications when disease first appears or when conditions favor development. Reapply at 14-day intervals. No more than 5 oz/A/application. No more than 1.25 lb/A/season. No more than 4 applications per season.

PHI – preharvest interval in days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

**Note 1:** See label for fungicide rate for each disease.

# LEAFY VEGETABLE DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>REASON</b>	C, E, L, M, P, S	5.5-8.2 fl oz	2	Head or leaf lettuce. Apply at 5-10 day intervals.
<b>REVUS</b>	C, E, L, M, P, S	8 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 32 fl oz/A/season. See supplemental label for new use expiring December 19, 2016.
<b>RHYME 2.08 SC</b>	C, E, L, M, P, S	5-7 fl oz	7	Apply preventively or when conditions favor disease development on a 7-day interval as needed. Do NOT make more than 4 applications per year or apply more than 28 fl oz/A/year.
<b>RIDOMIL GOLD SL or RIDOMIL GOLD COPPER</b>	C, L, M, S	0.125-2 pt or 1 pack/2.5 A	7, 3	Ridomil Gold SL: Apply in a tank mix before disease infection, continue on a 14 day schedule. See label for soil applications. For control of damping off in lettuce and spinach, apply 1-2 pt/A. PHI 7 days. For control of white rust and downy mildew in spinach, apply 0.25 pt/A. Ridomil Gold Copper: Controls white rust and downy mildew on spinach. For optimal results, see label for sequence of Ridomil Gold SL applications followed by foliar applications of Ridomil Gold Copper. 1 or 2 applications at 14-day intervals. PHI 3 days. See label for maximum amount of a.i.s from all sources.
<b>ROVRAL 4</b>	L	1.5-2 pt	14	Apply from planting to just after thinning. Repeat in 10 days. A third application may be needed if disease-favorable conditions persist. Maximum 3 applications/crop. See AZ, CA (exp. date not given) for preplant control of Sclerotinia spp.
<b>SCHOLAR SC</b>	C	16 fl oz/100 gal	NL	Drip/Drench application. Do not make more than 1 application.
<b>SERENADE ASO</b>	C, L, M, P, S	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Sup. label for soil drench, shanked-in, injected and in-furrow.
<b>SWITCH 62.5WG</b>	C, M E, L, P, S	10-14 fl oz 11-14 oz	7, 0	Apply prior to disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. PHI 7 days collard and mustard. Maximum 56 oz/A/season. 24c OR (exp. 12/2020) for certain diseases in C, M grown for seed.
<b>TANOS</b>	E, L, M, P, S	8 oz	3	Head lettuce only. Apply prior to disease development and continue on a 5-7 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 3 applications/crop.
<b>TAEGRO ECO</b>	E, L	2.6-5.2 oz		See label.
<b>TETRABAN</b>	C, E, L, M, P, S	6-15.5 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.
<b>TOPAZ/TILT</b>	C, M, P	3-4 fl oz	14	Begin applications at first sign of disease and repeat on 14 day interval. Maximum 2 applications before switching to a fungicide with a different mode of action. Maximum 16 fl oz/A/season.
<b>TOPGUARD EQ</b>	C, E, L, M, P, S	5-8 fl oz	7	Apply preventatively or when conditions are favorable for disease development. Specific application directions apply to certain diseases, refer to the label for directions. Reapplication a minimum of 7 day intervals.
<b>UNIFORM</b>	C, E, L, P, S	0.34 fl oz/1000' row		Apply in-furrow.
<b>ZAMPRO</b>	C, E, L, M, P, S	14 fl oz	0	Begin applications prior to disease development and continue on 7 day interval. Maximum 2 sequential applications before rotating to another mode of action. Maximum 42 fl oz/A/season.

PHI – preharvest interval in days.

\* C – Collard, E – Endive, L – Lettuce, M – Mustard, P – Parsley, S – Spinach

**Note 1:** See label for fungicide rate for each disease.



# ONION AND GARLIC WEED CONTROL

Preplant or Preemergence Herbicides			
Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	0, G	1-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Burndown no later than 30 days before planting.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	0, G	Up to 24 fl oz or Up to 32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	PP, PRE. Apply prior to planting, preemergence. Apply at least 3 days before planting in garlic. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DACTHAL W-75</b>	0, G	6-14 lb	Apply at seeding or transplanting and/or at layby. Consult the label for specific rates based on soil type. In sand loam soils, do not exceed 10 lb/A. Apply after planting to soil surface before weed seeds germinate and onions have emerged. In the Pacific Northwest, under dry conditions, should not be applied until just prior to the initial sprinkler irrigation.
<b>DUAL MAGNUM</b>	0, G	0.67-1.33 pt	24c for dry bulb onion and garlic in ME (indemnified; exp. 12/2019); OR and TX (indemnified; exp. 12/2018); CO (exp. 12/2020); OH (indemnified; exp. 12/2021).
<b>GRAMOXONE SL/SL 2.0</b>	0, G	2.5-4 pt + 1 pt NIS/100 gal	Apply to seeded onions PP or PRE for green or dry bulb harvest. Weeds and grasses emerging after treatment will not be controlled. 2-4 pt for PRE or POST directed to dry bulb onion. PHI 60 days.
<b>NORTRON</b>	0	16 or 32 fl oz	Apply PRE at or after planting but before weeds emerge. Use 16 fl oz on coarse soils, and 32 fl oz on medium and fine soils.
<b>OPTIFY</b>	0, G	5-12 fl oz	Plant Growth Regulator. At planting: 5 fl oz/A apply with liquid fertilizer. Broadcast, side or top dress 8-12 fl oz/A. Best results when applied with nutrients. Repeat application $\geq$ 7 days. Do not apply >24 oz/A/season.
<b>PREFAR 4-E</b>	0, G	3 qt	ID and OR. Apply in the fall in 10-50 gpa in a 10-12 in. bank and bed-up by throwing soil from furrows over the sprayed band. In spring, drag-off bed tops with a spike-tooth harrow, being careful not to expose soil beneath the treated layer. Plant in center of beds.
<b>PREFAR 4-E</b>	0, G	5-6 qt	Apply PP or PRE. Incorporation depth of 1-2". May be applied PRE shortly after planting if followed by immediate irrigation. Chemigation is possible with correct system. See label for further instructions.
<b>PROWL H2O</b>	0	2 pt	Apply 2 pt/A as a broadcast spray to soil surface PRE. Do not apply >4 pt/A/season. Do not apply within 30 days of harvest. Do not feed forage or graze in treated fields. 24c ID (12/2020) for delayed preemergence weed control in dry bulb onion 1-3 pt depending on soil texture, not to exceed 3 pt/A per crop.
<b>ROUNDUP POWERMAX/ WEATHERMAX**</b>	0, G	11-32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply prior to the emergence of onions for the control of emerged annual weeds. For specific rates on specific weeds, and perennials refer to the label. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>VIDA</b>	0, G	0.5-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

Postemergence Herbicides			
Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5</b>	0	Up to 24 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	POSTD. Apply through directed application postemergence in onion only. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>FRAMEWORK or PROWL H2O</b>	0, G	1.8-3.6 pt or 1.5-3 pt	Apply as a broadcast treatment when onions have 2-9 true leaves. First treatment can be applied at the loop stage and the second when onions have 2-6 true leaves. Do not mechanically incorporate. Apply PRE or POST from 1-5 leaf garlic. See label for higher rates in muck soils. Treatments are most effective where rainfall or overhead irrigation is received within 7 days of application. PHI 45 days (60 in CA). See label for additional directions and uses in CA, CO, KS, NE, TX, ID, OR, and WA.

\* O – Onion, G – Garlic

\*\* May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# ONION AND GARLIC WEED CONTROL

## Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>FUSILADE DX</b>	O, G	6-16 oz + 0.5 pt NIS/25 gal by ground or 1 pt NIS/25 gal by air	Apply POST to actively growing grasses. Check the label for specific rates by weed species. Cultivation is not recommended 7 days before or after application. Do not apply more than 48 oz/A/year. PHI 45 days.
<b>GOAL 2XL</b>	O, G	See label.	Apply POST to onions that have at least 2 true leaves. For best broadleaf weed control, multiple applications are necessary. Do not apply more than 2 pt/A in one season. See label for further directions. PHI 45 days.
<b>GOALTENDER</b>	O, G	See label	Direct or seeded or transplanted. Application timing and region influence rate. See label for restrictions. 24c for dry bulb onions at first true leaf growth stage: AZ, CA, NM, TX (exp. date not given); MI (exp. 6/2019).
<b>MOXY</b>	O, G	1-1.5 pt	Apply to onions in the 2-5 true leaf stage using a minimum of 50 gpa spray volume. Apply before weeds exceed the 4-leaf stage or 2" in height, whichever comes first. Do not apply to onions until the dew has completely dried. Applications should not be made 24 hours before or after cultivation, rainfall or irrigation. Best to apply on a sunny day. See label for PRE applications.
<b>NORTRON</b>	O	16 fl oz	See label for precautions on crop injury.
<b>OPTIFY</b>	O, G	8-12 fl oz	Plant Growth Regulator. Broadcast, side or top dress 8-12 fl oz/A. Via irrigation: Apply at 8 fl oz/A. Foliar: Apply directly to foliage of actively growing plants $\geq$ 6 fl oz/A in minimum 5 GPA. Best results when applied with nutrients. Repeat application $\geq$ 7 days. Do not apply >24 oz/A/season.
<b>OUTLOOK</b>	O, G	12-21 fl oz	Apply after bulb vegetables have reached the 2 true leaf stage and up to a minimum of 30 days before harvest. For transplanted vegetables, do not apply until transplants are in the ground and soil has settled around the transplants with several days to recover.
<b>POAST</b>	O, G	0.5-1.5 pt + 1 pt HSOC-COC <sup>1</sup>	Apply to actively growing grasses. See label for rate for individual grass species and sizes. Do not cultivate 7 days before or after application. PHI 30 days.
<b>SECTION THREE</b>	O, G	4-10.67 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Apply in minimum 20 GPA. Do not apply more than 10.67 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 45 days.
<b>SELECT 2 EC/CLEANSE</b>	O, G	6-8 fl oz: annuals 8-16 oz: perennials + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	For selective control of annual and perennial grasses. Use a minimum of 5 gal/A and a minimum of 30 lb pressure by ground. By air, apply a minimum of 3 gal/A. 45 day PHI. 14 day interval between Select 2 EC/Cleanse and liquid N or herbicide is recommended. Crop injury may occur with shorter intervals.
<b>SELECT MAX</b>	O, G	9-32 fl oz + 1 qt NIS/100 gal	Do not apply >32 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a minimum 14 day interval. Minimum 20 GPA ground or 10 GPA air (20 in CA). PHI 45 days.
<b>STARANE ULTRA</b>	O	0.35 pt	Apply from 2-6 leaf onion as broadcast or directed after 6 leaf. 24c CO, TX, UT (no exp. date given); MI 97/2018); OR (exp. 12/2018); WI (exp. 12/2019). PHI 42 days.
<b>TARGA</b>	O, G	4-12 fl oz	O, G grown under contract as non-food/non-feed crop for seed production in ID, MT, OR, WA, WY. Controls annual and perennial grasses. Ground application only. See label for other important restrictions.
<b>TRUST/TREFLAN HFP</b>	O	0.75-1.25 pt	Apply at layby as a directed spray to the soil between rows and incorporate immediately with sweeps or rolling cultivator. Do not apply PP or PRE or within 60 days of harvest. Remove emerged weeds before applications. Use rates depend on soil type and OM. Refer to label for specific application rates.

\* O – Onion, G – Garlic

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

## Growth Retardant

Product	Rate/Acre	Use	Comments/Restrictions
<b>ROYAL MH-30 XTRA or SG</b>	7 pt or 3.33 lb	Growth Retardant	Apply in 30 gal of water by ground or 10 gal by air. West of the Rockies, use 1 qt/100 gal of nonionic surfactant. Apply when bulbs are fully mature, have at least 5-8 green leaves and necks are soft enough for the tops to fall, if not already fallen. Spray is often applied when 50% of tops have fallen, but all tops are green, 10-14 days before harvest.





# ONION AND GARLIC INSECT CONTROL


## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ENTRUST SC</b>	O, G	3-8 fl oz	1	2ee various states (exp. date not given) for overhead sprinkler chemigation use. Note 1.
<b>EXIREL</b>	O, G	13.5-20.5 fl oz	1	Apply foliar with an effective adjuvant. Do not apply sooner than every 5 days. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>GLADIATOR</b>	O, G	19 fl oz	30	Make 2 consecutive applications then rotate to a different mode of action.
<b>GRIZZLY TOO</b>	O, G	0.96-1.92 fl oz	14	Use higher label rates for thrips population increases and avoid rescue situations. Apply by ground or air. Use a minimum of 2 GPA by air. Labeled for sprinkler irrigation application. Do not apply > 0.96 pt/A/year. Note 1.
<b>INTREPID 2F</b>	O	4-12 fl oz	1	Green onions only: Use 4-8 fl oz/A early, and 8-12 fl oz/A mid to late season.
<b>LAMBDA-CY AG</b>	O, G	1.92-3.84	14	When applying by air use a minimum of 2 GPA water. The addition of HSOC-COC <sup>1</sup> at 0.5% or NIS at 0.25% v/v may increase plant coverage.
<b>LANNATE LV</b>	O G	1.5-3 pt 1.5 pt	7	For green and dry bulb onion and garlic. May be applied to control thrips by overhead drip irrigation only in ID, NV, OR, UT, WA, beginning before populations reach 3-5 thrips/plant; see label for drip irrigation rates and recommendations. Note 1.
<b>LORSBAN ADVANCED</b>	O	1.1 fl oz/1000' row	60	Apply in-furrow at 1.1 fl oz/1000' row (18" rows) or POST - plant drench at 1 qt/A. Do not make more than one application per year.
<b>MALATHION 5 or 5EC</b>	O, G	1.5-2.5 pt 1.5-2 pt or 1.5-2.5 pt	3	Note 1.
<b>MALATHION 8 FLOWABLE</b>	O G	1.5-1.56 fl oz 1.56 fl oz	3	O: Maximum of 2 applications/year. G: Maximum of 3 applications/year. Note 1.
<b>MINECTO PRO</b>	O, G	7-10 fl oz	30	Do not make more than 2 sequential applications. For leafminer control, apply when adults are first observed. For thrips control, apply as part of management program and use 10 fl oz/A. Do not use as a rescue treatment for thrips.
<b>MOVENTO/MOVENTO HL</b>	O, G	5 fl oz/2.5 fl oz	3,7	3 days PHI for garlic and 3 or 7 days for onion, depending on type; see label.
<b>MUSTANG MAXX</b>	O, G	2.24-4 fl oz	7	Apply in a minimum of 20 GPA by ground, 3 GPA by air. Note 1.
<b>RADIANT SC</b>	O, G	5-10 fl oz	1	Does not include yellow- or western-striped armyworms. Note 1.
<b>REQUIEM EC</b>	O, G	1.5-3 qt	0	Begin applications as soon as thrips are seen in crop.
<b>TELONE II</b>	O	9-25 gal/18-24 gal	–	2ee and/or Supplemental label CO, ID, NV, OR, UT, WA (exp. dates not given): for standalone or sequential/simultaneous application with other fumigants to suppress/control wireworm and certain nematodes. 2ee CO, ID, NV, OR, UT, WA (exp. dates not given) for simultaneous or sequential application with K-PAM HL, Setaagon 42, Setaagon-K54 or Vapam HL for suppression of <i>V. dahliae</i> and nematodes.
<b>TRIGARD</b>	O, G	2.66 fl oz	7	Leafminer control. No more than 6 applications to 1 crop of bulb vegetables. Repeat as needed, at 7 day intervals to maintain control.
<b>VYDATE L</b>	O	1-4 pt: foliar	14	See state labels for states included and nematode information.
<b>WARRIOR II</b>	O, G	0.96-1.92 fl oz	14	Note 1.
<b>XENTARI</b>	O, G	0.5-2 lb	0	Bt insecticide. Note 1.
<b>YUMA 4E</b>	O	1.1 fl oz/1000' row	60	Apply in-furrow at 1.1 fl oz/1000' row (18" rows) or POST - plant drench at 1 qt/A. Do not make more

PHI – preharvest interval in days.

\* O – Onion, G – Garlic

**Note 1:** See label for insecticide rate for each pest.

 See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

# ONION AND GARLIC DISEASE CONTROL

## Labeled Fungicides

ONION AND GARLIC DISEASE*	FUNGICIDE	Actigard 50WG <sup>3</sup>	Aliette WDG	Badge SC/Badge X2	Bio-Tarn	Blocker 4F	Botran 75W	Bravo Ultrex/Weather Stik	Bravo Zn	Cabrio	Cannonball WG/WP	Cercobin	Chloronil 720/Praiz	Cuprofix Ultra 40 Dispers <sup>5</sup>	Dithane F-45	Endura	Fontelis	Forum	Gavel 75DF	Heritage	Inspire Super	Kocide 3000	Koverall	Luna Experience	Luna Tranquility	Mankocide	Merivon	Omega 500F	Onset 3.6L	Ordonis Opti	
Bacterial Blight				●										●								●				●					
Black Mold																						S									
Botrytis Leaf Blight								●	●	S		●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	
Botrytis Neck Rot							S	S					S			●							●	●	●	●	●	●	●	●	
Botrytis Rot																								●	●	●	●	●	●	●	
Cladosporium Leaf Blotch																					●			●	●	●					
Damping Off																															
Downy Mildew		S	● <sup>1</sup>	●				S	S	●			S	●	●				●	●	●		●	●			●	●	●	●	
Fusarium					●																										
Late Blight																															
Leaf Blight		S								●																		●			
Neck Rot														●						●											
Phytophthora					●																										
Pink Root																															
Powdery Mildew										●												●						●			
Purple Blotch			● <sup>1</sup>	●				●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Pythium					●																										
Rhizoctonia					●																										
Rust				●						●					●		●	●	●	●	●		●	●	●	●	●	●	●	●	
Stemphylium Leaf Blight and Stalk Rot																	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
White Rot						●	●				So	●					●	●	●	●	●	●	●	●	●	●	●	●	●	●	

## Labeled Fungicides (continued)

ONION AND GARLIC DISEASE*	FUNGICIDE	Ordonis Opti A, Ultra A	Ordonis Opti B	Ordonis Ultra B	Previsto	Pristine	Quadris Opti	Quadris Top	Quilt/Quilt Xcel	Reason 500SC	Revus	Ridomil Gold Copper	Ridomil Gold SL	Rovral 4	Scala	Serenade ASO	Switch 62.5 WG	Tanos	Tetranab	Topaz/Flit/Propimax	Topsin M WSB	Uniform	Vanguard WG	Zampro	Zing!					
Bacterial Blight					●																									
Black Mold																														
Botrytis Leaf Blight			●			●	●	●	S	●					● <sup>3</sup>	●	●	●		●	S			●	●	●	●	●	●	
Botrytis Neck Rot							● <sup>2</sup>							● <sup>3</sup>	●	●	●	S						●	●	●	●	●	●	
Botrytis Rot																														
Cladosporium Leaf Blotch							●	●	●												●									
Damping Off												So									So		So							
Downy Mildew		●	●	●	●	S		●	● <sup>8</sup>		●	●	●			●				●	●			●	●	●	●	●	●	
Fusarium																														
Late Blight																														
Leaf Blight						●																								
Neck Rot																								S						
Phytophthora																														
Pink Root																So														
Powdery Mildew																●														
Purple Blotch			●		●	●	●	●	●	●		● <sup>3</sup>	●		●	●	●	●	●	●	●			●	●	●	●	●	●	
Pythium																							So							
Rhizoctonia																														
Rust							●	●	●							●														
Stemphylium Leaf Blight and Stalk Rot						●	●	●	●				● <sup>3</sup>	● <sup>4</sup>																
White Rot							● <sup>2</sup>	● <sup>8</sup>					● <sup>4</sup>					S				●								

So- soil application. S - suppression.

\*Other diseases may be controlled, see label.

<sup>1</sup> Onion only. <sup>2</sup> Garlic and dry bulb onion. <sup>3</sup> Dry bulb onion only. <sup>4</sup> Garlic only. <sup>5</sup> Copper sulfate. <sup>6</sup> Sulfur. <sup>8</sup> Quilt Xcel only.

See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

# ONION AND GARLIC DISEASE CONTROL

Disease Treatment Guidelines				
Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTIGARD 50WG</b>	0	0.75-1 oz	7	Dry bulb onion only for disease suppression. Maximum 4 oz/A/year.
<b>ALIETTE WDG</b>	0	2-3 lb	7	Should be used in a preventive disease control program. Begin applications when conditions favor disease development and continue on a 7-14 day interval as needed. If disease is already present, apply at 3 lb/A rate on a 7 day interval. Maximum 7 applications/season.
<b>BADGE SC OR BADGE X2</b>	0,G	0.75-2.75 pt or 0.75-2.75 lb	0	Begin when plants are 4-6 inches high. Repeat applications at 7- to 10-day intervals. Applications can cause phytotoxicity to leaves. Apply higher rates when conditions favor disease development.
<b>BIO-TAM</b>	0,G	2.5-3 lb	–	Apply banded. See label for rate based on band and row width.
<b>BLOCKER 4F</b>	G	29 fl oz/1000' row 5 gal/A	–	Apply in furrow at planting time. Do not exceed 20 lb a.i./A per season. Not for use in CA.
<b>BOTRAN 75W</b>	0,G	1.5-2.67 lb	14	Direct-seeding for white rot, use 5.33 lb in 5" band and incorporate in top 1.5" of soil 1-2 weeks before onions are seeded only in eastern OR or WA and western ID. May also be used in planting sets or bulbs in furrow or broadcast. Use 1.5-2.67 lb/A for leaf blight and botrytis rot. Use 2.67 lb/A in CA.
<b>BRAVO ULTREX/ WEATHERSTIK</b>	0,G	0.9-2.7 lb or 1-3 pt	7	Use 1.4-2.7 lb/A or 1.5-3 pt/A for green onion and garlic grown for seed. Do not apply more than 15 lb a.i./A/season for dry bulb onion or garlic and 6.75 lb a.i./A for green onion or seed garlic.
<b>BRAVO ZN</b>	0,G	1.25-4.25 pt	7,14	Apply by ground, air or chemigation. Lower rate with low disease hazard and prior to infection; higher rate with high disease hazard. For suppression of neck rot during storage, a minimum of three weekly applications prior to lifting is recommended. PHI 7 days for dry bulb onion, garlic (dry bulb or for seed). PHI 14 days for green bunching onions, leeks or shallots. Do not apply >29 pt/A/season for dry bulb; 13 pt/A/season for green bunching or grown for seed.
<b>CABRIO</b>	0,G	8-12 oz	7	Use 12 oz/A for downy mildew. Begin application prior to disease development. Do not make more than 1 application before rotating to a different mode of action. Maximum of 6 applications/season. Note 1.
<b>CANNONBALL WG/WP</b>	0,G	7 oz/1000' row	7	Apply in-furrow. Do not apply >32 oz/A/season.
<b>CERCOBIN</b>	0,G	43.6 fl oz	–	Spray directly into the open furrow at planting. Do not apply more than 43.6 fl oz/A/year.
<b>CHLORONIL 720/PRAIZ</b>	0,G	1-3 pt	7	Use 1.5-3 pt/A for green onion and garlic grown for seed. Do not apply more than 15 lb a.i./A/season for dry bulb onion or garlic and 6.75 lb a.i./A for green onion or seed garlic.
<b>CUPROFIX ULTRA 40 DISPERS</b>	0,G	1.25-3 lb	–	Begin application when plants are 4-6 inches tall and continue on a 7-10 day interval. May cause phytotoxicity to leaves.
<b>DITHANE F-45</b>	0,G	2.4 qt	7	Apply as a protective and repeat on 7 day intervals. For dry bulb onions only. Also labeled for furrow drench in onions. Maximum 24 qt/A/crop. 24c OR (exp. 12/2019) and WA (12/2018) various diseases in dry bulb onions grown for seed.
<b>ENDURA</b>	0,G	6.8 oz	7	Apply prior to disease development and continue on a 7-14 day interval. Do not make >2 applications before rotating mode of action. Maximum 2 applications/season.
<b>FONTELIS</b>	0,G	16-24 fl oz	3	Begin applications prior to disease development and continue on 7-14 day schedule. Maximum 2 sequential applications before switching to a different mode of action. Maximum 72 fl oz/A/year.
<b>FORUM</b>	0,G	6 oz	0	Apply in a tank mix. Begin when conditions favor disease development and continue on a 5-7 day schedule. Maximum 2 sequential applications before rotating to another mode of action. Maximum 30 oz/A/season.
<b>GAVEL 75 DF</b>	0,G	1.5-2 lb	7	Apply on preventative basis at the onset of disease on 7-day intervals. Do not allow to contact bulbs after lifting. Do not make more than 8 applications or apply >16 lb/A/season. Do not apply to exposed bulb.
<b>HERITAGE</b>	0,G	3.2-8 oz	0	Apply prior to disease development and continue on a 7-14 day (5-7 for downy mildew) schedule. Do not make >3 sequential applications before switching to a different mode of action. Maximum 6 applications and 1.5 lb/A/season. Note 1.

PHI – preharvest interval in days.  
\* O – Onion, G – Garlic

SEE NOTES AT END OF SECTION.

# ONION AND GARLIC DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>INSPIRE SUPER</b>	0,G	16-20 fl oz	7, 14	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 80 fl oz/A/season for dry bulb onions and maximum 60 fl. oz/A/season for green onions. PHI 14 days for green onions.
<b>KOCIDE 3000</b>	0	0.75-1.5 lb	–	Begin when plants are 4-6" in height and repeat at 7-10 day intervals as needed.
<b>KOVERAL</b>	0,G	3 lb	7	Follow a protective spray schedule when conditions favor infection. Repeat on a 7 day spray interval.
<b>LUNA SENSATION</b>	0,G	8-12.8 fl oz	7	Apply in ground, aerial or chemigation. Apply on 10-14 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
<b>LUNA TRANQUILITY</b>	0,G	16-27 fl oz	7	Apply in ground, aerial or chemigation. Apply on 7-14 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
<b>MANKOCIDE</b>	0	1.5-2.5 lb	7	Dry bulb onion only. Begin when disease threatens and continue on a 7-10 day interval. Maximum 9.6 qt/A/season. Do not apply to exposed bulbs. Maximum 160 lb/A/season.
<b>MANZATE MAX/ MANZATE PRO-STICK, PENNCOZEB 75DF</b>	0,G	1.6-2.4 qt/3 lb	7	Apply when diseases are first reported in the area and repeat at 7 day intervals. Maximum 24 qt/A/crop for Manzate Max; 30 lb/A/crop for Manzate Pro-Stick, Penncozeb 75DF.
<b>MERIVON</b>	0,G	4-11 fl oz	7	Apply before disease is present.
<b>OMEGA 500F</b>	0,G	1 pt	7	Begin applications when conditions favor disease development and continue on a 7-10 day interval or when first disease symptoms appear.
<b>ONSET 3.6L</b>	0,G	4-6 fl oz	7	Use 20.5 fl oz for white rot in 4-6" band over/into furrow for dry bulb onion and garlic. For others, apply as protective spray. Repeat on 10-14 day intervals. Maximum 12 fl oz/A/season as foliar in dry bulb onion and garlic and 24 fl oz in green onion.
<b>ORONDIS OPTI</b>	0,G	1.75-2.5 pt	7	Supplemental label (exp. 4/2020): Do not make >2 sequential applications before rotating to fungicide with different mode of action. Do not exceed 6 applications/year. Do not follow soil applications of a.i. with foliar applications of Orondis Opti.
<b>ORONDIS OPTI A, ULTRA A</b>	0,G	2-4.8 fl oz	0	Begin ground, air-assisted or aerial applications prior to disease development and on a 5- to 10-day interval. Maximum 2 sequential applications before rotating to different mode of action. Do not use for >33% of total foliar fungicide applications or make >4 applications/crop. Do not exceed 6 foliar applications/A/year. 2ee for tank mix Opti A/Opti B in TX, OR (exp. 2/2018), RI (exp. 6/2018); Ultra A/ Ultra B in TX (exp. 3/2018), AL, CT, KY, MA, NJ (exp. 6/2018), RI (exp. 11/2018), OR (exp. 12/2018). 2ee for tank mix Opti A/Opti B (exp. 12/2018) and Ultra A/ Ultra B (exp. 11/2018) in AR, AZ, CO, DE, FL, GA, IA, ID, IL, IN, KS, LA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NM, NV, OH, OK, PA, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY.
<b>ORONDIS OPTI B</b>	0,G	2 pt	7,14	Begin ground, air or chemigation applications prior to favorable infection periods. Repeat at 7-day intervals. PHI 14 days for green bunching onions, leeks or shallots. Also see Orondis Opti A 2ee recommendations.
<b>ORONDIS ULTRA B</b>	0,G	8 pt	7	Begin ground, aerial or chemigation applications prior to disease development, then at 7-day intervals for bulb onion and galic, and 7- to 10-day intervals for green onion, leek and shallot. No more than 2 consecutive applications before switching to another non-Group 40 fungicide. A silicone-based adjuvant must be used. Also see Orondis Ultra A 2ee recommendations.
<b>PREVISTO</b>	0,G	0.75-2 qt	0	Begin when plants are 4-6 inches high. Repeat applications at 7- to 10-day intervals. Applications can cause phytotoxicity to leaves.
<b>PRISTINE</b>	0,G	10.5-18.5 oz	7	Begin applications prior to disease and continue on a 14 day interval. Maximum of 2 sequential applications before alternating mode of action. Maximum 6 applications or 111 oz/A/season. Note 1.
<b>QUADRI OPTI</b>	0,G	1.6-3.6 pt	7	Apply prior to disease development and continue on a 7-14 day (5-7 for downy mildew) schedule. Maximum 1 application before rotating to another mode of action. Maximum 1.5 lb a.i./A/season. Note 1.
<b>QUADRI TOP</b>	0,G	12-14 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 56 fl oz dry onions, 42 fl oz for green onion/A/year.

PHI – preharvest interval in days.

\* O – Onion, G – Garlic

# ONION AND GARLIC DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>QUILT</b>	O, G	14-27.5 fl oz	0,14	See label for rates and specific diseases controlled or suppressed. Apply prior to disease development and continue on a 7-10 day schedule. Maximum 1 application before rotating to another mode of action. PHI 0 days for green onion. Maximum 56 fl oz/A/season/crop. Note 1.
<b>QUILT XCEL</b>	O, G	14-26 fl oz	0,14	See label for rates and specific diseases controlled or suppressed. Apply prior to disease development and continue on a 7-10 day schedule. Maximum 1 application before rotating to another mode of action. PHI 0 days for green onion. Maximum 56 fl oz/A/season/crop. Note 1.
<b>REASON 500SC</b>	O, G	14-21 fl oz: dry 17.5-26 fl oz: green	0,14	Begin applications when conditions favor disease development and continue on a 7-10 day interval. PHI 0 days for dry bulb.
<b>REVUS</b>	O, G	8 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 32 fl oz (24 fl oz for green onion) /A/season.
<b>RIDOMIL GOLD SL or RIDOMIL GOLD COPPER</b>	O, G	0.5-1 pt or 1 pack/2.5 A	0, 10	Ridomil Gold SL: Apply PP incorporated or as a soil surface spray after planting. May be used on dry bulb, green and onions grown for seed. PHI 0 days. If banding, use a 7" band. Ridomil Gold Copper: Controls downy mildew when applied foliarly in a preventive disease control program. Apply at 14-day intervals until threat of disease is over. PHI 10 days for bulb onion, 7 days for green onion. See label for maximum amount of a.i.s from all sources.
<b>ROVRAL 4</b>	O, G	1.5 pt 4 pt	7	Apply as a foliar spray as soon as conditions become favorable for disease. Repeat at 14-day intervals. Up to 5 applications can be made per season. May be used on dry bulb onions.
<b>SCALA SC</b>	O, G	18 fl oz	7	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Maximum 2 application before rotating to another mode of action. Maximum 54 fl oz/A/season.
<b>SERENADE ASO</b>	O, G	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Sup. label for soil drench, shanked-In, Injected and in-furrow.
<b>SWITCH 62.5 WG</b>	O, G	11-14 oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. See label for soil application and white rot control. Maximum 56 oz/A/season. Apply by ground only.
<b>TANOS</b>	O, G	8-10 oz	3	Apply preventatively on a 5-7 day schedule. For suppression of some diseases.
<b>TETRABAN</b>	O, G	6-15.5 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.
<b>TOPAZ/TILT/PROPIMAX</b>	O, G	4-8 fl oz	0, 14	Begin when conditions favor disease and continue on a 7-10 day interval. Maximum 16 fl oz/A/season. PHI 0 days is for green onion.
<b>TOPSIN M WSB</b>	O, G	2 lb	–	Spray directly into open furrow at the time of seed, sets or bulbs. Also for penicillium clove rot in garlic. See label.
<b>UNIFORM</b>	O, G	0.34 fl oz/1000' row	0	Apply in-furrow.
<b>VANGARD WG</b>	O, G	10 oz	7	Apply prior to disease development and continue on a 7-10 day interval if conditions are favorable for disease development. May be applied by ground, air, or chemigation. Do not exceed more than 2 aerial applications. Use at least 5 GPA for aerial applications. For chemigation, apply in 0.1-0.25 inches/A. Maximum 28 fl oz/A/year.
<b>ZAMPRO</b>	O, G	14 fl oz	0	Begin application prior to disease development and continue on 5-7 day interval. Maximum 2 sequential applications before switching to a different mode of action. Maximum 42 fl oz/A/year.
<b>ZING!</b>	O, G	30 fl oz	7	Start spray schedule when disease is first reported in area, repeat at 7 day interval throughout season.

PHI – preharvest interval in days.

\* O – Onion, G – Garlic

**Note 1:** See label for fungicide rate for each disease.

# ROOT CROP WEED CONTROL

Preplant, Preemergence or Postemergence Herbicides			
Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	B, C, R, T	up to 2 fl oz	Hooded sprayer applications only. Apply in a minimum of 10 gal of water/A. Use NIS at 0.25% v/v, HSOC-COC <sup>1</sup> at 0.5% v/v or HSOC-MSO <sup>1</sup> at 0.5% v/v. Adding WC+NIS <sup>2</sup> is also allowed.
<b>CAPAROL 4L</b>	C	2-4 pt	PRE or POST. Apply PRE or POST up to 6-leaf carrot. Include NIS or HSOC-COC <sup>1</sup> for emerged weeds. Do not exceed more than 8 pt per cropping cycle. PHI 30 days. 24c WA (exp. 12/2020) 1-2 pt/A for seed carrot and seed parsnip.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	B, C, P, R, T	Up to 24 fl oz or Up to 32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	PP, PRE, POST Directed. Apply prior to planting, preemergence, at-planting, or through directed application postemergence. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DIMETRIC EXT/ METRICLUDE EXT</b>	C	0.33 lb	POST. Controls certain broadleaves. Apply after carrots have 5-6 true leaves. A second application may be made at least 3 weeks later. Do not apply within 3 days of another chemical or if cool, wet, cloudy weather. Do not exceed 0.67 lb/A. User assumes risk of crop injury. PHI 60 days.
<b>DUAL MAGNUM</b>	B, R, T C	0.67-1 pt (PPI) 0.67-2 pt (POST)	24c: in ME (indemnified; exp. 12/2019) for beet and carrot; in OR (indemnified, exp. 12/2020) for B, C, P, T; in WY (indemnified, exp. 6/2021) for R grown for seed; in OH (indemnified, exp. 12/2021) for B, C, R, T.
<b>FUSILADE DX</b>	B, C	6-16 fl oz + 1-2 qt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST. Carrots: Controls emerged annual and perennial grasses. Apply up to 48 fl oz/A/year. PHI 45 days. Beets: Only in WA, 24c for grassy weeds in beets grown for seed (exp. 12/2020); 12-16 fl oz/A, do not apply >32 fl oz/A/year.
<b>GOAL 2XL</b>	R	2 pt	PRE. Controls annual broadleaves. Apply after planting but before emergence of crop. Do not use on stressed crop.
<b>GRAMOXONE SL/SL 2.0</b>	C, T	2-4 pt + 1 pt NIS/100 gal	Apply PP or PRE. Controls emerged annual broadleaves and grasses. Do not apply more than 3 times per season. Use at least 10 gpa by ground. Apply to emerged weeds before or after seeding but before crop emerges.
<b>LOROX DF</b>	C, P	1-3 lb: carrot 1.5-3 lb: parsnips	PRE. Controls annual grasses and broadleaves. Apply after planting but before emergence of crop. Seeds should be planted at least 0.5" deep. Apply PRE to carrots only in CA, CO, MI, MN, NJ, ND, OH, OR, WA, WI and FL. Use 1-3 lb in CO, MI, NJ, OH, and WI. Use 1-2 lb in CA, FL, MN, ND, and OR and WA. POST applications in entire U.S. to carrots at 1.5-3 lb can be done when carrots are at least 3 inches. PHI 14 days for carrots.
<b>NORTRON SC</b>	B	60 fl oz: PP, PRE 5.25 fl oz: 2-4 lf POST 10.5 fl oz: 6-8 lf POST	PRE. Apply at planting or after, but before weeds germinate. For beets with in-furrow irrigation, apply preplant or at-planting. POST rate depends on beet size.
<b>OPTIFY</b>	B, C, R, T	5-12 fl oz	Plant Growth Regulator. At planting: 5 fl oz/A apply with liquid fertilizer. Broadcast, side or top dress 8-12 fl oz/A. Via irrigation: Apply at 8 fl oz/A. Foliar: Apply directly to foliage of actively growing plants ≥6 fl oz/A in minimum 5 GPA. Best results when applied with nutrients. Repeat application ≥7 days. Do not apply >24 oz/A/season.
<b>POAST</b>	B, C, P, R, T	1-2.5 pt + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST. Controls emerged grasses. Rate depends on weed species and geographic region. Do not apply more than 2.5 pt per application or more than 5 pt per season. PHI 60 days beet, 30 days rest.
<b>ROUNDUP POWERMAX/ WEATHERMAX**</b>	B, C, P, R, T	11-32 fl oz or 12-48 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply prior to crop emergence or transplanting. Controls emerged annual broadleaves and grasses. Use rates depend on weed species and weed size. See label for perennial rates. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>SECTION THREE</b>	B, C, P, R, T	4-5.33 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST to actively growing grasses. Do not apply more than 5.33 fl oz/A/application or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 14 days.
<b>SELECT 2 EC/CLEANSE</b>	B, C, R, T	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST to actively growing grasses. Radish PHI 15 days; other PHI's 30 days.
<b>SELECT MAX</b>	B, C, R, T	9-16 oz + 1 qt NIS/100 gal	POST. Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a minimum 14 day interval. See label for PHI.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip

\*\* May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# ROOT CROP WEED CONTROL

## Preplant, Preemergence or Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>TARGA</b>	B,C,R	4-12 fl oz	B,C,R grown under contract as non-food/non-feed crop for seed production in ID,MT,OR,WA,WY. Controls annual and perennial grasses. Ground application only. See label for other important restrictions.
<b>STINGER</b>	B, T	0.33-0.5 pt	POST. Controls specific broadleaf weeds. See label for list and weed size for applications. Apply to garden beet (0.25-0.5 pt/A) in the 2-8 leaf stage. Apply to turnip in the 1 to 5 leaf stage (1/3-1/2 pt/A). Use ≥10 gpa spray volume. Maximum of 1 application per season for turnip and 2 applications per season for garden beet. Maximum of 0.5 pt/A per season. 15 day PHI for turnip tops harvest. 30 day PHI for turnip roots and garden beet. 24c ID (exp. 12/2020) for broadleaf control in radish grown for seed.
<b>TRUST/TREFLAN HFP</b>	C, R	1-1.5 pt: coarse soil 1.25-1.5 pt: med. soil 1.5-2 pt: fine soil	PPI. Controls annual grasses and broadleaves. Incorporate 2-3" within 24 hours. Use lower rates in areas with <20" rainfall or irrigation. For radish, apply 1 pt on coarse soils or 1.5 pt for medium and fine soils.
<b>UPBEET</b>	B	0.5 oz + 2 pt NIS or 1 pt HSOC-COC <sup>1</sup> /100 gal	POST. Apply at 2-4 leaf stage. Additional applications may be made at 4-6 and 6-8 leaf stages. Maximum 1.5 oz/A/season. PHI 30 days.
<b>VIDA</b>	B,C,P,R,T	0.5-2 fl oz	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip

\*\* May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.





# ROOT CROP INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ADVISE FOUR</b>	B, C, P, R, T	5-12 fl oz: soil 1.4 fl oz: foliar	7, 21	See label for soil application instructions. PHI 7 days foliar.
<b>AGREE WG</b>		0.5-2 lb	0	Radish and other root crops.
<b>AGRI-MEK SC</b>	C	3.5 fl oz	–	24c OR (exp. 12/2019) to control two-spotted spider mites in carrots grown for seed. Apply by ground in 20 GPA, by air in 10 GPA. See label for adjuvant requirement, application maximums and intervals.
<b>ARCTIC</b>	T	2-4 fl oz	1	Labeled in FL, GA, IL, IN, OK, SC, TX, and WA. Note 1.
<b>ASANA XL</b>	C, R, T	5.8-9.6 fl oz	7	Apply in a minimum of 5 gpa. Do not exceed 0.5 lb. a.i./A/season - for carrot, 0.1 lb a.i. for radish, and 0.4 lb a.i. for turnip.
<b>BAYTHROID XL</b>	B, C, P, R, T	1.6-2.8 fl oz	0	Do not apply > 14 fl oz/A/season. Note 1.
<b>CLOSER SC</b>	B, C, P, R, T	1.5-5.75 fl oz	7	Do not make >4 applications/crop, 2 consecutively, or <7 days apart, and >17 fl oz/A/season. Do not apply anytime 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 feet out from the downwind edge of the field, a downwind 12-ft on-field buffer must be observed. Note 1.
<b>CORAGEN</b>	B, C, P, R, T	3.5-5 fl oz	1	
<b>DELTA GOLD</b>	B, C, P, R, T	1-2.4 fl oz	3	Note 1.
<b>DIAZINON AG 500</b>	B, C, R	1-4 qt	–	Note 1.
<b>DIMATE 4E</b>	T	0.5 pt	14	
<b>DIPEL DF</b>	B, C	0.25-2 lb	0	Bt insecticide. Note 1.
<b>ENTRUST SC</b>	B, C, P, R, T	3-6 fl oz	3	Apply Entrust SC at 4.5-10 fl oz for beet. See various states (exp. date not given) for overhead sprinkler chemigation use. Note 1.
<b>FASTAC EC/FASTAC CS</b>	C, P, R, T	1.3-3.8 fl oz	1	Do not make applications <4 days apart. Do not apply >11.4 fl oz/A/season. Leaves of root and tuber vegetables cannot be used for food or feed. Minimum 10 GPA ground and 2 GPA air.
<b>FULFILL</b>	B, C, T	2.75 oz	14	24c WA (exp. 12/2020) for B, C grown for seed.
<b>HERO</b>	B, C, P, T	2.6-10.3 fl oz	21	Note 1.
<b>INTREPID</b>	B, C, P, R, T	8-16 fl oz	14	PHI 1 day.
<b>LANNATE LV</b>	B C	1.5-3 pt 0.75-1.5 pt	0, 14 1	Use 1.5 pt for cucumber beetle in beet, PHI 0 for roots and 14 for tops. Maximum application is 3.6 lb a.i./A per crop for beets and 6.3 lb forcarrots.
<b>LEVERAGE 360</b>	C, R	2.4-2.8 fl oz	7	
<b>LORSBAN ADVANCED</b>	R T	1 fl oz/1000' row 1.6-2.75 fl oz/1000' row	30	Apply as water based drench in seed furrow with seed at planting for radish or turnip. For transplant turnips, apply directed at base. Use at least 40 gpa water. Use 4-5.5 pt for direct seeded or transplanted radish or turnip. 24c WA (exp. date not given) in carrot grown for seed: 1 qt/A in 10 gallons foliar broadcast or in 5 gallons aerial.
<b>MALATHION 5 OR MALATHION 5EC</b>	B, C, P T	1.5-2 pt 1-2 pt	7 1,7	C: Malathion 5EC only. PHI 1 day for T using Malathion 5EC. Note 1.
<b>MALATHION 8 FLOWABLE</b>	B, P R	1.25 pt 1 pt	7	Maximum of 3 applications/year.
<b>MOVENTO</b>	C	5 fl oz	1	Minimum 7-day application interval.
<b>MOVENTO HL</b>	C	2.5 fl oz	1	Maximum 5 fl oz/A/season.
<b>MUSTANG MAXX</b>	B, C, P, R, T	1.28-4 fl oz	1	Note 1.
<b>NEEMIX 4.5</b>	B, C, P, R, T	4-16 fl oz	0	May use other botanical insecticides as labeled. Note 1.
<b>PLATINUM</b>	B, C, P, T R	5-12 oz 5-6.5 oz	NA	At planting in-furrow or narrow band or through trickle or drip irrigation, see label for details.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip  
PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

# ROOT CROP INSECT CONTROL

Insect Treatment Guidelines (continued)				
Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>PLATINUM 75 SG</b>	B, C, P, T R	1.7-4.01 oz 1.7-2.17 oz	30 30	Apply in-furrow, after seeding, or drip (see label). Do not exceed 2.17 oz/A/season in radish and 4.01 oz/A/season in B,C,P,T.
<b>RADIANT SC</b>	B, C, P, R, T	6-8 fl oz	3, 7	PHI 7 days beets.
<b>REQUIEM EC</b>	B, C, P, R, T	2-3 qts	0	For Potato psyllid, begin treatments when thresholds have been reached.
<b>SEQUOIA</b>	B, C, P, R, T	1.5-5.75 fl oz	7	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. Do not apply any time 3 days prior to bloom until after petal fall. If blooming vegetation is present 12 ft out from the downwind edge of the field, a downwind 12 ft on field buffer must be observed. Note 1.
<b>SEVIN XLR PLUS</b>	B, C, P, R, T	0.5-2 qt	7	Do not apply >6 qt/A/year. Bee caution: do not apply to target crops or weeds in bloom. Note 1.
<b>SIVANTO PRIME</b>	B, C, P, R, T	7-14 fl oz	1	Foliar: Rate is pest-dependent, 7 day minimum application interval. PHI 1 day. Ground minimum 10 GPA, air minimum 2 GPA.
<b>STEED</b>	B, C, P, R, T	2.5-4.7 fl oz	21	Apply in minimum 2 GPA (air) or 10 GPA (ground) or 25 GPA (foliar). Do not make applications <7 days apart or >28.1 fl oz/A/season. Note 1.
<b>TELONE II</b>	C	11-19 gal	–	2ee in CO, ID, NV, OR, UT, WA (exp. date not given): standalone, or sequential/ simultaneous application with other fumigants to suppress nematode and/or wireworm.
<b>TRANSFORM WG</b>	B, C, P, R, T	0.75-2.75 oz	7	Minimum 14-day interval between applications. Maximum 4 applications per crop or 2 consecutive applications/year. Do not apply from 3 days prior to bloom until after petal fall. 2ee ID, OR, WA (exp. date not given) for control of plant bug (Lygus spp.)
<b>TUNDRA/BIFEN 2 AG GOLD/BRIGADE 2EC</b>	B, C, P, R, T	5.12-6.4 fl oz	1, 21	PHI 1 day for beets.
<b>VYDATE-L</b>	C	1-2 gal: soil 2-4 pt: foliar	14 1	See label for the 1-2 gal rate soil treatments and nematode information. Note 1. Foliar rates for carrot weevil.
<b>XENTARI</b>	B, C, T	0.5-2 lb	0	Bt insecticide. Note 1.
<b>YUMA 4E</b>	R T	1 fl oz/1000' row 1.6-2.75 fl oz/1000' row	NA	Apply as water based drench in seed furrow with seed at planting for radish or turnip. For transplant turnips, apply directed at base. Use at least 40 gpa water.
<b>ZEAL</b>	C	2-3 oz	NA	24c ID (exp. 12/2019) for control of two-spotted spider mite in carrot grown for seed.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip

PHI – preharvest interval in days.

**Note 1:** See label for insecticide rate for each insect.

# ROOT CROP DISEASE CONTROL

## Labeled Fungicides

DISEASE*	FUNGICIDE																									
	Badge SC/Badge X2	Bio-Tam	Bravo Ultrex/Weather Stik	Bravo Zn	Cabrio	Cercobin	Chloronil 720/Praiz	Cuprofix Ultra 40 Dispers 7	Dithane F-45 10	Endura	Flint 3	Fontelis	Gem 500 SC 4/Flint Extra	Heritage	Inspire Super	Kocide 3000	Koverall	Luna Tranquility	Manzate Max	Manzate Pro-Sick/Penncozeb 75DF	Merivon	Omega 500F	Onset 3.6L 3	Presidio	Previsto	Pristine
Alternaria Leaf Blight			1	1			1	1		1	1	1		1							1	1				
Alternaria Leaf Spot	14	2	2				2	1	1	1	1					1					1				1	1
Anthracnose	15	2					2																			
Ascochyta Leaf Spot														1				1								
Black Crown Rot	15																									
Blight, Early and Late																			1							
Botrytis Blight (Gray Mold)			2				2												1							
Bottom Rot			2				2																			
Cavity Spot																								5		
Cercospora Leaf Spot	1	1	1	1	1	1	1,6	6		1	13	1	1	1	1	1	1	1	1	1	1	1	1	1	16	1
Cercospora Leaf Blight																					1					
Damping Off																										
Downy Mildew	1							6																1		
Fusarium		1																								
Phytophthora		1																								
Pink Rot																										
Powdery Mildew					1	1			1	1	1	1	1	1	1			1		1						1
Pythium		1																						1		
Rhizoctonia Dry Root and Seed Rot		1																								
Root Dieback																								1		
Rust								1,6		1	1	1	1	1					1							
Southern Root Rot																										5
White Rust	15				1									1									1			

So - Soil application.

\*Other diseases may be controlled, see label.

<sup>1</sup> Carrot only. <sup>2</sup> Parsnip only. <sup>3</sup> Not on spinach. <sup>4</sup> Not on radish. <sup>5</sup> Controls early, suppresses late. <sup>6</sup> Beet only. <sup>7</sup> Copper sulfate. <sup>8</sup> Sulfur.

<sup>9</sup> See 24c in OR and WA. <sup>10</sup> Only for 24c in OR and WA crops grown for seed. <sup>11</sup> Radish only. <sup>12</sup> Quilt Xcel only.

<sup>13</sup> Quilt Xcel early blight only; Quilt suppression only of late blight. <sup>14</sup> Carrot, radish and turnip only. <sup>15</sup> Radish and turnip only. <sup>16</sup> Beet and carrot only.

 See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

# ROOT CROP DISEASE CONTROL

Labeled Fungicides													
ROOT CROPS	DISEASE*	FUNGICIDE											
		Quadris Opti	Quadris Top	Quilt/Quilt Xcel <sup>1</sup>	Rally 40 WSP	Reason 500SC	Ridomil Gold Copper	Ridomil Gold SL	Rovral 4 <sup>1</sup>	Serenade ASO	Switch 62.5WDG	Tetraban	Topaz/Tilt <sup>1,6</sup>
	Alternaria Leaf Blight		●	● <sup>12</sup>					●	●	●	●	So <sup>1</sup>
	Alternaria Leaf Spot									●			
	Anthracnose												
	Ascochyta Leaf Spot										●		
	Black Crown Rot								●	●			
	Blight, Early and Late	●		● <sup>13</sup>					●				
	Botrytis Blight (Gray Mold)								●	●			
	Bottom Rot												
	Cavity Spot				●	● <sup>1</sup>	So <sup>1</sup>						
	Cercospora Leaf Spot	●									●	● <sup>6</sup>	
	Cercospora Leaf Blight											● <sup>1</sup>	
	Damping Off						So <sup>1</sup>						So
	Downy Mildew								●				
	Fusarium												
	Phytophthora							So					
	Pink Rot												
	Powdery Mildew	●	●	● <sup>9</sup>					●	●	●	●	
	Pythium						So						So
	Rhizoctonia Dry Root and Seed Rot												
	Root Dieback							● <sup>10</sup>					
	Rust										●		
	Southern Root Rot												
	White Rust					● <sup>11</sup>					●		

So - Soil application.

\*Other diseases may be controlled, see label.

<sup>1</sup> Carrot only. <sup>2</sup> Parsnip only. <sup>3</sup> Not on spinach. <sup>4</sup> Not on spinach or radish. <sup>5</sup> Controls early, suppresses late. <sup>6</sup> Beet only. <sup>7</sup> Copper sulfate. <sup>8</sup> Sulfur.

<sup>9</sup> See 24c in OR and WA. <sup>10</sup> Only for 24c in OR and WA crops grown for seed. <sup>11</sup> Radish only. <sup>12</sup> Quilt Xcel only.

<sup>13</sup> Quilt Xcel early blight only; Quilt suppression only of late blight. <sup>14</sup> Carrot, radish and turnip only. <sup>15</sup> Radish and turnip only. <sup>16</sup> Beet and carrot only.

☀ See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

Disease Management Guidelines		
Disease	Labeled Crops*	Comments/Restrictions
<b>ALTERNARIA LEAF BLIGHT OR CEROSPORA LEAF BLIGHT</b>	B, C, P, R, T	Use 3-4 year crop rotation. Apply products containing azoxystrobin, chlorothalonil, iprodione, copper sulfate, copper hydroxide or pyraclostrobin.
<b>APHANOMYCES ROOT ROT</b>	B, C, P, R, T	Plant crop in well-drained soils, minimize compaction and rotate crops. Apply products containing azoxystrobin.
<b>ASTER YELLOWS</b>	B, C, P, R, T	Control leafhoppers which transmit this disease.
<b>BACTERIAL BLIGHT</b>	B, C, P, R, T	Use hot water treatment of seed.
<b>BLACK SPOT</b>	B, C, P, R, T	May be a problem on calcareous, high pH soils during dry weather. Apply borax at planting.
<b>CERCOSPORA LEAF SPOT</b>	B, C, P, R, T	Use 3 or more year crop rotation. Use copper hydroxide, copper sulfate, azoxystrobin or pyraclostrobin.
<b>CROWN ROT AND COTTONY SOFT ROT</b>	B, C, P, R, T	Use benomyl at first sign of infection. Apply products containing azoxystrobin for crown rot.
<b>PYTHIUM DAMPING-OFF</b>	B, C, P, R, T	Apply products with mefenoxam or metalaxyl.
<b>RHIZOCTONIA DRY ROT AND SEED ROT</b>	B, C, P, R, T	Control black spot. Chop and incorporate plant residue after harvest. Use seed protectants containing thiram or captan.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip

# ROOT CROP DISEASE CONTROL

## Disease Treatment Guidelines

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>BADGE SC OR BADGE X2</b>	B,C,R,T	0.75-4 pt 0.75-4 lb	0	0.75 - 4 pt/A or 0.75-4 lb/A for B, 1-4 pt/A or 0.75-3.578 lb for C and 1-2.25 pt/A or 1-2.25 lb/A for R and T. Repeat applications on 10- to 14-day intervals for B, 7- to 14-day intervals for C, and 10-day interval for R and T. Use higher rates when conditions favor disease development.
<b>BIO-TAM</b>	B, C, P, R, T	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
<b>BRAVO ULTREX/ WEATHER STIK</b>	C, P	1.375-1.8 lb or 1.5-2 pt	0,10	Begin applications at first sign of disease and continue at 7-10 day intervals. Maximum 6 lb a.i./A/season parsnip and 15 lb a.i./A carrot. PHI 0 days carrot.
<b>BRAVO ZN</b>	C	2.25-2.75 pt	0	Begin applications by ground, air or chemigation when disease threatens and repeat at 7- to 10-day intervals. Do not apply >29 pt/A/season.
<b>CABRIO</b>	B, C, P, R, T	8-16 oz	0	Use 8-16 oz/A for white rust and 8-12 oz/A for other diseases. Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Maximum 3 applications/season. Note 1.
<b>CERCOBIN</b>	B	10.9-21.8 fl oz	21	Do not apply more than 65.4 fl oz/A/year.
<b>CHLORONIL 720/PRAIZ</b>	C, P	1.5-2 pt	0,10	Begin applications at first sign of disease and continue at 7-10 day intervals. Maximum 6 lb a.i./A/season parsnip and 15 lb a.i./A carrot. PHI 0 days carrot.
<b>CUPROFIX ULTRA 40 DISPERS</b>	B C	1.25-3 lb 1.25 lb	–	Begin prior to disease development and continue on a 7-10 day (carrot) or 10-14 day (beet) interval.
<b>DITHANE F-45</b>	B, C, P	1.5 qt	–	24c OR (exp. 12/2019) and WA (exp. 12/2018) crops grown for seed
<b>ENDURA</b>	C	4.5-7.8 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 applications before rotating mode of action. Maximum 5 (low rate) or 3 (high rate) applications/season and 23.4 oz/A/season. Do not use on garden/sugar beets, radishes or turnips.
<b>FLINT</b>	B, C, P, R, T	2-3 oz	7	Begin applications preventatively when conditions favor disease development and continue on a 14 day schedule. Alternate with at least 1 application of another mode of action. Maximum 4 applications and 16 oz/A/season.
<b>FONTELIS</b>	B, C, P, R, T	16-30 fl oz	0	Begin applications prior to disease development and continue on 7-14 day schedule. Maximum 2 sequential applications before switching to another mode of action.
<b>GEM 500 SC/FLINT EXTRA</b>	B, C, P, T	2-2.9 fl oz	7	Begin applications preventatively and continue on a 14-day schedule. Do not make >1 application before rotating to another mode of action. Maximum 4 applications and 11.5 fl oz/A/season.
<b>HERITAGE</b>	B, C, P, R, T	3.2-10.5 oz	0	Apply prior to disease development and continue on a 7-14 day (5-7 day for powdery mildew) schedule. Do not make >2 sequential applications before switching to a different mode of action. Maximum 6 applications and 4 lb/A/season.
<b>INSPIRE SUPER</b>	C	16-20 fl oz	7	Begin applications prior to disease onset when conditions are conducive to disease. 7- to 10-day application schedule; no more than 2 sequential applications before alternating to fungicide with different mode of action. Minimum 15 GPA by ground, 5 GPA by air. Maximum 80 fl oz/A/year. Do not allow cattle or livestock to feed on leaves.
<b>KOCIDE 3000</b>	B C	0.75-2 lb 0.75-1.5 lb	– –	Apply prior to disease development and continue on a 10-14 day (7-14 day for carrot) schedule or as needed.
<b>KOVERALL</b>	B	1.5-2 lb	14	Start applications when disease first threatens and repeat every 7-10 days as needed. Do not apply more than 14 lb/A/crop. Do not feed treated sugar beets to livestock.
<b>LUNA TRANQUILITY</b>	B, C, P, R, T	11.2 fl oz	7	Apply in ground, aerial or chemigation. Apply on 7-14 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
<b>MANZATE MAX/ MANZATE PRO-STICK, PENNCOZEB 75DF</b>	B	1.6 qt/1.5-2 lb	14	Begin when disease first threatens; repeat at 7-10 day intervals. Maximum 11.2 qt/A/crop/season for Manzate Max; 14 lb/A/crop for Manzate Pro-Stick, Penncozeb 75DF.
<b>MERIVON</b>	B, C, P, R, T	4-5.5	7	Apply before disease is present.

PHI – preharvest interval in days.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip

SEE NOTES AT END OF SECTION.

# ROOT CROP DISEASE CONTROL

Disease Treatment Guidelines (continued)				
Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>OMEGA 500F</b>	C	1 pt	7	See label for disease specific treatment instructions. Do not make >4 applications/crop/season or apply > 4 pt/A/season.
<b>ONSET 3.6L</b>	B T	3-7.2 fl oz 4-7.2 fl oz	7	Apply as protective spray. Repeat on 14 day intervals. For turnips east of Rockies only. Maximum 28.8 fl oz/A/season. Include NIS.
<b>PRESIDIO</b>	B, C, P, R, T	3-4 fl oz	7	Tank mix with another mode of action is required. Spray at 10 day intervals. Maximum of 2 sequential applications before alternating mode of action. Maximum 4 applications or 12 fl oz/A/season. Control of cavity spot and root dieback in beet, parsnip, radish, and turnip at 3-4 fl oz/A.
<b>PREVISTO</b>	B, C	1-2 qt	0	Application interval of 10- to 14-day for B, 7- to 14-day for C.
<b>PRISTINE</b>	C	8-10.5 oz	0	Begin applications prior to disease and continue on a 7-14 day interval. Maximum of 2 sequential applications before alternating mode of action. Maximum 6 applications or 63 oz/A/season.
<b>QUADRI OPTI</b>	C	2.4 pt	0	Apply prior to disease development and continue on a 7-14 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 1.5 lb a.i./A/season.
<b>QUADRI TOP</b>	C	12-14 fl oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Use 14 fl oz/A for southern blight (white mold). Do not apply more than 56 fl oz/A/year.
<b>QUILT</b>	C, R	14 fl oz	14	See label for rates and specific diseases controlled or suppressed. Apply when conditions favor disease development and continue on a 7-10 day interval. Maximum 1 application before rotating to another mode of action. May be applied by chemigation.
<b>QUILT XCEL</b>	C	14 fl oz	14	See individual labels for rates and specific diseases controlled or suppressed. Apply when conditions favor disease development and continue on a 7-10 day interval. May be applied by chemigation.
<b>RALLY 40 WSP</b>	C	5-7.5 oz		24c OR & WA (exp. 12/2018): for powdery mildew in carrots grown for seed only. Apply in minimum 20 GPA ground or 10 GPA aerial. Begin prior to onset of disease and continue on 14 to 21 day schedule. Use higher rate or shorter interval on areas under high disease pressure.
<b>REASON 500SC</b>	C	8.2 fl oz	14	Alternate with Ridomil Gold on a 14-21 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 24.6 fl oz/A/season.
<b>RIDOMIL GOLD COPPER</b>	C, R	1 pack/2.5 A	7	For season-long control, see label for sequence of Ridomil Gold SL applications followed by foliar applications of Ridomil Gold Copper. 2-4 applications on a 14-day schedule, depending on disease development. No more than 4 applications per crop. See label for maximum amount of a.i.s from all sources.
<b>RIDOMIL GOLD SL</b>	B, P, R, T C	1-2 pt 0.25 - 2 pt	7	Begin 28-50 days after planting, continue on a 14-21 day schedule. Maximum 1 Post-planting spray and 4 directed sprays. See label for soil applications to carrot and other crops. See label for maximum amount of a.i.s from all sources.
<b>ROVRAL 4</b>	C	1-2 pt	0	Begin when conditions are favorable for disease and continue on a 7-14 day interval. Maximum 4 applications/crop.
<b>SERENADE ASO</b>	B, C, P, R, T	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Sup. label for soil drench, shanked-In, Injected and in-furrow.
<b>SWITCH 62.5WG</b>	B, C, P, T	11-14 fl oz	7	Apply prior to disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 56 oz/A/season. Do not allow cattle/livestock grazing of leaves. 24c OR (exp. 12/2020) for certain diseases in P, R grown for seed.
<b>TETRABAN</b>	B, C, P, R, T	6-20 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.
<b>TOPAZ/TILT</b>	B, R C	3-4 fl oz 4 fl oz	14	Begin when conditions favor disease and continue on a 7-10 day interval (14 day for beets). Maximum 16 fl oz/A/season. Tilt may be applied to carrot and radish through chemigation.
<b>UNIFORM</b>	B, P, R, T	0.34 fl oz/1000' row		Apply in-furrow.

PHI – preharvest interval in days.

\* B – Beet, C – Carrot, P – Parsnip, R – Radish, T – Turnip

**Note 1:** See label for fungicide rate for each disease.

# SOLANACEOUS CROP WEED CONTROL

## Preplant, Preemergence or Postemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	E, P, T	1-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PRE for transplants no closer than 1 day before transplanting and burndown no later than 7 days before planting.
<b>AUTHORITY MTZ</b>	T	8-20 oz	Apply PRE-transplant ahead of tomatoes only. May be applied in the FALL.
<b>COMMAND 3ME</b>	P	0.67-2.67 pt	PRE. Controls annual broadleaves and some grasses. Rate depends on soil texture. Use on all peppers except banana type. 24c MI (exp. 6/2019), OH (exp. 12/2019): for use in banana peppers.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5 or TOMAHAWK 4</b>	E, P, T	Up to 24 fl oz or Up to 32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	PP. Apply at least 3 days prior to planting. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DACTHAL W-75</b>	E, P, T	6-14 lb	PPI or PRE incorporate to 2". Control annual grasses and some broadleaves. Rate depends on soil type and texture.
<b>DEVIRINOL 50-DF</b>	E, P, T	2-4 lb	PPI. Controls annual grasses and some broadleaves. Use lower rates on coarse soils. Apply before planting and incorporate 1-2 inches the same day. Can be used on direct-seeded or transplanted peppers and tomatoes. Check label for rotational crops.
<b>DIMETRIC EXT/ MERTICLUDE EXT</b>	T	0.33-0.66 lb	PPI. Controls annual broadleaves and grasses. Apply PPI before transplanting. May tank mix with trifluralin. Apply to established tomatoes before weeds are 2" and when tomatoes have reached 5-6 leaves. May apply up to 1.33 lb/A for certain weeds. Allow 14 days between if using a split application. Do not tank mix or apply within 1 day of other pesticides. PHI 7 days.
<b>DUAL MAGNUM/ CHARGER BASIC</b>	T	1-2 pt	PPI or PRE before transplanting or POST directed after first settling rain or irrigation. For direct-seeded, apply post-directed after 4" tomato. Rates depend on soil type, see label. PHI for Dual Magnum 90 days if $\geq 1.33$ pt/A, and 30 days at $\leq 1.33$ pt/A. PHI for Charger Basic is 90 days. 24c VA (12/2020) and FL (exp. date not given) for Dual Magnum, PHI 60 days at $\leq 1.67$ pt/A. 24c (indemnified) OH (exp. date 12/2021) for Dual Magnum in transplanted bell and non-bell pepper.
<b>DUAL II MAGNUM</b>	T	<b>&lt;3% O.M.</b> 1-1.33 pt: Coarse 1.33-1.67 pt: Fine <b>&gt;3% O.M.</b> 1.33 pt: Coarse 1.33-1.67 pt: Medium 1.67-2 pt: Fine	PP, PPI, or POSTD. Apply PPI or PP to transplanted tomatoes only. Apply POSTD to seeded or transplanted tomatoes at least 4" tall. Minimum 20 GPA for POSTD applications. PHI 90 days when $>1.33$ pt/A applied. PHI 30 days when $<1.33$ pt/A applied.
<b>ENVOKE</b>	T	0.1-0.2 oz + 1 qt NIS/100 gal	Post-directed to transplanted tomatoes in AL, FL, GA, NC, SC, and TN. PHI 45 days. 24c MS (exp. date note given) for transplanted tomatoes.
<b>GRAMOXONE SL/SL 2.0</b>	E, P, T	2-4 pt soil applied or 2 pt directed spray + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	Apply PP or PRE to the crop to control emerged weeds. Emerged crops will be killed. Do not allow grazing. Use a minimum of 10 gpa by ground. Maximum of 3 applications per year. May be applied POST directed. May apply postharvest in tomatoes at 2.4-3.75 pt/A.
<b>LEAGUE</b>	P, T	4-6.4 oz	POST directed to well established peppers at least 10 inches tall. See label for PRE broadcast or directed and POST applications to tomatoes. 21 day PHI.
<b>MATRIX SG</b>	T	2-4 oz: PRE 1-2 oz: POST + 1-2 qt NIS/100 gal	PRE or POST. Controls annual broadleaves and grasses. Apply PRE with NIS if weeds are present. If rainfall is not applied within 5 days, activate irrigation. Apply POST after the crop reaches cotyledon stage. Apply up to 4 oz/A maximum per year. PHI 45 days.
<b>OPTIFY</b>	E, P, T	5-12 fl oz	Plant Growth Regulator. At planting: 5 fl oz/A apply with liquid fertilizer. Broadcast, side or top dress 8-12 fl oz/A. Via irrigation: Apply at 8 fl oz/A. Foliar: Apply directly to foliage of actively growing plants $\geq 6$ fl oz/A in minimum 5 GPA. Best results when applied with nutrients. Repeat application $\geq 7$ days. Do not apply $>24$ oz/A/season.
<b>POAST</b>	E, P, T	1-1.5 pt + 1 pt HSOC-COC <sup>1</sup>	Apply POST to actively growing grasses. Do not apply more than 4.5 pt/A per season. Applications to bell peppers under high humidity and temperature may cause injury. PHI 20 days. May be tank mixed with Dimetric EXT/Metriclude in tomato.

\* E – Eggplant, P – Pepper, T – Tomato

\*\* May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.



# SOLANACEOUS CROP WEED CONTROL

## Preplant, Preemergence or Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>PREFAR 4-E</b>	E, P	5-6 qt	Apply PP or PRE. Controls some annual broadleaves and grasses. Incorporate 1-2". If applied to soil surface, irrigate within 36 hours.
<b>PROWL H2O</b>	P, T	1-3 pt	PPI, PP surface prior to transplant, or POST directed to transplanted or direct seeded crop.
<b>REFLEX</b>	P, T	1-1.5 pt	24c GA (indemnified; exp. 12/2021) for transplanted tomatoes and peppers for weed control.
<b>ROUNDUP WEATHERMAX**</b>	E, P, T	11-32 fl oz + 8.5-17 lb AMS/100 gal <sup>a</sup>	Apply prior to planting and wait 3 days before planting. Controls emerged annuals. Rate depends on weed species and size. See label for perennial rates. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>SECTION THREE</b>	E, P T	4-5.33 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal 4-10.67 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST. Do not apply more than 5.33 fl oz/A/application (E,P), 10.67 fl oz/A/application (T) or 21.33 fl oz/A/season. For repeat applications make on a minimum 14-day interval. PHI 20 day.
<b>SELECT 2 EC/CLEANSE</b>	E, P, T	6-8 fl oz + 0.5 gal HSOC-COC <sup>1</sup> /100 gal	POST. Rate depends on weed species and size. PHI 20 days.
<b>SELECT MAX</b>	E, P, T	9-16 oz + 1 qt NIS/100 gal	POST. Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a minimum 14 day interval. PHI 20 days.
<b>SEQUENCE</b>	T	2.5-5 pt + 8.5-17 lb AMS/100 gal	Apply PRE transplant to varieties known to be tolerant. See label for soil and texture rates. PHI is 90 days. Apply only by ground. Do not feed or graze on forage.
<b>SPARTAN</b>	T	2.25-8 fl oz	PRE broadcast or banded prior to transplant. Rate depends on O.M. and soil texture.
<b>SPARTAN CHARGE</b>	P	4.5-7.6 oz	24c OH (exp. 12/2018) for PRE or POST-transplant shielded applications to row-middles where peppers are grown on plastic.
<b>TILLAM 6-E</b>	T	2.67-4 qt	For lighter soils with <10% O.M., use the low rate. Controls annual grasses and broadleaves. Apply just prior to mechanical transplanting, just prior to direct-seeding (west region only) or after transplanting. Tillam may also be applied as a layby treatment or through sprinkler irrigation (west region only). PHI 8 days.
<b>TRUST/TREFLAN HFP</b>	P, T	1-2 pt	PPI. Controls grasses and broadleaves. Use lower rates on coarse soils and in areas of <20" rainfall. For transplants, apply and incorporate before transplanting. On direct-seeded, apply as a directed spray at blocking or thinning and incorporate immediately.
<b>VIDA</b>	E, P, T	0.5-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PP burndown. Contact herbicide for broadleaf weed control and desiccation. Do not apply within 24 hours of planting.

\* E – Eggplant, P – Pepper, T – Tomato

\*\* May use other glyphosate herbicides: Roundup brands; Cornerstone brands, or Durango DMA/Duramax at labeled rates.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO) are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# SOLANACEOUS CROP INSECT CONTROL

## Labeled Insecticides

INSECT*	SOLANACEOUS CROPS		INSECTICIDE		SOLANACEOUS CROPS		INSECTICIDE	
	Actara	Admire Pro	Advise Four	Agree WG	Agri-Mek 0.15EC/SC	Arctic	Asana XL	Assail 70WP/30SG
Aphid	•	•	•				•	•
Armyworm				•			• <sup>1</sup>	•
Colorado Potato Beetle	•	•	•		•	•		
Cutworm							• <sup>2</sup>	
European Corn Borer							• <sup>3</sup>	
Flea Beetle	•	•	• <sup>6</sup>			•		
Fruitworm				•			• <sup>2</sup>	
Hornworm				•			• <sup>2</sup>	
Leafhopper	•	•	•					
Spider Mite					•			
Stink Bug	•	•						
Thrips		•	•					•

## Labeled Insecticides (continued)

INSECT*	SOLANACEOUS CROPS		INSECTICIDE		SOLANACEOUS CROPS		INSECTICIDE	
	Lambda-Cy Ag	Lannate	Leverage 360	Malathion 5/5EC	Malathion 8 Flowable	Minecto Pro	Movento/Movento HL	Mustang Maxx
Aphid	S	•	•	•	•	•	•	•
Armyworm	•	•	•	• <sup>2</sup>		•	•	•
Colorado Potato Beetle	•		•			•	•	
Cutworm	•	• <sup>2,4</sup>				•		
European Corn Borer	•	• <sup>4</sup>				•	•	
Flea Beetle	•		•				•	•
Fruitworm	•	• <sup>2</sup>	•			•	•	•
Hornworm	•	• <sup>2</sup>	•			•	•	•
Leafhopper	•		•				•	•
Spider Mite	S			• <sup>1</sup>	• <sup>1</sup>	•	•	•
Stink Bug	•	•				•		
Thrips	•	•				S		•

S – Suppression.

\* Many other insects may be controlled, see label.

<sup>1</sup> Eggplant and tomato only. <sup>2</sup> Tomato only. <sup>3</sup> Eggplant and pepper only. <sup>4</sup> Pepper only.

<sup>5</sup> Non-bell for aphids; bell for green peach aphid. State, regional restrictions. <sup>6</sup> Soil application only.

<sup>7</sup> Western flower, chili, melon, Florida flower, and eastern flower only.

☀ See Insecticide Resistance Management in the TECHNICAL INFORMATION section.

# SOLANACEOUS CROP INSECT CONTROL

## Insect Management Thresholds

<b>COLORADO POTATO BEETLE</b> (Eggplant)	<6" plants - 2 small larvae or 1 large larvae or 1 adult per plant. >6" plants - 4 small larvae or 2 large larvae or 2 adult per plant.
<b>COLORADO POTATO BEETLE</b> (Tomato)	Apply to borders or entire field to protect new transplants or if defoliation is occurring.
<b>CUTWORM</b> (Tomato)	Treat when larvae exceed 1 per 10 plants.
<b>EUROPEAN CORN BORER</b>	Regularly check 15 to 20 randomly selected plants from each of five locations in the field for aphids. If you notice European corn borer (ECB) eggs or larvae or if the catch of female ECB moths in nearby black light traps equals 4 per night for 3 consecutive nights when peppers are forming, insecticide treatments are necessary to protect the crop. For adequate protection against ECB, subsequent sprays will be needed at 5-7 day intervals (depending on insecticide and weather) while moth flights continue or until harvest, unless crop is side-dressed with granular insecticide. NOTE: The amount of sweet corn, in the tassel/silking stage, adjacent to pepper, should attract significant numbers of ECB moths for egg-lay. This preference for sweet corn may help to minimize ECB egg-lay on peppers.
<b>FLEA BEETLE</b> (Eggplant) (Pepper)	<3" plants - 2 beetles per plant 3-6" plants - 4 beetles per plant >6" plants - 8 beetles per plant
<b>FLEA BEETLE</b> (Tomato)	Treat when beetles exceed 2 per 10 leaves.
<b>FRUIT FLY</b> (Tomato)	Dust or spray tomatoes to cover lightly, but thoroughly, with synergized pyrethrins (Pyrenone, Pyrocyde).
<b>HORNWORM AND FRUITWORM</b> (Tomato)	Treat when > 2 per plant.
<b>LEAFHOPPER</b> (Tomato)	Occasional early season problem. Treat as needed.

## Insect Treatment Guidelines

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTARA</b>	E, P, T	2-5.5 fl oz	0	Note 1.
<b>ADMIRE PRO</b>	E, T P	7-10.5 fl oz 7-14 fl oz	0, 21	See label for soil application instructions. Use 1.3-2.2 fl oz/A foliar. PHI 0 days foliar. Note 1.
<b>ADVISE FOUR</b>	E, T P E, P, T	8-12 fl oz: soil 8-16 fl oz: soil 1.5-2.4 fl oz: foliar	0, 21	See label for soil application instructions. PHI 0 days foliar.
<b>AGRI-MEK 0.15 EC/SC</b>	E, P, T	8-16/1.75-3.5 fl oz	7	Use ≥ 20 GPA. Do not exceed 48/10.25 fl oz/A/season. Allow ≥ 7 days between applications. No more than 2 sequential applications. Includes commercially grown greenhouse tomatoes. Note 1.
<b>ARTIC</b>	E P T	6 fl oz 4-8 fl oz 2-8 fl oz	0, 3	PHI 0 days in tomato, 3 days in eggplant and pepper. Do not apply more than 0.8 lb a.i./A season in tomato, 0.8 lb a.i./A in pepper and 0.6 lb a.i./A in eggplant. Note 1.
<b>ASANA XL</b>	E, P T	5.8-9.6 fl oz 2.9-9.6 fl oz	1, 7	PHI 1 day for tomato. Do not exceed 0.35 lb a.i./A/season for eggplant or pepper and 0.5 lb a.i./A/season for tomato. Note 1.
<b>ASSAIL 70 WP/30SG</b>	E, P, T	0.8-1.7/2-4 oz	7	Aphids vary in susceptibility. Do not apply more than 5 times or 8.5/16 oz/A per crop. Note 1.
<b>AVAUNT</b>	E, P, T	2.5-3.5 fl oz	3	Do not apply more than 14 fl oz/A/crop. Note 1.
<b>BAYTHROID XL</b>	E, P, T	1.6-2.8 fl oz	0, 7	PHI 0 days for tomato. Do not exceed 16.8 fl oz/A/crop season. Note 1.
<b>BELAY</b>	E, P, T	9-12 fl oz: soil 3-4 fl oz: foliar	21	See label for soil application instructions.
<b>BELEAF 50SG</b>	E, P, T	2.8-4.28 oz	0	Note 1.
<b>BESIEGE</b>	E, P, T	5-9 fl oz	5	Maximum 31 fl oz/A or 0.36 lb a.i./A/year lambda-cyhalothrin-containing products or 0.2 lb/A/year chlorantraniliprole-containing products. 5-day minimum application interval.
<b>BRACKET 97/ ORTHENE 97</b>	P	0.25-1 lb	7	For bell peppers. For aphid in non-bell peppers, use 0.5 lb/A. Do not use more than 2.125 lb/A per crop cycle. Non-bell pepper in Midwest and East only.

\* E – Eggplant, P – Pepper, T – Tomato PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

# SOLANACEOUS CROP INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>BRIGADIER</b>	E, T P	3.8-9.85 fl oz 3.8-9.8 fl oz	1, 7	PHI 1 day for tomato. Note 1.
<b>CERTADOR</b>	E, P, T	32.5-47.5 fl oz: soil 6.5-26 fl oz: foliar	21, 1	Use only one application method. Apply as foliar when pests appear, as needed but not more than every 7 days. See label for row spacing rates.
<b>CLOSER SC</b>	E, P, T	1.5-4.5 fl oz	1	Do not make >4 applications/crop, 2 consecutively, or <7 days apart, and >17 fl oz/A/season. If blooming vegetation is present 12 feet out from the downwind edge of the field, a downwind 12-ft on-field buffer must be observed. Note 1.
<b>CONFIRM 2F</b>	E, P, T	6-8 fl oz	7	Rate dependent on target pest; see label. 10- to 14-day application interval.
<b>CORAGEN</b>	E, P, T	2-7.5 fl oz	1	Foliar rates. Also labeled for at-planting and drop chemigation uses. See label for rates. Note 1.
<b>DANITOL</b>	T	10.67 fl oz	3	Do not apply more than 2.7 pt/A per season.
<b>DECLARE</b>	E, P, T	0.77-1.54 fl oz	5	When applying by air, apply in a min. of 2 gal of water/A. Use higher rates for longer residual control. Rate vary depending on target pest.
<b>DELTA GOLD</b>	E, P, T	1-2.4 fl oz	1	Do not apply more than 14.4 fl oz per season. Note 1.
<b>DIMATE 4E</b>	P  T	0.5-0.67 pt  0.5-1 pt	0  7	Peppers may be harvested day of application. Maximum single application rate is 0.66 pt/A and maximum rate per year is 3.33 pt/A. Reapplication interval is 7 days. REI is 48 hours. Maximum single application rate is 1 pt/A and maximum total rate per year is 2 pt/A. 6 day reapplication interval. REI is 48 hours.
<b>DIPEL DF</b>	E, P, T	0.25-2 lb/1-4 lb	0	Bt insecticide. Note 1.
<b>DURIVO</b>	E, P, T	10-13 fl oz	30	Apply in-furrow; POST-seeding, transplant, or hill drench; drip chemigation; or shanked into root zone within 28 days of plant emergence or transplanting. Maximum 1 soil application/season.
<b>ENDIGO ZC</b>	E, P, T	4-4.5 fl oz	5	Note 1.
<b>ENTRUST SC</b>	E, P, T	3-8 fl oz	1	A Naturalyte insecticide. Do not apply less than 4 days apart and do not make more than 6 applications per calendar year. Do not apply more than 9 oz/29 fl oz per acre per season. 2ee various states (exp. date not given) for overhead sprinkler chemigation use. Note 1.
<b>EXIREL</b>	E, P, T	7-20.5 fl oz	1	Apply foliar with an effective adjuvant. Do not apply sooner than every 5 days. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>FASTAC EC/FASTAC CS</b>	E, P, T	2.2-3.8 fl oz	1	Do not make applications <7 days apart. Do not apply >11.4 fl oz/A/season. Minimum 10 GPA ground and 2 GPA air.
<b>FULFILL</b>	E, P, T	2.75 oz	0	Do not apply by air. Do not exceed 5.5 oz/A/season. Allow minimum of 7 days between applications.
<b>GLADIATOR</b>	E, P, T	10-19 fl oz	7	Maximum 57 fl oz/A/year. Note 1.
<b>GRIZZLY TOO</b>	E, P, T	0.96-1.92 fl oz	5	Do not apply ≥ 1.44 pt/A/season.
<b>HERO</b>	E, P, T	4-10.3 fl oz	1, 7	PHI 1 day for tomato. 2ee various states (exp. date not given) for brown marmorated stinkbug control in E,P at 7.1-10.3 fl oz/A. Note 1.
<b>INTREPID 2F</b>	E, P, T	4-16 fl oz	1	Use 4-8 fl oz/A for early season applications only and 8-10 fl oz/A for mid- to late-season applications or for heavy infestations or applications when coverage is difficult. Do not exceed 64 fl oz/A. Use 10-16 fl oz/A for tomato fruitworm (suppression only). Supplemental label all states except NY (exp. date not given) for control of Lepidoptera larvae. Note 1.
<b>LAMBDA CY AG</b>	E, P, T	1.92-3.84 fl oz	5	When applying by air, apply in a min. of 2 gal of water/A. Use sufficient water to obtain full coverage of foliage.
<b>LANNATE LV</b>	E, P, T	0.75-3 pt 1.5-3 pt	1, 3, 5	Do not make more than 10 applications per crop in eggplant or pepper and 16 in tomato. PHI 5 days for eggplant, 3 for pepper, 1 for tomato.
<b>LEVERAGE 360</b>	E, P, T	3.8-4.1 fl oz	0	Note 1.
<b>MALATHION 5</b>	E P T	1-2.5 pt or 1.5-2.5 pt 1-2.5 pt 1-2.5 pt or 1.5-2.5 pt	3 1	PHI 3 days for eggplant or pepper; 1 day for tomato. Note 1.

\* E – Eggplant, P – Pepper, T – Tomato PHI – preharvest interval in days.

SEE NOTES AT END OF SECTION.

# SOLANACEOUS CROP INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>MALATHION 8 FLOWABLE</b>	E, P, T	1.56 pt 1.5 pt	1,3	E,T: Maximum of 4 applications/year. P: Maximum of 2 applications/year. PHI for T is 1 day.
<b>MINECTO PRO</b>	E, P, T	5.5-10 fl oz	7	Rate is dependent on target pest; see label. Best control achieved with ground applications.
<b>MICROTHIOL DISPERS</b>	P, T	3-10 lb 5-10 lb	–	Red spider mite and other insects. Note 1.
<b>MOVENTO/MOVENTO HL</b>	E, P, T	4-5 fl oz/1.5-2.5 fl oz	1	Maximum of 10 fl oz/A/season Moventi, 5 fl oz/A/season Movento HL. Note 1.
<b>MUSTANG MAXX</b>	E, P, T	2.24-4 fl oz	1	Note 1.
<b>NEALTA</b>	T	13.7 fl oz	3	Apply at first sign of mites and continue on local threshold needs, but do not apply sooner than 14 day intervals. Apply in minimum 50 GPA. Do not apply more than 27.4 fl oz/A/year. Do not apply more than once without rotating MOA.
<b>OBERON 2SC</b>	E, P, T	7-8.5 fl oz	7	
<b>ONAGER</b>	E, P, T	12-24 fl oz	1	Do not apply > 24 fl oz/A/year or make >1 application/year. Labeled for greenhouse tomatoes only.
<b>PLATINUM</b>	E, P, T	5-11 fl oz	30	Apply in-furrow, banded and incorporated with irrigation, hill drench, trickle or drip irrigation, shanked in the root zone POST-seeding, or transplant. See label.
<b>PLATINUM 75 SG</b>	E, P, T	1.66-3.67 oz	30	Apply in-furrow, drench, drip, or shanked (see label). Do not exceed 3.67 oz/A/season.
<b>PROCLAIM</b>	E, P, T	2.4-4.8 oz	7	Up to 28.8 oz/A/season. Note 1.
<b>RADIANT SC</b>	E, P, T	5-10 fl oz	1	Use 6-10 fl oz for thrips. Not for yellow- or western-striped armyworms. Note 1.
<b>REQUIEM EC</b>	E, P, T	2-4 qt	0	For thrips (2-3 qt/A), apply as soon as seen in crop. For whiteflies (3-4 qt/A), apply before damaging levels are reached. For leafminer suppression, begin treatments before thresholds have been met. Note 1.
<b>SEQUOIA</b>	E, P, T	1.5-4.5 fl oz	1	Do not make applications less than 7 days apart. Do not make more than four applications or two consecutive per crop. Do not apply more than 17 fl oz/A/year. If blooming vegetation is present 12 ft out from the downwind edge of the field, a downwind 12 ft on field buffer must be observed. Note 1.
<b>SEVIN XLR PLUS</b>	E, P, T	0.5-2 qt	3	Do not apply >8 qt/A/year. Bee caution: do not apply to target crops or weeds in bloom. Note 1.
<b>SIVANTO PRIME</b>	E, P, T	7-28 fl oz	1,45	Foliar: 7-14 fl oz/A (pest-dependent), 7 day minimum application interval. PHI 1 day. Ground minimum 10 GPA, air minimum 2 GPA. Soil: 21-28 fl oz/A. PHI 45 days.
<b>STEED</b>	E, P, T	3.5-4.7 fl oz 3.5-4.7 fl oz	7 1	See label for application GPA by crop. Do not make applications <7 days apart or >28.1 fl oz/A/season. Note 1.
<b>TRIGARD</b>	P, T	2.66 fl oz	0	Leafminer control.
<b>TUNDRA/BIFEN 2 AG GOLD/BRIGADE 2EC</b>	E, P, T	2.1-6.4 fl oz 2.1-5.2 fl oz	7, 1	PHI 7 days for eggplant and pepper; 1 day for tomatoes. Note 1.
<b>VENOM 70SG</b>	E, P, T	1-4 oz	1, 21	May use 5-6 oz/A soil applied. PHI 21 days soil applied. Note 1.
<b>VERIMARK</b>	E, P, T	5-13.5 fl oz	1	Apply to soil at planting no earlier than 72 hours prior to planting. May drip chemigate or soil inject. Do not apply more than 13.5 fl oz/A at planting. Do not apply more than 0.4 lb a.i./A cyantraniliprole/crop/season. A spray application pH of 4-6 is recommended. Note 1.
<b>VOLIAM FLEXI</b>	E, P, T	4-7 oz	1	Maximum 14 oz/A/season.
<b>VOLIAM XPRESS</b>	E, P, T	5-9 fl oz	5	Note 1.
<b>VYDATE L</b>	E, P, T	2-4 pt: foliar	1, 3, 7	See label for soil applications and nematode control. See various states (exp. 12/2018) for brown marmorated stink bug control at 1.5-3 pt/A; PHI in pepper is 7 days, in tomato 3 days. Note 1.
<b>WARRIOR II</b>	E, P, T	0.96-1.92 fl oz	5	Do not apply $\geq$ 1.44 pt/A/season.
<b>XENTARI</b>	E, P, T	0.5-2 lb	0	Bt insecticide. Note 1.
<b>ZEAL</b>	E, P	2-3 oz	7	Two-spotted spider mite.

PHI – preharvest interval in days.

\* E – Eggplant, P – Pepper, T – Tomato

**Note 1:** See label for insecticide rate for each insect.

# SOLANACEOUS CROP DISEASE CONTROL

## Labeled Fungicides

DISEASE*	SOLANACEOUS CROPS																																						
	FUNGICIDE	Actigard 50WG	Aliette WDG	Aprovia Top	Badge SC/Badge X2	Bio-Tam	Blocker 10G	Bravo Ultrex/Weather Stik <sup>3</sup>	Bravo ZN	Cabrio	Chloronil 720 <sup>3</sup> /Praiz	Cuprofix Ultra 40 Dispers 7	Curzate 60DF <sup>1</sup>	Dithane F-45	Endura	Flint	Fontelis	Forum	Fracture	Gavel 75 DF	Gem 500 SC/Flint Extra	Heritage	Indar 2F	Inspire Super	Kocide 3000	Koverall	Luna Sensation	Mankocide 1	Manzate Max	Manzate Pro-Stick/Penncozeb 75DF	Mentor	Mettle 125 ME	Mural						
Alternaria Blight				2							5						5								5	6													
Anthracnose							3				3						5					5																	
Bacterial Speck	1											1														1	1												
Bacterial Spot	1			12								1,6														1,6	1												
Black Mold				1			3				3																							1					
Botrytis (Gray Mold)									5						1					1																			
Buckeye Rot																																							
Cercospora Leaf Spot				6								6																											
Crown Rot and Damping Off																																							
Downy Mildew				2																																			
Early Blight				1	12			1			1	1																											
Fusarium																																							
Gray Leaf Mold				1				1			1	1																											
Gray Leaf Spot								1			1																												
Late Blight				12				1			1	1																											
Leaf Mold				1																																			
Phomopsis				5								1			6																								
Phytophthora Blight				2																																			
Phytophthora spp. (Root Rot)	1																																						
Pink Rot																																							
Powdery Mildew																																							
Pythium spp. (Damping off)	1																																						
Rhizoctonia																																							
Ripe Rot																																							
Root and Fruit Rot																																							
Seed Rot and Damping Off																																							
Septoria Leaf Spot				1	1			1			1	1																											
Target Spot								1			1																												

SOLANACEOUS CROP DISEASES

# SOLANACEOUS CROP DISEASE CONTROL

## Labeled Fungicides (continued)

DISEASE*	FUNGICIDE	Omega 500F <sup>2</sup>	Orondis Gold 200	Orondis Gold B	Orondis Opti	Orondis Opti A, Ultra A	Orondis Opti B	Orondis Ultra B	Ph-D	Presidio	Previcur Flex	Previsto	Pitaxor	Quadris Opti	Quadris Top	Quintec	Rally 40WSP	Reason 500SC	Revus 6	Revus Top 1	Rhyme 3.08SC	Ridomil Gold Copper	Ridomil Gold SL	Scala	Scholar SC	Serenade ASO	Switch 62.5WG	Tanagro ECO	Tanos	Tetranban	Topguard	Topguard EQ	Zapro	Zing!		
		Alternaria Blight												5																						
Anthracnose					●	●			S			13	●	●	●						●	●									●	●	●	2	●	
Bacterial Speck												1														●	S1,6	S1								
Bacterial Spot												14														●	S1,6	S								
Black Mold													●	●	1						●	●			●						●					
Botrytis (Gray Mold)					●			●				S												●												
Buckeye Rot					●	●								●																S1	●	1				
Cercospora Leaf Spot						●						6			2																	2	●			
Crown Rot and Damping Off		●	●																				●,So													
Downy Mildew					●			●												●																
Early Blight								●		1	1	●	●	●	1				●		●	●		●	●	●	S1,6	●	●	1	1		●		●	
Fusarium																											S1,6									
Gray Leaf Mold												1											●	●	●											
Gray Leaf Spot															●						●															
Late Blight					●	●			●	1	1	S	●	●				●		●	●	1				●	S1,6	●	●	1	1		●	●	●	
Leaf Mold						●									1						●										1					
Phomopsis												5																								
Phytophthora Blight		2	●		●			●										S	S			6					S1,6	S						●		
Phytophthora spp. (Root Rot)								●														6														
Pink Rot					●																															
Powdery Mildew						●		●					●	●	●	●	●			●	●				●		S1,6			●	2	●				
Pythium spp. (Damping off)										●												6	So				S1,6									
Rhizoctonia													S														S1,6		●							
Ripe Rot																																				
Root and Fruit Rot			●																			1	●,So													
Seed Rot and Damping Off																																				
Septoria Leaf Spot												1	●	●	●	1		S		●										1	1		●		●	
Target Spot													●	●	1					●	●			8		●	●		1	1		●				

So - soil application.

S - Suppression.

\*Other diseases may be controlled, see label.

<sup>1</sup> Tomato only. <sup>2</sup> Eggplant and pepper only. <sup>3</sup> Fruit diseases of tomato; other diseases are labeled also.

<sup>4</sup> Control in pepper, suppression in tomato. <sup>5</sup> Eggplant only. <sup>6</sup> Pepper only. <sup>7</sup> Copper sulfate. <sup>8</sup> Florida only. <sup>12</sup> Pepper and Tomato. <sup>13</sup> Eggplant, pepper, tomato only. <sup>14</sup> Pepper and tomato only.

☀ See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

# SOLANACEOUS CROP DISEASE CONTROL

## Disease Management Guidelines

Disease	Labeled Crops*	Comments/Restrictions
<b>ALTERNARIA BLIGHT, ANTHRACNOSE OR PHOMOPSIS FRUIT ROT</b>	T	Rotate with crops other than tomato or pepper. Use disease-free seed and resistant varieties. Apply fixed coppers for control.
<b>ALTERNARIA LEAF SPOT</b>	P	Use fungicides containing copper.
<b>ANTHRACNOSE</b>	P	Use fungicides containing copper, pyraclostrobin, or famoxadone + cymoxanil.
<b>ANTHRACNOSE</b>	T	Use fungicides containing coppers, chlorothalonil, famoxadone + cymoxanil mancozeb, maneb or azoxystrobin.
<b>ASTER YELLOW</b>	T	Controls leafhoppers.
<b>BACTERIAL SPECK AND CANKER</b>	T	Use fungicides with copper or famoxadone + cymoxanil (suppression).
<b>BACTERIAL SPOT</b>	P	Use resistant cultivars, hot water seed treatments and fungicides containing copper, copper sulfate or streptomycin sulfate or famoxadone + cymoxanil (suppression).
<b>BACTERIAL SPOT</b>	T	Use hot water seed treatments and seed at higher rates. Fungicides include coppers, streptomycin sulfate and mancozeb or famoxadone + cymoxanil (suppression).
<b>BLOSSOM-END ROT</b>	T	Maintain uniform soil moisture and avoid excess N and soluble K salt. Avoid close cultivation.
<b>BOTRYTIS (GRAY MOLD)</b>	T	Reduce relative humidity in green houses. Use fungicides containing benomyl, coppers, or Scala.
<b>CERCOSPORA LEAF SPOT</b>	P	Use fungicides containing copper.
<b>CROWN ROT AND DAMPING-OFF</b>	P	Use fungicides containing mefenoxam at the time of planting or other seed treatments.
<b>EARLY AND LATE BLIGHTS</b>	T	Use fungicides containing azoxystrobin, famoxadone + cymoxanil, fenamidone, fluoxastrobin, mancozeb, pyraclostrobin or coppers. Scala: early blight only.
<b>FUSARIUM AND VERTICILLIUM WILTS</b>	T	Plant resistant varieties and rotate crops. Vapam HL may also be used.
<b>PHYTOPHTHORA BLIGHT AND RIPE ROT</b>	P	Use fungicides containing maneb or famoxadone + cymoxanil (suppression).
<b>POWDERY MILDEW</b>	T	Use Rally 40W SP.
<b>SEED ROT AND DAMPING-OFF</b>	E	Use disease-free seed and sterile soil. Apply products containing mefenoxam.
<b>SEED ROT AND DAMPING-OFF</b>	T	Use seed treated with captan or thiram.
<b>SEPTORIA LEAF BLIGHT</b>	T	Use fungicides containing azoxystrobin, chlorothalonil, famoxadone + cymoxanil, fenamidone, maneb, mancozeb or pyraclostrobin.
<b>SOIL ROT</b>	T	Stake or mulch plants.
<b>VERTICILLIUM WILT</b>	E	Control weeds and use long crop rotations with non-susceptible crops. Plant into well-drained soils. Apply metam-sodium for control.
<b>VIRAL DISEASES - MOSAICS, POTATO VIRUS X AND Y</b>	P	Use transplants free of infection and plant as far as possible from other solanaceous crops, melons, and alfalfa. Plant resistant varieties when possible and eliminate weed host plants near fields.
<b>WALNUT WILT</b>	T	Avoid planting tomatoes within the distance of the tree that equals the tree height.

\* E – Eggplant, P – Pepper, T – Tomato



# SOLANACEOUS CROP DISEASE CONTROL

## Disease Treatment Guidelines

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ACTIGARD 50WG</b>	P,T	0.75 oz	14	Begin applications within 1 week of transplanting or emergence, and continue up to 8 weekly applications. Maximum 6 oz/A/year. 24c FL (sweet peppers, including bell; exp. 12/2018), MI (bell peppers; exp. 12/2022) for protection against bacterial spot.
<b>ALIETTE WDG</b>	T	2-5 lb	14	Apply at 2-4 leaf for direct seeded and immediately after transplanting to the field. Continue on 7-14 day intervals. Maximum 20 lb/season.
<b>APROVIA TOP</b>	E,P,T	10.5-13.5 fl oz	0	E,P: Begin applications prior to disease onset when conditions are conducive for disease, on a 7-14 day schedule. No more than two applications on a 7 day interval, with remaining applications no closer than a 14 day interval. See label for tomato-specific directions, annual maximums, and resistance management.
<b>BADGE SC OR BADGE X2</b>	E,P,T	0.75-2.25 pt or 0.75-2.25 lb	0	0.75-1.5 pt/A for E, 0.75-2.25 pt/A for P and 0.75-1.8 pt/A for T. Application intervals: 7- to 10-day interval for E; 3- to 10-day Badge SC for T,P; 5- to 10-day Badge X2 for T and 7- to 10-day Badge X2 for P. Use higher rates when conditions favor disease development. See label for greenhouse and shadehouse diseases and rates.
<b>BIO-TAM</b>	E,P,T	2.5-5 lb	–	Apply at sowing, restart of vegetative growth, and before infection risk period. If rainfall is not expected, irrigate with 0.25-0.5"/A.
<b>BLOCKER 10G</b>	P	0.75-1 lb/1000' row	–	Apply in furrow at planting time to the soil around seed and to the covering soil as it fills the furrow.
<b>BRAVO ULTREX/ WEATHER STIK</b>	T	1.3-1.8 lb or 1.5-2 pt	0	Begin applications when disease threatens and continue at 7-10 day intervals for foliage. Start at fruit set and continue at 7-14 day interval. Maximum 15 lb a.i./season. Note 1.
<b>BRAVO ZN</b>	T	2-4 pt	0	See label for foliage vs. fruit pathogens and use rates. Begin ground, air or chemigation applications when dew or rain occur and disease threatens. Apply on a 7- to 10-day interval for foliage diseases. Begin application for fruit diseases at fruit set and on a 7- to 10-day interval. Do not apply >28.5 pt/A/season.
<b>CABRIO</b>	E,P,T	8-16 oz	0	Use 8-12 oz for downy mildew and 12-16 oz/A for other diseases. Begin applications prior to disease development and continue on a 7-14 day schedule. Do not make >2 (1 for late blight) applications before rotating mode of action. Maximum 6 applications/season. Note 1.
<b>CHLORONIL 720/PRAIZ</b>	E,P T	1.5 pt 1.375-2.75 pt	3 0	Begin applications as foliage, flower and fruit spray when disease is expected. Repeat at 7-10 day intervals as needed. Maximum 9 lb a.i./A/season. Begin applications when disease threatens and continue at 7-10 day intervals for foliage. Start at fruit set and continue at 7-14 day interval. Maximum 15 lb a.i./A/season. Note 1.
<b>CUPROFIX ULTRA 40 DISPERSS</b>	E P,T	1.25 lb 1.25-3 lb	–	Begin prior to disease development and continue on a 7-10 day (eggplant) or 5-10 day (tomato, pepper) interval.
<b>CURZATE 60DF</b>	E,P T	1.5 pt 3.2-5 oz	3 3	Begin applications as foliage, flower and fruit spray when disease is expected. Repeat at 7-10 day intervals as needed. Maximum 9 lb a.i./season Tank mix with a protectant fungicide. Apply on a 5-7 day schedule. Maximum 30 oz/A/year.
<b>DITHANE F-45</b>	P,T	1.2-2.4 qt	5,7	Start when seedlings emerge or transplants are set and repeat at 7-10 day intervals. Use 1.2-1.6 qt/A west of Mississippi river and 1.2-2.4 qt/A east of river. Maximum of 6.4 qt/A west and 16.8 qt east of river/A/crop.
<b>ENDURA</b>	E,P,T	2.5-3.5 oz	0	Begin applications prior to disease development and continue on a 7-14 day schedule. Use 9-12.5 oz/A for botrytis gray mold in tomato. Do not make >2 applications before rotating mode of action. Maximum 6 (2 at high rate in tomato) applications/season. Note 1.
<b>FLINT</b>	E,P,T	1.5-4 oz	0	Begin applications preventatively when conditions favor disease development and continue on a 7-10 day schedule. Use a tank mixture for late blight. Alternate with at least 1 application of another mode of action. Maximum 5 applications and 16 oz/A/season. Note 1.

PHI – preharvest interval in days.  
\* E – Eggplant, P – Pepper, T – Tomato

SEE NOTES AT END OF SECTION.

# SOLANACEOUS CROP DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>FONTELIS</b>	E, P, T	16-24 fl oz	0	Begin application prior to disease development and continue on 7-14 day schedule. Labeled for greenhouse production. Maximum 2 sequential applications before switching to a different mode of action. Maximum 72 fl oz/A/year. See label for use against soil-borne diseases in tomato at 1-1.6 fl oz/1000' row.
<b>FORUM</b>	E, P, T	6 oz	0	Apply in a tank mix. Begin when plants are 4-6" tall or prior to disease and continue on a 5-7 or 7-10 day schedule. Maximum 2 sequential applications before rotating to another mode of action. Maximum 30 oz/A/season.
<b>FRACTURE</b>	T	24.4 or 36.6 fl oz	1	Apply prior to onset of disease and continue on 7-10 day interval. Rainfast 2-4 hours. Use higher rate under severe disease pressure. Do not make >5 application/harvest cycle.
<b>GAVEL 75 DF</b>	T	1.5-2 lb	5	Start applications when seedlings emerge or transplants are set and repeat on 7-10 day intervals. Use a full rate of fixed Cu in tank mix with 2 lb rate. West of Mississippi: do not make more than 4 applications or apply more than 8 lb/A/season. East of Mississippi: do not make more than 8 applications or apply more than 16 lb/A/season.
<b>GEM 500 SC/FLINT EXTRA</b>	E, P, T	2.5-3.8 fl oz		Rate dependent on specific disease; see label. Late blight controlled with tank mixed with protectant fungicide. Apply on a 7- to 10-day interval as needed. Maximum 16 fl oz/A/year. No more than 5 applications/A/year.
<b>HERITAGE</b>	E, P T	3.2-8 oz 0.8-3.2 oz	0	Apply prior to disease development and continue on a 7-14 day (tomato: 5-7 for late blight, 7-21 others) schedule. Do not make >2 (4 tomato) sequential applications before switching to a different mode of action. Do not apply to tomato until 21 days after transplant or 35 days after seeding. Maximum 4 (8 tomato) applications and 2 lb (1.6 lb tomato)/A/season. Note 1.
<b>INDAR 2F</b>	P	6-12 fl oz	7	Minimum re-treatment interval is 10 days. Do not apply through chemigation. Do not make more than 2 consecutive applications.
<b>INSPIRE SUPER</b>	E, P, T	16-20 fl oz	0	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 47 fl oz/A/season.
<b>KOCIDE 3000</b>	E P T	0.75-1.5 lb 0.75-1.25 lb 0.75-1.75 lb	-	Apply prior to disease development and continue on a 7-10 day (5-7 day for tomato) schedule or as needed.
<b>KOVERALL</b>	P T	2-3 lb 0.75-3 lb	7 5	Pepper: 2 lb/A west of the Mississippi River and no more than 19.2 lb/A/crop. 3 lb/A east of the Mississippi River and no more than 12.8 lb/A (9.6 a.i./A) per crop. Tomato: See label for disease-specific rates, crop maximums and geographical restrictions. PHI 5 days.
<b>LUNA SENSATION</b>	E, P, T	5-7.6 fl oz	3	Apply in ground, aerial or chemigation. Apply on 7-14 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
<b>MANZATE MAX/ MANZATE PRO-STICK, PENNZOZEB 75DF</b>	T P	0.6-2.4 qt/0.75-3 lb 1.2-2.4 qt/1.6-3.2 lb	5	Begin applications when seedlings emerge or transplants are set; repeat at 7-10 day intervals. Rate/Acre and maximum rate dependent on geography and/or disease; see label.
<b>MENTOR</b>	T	4-8 oz/100 gal		Post-harvest dip, drench, or high-volume spray (4-8 oz/50,000 lb. of fruit). Dip for ~30 seconds and allow to drain. Must be used in a tank mixture with fludioxonil. May be used with food grade adjuvant. Do not make more than one application.
<b>METTLE 125 ME</b>	E, P, T	6-8 fl oz	0	7- to 14-day reapplication interval. Make no more than 2 sequential applications before alternating to another fungicide with a different mode of action. Do not apply >5 applications/A/year.
<b>MURAL</b>	E, P, T	5.23-6.97 fl oz	0	Apply prior to disease development.
<b>OMEGA 500F</b>	E, P	1-1.5 pt	30	Apply on 7-14 day schedule. Initial application may be soil drench after transplanting at 1.5 pt/A. Do not apply more than 9 pt/A/year. REI 12 hours.
<b>ORONDIS GOLD 200</b>	E, P, T	2.4-19.2 fl oz	0	Apply at planting, in furrow, by drip, or in transplant water. See label for resistance management information and restrictions. No more than 4 applications per crop; do not use for >33% of total soil fungicide applications. 7-day minimum application interval. 2ee for tank mix with Ridomil Gold SL in AL, AR, AZ, CO, DE, FL, GA, IA, ID, IL, IN, KS, LA, MA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NV, OH, OK, PA, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY (exp. 1/2020). 2ee for tank mix with Orondis Gold B in TX, OR (exp. 2/2018).

PHI – preharvest interval in days.

\* E – Eggplant, P – Pepper, T – Tomato

**Note 1:** See label for fungicide rate for each disease.

# SOLANACEOUS CROP DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ORONDIS GOLD B</b>	E, P T	1 pt 1-2 pt	7 7	Eggplant/Pepper: Apply before plants are infected (if already infected, cannot be cured). Soil spray (broadcast or band) in water or liquid fertilizer PP or at planting. For peppers, apply PP or PRE. Injection (drip irrigation) at planting with two additional applications on 30-day schedule. For banded applications use a 12" - to 16" band. Tomato: Soil spray (broadcast or band) in water or liquid fertilizer at planting. For banded applications use a 7" band. Injection (drip irrigation) for applications subsequent to soil spray, with first at 4-6 weeks after planting, then as needed up to 4 weeks before harvest and before last irrigation. Also see Orondis Gold 200 2ee recommendations.
<b>ORONDIS OPTI</b>	E, P, T	1.75-2.5 pt	7	Do not make >2 sequential applications before rotating to fungicide with different mode of action. Do not exceed 6 applications/year. Do not follow soil applications of a.i. with foliar applications of Orondis Opti.
<b>ORONDIS OPTI A, ULTRA A</b>	E, P, T	2-4.8 fl oz	0	Begin foliar ground, air-assisted or aerial applications prior to disease development and on a 5- to 14-day interval. Maximum 2 sequential applications before rotating to different mode of action. Do not follow soil applications of Orondis with foliar applications of Opti A or Ultra A. Do not exceed 6 foliar applications/A/year; do not use for >33% of total foliar fungicide applications. Ultra A is labeled for greenhouse production. 2ee for tank mix Opti A/Opti B in TX, OR (exp. 2/2018), RI (exp. 6/2018); Ultra A/Ultra B in TX (exp. 3/2018), AL, CT, KY, MA, NJ (exp. 6/2018), RI (exp. 11/2018), OR (exp. 12/2018). 2ee for tank mix Opti A/Opti B (exp. 12/2018) and Ultra A/Ultra B (exp. 11/2018) in AR, AZ, CO, DE, FL, GA, IA, ID, IL, IN, KS, LA, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NM, NV, OH, OK, PA, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY.
<b>ORONDIS OPTI B</b>	E, P T	1.5 pt 2 pt	0 0	Begin ground, air or chemigation applications prior to favorable infection periods. Repeat at 7- to 10-day intervals. For tomato fruit diseases, begin applications at fruit set, and then at 7- to 14-day intervals. Also see Orondis Opti A 2ee recommendations.
<b>ORONDIS ULTRA B</b>	E, P T	8 pt 8 pt	1 1	Use of NIS, COC or blend is recommended. Can be applied by ground, air or chemigation. For Eggplant/Pepper Peronospora tabacina and for Tomato late blight, begin applications prior to disease development and on a 7- to 10-day interval. Make no more than 2 consecutive applications before switching to another non-Group 40 fungicide. For Eggplant/Pepper Phytophthora blight, apply in a mixture with copper-based fungicide by ground, air or chemigation at first sign of disease, and alternate with another fungicides on a 7- to 14-day interval or use in a blocking program of 2 applications followed by another fungicide. Also see Orondis Ultra A 2ee recommendations.
<b>PH-D</b>	E, P, T	6.2 oz	0	Apply by preventatively and continue on a 10-14 day interval. Alternate with different modes of action. Maximum 5 applications.
<b>PRESIDIO</b>	E, P, T	3-4 fl oz	2	Tank mix with another mode of action is required. Spray at 10 day intervals. Maximum of 2 sequential applications before alternating mode of action. Maximum 4 applications or 12 fl oz/A/season. Supplemental label all states except HI (exp. date not given) for application through drip irrigation systems.
<b>PREVICUR FLEX</b>	P T	1.2 pt 0.75-1.5 pt	5	See label for application instructions.
<b>PRIAXOR</b>	E, P, T	4-8 fl oz	7	Apply prior to when conditions favor disease development and continue on 7-14 day schedule. Maximum 24 fl oz/A/season. Maximum 3 applications before rotating to another mode of action. Apply 6-8 fl oz/A for powdery mildew and 8 fl oz/A for late blight. Use with NIS at 0.125% v/v.
<b>QUADRI OPTI</b>	T	1.6 pt	0	Apply prior to disease development and continue on a 5-7 or 7-21 day schedule. Do not make >1 application before switching to a different mode of action. Do not apply until 21 days after transplanting or 35 days after seeding tomato.
<b>QUADRI TOP</b>	E, P, T	8-14 fl oz 8 fl oz	0	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 55.3 fl oz/A/year for eggplant and pepper and 47 fl oz/A/year for tomato. Do not use an adjuvant/NIS in tomato.
<b>QUINTEC</b>	T	4-6 fl oz	3	Apply before symptoms appear. Use 6 fl oz/A in ≥ 30 GPA water. No more than two consecutive applications; apply alternate spray within 14 days of Quintec application.
<b>RALLY 40WSP</b>	E, P T	2.5-5 oz 2.5-4 oz	1 1	Begin application at the first sign of disease and on 10-14 day interval (E,P) and <21 days (T). See label for crop specific directions and restrictions.

PHI – preharvest interval in days.

\* E – Eggplant, P – Pepper, T – Tomato

**Note 1:** See label for fungicide rate for each disease.

# SOLANACEOUS CROP DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>REASON 500 SC</b>	E, P, T	5.5-8.2 fl oz	14	Apply prior to when conditions favor disease development and continue on a 5-10 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 24.6 fl oz/A/season. Note 1.
<b>REVUS</b>	E, P	8 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 32 fl oz/A/season. Include NIS or COC.
<b>REVUS TOP</b>	T	5.5-7 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-10 day schedule. Maximum 2 application before rotating to another mode of action. Maximum 28 fl oz/A/season.
<b>RHYME 2.08 SC</b>	T	3.5-7 fl oz	0	Apply preventatively or when conditions favor disease development on a 7-day interval as needed. Do NOT make more than 4 applications per year or apply more than 28 fl oz/A/year. Rates vary based on disease present.
<b>RIDOMIL GOLD COPPER</b>	P, T	1 pack/2.5-3.7 A	7, 14	See label for differing pepper, processing tomato, and fresh tomato application instructions and seasonal maximums. PHI 7 days for peppers, 14 days for tomatoes. See label for maximum amount of a.i.s from all sources.
<b>RIDOMIL GOLD SL</b>	E, P, T	1 pt	7	Directed spray at plant base and incorporate or shank application for eggplant and pepper. Broadcast, band or soil injection for tomato. See label for soil applications. See label for use in transplant water. See label for maximum amount of a.i.s from all sources.
<b>SCALA SC</b>	T	7 fl oz	1	Apply prior to when conditions favor disease development and continue on a 7-14 day schedule. Maximum 2 applications before rotating to another mode of action. Maximum 35 fl oz/A/season. See label for maximum amount of a.i.s from all sources. 2ee FL (exp. date not given) 7 fl oz/A for target spot.
<b>SCHOLAR SC</b>	T	16-32 fl oz/100 gal	–	Apply post-harvest dip, drench, or high volume spray (16 fl oz/50,000 lb of fruit). Dip for at least 30 seconds and allow to drain. Must be used in a tank mixture with propiconazole. Not for processed tomato. 2ee CA, FL, GA, MD, NC, OH, SC, TN, TX, VA (exp. date not given) for tank mix on postharvest diseases.
<b>SERENADE ASO</b>	E, T	2-6 qt	0	Begin after emergence or transplant. Repeat on 7-10 day intervals. Sup. label for soil drench, shanked-In, Injected and in-furrow.
<b>SWITCH 62.5WG</b>	E, P, T	11-14 oz	0	Apply prior to or at the onset of diseases. Apply by ground only. Do not apply >56 oz/A/year. Do not apply to small tomatoes such as cherry/grape type in greenhouse. 2ee FL (exp. 2/2020) for Target Spot.
<b>TAEGRO ECO</b>	P, T	2.6-5.2 oz		See label.
<b>TANOS</b>	P T	8-10 oz 6-8 oz	3	Tank mix with a contact fungicide. Apply prior to disease development and continue on a 5-7 day schedule. Maximum 1 application before rotating to another mode of action. Maximum 72 oz/A/crop. Note 1.
<b>TETRABAN</b>	E, P, T	5-15.5 fl oz	0	Apply by ground, air or irrigation. See label for crop and disease-specific application instructions and in-furrow or banded rates for soilborne diseases.
<b>TOPGUARD</b>	E, P	14 fl oz	0	Do not exceed 14 fl oz/application. Do not apply more than 56 fl oz/A/year.
<b>TOPGUARD EQ</b>	E, P, T	4-8 fl oz	0	Apply preventatively or when conditions are favorable for disease development. Specific application directions apply to certain diseases, refer to the label for directions. Reapplication on 7-14 day intervals.
<b>ZAMPRO</b>	E, P, T	14 fl oz	4	Begin application prior to disease development and continue on 5-7 day interval. Maximum 2

PHI – preharvest interval in days.

\* E – Eggplant, P – Pepper, T – Tomato

**Note 1:** See label for fungicide rate for each disease.



# CITRUS WEED CONTROL

## Preplant or Preemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	C, Cl, G, K, L, LI, M, T, TA	1-2 fl oz + 1 pt NIS or 0.5 gal HSOC-COC <sup>1</sup> /100 gal	PRE for transplants no closer than 1 day before transplanting.
<b>ALION</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	5-6.5 fl oz	PRE for annual grasses and broadleaf weeds. Apply to the soil as a uniform broadcast or band. Moisture needed for activation. Do not use on soils with ≥40% gravel content. Allow ≥ 90 days between applications in Florida and Georgia or ≥30 days between applications in other states. Apply in citrus trees established for a minimum of one year after transplanting, unless allowed under a 24c label. Maximum 10.3 fl oz/A/year. See various states (exp. date not given) for application with reduced rates of rimsulfuron.
<b>BROADWORKS</b>	C, G, L, LI, M, O, T, TA	3-6 fl oz	Best PRE control before germination of seed. Rainfall or irrigation soon after application will enhance. No more than 6 fl oz/A for the first application, no more than 12 fl oz /A per year in a 12-month period, no more than 3 applications in a 12-month period. See label to select one of 3 application programs and for other restrictions. PHI 1 day.
<b>CORNERSTONE 5 PLUS/ TOMAHAWK 5</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	0.75-7.5 pt + 8.5-17 lb AMS/100 gal <sup>9</sup>	PRE. Site preparation prior to planting or transplanting. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>DEVIRINOL 50-DF</b>	G, L, O, T, TA	4-8 lb	PRE. Rain or irrigation is needed to activate. Incorporate within 24 hr to 3 weeks depending on region. Do not use in Imperial, Coachella, or Palo Verde valley areas of CA. Do not use on nursery or bedded crops. Do not allow to contact green stem or plant material. PHI 35 days. Note 3.
<b>EPTAM 20G</b>	G, O	15-30 lb	PPI. For nursery and young field plantings. Apply and incorporate. Note 2.
<b>EPTAM 7E</b>	G, O	3.5-7 pt	PPI. For nursery and young field plantings. Apply as a directed spray and incorporate. Note 2.
<b>FRAMEWORK or PROWL H2O</b>	C, G, L, O, T, TA	2.4-4.8 qt or 2-6.3 qt	PP, PPI, PRE. Apply before or after transplanting to non-bearing trees. Does not control established weeds. Apply to the ground beneath trees. Do not apply to newly transplanted trees until the ground has settled. Do not apply >72 fl oz/A/year. PHI 1 day. Notes 2,3.
<b>FUSILADE DX</b>	C, Cl, G, K, L, LI, M, O, P, TA	Up to 24 fl oz	POSTD. Apply to actively growing grasses in the interspaces between trees or around the base of trees. Avoid contact with foliage. Minimum 21 days between applications. PHI 14 days.
<b>GALLERY DF</b>	G, L, O	0.66-1.33 lb	PRE. Application over the top of trees may cause injury. Do not apply to newly transplanted trees until the ground has settled and no cracks are present. Field grown grapefruit, lemon, and orange. Not labeled in AZ. PHI 365 days. Note 2.
<b>GOAL 2XL</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	2-8 pt	PRE. For permanently established groves in AZ, CA, FL, TX, LA. Avoid spray on citrus foliage. PHI 365 days. Only in non-bearing orchards. Notes 2, 3.
<b>GOALTENDER</b>	C, Cl, G, K, L, LI, T, TA	3 pt	PRE. Only in non-bearing orchards. Do not apply during new foliage growth. PHI 365 days. Notes 2, 3.
<b>PRINCEP/SIMAZINE 4L</b>	G, L, O	2-8 qt	PRE. Use 4 qt in FL and 4 qt Princep or 4-4.8 qt Simazine in TX for grapefruit and oranges; 2-4 qt as a single application or 2 qt fall plus 2 qt in spring for grapefruit, lemons and oranges in CA; 1.6 qt spring plus 1.6 qt fall for lemons and oranges in AZ. Can use in FL, 8 lb a.i. in spring instead of two 4 lb a.i. application (spring + fall). Do not allow to contact green stem or plant material. PHI see label. Do not use in Imperial, Coachella, or Palo Verde Valleys. Do not exceed 4 qt Princep per A/yr on grove planted trees 1 yr old or less. Do not exceed 6 qt simazine per growing season in FL.
<b>PRINCEP</b>	G, L, O	2.2-8.8 lb	PRE. Use 4.4 lb in FL and 4.4 lb Princep or 4.4-5.3 lb Simazine and 2.2-4.4 lb Princep in TX for grapefruit and oranges; 2.2- 4.4 lb as a single application or 2.2 lb fall plus 2.2 lb in spring for grapefruit, lemons and oranges in CA; 1.77 lb Princep or 1.75 lb Simazine spring plus 1.77 lb Princep or 1.75 lb Sima-zine fall for lemons and oranges in AZ. Can use in FL, 8 lb a.i. in spring instead of two 4 lb a.i. application (spring + fall). Do not allow to contact green stem or plant material. PHI see label. Do not use in Imperial, Coachella, or Palo Verde Valleys. For Princep, do not exceed 4.4 lb per A/yr on grove planted trees 1 yr old or less.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine. SEE NOTES AT END OF SECTION

\*\* May use other labeled glyphosate brands.

# CITRUS WEED CONTROL

## Preplant or Preemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>SNAPSHOT 2.5 TG</b>	G, L, O	100-200 lb	PRE. Application over the top of trees may cause injury. Do not apply to newly transplanted trees until the ground has settled and no cracks are present. Field grown grapefruit, lemon, and orange. Not labeled in AZ. PHI 365 days. Note 2.
<b>SURFLAN A.S.</b>	C, Cl, G, K, L, LI, M, O, P, TA	2-6 qt	PRE. Higher rates provide longer term control. See label for time between applications. Notes 2, 3.
<b>SUREGUARD</b>	C	8-12 oz	PRE. Use NIS or COC for POST applications. Do not apply to trees less than 1 year old unless protected. Do not allow to contact green stem or plant material. PHI 365 days. Notes 2, 3.
<b>TREFLAN TR-10 or TRUST/TREFLAN HFP</b>	C, G, L, O, T, TA	5-10 lb/1-2 pt: new 10-20 lb/2-4 pt: established	PPI inc. For new and established plantings. Rate dependent on soil texture and O.M. PHI 60 days. Notes 1, 2.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine. SEE NOTES AT END OF SECTION  
 \*\* May use other labeled glyphosate brands.

## Postemergence Herbicides

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>AIM EC</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	Up to 2 fl oz	POST directed. Apply to middles and strips. Do not allow to contact green stem or plant material. PHI 3 days.
<b>BROADWORKS</b>	C, G, L, LI, M, O, T, TA	3-6 fl oz	Best control before weeds reach 5". Rainfall or irrigation soon after application will enhance preemergence activity. No more 6 fl oz/A for the first application, no more than 12 fl oz /A per year in a 12-month period, no more than 3 applications in a 12-month period. See label to select one of 3 application programs and for other restrictions.
<b>CORNERSTONE/PLUS/ TOMAHAWK 4 or CORNERSTONE 5 PLUS/ TOMAHAWK 5</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	Up to 5 qt or up to 7.5 pt + 8.5-17 lb AMS/100 gal <sup>a</sup>	POST directed. Apply to middles and strips. Do not allow to contact green stem or plant material. PHI 1 day Cornerstone. <sup>a</sup> Include NIS or WC+NIS <sup>2</sup> as needed.
<b>DURANGO DMA/ DURAMAX</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	1.4-7.5 pt	POST directed. Apply to middles and strips. Do not allow to contact green stem or plant material. Tank mix for residual control. 1-2 % dry AMS may increase performance. PHI 1 day.
<b>FUSILADE DX</b>	G, L, LI, O, T, TA	16-24 fl oz + 0.5 gal HSOC-COC <sup>1</sup> or 1-2 qt NIS/100 gal	POST directed. Do not allow to contact green stem or plant material. PHI 14 days. Note 2.
<b>GOAL 2XL</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	2-8 pt	POST. For permanently established groves in AZ, CA, FL, TX, LA. Avoid spray on citrus foliage. PHI 365 days. Notes 2, 3.
<b>GRAMOXONE SL/SL 2.0</b>	Cl, G, K, L, LI, M, O, P, TA	2.5-4 pt + 1 pt NIS/100 gal	POST directed. Do not allow to contact green stem or plant material. Always add COC or NIS. Note 3.
<b>HYVAR X</b>	C	2-4 lb: TX, FL 4-8 lb: other states	POST. Avoid spray on citrus foliage and fruit. See label for state, soil and tree age restrictions. PHI 60 days. Note 3.
<b>KARMEX 80DF</b>	C	2-8 lb	POST directed. Use 3-4 lb, or 2 lb followed by 2 lb in AZ (except Yuma) and CA (except Imperial and Coachella Valley); 2-6 lb in TX; banded applications only in FL. On the east coast- 2-8 lb in Flatwoods, 2-4 lb in Ridge area. Use only on trees established for at least 1 year. Do not use on soils with <1% O.M. Rain or irrigation is needed to activate. Do not allow to contact green stem or plant material. Notes 1, 2, 3.
<b>KROVAR I DF</b>	C	2-6 lb	POST. Avoid spray on citrus foliage and fruit. See label for state, soil, tree age restrictions. Note 3.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine. \*\* May use other labeled glyphosate brands.  
**NOTE 1:** bearing crops. **NOTE 2:** non-bearing crops. **NOTE 3:** grazing is not permitted.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO)C are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.

# CITRUS WEED CONTROL

## Postemergence Herbicides (continued)

Herbicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>MATRIX SG</b>	C, Cl, G, K, L, Ll, M, O, P, T, TA	4 oz	Apply broadcast or uniform band to crop established for one full growing season. Moisture needed for activation. Avoid contact with crop foliage. PHI 3 days.
<b>POAST</b>	C	up to 2.5 pt + 1 pt HSOC-COC <sup>1</sup>	POST. Pulp and waste may be fed to livestock. PHI 15 days.
<b>REGLONE/DIQUAT 2L-DESICCANT</b>	G, L, Ll, O, T, TA	1.5-2 pt + 0.5-4 pt NIS/100 gal	POST directed. Do not allow to contact green stem or plant material. PHI 365 days. Notes 2, 3.
<b>ROUNDUP POWERMAX/WEATHERMAX**</b>	C, Cl, G, K, L, Ll, M, O, P, T, TA	Up to 3.3 qt + 8.5-17 lb AMS/100 gal <sup>a</sup>	POST directed. Apply to middles and strips. Do not allow to contact green stem or plant material. PHI 1 day. <sup>a</sup> Or WC+NIS <sup>2</sup> .
<b>SECTION THREE</b>	C	4-5.33 fl oz	POST directed. PHI 365 days. Note 2.
<b>SELECT 2 EC/CLEANSE</b>	C	6-8 fl oz + 1 qt NIS/100 gal	POST directed. Non-bearing only. PHI 365 days. Note 2.
<b>SELECT MAX</b>	C	9-16 oz + 1 qt NIS/100 gal	POST directed. Do not apply >16 fl oz/A in a single application or 64 fl oz/A/year. For repeat application make on a minimum 14 day interval. PHI 365 days.
<b>SOLICAM DF</b>	C	2.5-10 lb: FL, TX 2.5-5 lb: other areas	POST directed. For irrigated citrus only in FL and TX. Do not allow to contact green stem or plant material. Rainfall or irrigation required to activate. PHI 30 days.
<b>SUREGUARD</b>	C	8-12 oz	POST. Use NIS or COC for POST applications. Do not apply to trees less than 1 year old un-less protected. Do not allow to contact green stem or plant material. PHI 365 days. Notes 2, 3.
<b>TREEVIX</b>	Cl, G, L, Ll, M, O, P, T, TA	1 oz + 0.5 gal HSOC-MSO <sup>1</sup> or HSOC-COC <sup>1</sup> /100 gal + 8.5-17 lb AMS or 1.25-2.5 gal UAN/100 gal	Apply POST-directed broadcast or band at the base of trees to broadleaf weeds. Apply up to 3 times per year to bearing or non-bearing crop. See label for application to new or replacement trees. PHI 0 days.
<b>TREFLAN TR-10 or TRUST/TREFLAN HFP</b>	C, G, L, O, T, TA	5-10 lb/1-2 pt: new 10-20 lb/2-4 pt: established	POST inc. For new and established plantings. Rate dependent on soil texture and O.M. PHI 60 days. Notes 1, 2.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, Ll- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine. \*\* May use other labeled glyphosate brands.

**NOTE 1:** bearing crops.

**NOTE 2:** non-bearing crops.

**NOTE 3:** grazing is not permitted.

<sup>1</sup> Between and Superb HC (COC) and Succeed/Ultra and Destiny HC (MSO)C are HSOC adjuvants, generally used at half standard COC or MSO rates.

<sup>2</sup> Class Act NG or Flex, Alliance, or Ultra-Lite may be used where herbicides require NIS and AMS or a water conditioner.



# CITRUS INSECT CONTROL

## Labeled Insecticides

INSECT*	INSECTICIDE																																			
	ABBA 0.15EC	ABBA Ultra	Actara	Advise Four	Admire Pro	Agri-Flex	Agri-Mek 0.15 EC/SC	Altacor	Assail 70WIP/30SG	Baythroid XL <sup>17</sup>	Belay 50WDG <sup>7</sup>	Bracket 97/Orthene 97	Brigade WSB	Brigadier	Capture LFR	Citrus Oil 435 or 455	Comite	Confirm 2F	Danitol	Delegate WG	Dimethoate 4E	Dipel DF	Entrust SC	Envidor ZSC	Esteem 0.86 EC	Exirel	Fastac EC/Fastac CS	GF-120 NF	Gladiator	Intrepid 2F	Intrepid Edge	Kumulus DF	Leverage 360			
Aardvark Mite																																				
Aphids				●	●	●	●		●		●	●									●					●									●	
Asian Citrus Psylla	●	●	●	●	●	●	●			●	●									●	●	●				●			●						●	
Asian Cockroach													●	●	●												●		●							
Broad Mite	●	●					●	●									●							●					●						●	
Citrus Blackfly			●	●	●	●					●	● <sup>12</sup>								●					●											
Citrus Bud Mite	●	●					●	●																					●						●	
Citrus Flat Mite																				●				●											●	
Citrus Leafminer	●	●	●	●	●	●	●	●	●		●							●		●			●	●	●	●	●	●	●	●	●	●	●	●	●	
Citrus Psyllid									● <sup>18</sup>											●	S					●										
Citrus Red Mite																	●			●				●												
Citrus Root Weevil			●				●													●								●								
Citrus Rust Mite	●	●	●				●	●								●	●			●				●					●						●	
Citrus Thrips	●	●		S <sup>23</sup>	S	●	●		●	●	S	●								●	●	●		●		●	●	●	●	●	●	●	●	●	●	
Cutworms										●									●		●		●				●		●	●	●	●	●	●	●	
Fuller Rose Beetle			● <sup>24</sup>				●			●																	●	●	●	●	●	●	●	●	●	●
Glassy-winged Sharpshooter			●	●	●	●		●	●	●										●							●	●	●	●	●	●	●	●	●	●
Grasshoppers			●				●			●		●															●	●	●	●	●	●	●	●	●	●
Katydid			●				●	● <sup>18</sup>	●		●									●	● <sup>19</sup>						●	●	●	●	●	●	●	●	●	●
Leaf Notcher													●	●	●												●	●	●	●	●	●	●	●	●	●
Leafhopper			●	●	●	●					●																	●	●	●	●	●	●	●	●	●
Leafroller																			●		●		●				●	●	●	●	●	●	●	●	●	●
Mealybugs			●	●	●	●					●	●																								●
Mite		●																																		
Nematodes				S <sup>23</sup>																																
Orange Tortix																				●		●							●						●	
Orangedog												●								●		●		●	●				●							
Pear Psylla																																				
Peelminer								●													●															●
Plant Bugs			●				●					●																	●							
Red Spider Mite																																				●
Root Weevil Complex				●	● <sup>1</sup>				●			●	●	●	●																					●
Scale				●	●	●		● <sup>3</sup>		●						● <sup>6</sup>						● <sup>8</sup>		● <sup>9</sup>											●	
Six Spotted Mite																			●																	●
Silver Mite																																				●
Spider Mite																	●																			●
Tephritid Fruit Fly																																				●
Termites				●	● <sup>2</sup>																															
Texas Citrus Mite																	●			●				●												
Two Spotted Spider Mite	●	●					●	●													●				●											
Western Tussock Moth																				●		●														●
Whiteflies			●	●	●	●					S	●				●								●		●										
Yuma Spider Mite																				●					●											●

Continued on next page

\* Many other insects may be controlled, see label.  
S - suppression.

<sup>1</sup> Container grown only.

<sup>2</sup> Florida only.

<sup>3</sup> Caribbean black, citricola, and red scale.

<sup>4</sup> Diaprepes abb. only.

<sup>5</sup> Diaprepes, Southern blue green citrus, and blue green citrus root weevil. Tundra only on Diaprepes; not labeled on leaf notcher.

<sup>6</sup> Except snow scale

<sup>7</sup> Except rust mite.

<sup>8</sup> Except black or snow mite.

<sup>9</sup> Includes black, brown soft, California red, Florida red, and snow scale.

<sup>10</sup> Includes black, soft, yellow, purple, California red, and citrococola scale.

<sup>11</sup> Suppression of apple and brown citrus aphid.

<sup>12</sup> Not in California.

<sup>14</sup> West of MS river only.

<sup>15</sup> Larvae only. Nymphs only for katydids.

<sup>16</sup> Not in Florida.

<sup>17</sup> Only labeled in CA and AZ; Asian citrus psyllid in TX.

<sup>18</sup> Assail 30SG for katydids in CA, citrus psyllid in FL only.

<sup>19</sup> Nymphs only; suppression of adults.

<sup>20</sup> 24c label for TX, FL only. Full label for AZ, CA, FL, and TX only.

<sup>23</sup> Soil treatment only.

<sup>24</sup> 2ee certain states only.

<sup>25</sup> 24c, 2ee or Supplemental label.

☞ See Insecticide Resistance Management in the TECHNICAL INFORMATION section.

# CITRUS INSECT CONTROL

## Labeled Insecticides (continued)

CITRUS INSECT*	INSECTICIDE																										
	Lorsban Advanced	Malathion 5/5EC	Malathion 8 Flowable	Microthial Disperss	Minecto Pro	Movento/Movento HL	Movento MPC	Mustang 20	Nealta	Nexter	Omite 6	Onager	Platinum	Platinum 75 SG	Requiem EC	Sevin XLR Plus	Sivanto prime	Stallion Brand	Success	Tundra/Bifen 2 AG Foli/Brigade 2 EC	Tundra Supreme	Vendex 50WP	Verimark	Vollam Flexi	Vydate L	Xentari	
Aardvark Mite																											
Aphids	●		●			●	●			● <sup>11</sup>			●	●			●							●	●		
Asian Citrus Psylla	●				●	●	●	● <sup>20</sup>					●	●	●	●	●						●	●			
Asian Cockroach								●										●		●							
Broad Mite				●	●					●																	
Citrus Blackfly													●	●										●			
Citrus Bud Mite				●		●				●																	
Citrus Flat Mite				●																							
Citrus Leafminer					●	●	●						●	●		S							●	●	●		
Citrus Psyllid	● <sup>2</sup>															●											
Citrus Red Mite						●	●		●	●		●			●							●					
Citrus Root Weevil								●								●		●			●			●			
Citrus Rust Mite	● <sup>2</sup>				●	●	●			●					●	●						●			●		
Citrus Thrips	S	●			●	●	●	●										●	●					●	●		
Cutworms	●							●								●		●	●	● <sup>15</sup>							●
Fuller Rose Beetle								●								●		●						●			● <sup>24</sup>
Glassy-winged Sharpshooter								●				●						●						●			●
Grasshoppers	●							●										●						●			●
Katydids	●							●								S	●	●	● <sup>15</sup>					●			●
Leaf Notcher																●		●			●						●
Leafhopper								●		●				●				●				●		●			●
Leafroller	●							●								●		●		● <sup>15</sup>							●
Mealybugs	●					●	●					●	●			●								●			●
Mite							●			●	●	●				●										S	
Nematodes						S																					
Orange Tortix	●							●								●		●	● <sup>15</sup>								
Orangedog	●							●								●		●									●
Pear Psylla										●																	
Peelminer																		●	● <sup>15</sup>					●			●
Plant Bugs								●								●		●						●			●
Red Spider Mite												●															
Root Weevil Complex						● <sup>24</sup>				S			●	●						● <sup>5</sup>	●						
Scale	● <sup>10</sup>		●			● <sup>2</sup>	●									●	●							●			
Six Spotted Mite				●						●					●												
Silver Mite				●																							
Spider Mite				●						●																	
Tephritid Fruit Fly			● <sup>25</sup>																								
Termites																											
Texas Citrus Mite									●	●					●								●				
Two Spotted Spider Mite					●				●	●		●			●							●					
Western Tussock Moth	●															●			● <sup>15</sup>								
Whiteflies						●	●	●		S			●	●		●	●							●			
Yuma Spider Mite				●																			●				

\* Many other insects may be controlled, see label.  
S - suppression.

<sup>1</sup> Container grown only.

<sup>2</sup> Florida only.

<sup>3</sup> Caribbean black, citricola, and red scale.

<sup>4</sup> Diaprepes abb. only.

<sup>5</sup> Diaprepes, Southern blue green citrus, and blue green citrus root weevil. Tundra only on Diaprepes; not labeled on leaf notcher.

<sup>6</sup> Except snow scale

<sup>7</sup> Except rust mite.

<sup>8</sup> Except black or snow mite.

<sup>9</sup> Includes black, brown soft, California red, Florida red, and snow scale.

<sup>10</sup> Includes black, soft, yellow, purple, California red, and citricola scale.

<sup>11</sup> Suppression of apple and brown citrus aphid.

<sup>12</sup> Not in California.

<sup>14</sup> West of MS river only.

<sup>15</sup> Larvae only. Nymphs only for katydids.

<sup>16</sup> Not in Florida.

<sup>17</sup> Only labeled in CA and AZ; Asian citrus psyllid in TX.

<sup>18</sup> Assail 30SG for katydids in CA, citrus psyllid in FL only.

<sup>19</sup> Nymphs only; suppression of adults.

<sup>20</sup> 24c label for TX, FL only. Full label for AZ, CA, FL, and TX only.

<sup>23</sup> Soil treatment only.

<sup>24</sup> 2ee certain states only.

<sup>25</sup> 24c, 2ee or Supplemental label.

☞ See Insecticide Resistance Management in the TECHNICAL INFORMATION section.

# CITRUS INSECT CONTROL

Insect Treatment Guidelines				
Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>ABBA 0.15EC</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	0.5-2 fl oz/100 gal + 1.6 pt horticultural spray oil/100 gal	7	Aerial application for citrus leafminer only (Not in CA). Always apply with horticultural spray oil (not a dormant oil) as directed. Do not apply >40 fl oz/A/season. Do not make >3 applications/season or within 30 days of one another. Do not allow grazing. 2ee CA (exp. date not given) for addition of spreader/sticker adjuvant use.
<b>ABBA ULTRA</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	0.25-1 fl oz/100 gal + 1.6 pt horticultural spray oil/100 gal	7	Aerial application for citrus leafminer only (not in CA). Always apply with horticultural spray oil (not a dormant oil) as directed. Do not apply >20 fl oz/A/season. Do not make >3 applications/season or within 30 days of one another. Do not allow grazing. 2ee CA (exp. date not given) for addition of spreader/sticker adjuvant use.
<b>ACTARA</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	3-5.5 fl oz	0	Apply before pests reach damaging levels.
<b>ADMIRE PRO</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	7-14 fl oz: field 0.33-0.5 ml/"citra pot" (0.1 ft <sup>3</sup> container media) container	0	Apply by chemigation into the root zone, soil surface band, drench to tree base, or foliar. For field and container grown. Apply through irrigation or soil drench for containers. Note 4.
<b>ADVISE FOUR</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	16-32 fl oz: field 0.38-0.58 ml/"citra pot" (0.1 ft <sup>3</sup> container media) container	0	Apply by chemigation into the root zone, soil surface band, or drench to tree base. For field and container grown. Apply through irrigation or soil drench for containers. Note 4.
<b>AGRI-FLEX</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	5.5-8.5 fl oz	7	See label for application restrictions. Include a dormant oil. Note 3.
<b>AGRI-MEK SC/0.15 EC</b>	C, Cl, G, K, L, LI, M, O, T, TA	1.0-4.25/5-20 fl oz	7	See label for application restrictions. Include a horticultural spray oil. Do not use binder or sticker type adjuvants. Note 3.
<b>ALTACOR</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	3-4.5 fl oz	1	Make no more than 3 applications/season.
<b>ASSAIL 70WP/30SG</b>	C, G, K, L, LI, M, O, P, T, TA	1.1-5.7 oz/ 2.5-13.3 oz	7	Do not make more than 5 applications/season.
<b>BAYTHROID XL</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	1.6-6.4 fl oz	–	Labeled in CA and AZ. 24c for Asian citrus psyllid in FL at 3.0-6.4 fl oz/A (exp. date not given), TX at 3.2-6.4 fl oz/A (exp. date not given). Note 4.
<b>BRACKET 97/ ORTHENE 97</b>	C	0.5-0.75 lb	365	Also labeled for mound treatment of ants at 0.75 oz/ 5 gallons of water. Not labeled for blackfly or harvester ants in CA. Note 2.
<b>BRIGADE WSB</b>	C	0.25-0.5 lb a.i.	1	Ground application only. Do not allow to contact fruit or foliage. 24c CA (exp. 9/2018) for control of Fuller Rose Beetle at 2.5-5 lb/A on O, L, G citrus tree trunks.
<b>BRIGADIER</b>	C	0.2-1.0 lb a.i.	1	Ground application only. Do not allow to contact fruit or foliage.
<b>CAPTURE LFR</b>	C	0.1-0.5 lb a.i.	1	Ground application only. Do not allow to contact fruit or foliage.
<b>CITRUS OIL 435 or 455</b>	C	2-10 gal	–	Do not apply with, or within 30 days of sulfur.
<b>COMITE</b>	G, O	2-3 pt	21	Florida and Texas only.
<b>CONFIRM 2F</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	8-16 fl oz	14	Use of a spreader/sticker is recommended. Minimum retreatment interval of 14 days. Application timing differs with target pest; see label.
<b>DANITOL 2.4EC</b>	C	10.67-21.33 fl oz	1	Do not mix with copper. Petroleum oils improve mite control. Note 3.
<b>DELEGATE WG</b>	C, G, L, LI, O, TA	3-6 oz	1	Treat using thresholds. Lower rates may be used for light infections and smaller trees. Use 4-6 oz for citrus thrips. Rotate for resistance management. Adjuvants improve control of some insects. See label for low volume applications in FL. Note 4.
<b>DIMATE 4E/DIMETHOATE 4E</b>	C, G, K, L, LI, O, P, T, TA	0.5-2 pt: mist 0.5-1.5 pt/100 gal: ground	15, 45	Do not use on seedlings. PHI 45 days for high rate with scales. For non-bearing and nursery citrus in CA and AZ: PHI is 1 year, use 1 pt/100 gal for thrips and aphids and 2 pt/A for soil drench of 1-3 yr old trees. For thrips in C, G, L, O, and TA in AZ: use up to 2 qt/A. See label for aerial GPA. Notes 3, 4, 6, 7.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine. SEE NOTES AT END OF SECTION.  
PHI – preharvest interval days.

# CITRUS INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>DIPEL DF</b>	G, L, O	0.5-2 lb	–	Apply to light to moderate populations of newly hatched cutworm larvae. A spreader-sticker or surfactant may be used for hard to wet crops.
<b>ENTRUST SC</b>	C, G, L, LI, O, TA	4-10 fl oz	1	Do not apply to nurseries. Adjuvants may improve thrip control.
<b>ENVIDOR 2 SC</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	12-20 fl oz	7	Ground application only. Use 18-20 oz for rust mite when applied with oil. Maximum of 1 application per season.
<b>ESTEEM 0.86 EC</b>	C	16 oz: scale 8-10 oz: other insects	1	Oil may be included for scale control.
<b>EXIREL</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	13.5-20.5 fl oz	1	Apply foliar with particle size >90 microns. Do not apply sooner than every 7 days. Do not apply more than 0.4 lb ai cyantraniliprole/crop/season. A spray adjuvant and application pH of 4-6 is recommended. 2ee: AZ, CA (exp. 12/2019) for control of Citrus Thrips and protection of fruit from thrips damage; FL (exp. 12/2019) for control of Diaprepes Root Weevil Adults; CA, AZ, FL, TX (exp. 12/2019) for control of Orange Dog Caterpillar; CA, AZ (exp. 12/2019) for control of Citrus Cutworm; CA (exp. 12/2018) for control of Katydid Nymphs. Note 5.
<b>FASTAC EC/FASTAC CS</b>	C, Cl, G, K, L, LI, M, O, P	3.8 fl oz	1	Do not make applications <14 days apart. Do not apply >11.4 fl oz/A/season. Minimum 20 GPA concentrated/100 GPA dilute ground and 10 GPA air.
<b>GF-120 NF</b>	C, G, K, L, LI, O, T	10-20 oz	–	Once mixed, use within 24 hours. OMRI listed.
<b>GLADIATOR</b>	C, Cl, G, K, L, LI, M, O, P, T	19 fl oz/A 1.9 fl oz/100 gal	7	Do not make applications less than 30 days apart. Aerial application allowed for citrus leafminer and Asian citrus psyllid only. Maximum 38 fl oz/A/year. Nonionic surfactant is recommended.
<b>INTREPID 2F</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	8-16 fl oz	1	Include an adjuvant. 24c: FL (exp. date not given) for Lepidoptera larvae at 8-16 fl oz/A; CA (exp. date not given) for leafminer in non-bearing citrus at 6-12 fl oz/A.
<b>INTREPID EDGE</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	6-12 fl oz	1	Not labeled for AZ or CA. Do not apply to nursery or greenhouse citrus. Do not apply >8 fl oz/A in FL. Apply at first observations of target pest on flushing leaves. Rate depends on tree size and infestation level, with higher rates used on larger trees and/or heavy infestations. See label.
<b>KUMULUS DF</b>	C	8-20 lb	–	Do not apply within 21 days of an oil spray. Do not apply in or with oils. Note 2.
<b>LEVERAGE 360</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	2.4-6.4 fl oz	0	CA and AZ only. See label for specific rates for each insect. 2ee CA, AZ (exp. date not given) for brown marmorated stink bug at 3.2-6.4 fl oz/A; CA (exp. date not given) for earwig control at 6.4 fl oz/A. Note 5.
<b>LORSBAN ADVANCED</b>	C	2-7 pt	21, 35	Up to 12 pt/a allowed in CA and AZ. Not labeled in MS. See label for ant control. Spray oils improve control of some insects. Use 4E for psylla control in FL. Use 5 pt for citrus rust mite suppression. PHI is 35 days for over 7 pt. Notes 3, 9.
<b>MALATHION 5 OR 5EC</b>	G, L, LI, O, T, TA K	1.25-2 pt or 2.4-7.2 p 7.2 pt	7	For Malathion 5 EC, use rate of 2.4 pt/A at maximum of 3 applications/year, or 7.2 pt if maximum of 1 application/year. K, T: Malathion 5EC only. Do not apply during full bloom for thrips. Grazing is allowed after 7 days.
<b>MALATHION 8 FLOWABLE</b>	G, K, L, LI, M, O, T, TA	4.5 pt	7	Maximum of 1 application/year. See label for CA-specific rates. 24c FL (exp. date not given) for Tephritidae fruit flies at 2.9 fl oz/A mixed with 9.6 fl oz/A protein hydrolase bait.
<b>MICROTHIOL DISPERSS</b>	C	10-15 lb	–	Do not apply within 21 days of an oil spray. Spreader-sticker required. Note 4.
<b>MINECTO PRO</b>	G, K, L, LI, M, O, T, TA	8-12 fl oz	7	Rate dependent on target pest; see label. Time applications to most susceptible insect or mite pest stage at locally determined action thresholds. 2ee FL (exp. 5/2021) to control adult root weevil at 12 fl oz/A.
<b>MOVENTO/MOVENTO HL</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	8-10 fl oz/4-5 fl oz	1	Rates based on full size mature trees. Minimum 21 days between applications. Maximum 20 fl oz/A/season. Movento, 5 fl oz/A/season Movento HL. Note 7.
<b>MOVENTO MPC</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	16 fl oz	1	Maximum 32 fl oz/A/yr.
<b>MUSTANG</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	4.3 fl oz	1	For CA, AZ, FL, LA and TX. Asian citrus psyllid: 2ee AZ, CA (exp. date not given) for ground/air application; 24c FL, TX (exp. date not given) for ground/air application.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine. SEE NOTES AT END OF SECTION.  
PHI – preharvest interval days.

# CITRUS INSECT CONTROL

## Insect Treatment Guidelines (continued)

Insecticide	Labeled Crops*	Rate/Acre	PHI	Comments/Restrictions
<b>NEALTA</b>	C, Cl, G, K, L, LI, M, P, T, TA	13.7 fl oz	7	Apply at first sign of mites and continue on local threshold needs, but do not apply sooner than 14 day intervals. Apply in minimum 100 GPA. Do not apply more than 27.4 fl oz/A/year. Do not apply more than once without rotating MOA.
<b>NEXTER</b>	C	4.4-10.67 fl oz	7	Rate depends on specific mite. Includes non-bearing nurseries. Apply by ground only. Do not use on rust mite in FL. Adjuvants may be used in certain conditions. Note 2.
<b>OMITE 6</b>	C, G, L, LI, O, TA	2 pt	365	May be used in nurseries also. Note 2.
<b>ONAGER</b>	C	12-24 fl oz	1	Do not make >1 application/year. CA, AZ, TX only for fruit bearing trees and <i>Tetranychid</i> mites only (do not apply >24 fl oz/A/year). Use on non-bearing trees in all states to control additional mites.
<b>PLATINUM 75 SG</b>	C, G, K, L, LI, M, O, P, T, TA	2.67-3.67 oz	0	Use 1.83-3.67 oz for Asian citrus psyllid and citrus leafminer. Apply Platinum as a soil surface band, drench or by chemigation. Do not exceed 3.67 oz/A/season.
<b>REQUIEM EC</b>	C, G, L, LI, O, P, TA	2-4 qt		Treat when pests appear or in accordance with local economic thresholds. Do not exceed 2% v/v.
<b>SEVIN XLR PLUS</b>	C, Cl, G, K, L, LI, M, O, P	2-5 qt	5	May apply 5-12 qt/A for yellow scale in CA only. May apply 5-8 qt/A for adult citrus weevils in FL only. Do not apply >20 qt/A/year in any state. Bee caution: do not apply to target crops or weeds in bloom. See label for specific rates. 2ee AZ, CA, FL, and LA (exp. date not given) for control of Asian citrus psyllid at 1.5-3 qt. Note 4.
<b>SIVANTO PRIME</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	7-28 fl oz	1, 30	Foliar: 7-14 fl oz/A (pest-dependent), 7 day minimum application interval. PHI 1 day. Ground minimum 10 GPA, air minimum 2 GPA. Soil: 21-28 fl oz/A. PHI 30 days.
<b>STALLION BRAND</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	11.75 fl oz	21	See label for restrictions.
<b>SUCCESS</b>	C, G, L, LI, O, TA	4-10 fl oz	1	Do not apply to nurseries. Adjuvants may improve thrip and leafminer control.
<b>TUNDRA/BIFEN 2 AG GOLD/BRIGADE 2EC</b>	C	16-32 fl oz	1	Apply to bare ground beneath the trees. Ground application only. Do not allow to contact fruit or foliage.
<b>TUNDRA SUPREME</b>	C	42.1-53.3 fl oz	28	For orchard floors. Protects citrus from Diprepes and other root weevils. Timing is critical. See label for all insects controlled, application timing, and other restrictions.
<b>VENDEX 50 WP</b>	C	2-4 lb: CA, AZ 2-3 lb: TX, FL	7	Note 3.
<b>VERIMARK</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	15-30 fl oz	1	Apply to as soil drench or microsprinkler irrigation. See label for rate by height. Do not apply more than two 15 fl oz applications/year to soil. At rates >15 fl oz, do not apply more than once/year. Do not apply more than 0.4 lb ai cyantraniliprole/crop/year. A spray application pH of 4-6 is recommended. Note 4, 5.
<b>VOLIAM FLEXI</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	4-7 oz	1	See label for application timing. Note 7.
<b>VYDATE L</b>	C	2-4 pt: thrip 0.25-1 pt/100 gal: rust mite	7	Also labeled for nematode suppression in bearing and control in non-bearing crops. Use 4-8 pt/A in non-bearing for mites, aphids, leafhopper, leaf miner, and thrips. Do not apply to plants under stress. A spreader-sticker may be used in non-bearing. Do not apply when bees are in the crop area. Notes 1, 2, 3, 8.
<b>XENTARI</b>	C	0.5-2 lb	0	Bt insecticide.
<b>YUMA 4E</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	2-7 pt	21, 35	Up to 12 pt/a allowed in CA and AZ. Not labeled in MS. See label for ant control. Spray oils improve control of some insects. Use 5 pt for citrus rust mite suppression. PHI 35 days > 7 pt. Notes 3, 9.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine.

PHI - preharvest interval days.

**NOTE 1:** Bearing crops.

**NOTE 2:** Non-bearing crops.

**NOTE 3:** Grazing is not permitted.

**NOTE 4:** Labeled for use in chemigation.

**NOTE 5:** Do not apply during bloom or within 10 days prior to bloom or when bees are foraging.

**NOTE 6:** Citrus- non bearing and nursery only in CA and AZ.

**NOTE 7:** Restrictions on time of day and bloom stage for application.

**NOTE 8:** Do not spray when bees are in the area. May be sprayed during bloom from 1 hr before sunset to 1 hr after sunrise or when temperature is below 55° F.

**NOTE 9:** Do not spray when bees are in the area. May be sprayed during bloom from 1 hr after sunset to 2 hr before sunrise.

**NOTE 10:** Notify beekeepers within 1 mile of treatment 48 hours in advance and limit times to when bees are least active, e.g., before 7 AM or after 7 PM or when temperature is below 55°F at site.

**NOTE 11:** In CA only for thorough coverage spray use 0.5 to 1.5 gal/100 gal.

# CITRUS DISEASE CONTROL

## Labeled Fungicides

DISEASE*	FUNGICIDE																																				
	Abound	Actigard 50WG	Aliette WDG	Alumni	Badge SC/Badge X2	Banner Maxx	Bio-Tam	Cuprofix Ultra 40 Dispers	Enable	Gem 500 SC/Flint Extra	Graduate/Graduate A+	Graduate Max MP	Headline SC	Heritage	Indar 2F	Kocide 3000	Luna Sensation	Luna Tranquility	Mentor	Orbit	Pristine	Quadris Top	Quilt	Revus	Ridomil Gold SL/GR	Scala SC	Serenade ASO	Subdue GR	Subdue Maxx	Switch 62.5WG	Tetraban	Topaz/Tilt/Propimax	Trilogy	Velum Prime			
Albinism	●													●																							
Algal Spot					●			●								●																					
Alternaria Brown Spot			S <sup>1</sup>		●			S					●			S	●				●															S	
Alternaria									●								●								S <sup>1,2</sup>			●									
Alternaria Leaf and Fruit Spot	●													●								●				●											
Anthracnose	●									●			●									●							●						●		
Black Spot	●				●			●					●								● <sup>1</sup>	●															
Brown Rot			●		●																																
Citrus Canker		S			S			S <sup>4</sup>								S <sup>4</sup>																					
Downy Mildew																																					
Greasy Spot	●				●	●		● <sup>4</sup>	●	●			●	●	●	● <sup>4</sup>	●				●	●	●	●			●						●				
Ice Nucleating Bacteria			● <sup>2</sup>																																		
Melanose	●				●			● <sup>4</sup>	●	●			●	●		● <sup>4</sup>	●				●	●					●										
Pink Pitting					●			● <sup>4</sup>								● <sup>4</sup>																					
Post-bloom Fruit Drop (PFD)	●								●	●			●	●		●						●					●								●		
Post Harvest Diseases				●									● <sup>5</sup>							● <sup>9</sup>														●			
Phytophthora Brown Rot					●			●	● <sup>4</sup>							● <sup>4</sup>									●												
Phytophthora Foot and Root Rot			●		●			●	● <sup>3</sup>							● <sup>3</sup>						●		●			●	●									
Pythium, Fusarium, Rhizoctonia							●																													●	
Scab	●				●			● <sup>4</sup>	●	●			●	●	●	● <sup>4</sup>	●				●	●					●										
Septoria Spot	● <sup>2</sup>				●			●								●						● <sup>2</sup>															

\*Other diseases maybe controlled, see label.

S- suppression.

<sup>1</sup> Florida only.

<sup>2</sup> California only.

<sup>3</sup> Foot only.

<sup>4</sup> Includes nursery.

<sup>5</sup> Including fruit rots, stem end rots, and gray mold.

<sup>9</sup> Includes green or blue mold, and sour rot.

☀ See Fungicide Resistance Management in the TECHNICAL INFORMATION section.

# CITRUS DISEASE CONTROL

Disease Treatment Guidelines			
Fungicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>ABOUND</b>	C, Cl, G, K, L, LI, M, O, P, TA	12-15.5 fl oz	Begin applications prior to disease development and continue on a 7-21 day schedule. Adjuvants may be added. PHI 0 days. Use 9-15.5 fl oz for black spot and 12-15.5 fl oz for sweet orange scab. 2ee CA (exp. 12/2020) for Septoria spot. Notes 1, 3, 4.
<b>ACTIGARD 50WG</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	0.5-3.2 oz 0.0012-0.035 oz/single tree 0.12-0.15 oz/100 trees	Up to 12 applications on 30-day retreatment interval schedule. May be applied via drip or micro-sprinkler irrigation. Drench application: See label for directions based tree age and solution mixture. See label for maximum a.i./A restrictions. PHI 0 days.
<b>ALIETTE WDG</b>	C	3 lb/100 gal: root dip 5 lb/100 gal: foliar 5 lb/A: chemigation	Non-bearing crops. Also labeled at 2.5-5 gal/5 gal for trunk spray or paint. Do not mix with copper compounds. PHI 12 months. Notes 2, 4, 5, 7.
<b>ALIETTE WDG</b>	C	5 lb/A or 1 lb/100 gal: foliar 5 lb/A: chemigation	Bearing crops. Also labeled at 2.5-5 gal/5 gal for trunk spray or paint. Do not mix with copper compounds. PHI 30 days. Notes 2, 4, 5, 6.
<b>ALUMNI</b>	C	See label	For bin dips, floods, or drenches.
<b>BADGE SC OR BADGE X2</b>	C, G, K, L, LI, O, P, T, TA	0.75-11 pt or 0.5-11 lb	Rates and application directions vary based on the target disease. Use higher rates when conditions favor disease development. Also labeled for non-bearing nurseries. See label for rates. Note 2, 4, 6, 7
<b>BANNER MAXX</b>	C	2-24 fl oz/100 gal	Apply from June through August. PHI 12 months. Notes 2, 5, 7.
<b>BIO-TAM</b>	C, Cl, G, K, L, LI, M, O, P, TA	2.5-3 lb	Banded: See label for proper rate based on band and row width. Note 2.
<b>CUPROFIX ULTRA 40 DISPERS</b>	G, K, L, LI, O, P, T, TA	1-8 lb/see label: field 3-6 lb/see label: nursery	Use 200 gpa for nursery. See the label for application timing. Notes 2, 4.
<b>ENABLE</b>	C, G, K, L, LI, O, M, P, TA	8 oz	Three applications may be made at 21 day intervals. PHI 0 hours.
<b>GEM 500 SC/FLINT EXTRA</b>	C	2-3.8 fl oz	Begin applications preventively and continue throughout the growing season using a 7-21 day spray schedule. Follow resistance management guidelines. PHI 30 days. Note 3.
<b>GRADUATE</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	16-32 oz/100 gal: In-line dip/drench/ In-line aqueous or fruit coating spray.	Apply 16-32 oz/250,000 lb fruit as an aqueous or coating spray. For maximum control, treat storage and after storage just before marketing. For post-harvest disease control. Note 3.
<b>GRADUATE A+</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	32-64 fl oz/100 gal: dip/drench	Apply 32-64 fl oz/250,000 lb fruit as an aqueous or coating spray. For maximum control, treat before storage and after storage just before marketing. 2ee AZ, CA, FL (exp. 5/2020); TX (exp. date not given): 8-16 fl oz/100 gal Dip/Drench for green and blue mold.
<b>GRADUATE MAX MP</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	33-66 fl oz/100 gal: dip/drench	Apply 33-66 fl oz/250,000 lb fruit as an aqueous or coating spray. For maximum control, treat before storage and after storage just before marketing. Do not make more than 2 applications/year
<b>HEADLINE SC</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	9-15 fl oz	Begin applications prior to disease development and continue on a 10-21 day schedule. Grazing is permitted. PHI 14 days. 2ee FL, TX (exp. date not given) for 9-12 fl oz/A Headline SC for sweet orange scab. Notes 3, 4.
<b>HERITAGE</b>	C, Cl, G, K, L, LI, M, O, P, TA	6.4-8 oz	Begin applications prior to disease development and continue on a 7-21 day schedule. Adjuvants may be added. PHI 0 days. Notes 4, 5.
<b>INDAR 2F</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	8 fl oz	PHI up to day of harvest. Minimum re-treatment interval of 21 days. Do not apply with polymer based spray adjuvants. Notes 4, 5, 6.
<b>KOCIDE 3000</b>	C, G, K, L, LI, O, P, T, TA	1.5-9 lb: field 3-6 lb: nursery	See the label for application timing. Notes 2, 4.
<b>LUNA SENSATION</b>	C, Cl, G, K, L, LI, O, M, P, TA	7.6 fl oz	Apply in ground, aerial or chemigation. Apply on 7-21 day interval when disease pressure is severe. Do not apply more than 2 sequential application.
<b>LUNA TRANQUILITY</b>	L	27 fl oz	Apply in ground, aerial or chemigation. Apply on 7-21 day interval when disease pressure is severe. Do not apply more than 2 sequential application.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine.

# CITRUS DISEASE CONTROL

## Disease Treatment Guidelines (continued)

Fungicide	Labeled Crops*	Rate/Acre	Comments/Restrictions
<b>MENTOR</b>	Cl, G, L, LI, O, T, TA	8-16 oz/100 gal	Post-harvest dip, drench, flood, or spray (8-16 oz/250,000 lb. of fruit). Dip for ~30 seconds and allow to drain. Do not make more than two applications.
<b>ORBIT</b>	C	6-8 fl oz	Apply from June through August. PHI 12 months. Notes 1, 7.
<b>PRISTINE</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	16-18.5 fl oz	Begin applications prior to disease development and continue on a 10-21 day schedule. Maximum 4 applications, 2 sequential. PHI 0 days. 2ee FL (exp. date not given) for citrus black spot.
<b>QUADRI TOP</b>	C, G, L, LI, O, TA	10-15.4 fl oz	Begin before disease development and continue on a 7-21 day interval. An adjuvant may be used. PHI 0 days. 2ee CA (exp. 12/2020) at 10-15.4 fl oz/A for septoria spot. 2ee FL (exp. 10/2020) at 15.4 fl oz/A for cercospora leaf spot, diplodia stem-end rot, penicillium decays green mold, whisker mold, blue mold, and powdery mildew.
<b>QUILT</b>	C, G, K, L, LI, O, M, P, TA	20.5-27.5 fl oz	Apply up to 2 times during June, July or August, by ground, air or chemigation. Do not use in citrus plant propagation nurseries.
<b>REVUS</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	8-16 fl oz/100 gal	For use in container production in nurseries and prior to transplanting. Apply as a drench.
<b>RIDOMIL GOLD GR/SL</b>	C, Cl, G, K, L, LI, M, O, T, TA	See label	See label.
<b>SERENADE ASO</b>	C, G, L, O, P, T, TA	2-6 qt	Begin application before disease suppression. Repeat from 7-21 day interval depending on the disease.
<b>SUBDUE GR</b>	C	200 lb	Apply as broadcast or banded. For landscape and nursery citrus. Irrigate if rain does not occur within 3 days. Notes 2, 7.
<b>SUBDUE MAXX</b>	C	2-3 fl oz/100 gal apply 100-250 gal/1000' row: drench 1 gal/a: soil surface	For landscape and nursery citrus. Notes 2, 7.
<b>SWITCH 62.5WG</b>	L, LI	11-14 oz	Make one application near harvest to prevent post-harvest fruit rot. PHI 0 days. Do not apply more than 14 oz/A/year.
<b>TETRABAN</b>	C, G, K, L, LI, M, P, T, TA	32-64 fl oz/100 gal: dip/drench; 32-64 fl oz/7-100 gal: spray	See label for spray application fruit volume and dip/drench contact time.
<b>TOPAZ/TILT/PROPIMAX</b>	C, Cl, G, K, L, LI, M, O, P, TA	6-8 fl oz	For non-bearing citrus. Begin applications in June. Apply on a 30 day interval through August. PHI 12 months.
<b>TRILOGY</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	1 %v/v 25-200 gal: high volume 0.5 gal/5 gal: low volume	Repeat every 7-14 days as needed.
<b>VELUM PRIME</b>	C, Cl, G, K, L, LI, M, O, P, T, TA	6.5-6.84 fl oz	Apply by chemigation at critical timings for disease suppression based on consultation with University or extension guidelines. Continue as needed on 7- to 21-day interval. Maximum 13.7 fl oz (0.466 lb ai)/A/year. PHI 7 days. See label for resistance management.

\* C- citrus, Cl- citron, G- grapefruit, K- kumquat, L- lemon, LI- lime, M- mandarin, O - orange, P- pummelo, T- tangelo, TA- tangerine.

**NOTE 1:** Not for nurseries.

**NOTE 2:** Can be used in nurseries.

**NOTE 3:** Follow resistance management guidelines.

**NOTE 4:** Labeled for chemigation.

**NOTE 5:** Grazing or feeding forage is not permitted.

**NOTE 6:** Bearing citrus.

**NOTE 7:** Non-bearing citrus.