

Mobile Fungicides for Managing Powdery Mildew, Downy Mildew, + Phytophthora Blight in Cucurbits

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For additional information about these diseases and their management see webpages about them at
<https://www.vegetables.cornell.edu/pest-management/disease-factsheets/>

Fungicide	FRAC Code	Diseases	Recommended Rate/A (labeled)	REI	PHI	Seasonal Limits
Vivando ^a	50	Powdery mildew	15.4 fl oz	12 h	0 d	3 sprays ^l
Proline	3	Powdery mildew ^b	5.7 fl oz	12 h	7 d	2 sprays
Procure	3	Powdery mildew ^b	8 fl oz (4-8)	12 h	0 d	24 fl oz ^l 3-4 sprays
Rhyme [*]	3	Powdery mildew ^b	7 fl oz (5-7)	12 h	0 d	4 sprays
Gatten [*]	U13	Powdery mildew	8 fl oz (6-8)	12 h	0 d	2 sprays
Luna Experience [*]	7 + 3	Powdery mildew ^b	10-17 fl oz (6-17)	12 h	7 d	34 fl oz ^l
Aprovia Top ^a	7 + 3	Powdery mildew ^b	13.5 oz (10.5-13.5)	12 h	0 d	4 sprays ^l
Miravis Prime [*]	7 + 12	Powdery mildew	11.4 oz (9.2-11.4)	12 h	1 d	2 sprays ^l
Quintec	13	Powdery mildew ^c	6 fl oz (4-6)	12 h	3 d	24 fl oz ^l
Torino	U8	Powdery mildew ^c	3.4 fl oz	4 h	0 d	2 sprays
Orondis Ultra ⁱ	49+40	Blight, Downy mildew	5.5 - 8.0 fl oz	4 h	0 d	4 sprays or 33% of all sprays
Orondis Opti ⁱ	49+M5	Downy mildew	1.75 – 2.5 pt	12 h	0 d	
Orondis Gold ⁱ	49+4	Blight	2.4 - 19.2 fl oz	12 h	0 d	At planting
Ridomil Gold SL ^j	4	Blight	1-2 pt to soil	48 h	5 d	2 pt
Omega ^e	29	Blight, Downy mildew	0.75 – 1.5 pt	12 h	7/30	4-7 sprays
Zampro [*]	40+45	Blight, Downy mildew	14 fl oz	12 h	0 d	3 sprays ^l
Gavel	22+M3	Blight, Downy mildew	1.5 – 2 lb	48 h	5 d	8 sprays
Tanos ^h	27+11	Blight, Downy mildew	8 oz	12 h	3 d	4 sprays ^m
Ranman ^{a, d}	21	Blight ⁿ , Downy mildew	2.75 fl oz (2.1-2.75)	12 h	0 d	6 sprays ^d
Forum ^a	40	Blight, Downy mildew ^k	6 fl oz	12 h	0 d	5 sprays ^m
Revus ^a	40	Blight, Downy mildew ^k	8 fl oz	4 h	0 d	4 sprays ^m
Presidio ^g	43	Blight ⁿ , Downy mildew ^k	4 fl oz (3 – 4)	12 h	2 d	2 sprays (new label)
Previcur Flex	28	Downy mildew ^k	1.2 pt	12 h	2 d	5 sprays
K-Phite, etc. ^f	P 07	Blight	2.5 – 5 pt	4 h	0 d	7 sprays
Zing!	22+M5	Downy mildew	36 fl oz	12 h	0 d	8 sprays ^m
Curzate ^h	27	Downy mildew	5 oz (3.2 - 5)	12 h	3 d	6 sprays

* Gatten, Luna Experience, Miravis Prime, Rhyme, and Zampro are NOT permitted used on Long Island. Seasonal limit for Gatten in NY is less than in other states (5 sprays).

Fungicides classified as restricted use in NY: Aprovia Top, Gatten, Gavel, Miravis Prime, Omega, Presidio, Previcur Flex, Procure, and Zing!

^a Organosilicone and/or non-ionic surfactant recommended or required (Revus).

^b Some DMI (FRAC 3) fungicides have continued to exhibit good to excellent efficacy in fungicide evaluations and pathogen isolates have not been detected with a level of insensitivity to this chemistry that would be expected to impact efficacy of the best DMIs. Apply Procure no more than 3 times to transplanted crop; 4 applications can be made to direct-seeded crop when used at 4-6 fl oz/A.

^c No longer recommended because resistance in the pathogen has become common affecting efficacy, and there is adequate diversity of fungicides not affected by resistance in different FRAC groups to effectively manage powdery mildew and fungicide resistance. One application of Torino or Quintec might contribute to management, especially used early in powdery mildew development when resistant isolates are less common. Resistant isolates tend to be resistant to both chemistries. Quintec is labeled for use on non-edible-peel cucurbits (melon, pumpkin, winter squash, gourd).

^d Rate range applies for downy mildew; high rate for Phytophthora blight. Can be applied up to 3 times consecutively, which must be followed by at least the same number of applications of fungicide(s) with different FRAC code.

^e PHI is 30 days for cucumbers and melons; 7 days for other crops.

^f Other phosphorous acid fungicides include ProPhyt and Fosphite. Rate and seasonal limits vary a little among products. Recommended tank mixed with other fungicides. Note that there are also phosphate fertilizers, which are not fungicides.

^g New Presidio label has only 2, not sequential applications. Plant-back restriction for most non-labeled crops is 18-month.

^h Short residual; apply another fungicide within 5 days.

ⁱ Orondis Gold is labeled for one application to soil at planting for Phytophthora blight. Its use in a crop prohibits foliar application of Orondis Opti and Orondis Ultra. These foliar Orondis formulations can be applied no more than twice consecutively. When at least 3 applications are made, these Orondis fungicides can be no more than 33% of the applications, or a maximum of 4 applications per planting, whichever is fewer. Orondis Opti is labeled for several other diseases because it contains chlorothalonil in addition to oxathiapiprolin. It is only recommended used for these diseases when downy mildew is also present. Mandipropamid, the second active ingredient in Orondis Ultra, is the same AI in Revus, therefore using both in a fungicide program necessitates using less than the max of each listed in the table. When Orondis Ultra is applied at highest label rate (8 fl oz/A), then max number applications of Orondis Ultra plus Revus is 4 total. When Orondis Ultra is applied 4 times at 6 fl oz/A, then Revus can be applied once.

^j Ridomil Gold SL is recommended for Phytophthora blight only on farms where Ridomil fungicides were not used over several preceding years on other labeled crops (ex. pepper) as resistance may have developed already. Apply to soil at planting and/or through drip.

^k Resistance has been found mostly in isolates from cucumber or with seedling bioassays using cucumber. Likely effective for downy mildew on watermelon, pumpkin, and squashes. Limit use. Resistance to Previcur Flex has not been detected in recent bioassays.

^l No more than 2 consecutive (sequential) applications permitted before rotating to a fungicide with a different FRAC code.

^m No consecutive applications permitted before rotating to fungicide with different FRAC code.

ⁿ Resistance has been documented in the Phytophthora blight pathogen where this has been examined, which is in the southeastern U.S.

Additional Information

Tank-mix each of these fungicides with a protectant, with the exception of Zing! or Gavel, which are formulated with chlorothalonil or mancozeb. Need to tank-mix is specified in use directions on many labels.

Sulfur is a very effective, inexpensive product for powdery mildew, no efficacy for other diseases.

Oils (several botanical and mineral oils available) are also a good choice for powdery mildew only.

Chlorothalonil and copper have broad-spectrum activity. Copper also effective for bacterial diseases.

Mancozeb is recommended when only downy mildew is occurring.

Apply fungicides for a particular disease in alternation to manage resistance (in the use directions on many labels; typically 1 or 2 consecutive spray maximum) and to ensure effective control if resistance develops.

QoI fungicides*, and Ridomil fungicides are not recommended for downy mildew due to resistance and therefore are not in table. (*include Cabrio, Quadris, Flint).

Endura, Pristine, and QoI fungicides are not recommended for powdery mildew because resistant pathogen isolates have been found commonly every year on Long Island.

Last updated: 2-20-22.