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 http://vegetablemdonline.ppath.cornell.edu/NewsArticles/NewsList.htm; http://blogs.cornell.edu/livegpath/; 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 [c]	3	Powdery mildew	5.7 fl oz	12 h	7 d	2 sprays
Procure [c]	3	Powdery mildew	8 fl oz (4-8)	12 h	0 d	40 fl oz [l]
Gatten *	U13	Powdery mildew	8 fl oz (6-8)	12 h	0 d	2 sprays
Luna Experience*	7 + 3	Powdery mildew	10-17 fl oz (6-17)	12 h	7 d	34 fl oz [l]
Aprovia Top [a]	7 + 3	Powdery mildew	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 [b, c]	13	Powdery mildew	6 fl oz (4-6)	12 h	3 d	24 fl oz [l]
Torino [c]	U8	Powdery mildew	3.4 oz	4 h	0 d	2 sprays
Orondis Ultra [i]	49+40	Blight, Downy mildew	5.5 - 8.0 fl oz	12 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
Ranman [a, d]	21	Blight, Downy mildew	2.75 fl oz(2.1-2.75)	12 h	0 d	6 sprays [d]
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]
Forum [a, k]	40	Blight, Downy mildew [k]	6 fl oz	12 h	0 d	5 sprays [m]
Revus [a, c, k]	40	Blight, Downy mildew [k]	8 fl oz	12 h	0 d	4 sprays [m]
Presidio [g, k]	43	Blight, Downy mildew [k]	4 fl oz (3 – 4)	12 h	2 d	2 sprays (new label)
Previcur Flex [k]	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, and Zampro are NOT permitted used on Long Island. Seasonal limit for Gatten in NY is less than in other states (5).

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] Quintec is labeled for use on non-edible-peel cucurbits (melon, pumpkin, winter squash, gourd). 10-14 day spray interval.

[c] Limited use recommended because resistance could affect efficacy especially when applied often. No more than one application of Torino is recommended; if it is to be included in fungicide program, early in powdery mildew development is best.

[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] When at least 3 applications made, 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. It is only recommended used for these diseases when downy mildew is also present. Orondis Gold is labeled for application to soil at planting for Phytophthora blight. Its use in a crop prohibits foliar application of Orondis Opti and Orondis Ultra.

[j] Ridomil Gold SL is recommended for Phytophthora blight only on farms where Ridomil fungicides were not used over several presiding 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. Might be effective for downy mildew on other cucurbit crops. Limit use.

[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.

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.

Previcur Flex, QoI fungicides*, and Ridomil fungicides are not recommended for downy mildew due to resistance and therefore are not in table. (*include Amistar, 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.

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