

Cornell Onion (Dry Bulb) Fungicide “Cheat-Sheet” for Leaf Diseases in New York

Compiled by Christy Hoepting, Cornell Vegetable Program, July 2019.



Trade name	Active ingredient	FRAC ¹ code	Relative Disease Control Rating ²			Rotation restrictions	Rate (product/A)	Maximum allowable per season	
			BLB ³	SLB	DM			Total Amount	No. of max rate apps
Bravo Weatherstik & generics	chlorothalonil	M5	Best	Fail	Fail	none	1.5-3 pt	20 pts	6 (3 pt)
Penncozeb & generics	mancozeb	M3	Fail	Fail	M-G	none	2-3 lb	32 lbs	10 (3 lb)
Rovral & generics	iprodione	2	P	P ⁶	Fail	none	1 pt (in tankmix) 1.5 pt (alone)	10 pts (in tank mix) 7.5 pts (alone)	10 (1 pt) 5 (1.5 pt)
Scala	pyrimethanil	9	M-P	P ⁶	Fail	none	9-18 fl oz	54 fl oz	3 (18 fl oz)
Rovral 1 pt + Scala 9 fl oz	iprodione pyrimethanil	2 9	P	P ⁶	Fail	none			6
Luna Tranquility	Fluopyram pyrimethanil	7 (1) ¹ 9	Best	Best	Fail	No more than 2 sequential apps before rotating to non-7 or 9 group fungicides	12 fl oz ⁸ 16-27 fl oz	54.7 fl oz ⁴	3 (16 fl oz)
Luna Experience	Fluopyram tebuconazole	7 (1) ¹ 3	Best	Best	Fail	No more than 2 sequential apps before rotating to non-3 or 7 group fungicides	12.8 fl oz	25.6 fl oz ⁴	2 (12.8 fl oz)
Merivon	fluxapyroxad + pyraclostrobin	7 (2) ¹ 11	G	VG	M	No more than 2 sequential apps before rotating to non-7 or 11 group fungicides	5.5-11 fl oz 9 fl oz ⁹	33 fl oz 3 apps	3 (11 fl oz)
Quadris Top	azoxystrobin + difenoconazole	11 3	Fail	VG	M-G	No more than 1 application before rotating to non-11 group fungicide	12-14 fl oz ⁹	56 fl oz ⁴	4 (14 fl oz)
Inspire Super	difenoconazole + cyprodinil	3 9	M	VG	Fail	No more than 2 sequential apps before rotating to non-3 or 9 group fungicides	16-20 fl oz ⁹	80 fl oz ⁴	4 (20 fl oz)
Endura	boscolid	7 (3) ¹	P-M	P ⁶	Fail	No more than 2 sequential apps before rotating to non-7 group fungicides	6.8 oz	41 oz 6 apps	6 (6.8 oz)
Tilt & generics	propiconazole	3	G-M	VG-G	Fail	none	4-8 fl oz ⁹ (alone) 2-4 fl oz (in tank mix)	16 fl oz	2 (8 fl oz) 4 (4 fl oz)
Rampart, etc.	phosphorous acid	33	Fail	Fail	M	none	1-3 qt		

Trade name	Active ingredient	FRAC ¹ code	Relative Disease Control Rating ²			Rotation restrictions	Rate (product/A)	Maximum allowable per season	
			BLB ³	SLB	DM			Total Amount	No. of max rate apps
Viathon	phosphorous acid tebuconazole	33 3	M	VG	M	none	2-3 pt	6 pt	2 (3 pt)
Quadris	azoxystrobin	11	Fail	Fail ⁶	M	No more than 1 application before rotating to non-11 group fungicides	6-12 fl oz	92.3 fl oz	7 (12 fl oz)
Cabrio	pyraclostrobin	11	Fail	Fail ⁶	M	No more than 1 application before rotating to non-11 group fungicides	8-12 fl oz	72 fl oz	6 (12 fl oz)
Ridomil Gold Bravo	Mefanoxam chlorothalonil	4 M5	M	Fail	Best	none	2.5 pt	12.5 pt	5 (2.5 pt)
Tanos	cymoxanil famoxadone	27 11	Fail	Fail	M	No more than 1 application before rotating to non-11 group fungicides	8 oz	84 oz	10 (8 oz)
Zampro	dimethomorph ametoctradin	40 45	Fail	Fail	M	No more than 2 sequential applications	14 fl oz	42 fl oz	3 (14 fl oz)
Revus	mandipropamid	40	Fail	Fail	M	No more than 2 sequential applications before rotating to non-40 group fungicides	8 fl oz	32 fl oz	4 (8 fl oz)
Omega	fluazinam	29	?? ⁵	M-P	M-P	None: Do not use with adjuvant	1 pt	6 pt	6 (1 pt)
Gavel	zoxamide mancozeb	22 M3	P-Fail	P	M	None: Do not contact exposed bulbs	1.5-2 lb	16 lb	6 apps
Switch	cyprodinil fludioxinil	9 12	P	P	Fail	No more than 2 sequential application before rotating to different MOA	11-14 oz	56 oz	4 (14 oz)
Orondis Opti	oxathiapiprolin chlorothalonil	U15 M5	M ⁷	Fail	Best	No more than 2 sequential applications before rotating to different MOA	1.75-2.5 pt	10 pt	33% of total fungicide apps or 4 apps
Orondis Ultra	Oxathiapiprolin mandipropamid	U15 40	Fail	Fail	Best	No more than 2 sequential applications before rotating to different MOA	5.5-8 fl oz	32 fl oz	33% of total fungicide apps or 4 apps

¹FRAC: Fungicide Resistance Action Committee Chemical class code. Numbers in brackets indicate different sub-classes within FRAC group. Cross-resistance among sub-classes within same FRAC often does not occur. ²Relative disease control ratings are based on fungicide trials, 2006-2018 (Hoepting *et. al*). **Best**: best (or one of the best) of all fungicides tested; **VG**: very good; **G**: good; **M**: mediocre/middle of the pack; **P**: poor; **Fail**: failed to control disease, not different than untreated control. ³BLB: Botrytis Leaf Blight; **SLB**: Stemphylium Leaf Blight; **DM**: Downy mildew. ⁴Maximum allowable limit of active ingredient per acre per season: pyrimethanil – 2.1 lb (= 0.024 lb/fl oz Luna Tranquility; = 0.039 lb/fl oz Scala); difenoconazole – 0.46 lb (= 0.0057 lb/fl Inspire Super; = 0.0082 lb/fl oz Quadris Top); fluopyram – 0.446 lb (= 0.013 lb/fl oz Luna Experience; = 0.008 lb/fl oz in Luna Tranquility); tebuconazole – 0.335 lb (= 0.013 lb/fl Luna Experience; = 0.003 lb/fl oz Viathon). ⁵?? Not tested in Cornell trials. Expect FRAC 3 & 7 to be very good on SLB. ⁶Fungicide Resistance Warning: SLB has been found to be resistant to FRAC 11 fungicides, FRAC 7 boscolid and FRAC 9 Scala in New York. Preliminary fungicide sensitivity testing has indicated that SLB has developed resistance to iprodione in Oswego. ⁷For best BLB control add Bravo 1 pt to Orondis Opti. ⁸Luna Tranquility 12 fl oz is lower than labeled rate. No difference between 16 fl oz and 12 fl oz in 6 out of 6 side-by-side comparisons in Cornell trials for SLB, therefore, at this time, 12 fl oz rate is okay until further notice. ⁹Generally wise to consider cross-resistance will occur among all FRAC 3 fungicides (e.g. we lose one, we lose them all), therefore, highest label rates are recommended for best resistance management. Appears that SLB is developing resistance to SLB – use minimum 9 fl oz rate. For more information on relative performance of fungicides for management of leaf diseases in onions, contact Christy Hoepting (cah59@cornell.edu; 585-721-6953).