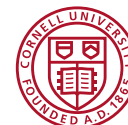


# Cornell Onion (Dry Bulb) Fungicide “Cheat Sheet” for Control of Leaf Diseases in New York, 2023

Compiled by Christy Hoepfing, CCE Cornell Vegetable Program (June 2023). Results based mostly on on-farm field trials (Hoepfing et al. 2021-2022)



Product/Tank Mix and Rate/A	Active Ingredient	FRAC <sup>1</sup>		Relative Performance E: Excellent; VG: Very Good; G: Good; F: Fair; P: Poor; Fail				Activity on DM <sup>2</sup>	Maximum Allowable/Season	
		Code <sup>3</sup>	Risk of Fungicide Resistance Rating	BLB <sup>4</sup> halos	BLB necrotic spots	SLB <sup>5</sup> target spots	SLB leaf dieback		Rate/Acre	No. Apps (max. rate)
<b>Protectants – Multi-site Mode of Action</b>										
Bravo 3 pt <sup>6</sup>	chlorothalonil	M05	very low	VG	G-VG	Fail-P	Fail-P	No	20 pts	6 (3 pt)
Bravo 1.5 pt	chlorothalonil	M05	very low	F	F-P	Fail	Fail-P	No	20 pts	6 (3 pt)
e.g. Manzate Max <sup>7</sup>	mancozeb 1 lb	M03	very low	VG <sup>8</sup>	Fail	Fail	Fail	Yes	24 qts	10 (2.4 qt)
e.g. Manzate Max	mancozeb 3 lb	M03	very low	VG	Fail	Fail	Fail	Yes	24 qts	10 (2.4 qt)
<b>FRAC 2 and 9</b>										
Rovral 1.5 pt	iprodione	2	medium-high	G (Oswego) Fail (Elba)	Fail-P	Fail-P	G-F	No	7.5 pts	5 (1.5 pt)
Scala 18 fl oz	pyrimethanil	9a	medium	G (Elba) Fail (Oswego)	Fail-P	variable	Fail	No	54 fl oz	3 (18 fl oz)
Scala 9 fl oz + Rovral 1 pt	pyrimethanil + iprodione	9a 2	medium + medium-high	G	F	P-Fail	G-F	No	54 pts 10 pts	6 (9 fl oz) 10 (1 pt)
<b>FRAC P07</b>										
Rampart,	phosphorous acid	P07	low	Fail	F	F-G	G	Yes	?	? (6 pt)
Reveille, etc.	potassium phosphite	P07	low	Fail	F	F-G	G	Yes	28 pt	7 (4 pt)
<b>FRAC 3</b>										
Tilt 8 fl oz <sup>9</sup>	propiconazole	3a	medium	Fail	P-F (Elba) VG (Oswego)	F-G	G-P	No	16 fl oz	2 (8 fl oz)
Quadris Top 14 fl oz	difenaconazole + azoxystrobin	3b 11	medium + high	Fail-P	F	Fail	P	No Yes	56 fl oz	4 (14 fl oz)
Inspire Super 20 fl oz	difenaconazole + cyprodinil	3b 9b	medium + medium	Fail	VG	P-Fail	F-Fail	No	80 fl oz	4 (20 fl oz)
Viathon 3 pt	tebuconazole + phosphorous acid	3c P07	medium + low	Fail	VG	F-G	VG	No Yes	6 pts	2 (3 pts)
Cevya 5 fl oz	mefentrifluconazole	3d	medium	Fail	Fail-P	Fail	Fail	No	15 fl oz	3 (5 fl oz)
Quadris Top 14 fl oz + Tilt 8 fl oz	difenaconazole + azoxystrobin + propiconazole	3b + 11 3a	medium + high medium	P-Fail	VG-E	F-G G (Oswego)	VG	Yes No	--	2
Viathon 3 pt + Tilt 8 fl oz	tebuconazole + phos. acid + propiconazole	3c + P07 3a	medium + low medium	Fail	E	G-VG	E-VG	Yes No	--	2
Inspire Super 20 fl oz + Viathon 3 pt	difenaconazole + cyprodinil + tebuconazole + phos. acid	3b + 9b 3c + P07	medium medium + low	Fail	VG-E	G-VG	VG	No Yes	--	2
Inspire Super 20 fl oz + Quadris Top 14 fl oz	difenaconazole + cyprodinil + difen. + azoxystrobin	3b + 9b 3b + 11	medium medium + high	na <sup>10</sup>	F	Fail	P-F	Yes	--	2

1 **FRAC:** Fungicide Resistance Action Committee

2 **DM:** Downy mildew. If fungicide treatment does not have activity on DM, grower may want to add a fungicide with activity on DM to tank mix.

3 **FRAC codes.** Numbers in brackets represent active ingredients that belong to different sub-classes of FRAC 7. The letters a, b, c, etc. following the FRAC 3 & 9 codes indicate different active ingredients within the same sub-class

4 **BLB:** Botrytis leaf blight. See photos for more on the difference between halos and spots.

5 **SLB:** Stemphylium leaf blight. See photos for target spots and “dirty tips”. SLB has developed fungicide resistance of FRAC groups 2, 3, 7, 9 and 11 in New York muck-onion production.

6 Example trade name for products with these active ingredients; several products are available.

7 Example trade name for products with these active ingredients; several products are available.

8 Mancozeb 1 lb/A only provides very good control when BLB halo pressure is low.

9 Example trade name for products with these active ingredients; several products are available.

10 na: No trial data available to comment.

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		Code <sup>3</sup>	Risk of Fungicide Resistance Rating	BLB <sup>4</sup> halos	BLB necrotic spots	SLB <sup>5</sup> target spots	SLB leaf dieback		Rate/Acre	No. Apps (max. rate)
<b>FRAC 7</b>										
Luna Tranquility 16 fl oz	fluopyram + pyrimethanil	7(1) 9a	high* + medium	G	VG	F	P (Elba) G (Oswego)	No	54.7 fl oz	3 (16 fl oz)
Luna Experience 10 fl oz	fluopyram + tebuconazole	7(1) 3c	high* + medium	G-F	VG	F	G	No	25.6 fl oz	2 (12.8 fl oz)
Merivon 9 fl oz	fluxapyroxad + pyraclostrobin	7(2) 11	high* + high	VG-E	Fail	Fail	Fail	No Yes	33 fl oz	3 (11 fl oz)
Miravis Prime 11.4 fl oz	pydiflumetofen + fludioxonil	7(4) 12	high* + low-medium	VG-E	F-P	P-F	G	No	34.2 fl oz	3 (11.4 fl oz)
Luna Flex 13.6 fl oz	fluopyram + difenaconazole	7(1) 3b	high* + medium	na	na	na	na	No	27.2 fl oz	2 (13.6 fl oz)
Luna Tranquility 16 fl oz + Rovral 1 pt	fluopyram + pyrimethanil + iprodione	7(1) + 9a 2	high* + medium + medium-high	VG-G	VG	F VG (Oswego)	VG-E	No	--	3
Luna Experience 12.8 fl oz + Rampart 3 qt	fluopyram + tebuc. + phosphorous acid	7(1) + 3c P07	high* + medium + low	na	na	na	E-VG	--	--	--
Miravis Prime 11.4 fl oz + Rovral 1 pt	pydiflumetofen + fludioxonil + iprodione	7(4) + 12 2	high* + low-medium + medium-high	VG-E	F-G	P-F	VG-G	No No	--	3
<b>FRAC 29, 12 and 19</b>										
Omega 16 fl oz	fluazinam	29	low	E	F	Fail	G <sup>11</sup>	Yes	96 fl oz	6 (16 fl oz)
Cannonball	fludioxonil	12	low-medium	Fail	Fail	F-P	G	No	--	--
Oso 6.5 fl oz	polyoxin D zinc salt	19	medium	Fail	Fail-P	P-F	P-Fail	No	78 fl oz	6 (13 fl oz)
Oso 6.5 fl oz + Rampart 3 pt	polyoxin D zinc salt + phosphorous acid	19 P07	medium + low	Fail	F	G-VG	G	Yes	--	6
Oso 6.5 fl oz + Miravis Prime 11.4 fl oz	polyoxin D zinc salt + pydiflumetofen + fludioxonil	19 7(4) + 12	medium + high* + low-medium	VG	F-G	G	VG	No	--	3

11 In 2020, Omega was rated as having fair performance for keeping foliage green. It is suspected that since it was excellent on BLB halos and pressure was high, that this contributed to higher plant health ratings in 2021.

\* FRAC rates FRAC 7 as “medium-high”. Given our experience with FRAC 7 and SLB, we ranked it as “high” instead.



**BLB halos** (blue) and **BLB necrotic spots** (yellow)



**SLB sporulation of necrotic leaf tips, “dirty tips”**



Tan, black and purple **SLB target spots**.

Photos by Christy Hoeping, CCE Cornell Vegetable Program