

FRAC Codes and Resistance Management Guidelines for Commonly-Used Fungicides in Commercial Vegetable Production

Fungicide	Active Ingredient(s)	FRAC Code*	Risk Management**	Management required	Fungicide Resistance Management Guidelines***
Sulfur	sulfur	M1	L	N	FRAC code M fungicides are low risk, protectant fungicides. Use alone, or tank mix with higher risk fungicides and use in rotations with other FRAC codes
Copper	fixed copper(s)	M2	L	N	
Mancozeb, Maneb, Dithane	EBDC	M3	L	N	
Captan	Captan	M4	L	N	
chlorothalonil	chlorothalonil	M5	L	N	
Topsin M	thiophanate-methyl	1	H	Y	Tank mix, rotate
Nova, Procure, Tilt	myclobutanil, triflumizole, propiconazole	3	M	Y	Tank mix with FRAC code M fungicides, rotate with other FRAC codes
Ridomil Gold Copper	mefenoxam + copper	4 + M1	H - L	Y	Formulation reduces risk
Ridomil Gold Bravo	mefenoxam + chlorothalonil	4 + M5	H - L	Y	
Ridomil Gold, Ultra Flourish	mefenoxam	4	H	Y	Resistance known
Endura	boscalid	7	M	Y	Resistance known, tank mix & rotate with other FRAC codes
Switch	cyprodinil + fludioxonil	9 + 12	M	Y	
Amistar / Quadris	azoxystrobin	11	H	Y	High Risk, Tank mix with FRAC code M fungicides; Rotate with with non-FRAC code 11 fungicides. Follow restrictions on label
Cabrio	pyraclostrobin	11	H	Y	
Flint	trifloxystrobin	11	H	Y	
Pristine	pyraclostrobin + boscalid	11 + 7	H	Y	
Reason	fenamidone	11	H	Y	
Tanos	fomoxadone + cymoxanil	11 + 27	M	Y	
Elevate	fenhexamid	17	L - M	Y	Rotate/tank mix with other FRAC codes
Ranman	cyazofamid	21	M - H	Y	Rotate/tank mix with other FRAC codes
Gavel	zoxamide + mancozeb	22 + M3	L - M	Y	Rotate with other FRAC codes
Curzate	cymoxanil	27	L - M	Y	Rotate/Tank mix with a FRAC Code M fungicide if required, rotate with other FRAC codes
Previcur Flex	propomocarb HCL	28	L - M	Y	
Alliete, Phosphonates	fosetyl AI, phosphorous acids	33	L	Y	
Forum	dimethomorph	40	L - M	Y	

* FRAC code: M = multi-site mode of action (MOA), numbered groups = fungicides with similar MOA

** Risk management: L = low risk, M = moderate risk or H = high risk for fungicide resistance to develop

*** See fungicide label for specific crops, rates and instructions on use

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