

Table 1. Characteristics of fungicides for disease control in small fruit crops (grapes and berry crops).

Fungicide	Active ingredient	Chemical group	FRAC group*	Risk of resistance	Mode of action	PHI (days)**	REI (hours)**
Abound	azoxystrobin	Strobilurins	11	High	Systemic	0-14	4
Aliette	fosetyl-Al	Ethylphosphonates	33	Low	Systemic	0-60	12
Armcarb	potassium bicarbonate	Salts/Inorganics	–	Low	Protectant	0	4
Bravo	chlorothalonil	Chloronitriles	M5	Low	Protectant	42	24
Cabrio	pyraclostrobin	Strobilurins	11	High	Systemic	0	12
Captan	captan	Phthalimides	M4	Low	Protectant	0-3	24-96
Captevate	fenhexamid + captan	Hydroxyanilides + Phthalimides	17, M4	Low to medium	Syst. + Prot.	0-3	24
Copper	copper	Inorganics	M1	Low	Protectant	0	24
Dithane/Penncozeb	mancozeb	Dithiocarbamates	M3	Low	Protectant	66	24
Elevate	fenhexamid	Hydroxyanalides	17	Low to medium	Systemic	0	12
Elite/Orius	tebuconazole	Sterol inhibitors	3	Medium	Systemic	14	12
Endura	boscalid	Carboxamides	11	Medium	Systemic	14	12
Flint	trifloxystrobin	Strobilurins	11	High	Systemic	14	12
Gavel	zoxamide and mancozeb	Benzamides	22	Low to medium	Syst. + Prot.	66	24
Kaligreen	potassium bicarbonate	Salts/inorganics	–	Low	Protectant	1	4
Nova/Rally	myclobutanil	Sterol inhibitors	3	Medium	Systemic	0-14	24
Orbit/PropiMax	propiconazole	Sterol inhibitors	3	Medium	Systemic	0-30	24
Oxidate	hydrogen peroxide	Inorganics	–	Low	Protectant	0	4
Pristine	pyraclostrobin + boscalid	Strobilurins + carboxamides	7, 11	Medium to high	Systemic	0-14	12
Procure	triflumizole	Sterol inhibitors	3	Medium	Systemic	1-7	12
ProPhyt/Phostrol	phosphorous acid	Phosphonates	33	Low	Systemic	0	4
Quintec	quinoxifen	Quinolines	13	Medium	Systemic	1-14	12
Ridomil Gold	mefenoxam	Phenylamides	4	High	Systemic	0-45	48
Ridomil Gold MZ/Cu	Mef. + mancozeb/ copper	Phen. + dithiocabamates/ inorganics	4, M3/ M1	Medium to High	Syst. + Prot.	66/42	48
Rovral	iprodione	Dicarboximides	2	Medium to high	Protectant	0-7,a***	24-48
Rubigan/Vintage	fenarimol	Sterol inhibitors	3	Medium	Systemic	30	12
Scala	pyrimethanil	Anilinopyrimidines	9	Medium	Systemic	1-7	12
Serenade/Sonata	<i>Bacillus subtilis/B. pumilus</i>	Biological	–	Low	Protectant	0	4
Sovran	kresoxym methyl	Strobilurins	11	High	Systemic	14	12
Sulfur	sulfur	Inorganics	M2	Low	Protectant	0	12-24
Switch	cyprodinil + fludioxinil	Anilinopyrimidines + Phenylpyrroles	9, 12	Low to medium	Syst. + Prot.	0	12
Thiram	thiram	Dithiocarbamates	M3	Low	Protectant	3	24
Topsin-M	thiophanate methyl	Methyl benzimidazole carbamates	1	High	Systemic	1-14	12
Vanguard	cyprodinil	Anilinopyrimidines	9	Medium	Systemic	7	12
Ziram	Ziram	Dithiocarbamates	M3	Low	Protectant	14-21	48

*FRAC = Fungicide Resistance Action Committee; – = no group assigned. If fungicides are in the same group, fungi may display or develop cross resistance., ** PHI and REI depend on the crop, ***Rovral may not be applied after first fruiting flower on strawberries.