



## How to Manage Pests

### UC Pest Management Guidelines

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## Grape

### 2015 Fungicide Efficacy and Treatment Timing

(Reviewed 7/15, updated 1/16)

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- [Fungicide efficacy – Soft Chemistry \(Biological and Natural Products\)](#)
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#### FUNGICIDE EFFICACY – CONVENTIONAL CHEMISTRY

Fungicide	Resistance risk (FRAC#) <sup>1</sup>	Powdery mildew	Downy mildew	Rot		Phomopsis cane and leaf spot	Eutypa dieback	Bot Canker	Dead Arm ( <i>Phomopsis</i> sp.)
				Botrytis bunch rot	Summer rot				
Abound	high (11) <sup>2</sup>	++++	++++	+	—	+++	NR	—	—
Flint <sup>3</sup>	high (11) <sup>2</sup>	++++	+++	++	++	++	NR	—	—
Orius/Tebucon/Toledo/Tebuconazole (Elite/Tebuzol)**	high (3)	++++	—	++	++	—	NR	—	—
Quadris Top	high (3/11)	++++	+	++	++	++	NR	—	—
Inspire Super	medium (3/9)	++++	—	++++	++	—	NR	—	—
Luna Experience	medium (3/7)	++++	—	++++	++	—	NR	—	—
Luna Tranquility***	medium (7/9)	++++	—	++++	++	—	NR	—	—
Mettle	high (3)	++++	—	—	+	—	NR	—	—
Kenja*	high (7)	++++	NR	NR	NR	NR	NR	NR	NR
Aprovia*	medium (7/11) <sup>2</sup>	NR	NR	NR	NR	NR	NR	NR	NR
Pristine	medium (7/11) <sup>2</sup>	++++	++++	++++	+++	+++	NR	—	—
Procure	high (3)	++++	—	—	—	—	NR	—	—
Quintec	high (13)	++++	—	—	—	—	NR	—	—
Rally	high (3)	++++	—	—	—	—	+++	++	++
Rally+Topsin-M <sup>5</sup>	high (1/3)	++++	—	—	—	++++	—	++++	++++
Revus Top	medium (3/40)	++++	++++	++	++	++	NR	—	—
Rubigan/Vintage	high (3)	++++	—	—	—	—	NR	—	—
Sovran	high (11) <sup>2</sup>	++++	++++	++	++	++++	—	—	—
Sulfur	low (M2)	++++	—	—	—	—	NR	—	—
Rhyme	high (3)	++++	—	—	—	—	NR	—	—
Topsin-M/T-Methyl/Incognito	high (1) <sup>2</sup>	++++	—	++	++	+	++++	—	—
Torino	high (U6)	++++	—	—	—	—	—	—	—

Vivando	high (U8)	++++	—	—	—	—	—	—	—
Bayleton**	high (3)	++	—	—	—	—	NR	—	—
Copper	low (M1)	++	+++	++	+++	+	—	—	—
Elevate	high (17) <sup>2</sup>	++	—	++++	++	—	NR	—	—
Protexio	high (17) <sup>2</sup>	++	—	++++	++	—	NR	—	—
Ph-D	medium (19)	++	—	+++	+++	ND	NR	—	—
Rovral + Oil <sup>4</sup>	low (2)	++	—	++++	—	—	NR	—	—
Scala	high (9) <sup>2</sup>	++	—	++++	++	—	NR	—	—
Switch	low (9/12)	++	—	++++	+++	—	—	—	—
Vanguard	high (9) <sup>2</sup>	++	—	++++	++	—	NR	—	—
Tavano/Oso	medium (19)	+	—	+++	+++	ND	NR	—	—
Botran	medium (14)	—	—	+++	—	—	—	—	—
Captan	low (M4)	—	+	+++	+++	+++	NR	—	—
CaptEstate**	low (M4/17)	—	+	+++	+++	+	—	—	—
Dithane/Manzate/Penncozeb	low (M3)	—	—	++	—	+++	—	—	—
Presidio	high (43)	—	++++	—	—	—	—	—	—
Revus	high (40)	—	++++	—	—	—	—	—	—
Ridomil Gold/ (Mefenoxam**)	high (4)	—	++++	—	—	—	—	—	—
Rovral/Iprodione/Nevado	low (2)	—	—	+++	—	—	—	—	—
Ziram	low (M3)	—	++	+	+	+++	—	—	—

**Rating:** +++++ = excellent and consistent, +++ = good and reliable, ++ = moderate and variable, + = limited and/or erratic, +/- = minimal and often ineffective, — = ineffective; ND = no data and NR = not recommended.

\* Registration pending in California.

\*\* Not registered, label withdrawn or inactive in California.

\*\*\* Registered only on wine grapes in California.

#### GRAPEVINE: FUNGICIDE EFFICACY – SOFT CHEMISTRY (BIOLOGICAL AND NATURAL PRODUCTS)

Fungicide	Resistance risk (FRAC#) <sup>1</sup>	Powdery mildew	Downy mildew	Bunch rot		Phomopsis cane and leaf spot	Eutypa dieback	Bot Canker	Dead Arm ( <i>Phomopsis</i> sp.)
				Botrytis	Summer				
Armicarb	low	+++	—	—	—	—	—	—	—
B-Lock*	low	—	---	—	—	—	++++	++	NR
Cinnacure	low	+++	—	—	—	—	—	—	—
Elexa**	low	+++	—	—	—	—	—	—	—
JMS Stylet oil <sup>4</sup>	low	+++	—	+++	++	—	NR	—	—
Kaligreen	low	+++	—	—	—	—	—	—	—
Milstop	low	+++	—	—	—	—	—	—	—
Regalia	low	+++	—	—	—	—	—	—	—
Taegro	low	+++	—	++	+	—	—	—	—
Serenade	low (44)	+++	—	++	+	—	—	—	—
Sonata	low	+++	—	++	NR	—	—	—	—
Botector	low	ND	—	+	—	—	—	—	—
Purespray	low	+++	—	—	—	—	—	—	—
Vintre	low	+++	—	—	—	—	—	—	—
Actinovate	low	++	—	—	—	—	—	—	—

Fracture	low	+++	—	++	—	—	—	—	—
HiPeak*	low	++	—	—	—	—	—	—	—
Employ*	low	++	—	—	—	—	—	—	—
Prev-am* <sup>4</sup>	low	++	—	—	—	—	++	—	—
Sporan	low	++	—	—	—	—	—	—	—
Timorex* <sup>4</sup>	low	++	—	—	—	—	—	—	—
VigorCal*	low	++	—	—	—	—	—	—	—
VigorK*	low	++	—	—	—	—	—	—	—
Double Nickel	low	+	—	+	NR	—	—	—	—
Sporatec	low	+	—	—	—	—	—	—	—
Vitiseal	low	—	—	—	—	—	++++	—	—

\* Registration pending in California.

\*\* Not registered, label withdrawn or inactive in California.

**Rating:** +++++ = excellent and consistent, +++ = good and reliable under low to medium disease pressure (high disease pressure will result in reduced efficacy with a rating of +/+++), ++ = moderate and variable, + = limited and/or erratic, +/- = minimal and often ineffective, — = ineffective; and NR = not recommended.

<sup>1</sup>Group numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see <http://www.frac.info/>). Fungicides with a different group number are suitable to alternate in a resistance management program. In California, make no more than one application of fungicides with mode-of-action Group numbers 1, 4, 9, 11, or 17 before rotating to a fungicide with a different mode-of-action Group number; for fungicides with other Group numbers, make no more than two consecutive applications before rotating to fungicide with a different mode-of-action Group number.

<sup>2</sup>To reduce the risk of resistance development, start treatments with a fungicide with a multi-site mode of action; rotate or mix fungicides with different mode of action FRAC numbers for subsequent applications, use labeled rates (preferably the upper range), and limit the total number of applications/season.

<sup>3</sup> Causes severe phytotoxicity on Concord grape.

<sup>4</sup> Phytotoxic if used within 2 weeks of Captan or sulfur.

<sup>5</sup> Tank mixture applied post-pruning (dormant or delayed dormant).

## GRAPEVINE: TREATMENT TIMING

**Note: Not all indicated timings may be necessary for disease control.**

Disease	Dormant	Budbreak	Full bloom	Pre-close	Veraison	Preharvest/Postharvest <sup>5</sup>
Botryosphaeria canker (Bot canker)	+++	—	—	—	—	—
Botrytis Bunch Rot	+++ <sup>2</sup>	—	+++ <sup>1</sup>	+++ <sup>1</sup>	+++ <sup>1</sup>	+++ <sup>1</sup>
Brown spot	—	—	—	+++	+++	+++
Dead arm	+++	+++	—	—	—	—
Downy mildew	—	+++	+++	—	—	—
Esca (Black measles)	+++ <sup>2</sup>	—	—	—	—	—
Eutypa Dieback	+++	—	—	—	—	—
Powdery mildew	+++ <sup>2</sup>	+++ <sup>3</sup>	+++ <sup>3</sup>	+++ <sup>4</sup>	—	—
Phomopsis	+++	+++	—	—	—	—
Summer bunch rot (sour rot)	—	—	—	—	+++ <sup>1</sup>	+++ <sup>1</sup>

**Rating:** +++ = most effective, ++ = moderately effective, + = least effective, and — = ineffective

<sup>1</sup> Apply only if rain is forecasted.

<sup>2</sup> Use 10 gallons lime sulfur per acre in at least 100 gallons water.


<sup>3</sup> Apply bud break and full bloom treatments every year.

<sup>4</sup> Apply as needed (a disease risk assessment model is available to help determine need for spray).

<sup>5</sup> Preharvest treatments for postharvest decay control.

### Precautions

### PUBLICATION

 UC IPM Pest Management Guidelines: Grape  
UC ANR Publication 3448

### General Information

Adaskaveg, J. E., B. A. Holtz, T. J. Michailides, and W. D. Gubler. 2015. [Efficacy and Timing of Fungicides, Bactericides, and Biologicals for Deciduous Tree Fruit, Nut, Strawberry, and Vine Crops](#) (PDF)

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