

Table 43. Effectiveness of fungicides on grape diseases.

Fungicide	Phomopsis				
	Cane and Leaf Spot	Black Rot	Downy Mildew	Powdery Mildew	Botrytis Rot
Abound <sup>a</sup>	++++	++++	++++	+++	-
Aliette	-	-	++++	-	-
Armcarb	-	-	-	+++	-
Bayleton <sup>d</sup>	-	++++	-	++++	-
Bordeaux mix <sup>b</sup>	++	++	++++	+++	++
Captan	+++	+	+++	-	+
Copper & lime	+	+	+++	++	+
Elevate	-	-	-	-	+++
Ferbam	++	+++	++	-	-
Fixed Copper <sup>c</sup>	++	++	+++	++	+
Flint <sup>a</sup>	++	++++	+++	++++	-
JMS Stylet Oil	-	-	-	+++	-
Mancozeb <sup>f</sup>	+++	+++	+++	-	-
Messenger	?	?	?	?	?
Nova <sup>d</sup>	+	++++	-	++++	-
Nutrol	-	-	-	+++	-
Procure <sup>d</sup>	-	++	-	++++	-
Ridomil Gold MZ <sup>g</sup>	-	+	++++	-	-
Ridomil/Copper <sup>g</sup>	+	+	++++	++	+
Rovral <sup>e</sup>	-	-	-	-	+++
Rubigan <sup>d</sup>	-	++	-	++++	-
Serenade	-	-	-	-	+
Sovran <sup>a</sup>	++	++++	+++	++++	++
Sulfur <sup>h</sup>	+	-	-	+++	-
Topsin-M	-	++	-	+++	+ <sup>i</sup>
Va guard	-	-	-	-	+++
Ziram	++	+++	++	-	-

++++=excellent, +++=good, ++=moderate, +=slight, -=not effective, ?=unknown.

<sup>a</sup> Do not use azoxystrobin (Abound), kresoxim methyl (Sovran), or trifloxystrobin (flint) continuously. Rotate with other fungicide groups as per label. Abound can cause serious injury to some apple cultivars. Avoid drift to apples and do not spray apples with equipment used for spraying Abound. Flint should not be used on Concord grapes. Sovran can injure some cherry cultivars.

<sup>b</sup> Bordeaux mix is a mixture of copper sulfate and hydrated lime; it may be purchased prepacked or mixed fresh by the grower.

<sup>c</sup> Fixed copper compounds that are registered for use on grapes include Kocide 101, BCS-Copper Fungicide, Ten-Cop 5E, copper oxychloride sulfate (C-O-C-S), and many other compounds and formulations. The main drawback of copper fungicides is the potential for severe injury to grape foliage, depending on variety and weather conditions, and for reduced vine vigor and yields even in the absence of visible foiar injury. Cool wet weather generally makes copper toxicity worse. Phytotoxicity can be lessened by adding spray loime. One should be very careful mixing other pesticides with preparations containing lime: many of these combinations are incompatible. Excessive use of copper within 30 days of harvest may interfere with wine makein.

<sup>d</sup> Bayleton, Nova, and Elite can control black rot after infection has occurred. For effective control, infection periods must be monitored and fungicide applied within 3 days after the start of an infection period. Application of these materials and Rubigan and Pricure to sporulating lesions of powdery mildew is best avoided to prevent selection of resistant strains of the pathogen. Continuous heavy use of this group of fungicides may result in the development of resistant strains of fungi.

<sup>e</sup> Continuous heavy use of this fungicide (iprodione) may result in the development of strains of fungi (esp. Botrytis) that are resistant to it. Iprodione resistant strains of Botrytis have been found in east coast vineyards. Do not routinely apply more than two iprodione sprays per season.

<sup>f</sup> Trade names for mancozeb include Manzate 200, Manzate 200 DF, Dithane M45, Dithane F45, Dithane DF, Penncozeb, and Manex II.

<sup>g</sup> Ridomil Gold MZ contains 10% mefenoxam plus 48% mancozeb, Ridomil Gold/Copper contains 10% mefenoxam plus 60% copper hydroxide.

<sup>h</sup> Sulfur may cause damage to sensitive varieties, it should always be used under cool temperatures.

<sup>i</sup> Continuous use of Topsin M may result in the development of strains of Botrytis that are resistant to it. Topsin-M resistant Botrytis has been found in east coast vineyards.