AWRI Australian Wine Research Institute

Fact Sheet
VITICULTURE

Fungicide resistance

Introduction

Fungicide resistance in your vineyard can spell trouble for producing a clean grape crop in a cost-effective manner this season and in the future. This fact sheet provides information on how fungicide resistance occurs and actions you can take to avoid its occurrence.

What is fungicide resistance?

Fungicide resistance happens when a fungus survives a dose of a chemical that would normally kill or control it. If the maximum label rate for a chemical is needed to manage a disease, this is termed ‘reduced sensitivity’, whereas a lack of control at the maximum label rate indicates ‘field resistance’. Both ‘resistance’ and ‘reduced sensitivity’ can only be diagnosed through laboratory testing.

Why does fungicide resistance matter?

Fungicide resistance is a problem for winegrape growers because it can lead to fewer effective tools to manage disease; the need for more frequent or varied fungicide applications; environmental issues; negative public opinion; higher production costs; greater crop losses; and possible fruit rejection.

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How does fungicide resistance occur?

The development of fungicide resistance can be summarised in four stages.

1 Natural resistance	2 Fungicide applied	3 Resistant fungi survive and multiply	4 Fungicide failure
			
A few individuals of the fungal population are naturally resistant to specific fungicides.	Fungicide kills susceptible fungus leaving the naturally resistant fungal population.	Disease symptoms worsen after fungicide treatment.	Repeated application of fungicides from the same fungicide group, and/or at the wrong time and rate, enables resistant fungi to multiply. Over time, fungicide control fails.

How to avoid fungicide resistance?

1 Read chemical labels	2 Rotate chemical groups	3 Test
		
A few individuals of the fungal population are naturally resistant to specific fungicides.	Rotate chemical groups regularly to prevent resistance and follow CropLife Australia's resistance management strategies (refer pages 15-17 in the '*Dog book*').	If you suspect chemical failure in the vineyard, seek laboratory testing for resistance or reduced sensitivity to specific fungicide groups.

Testing service

A free national testing service to monitor powdery mildew, downy mildew and botrytis fungicide resistance in winegrapes is available until June 2027 as part of a research project led by South Australian Research and Development Institute (SARDI), a research division of the Department of Primary Industries and Regions (PIRSA), in collaboration with Curtin University and the Australian Wine Research Institute (AWRI). This work is funded by Wine Australia, the Cooperative Research Centre for Solving Antimicrobial Resistance in Agribusiness, Food, and Environments (SAAFE CRC), SARDI and Curtin University.

Powdery mildew and downy mildew fungicide resistance testing

Submit samples to the SARDI Horticulture Pathology Laboratory in Adelaide, South Australia, following the sampling instructions here. Biosecurity considerations apply.
Prior to sending, contact ismail.ismail@sa.gov.au.

Botrytis fungicide resistance testing

Submit samples to Curtin University in Western Australia, following the sampling instructions here. Biosecurity considerations apply. Prior to sending, contact lincoln.harper@curtin.edu.au.

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