

Protecting Australian Vegetables from Fungicide and Bactericide Resistance



What is the issue?

Fungicides and bactericides are essential tools for growers, but fungi and bacteria can develop antimicrobial resistance (AMR) over time, allowing them to survive treatments and making once-effective products less effective or ineffective.



Australia's vegetable industry is worth more than **\$6 BILLION** EVERY YEAR.

Resistance can reduce crop yields, quality and market access – impacting growers, consumers, and the economy.

Why does it matter?

Effective disease control is essential for producing healthy, high-quality vegetables. When resistance develops, growers may need more products, higher doses or alternative management strategies.



Reduced disease control

Products that previously worked may become less effective



Higher production costs

Growers may need additional treatments or alternative disease control measures



Fewer Treatment Options

Resistance can reduce the number of effective products available



Greater risk to crops

Poorly controlled disease can reduce crop yield and quality



Potential impacts on markets

Significant disease problems can affect supply and market access



Better monitoring and early detection will help growers and industry respond before resistance becomes a widespread problem

WHY DOES IT MATTER?



Reduced disease control



Higher production costs



Fewer treatment options



Greater risk to crops



Potential impacts on markets



Australia does not currently have a coordinated national program to monitor resistance in vegetable diseases

What did we find?

A review of available information identified Australian reports of vegetable diseases showing resistance or reduced sensitivity to fungicides or bactericides. These include seven resistance issues recognised by agricultural chemical industry body CropLife Australia.

Some diseases are more likely to develop resistance

Not all diseases or chemicals carry the same risk. Some disease-causing fungi are more likely to develop resistance because they reproduce quickly, produce many spores, and spread easily or change genetically very quickly.

The risk depends on a combination of:

- 1 The disease
- 2 The product being used
- 3 How the crop and disease are managed

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Which vegetable diseases are of concern?

Diseases affecting Australian vegetables that have been identified as having a medium or high risk of developing resistance to fungicide include:

- Grey mould (affecting several crops)
- Downy mildew of cucurbits
- Powdery mildew of cucurbits
- White rust of brassicas
- Ascochyta blight of peas
- Blight or purple spot of peas
- Downy mildew of lettuce
- Powdery mildew of carrots



These crops are worth

\$2.17 BILLION

In 2024-25, that's **36%** of the value of Australia's fresh vegetable production.



If resistance becomes **widespread**, the economic consequences could be significant for individual growers and the broader vegetable industry

The biggest challenge: We need better monitoring

One of the most important findings of the review was that information about fungicide and bactericide resistance in Australian vegetable production is limited, difficult to access, and often not up to date. There are also limited resources currently available for routine resistance testing and monitoring in Australian vegetable crops. This creates an important knowledge gap.

Why is monitoring important?

Without regular monitoring, resistance may not be detected until growers begin experiencing problems with disease control. Earlier detection gives growers and industry more time to respond, adjust disease management practices, and protect the effectiveness of products.

VEGETABLE DISEASES OF CONCERN

Diseases with **medium or high risk** of developing fungicide resistance:



Grey mould
(several crops)



Downy mildew
of cucurbits



Powdery mildew
of cucurbits



White rust
of brassicas



Ascochyta blight
of peas



Blight/Purple spot
of peas



Downy mildew
of lettuce



Powdery mildew
of carrots



Better monitoring and earlier detection will help growers and industry respond before resistance becomes a widespread problem.

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Other agricultural industries are already monitoring resistance

Australia already has examples of coordinated resistance monitoring in other agricultural industries. The broadacre cropping industry has established the Australian Fungicide Resistance Extension Network (AFREN), which brings together plant pathologists, resistance experts and extension specialists. The Australian wine industry also has researchers working together to monitor and manage fungicide resistance in grapevines.

However, there is currently no similar coordinated network for monitoring resistance in disease-causing fungi, bacteria, viruses or nematodes affecting Australian levy vegetables.

What can we do?

Detect resistance early and protect the tools growers rely on. A coordinated approach to resistance monitoring could help Australia identify problems earlier and support growers in making informed disease-management decisions.

Key priorities include:



Monitor: Regularly check important vegetable diseases for signs of resistance



Detect early: Strengthen testing so emerging resistance can be identified before it becomes widespread



Share information: Improve communication between growers, researchers, agronomists, industry and agricultural chemical companies



Use products wisely: Support good resistance-management practices that maintain effectiveness of products for as long as possible



Support growers: Turn research and monitoring results into clear, practical recommendations that growers can use on farm



Work together: Build a coordinated Australian network for monitoring and managing resistance in vegetable diseases

WHY THIS MATTERS



Early detection helps stop resistance before it spreads



Working together protects effective disease control tools for the future



Better management supports healthy crops, strong yields and lower costs for growers



A coordinated approach builds a stronger, more resilient industry



Working together today helps protect crop yields, reduce costs and keep effective disease control tools available for the future