

Getting sprays right: ~~Understanding~~ Utilising type, timing & technique

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Technical Services (Viticulture & Horticulture)



Principles of successful control

Type

- ✓ Mode of action
- ✓ Formulation
- ✓ Redistribution properties
- ✓ Product characteristics
- ✓ Label claims

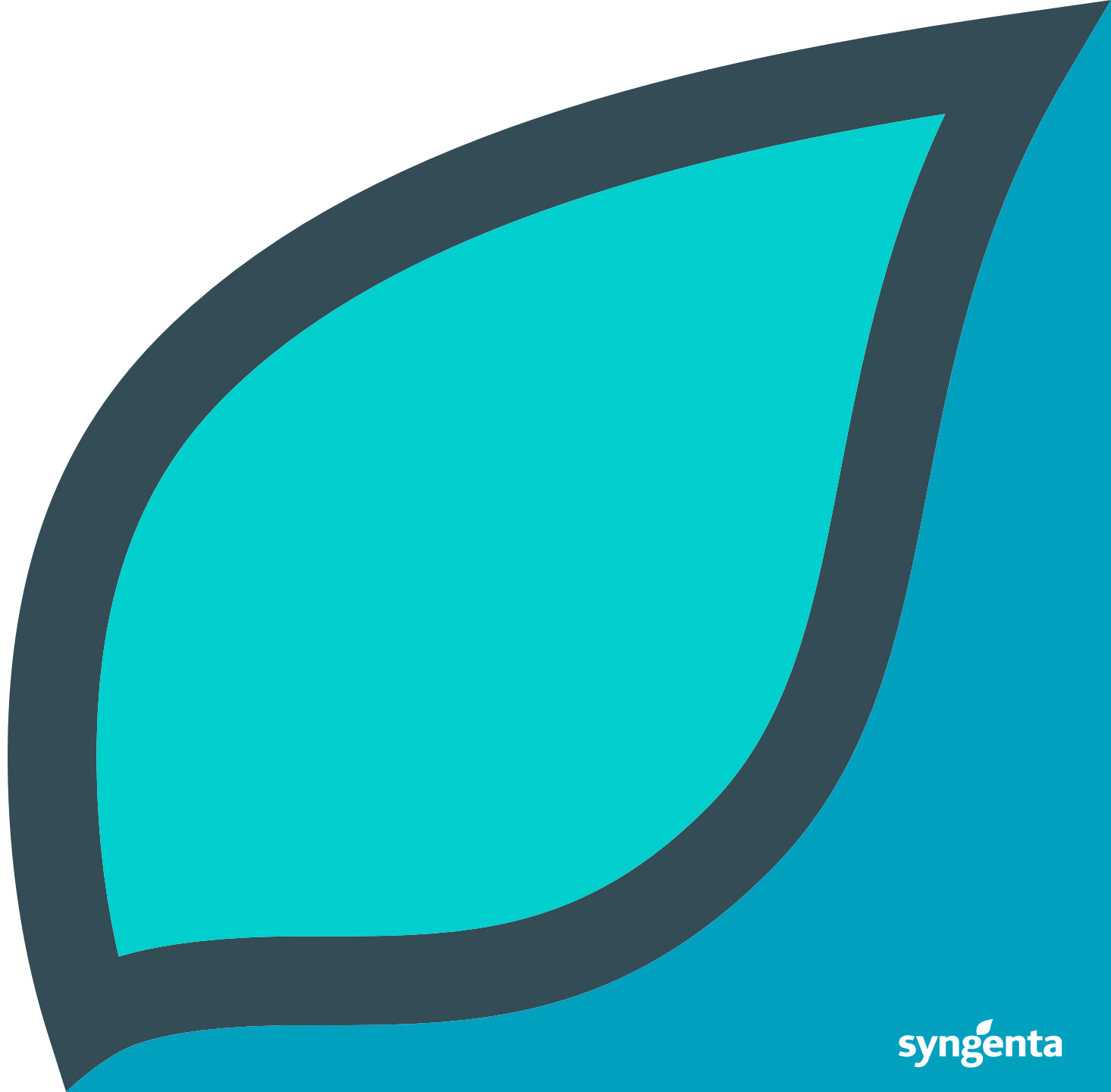
Timing

- ✓ Crop growth stage
- ✓ Target life stage & lifecycle
- ✓ Environmental conditions

Technique

- ✓ Equipment selection & calibration
- ✓ Nozzle selection
- ✓ Water rate
- ✓ Coverage
- ✓ Product dose rate
- ✓ Target identification
- ✓ Mixing

TYPE



Fungicide mode of action – powdery mildew

Type

Timing

Technique

Spore germination

Penetration

Colonisation

Pre-sporulation

Sporulation



Preventative

Curative

Anti-sporulant

Contact multisites (e.g., THIOVIT® Jet)



Strobilurins (e.g., AMISTAR® 250 SC)



SDHI's (e.g., MIRAVID®)



Morpholines or DMI's (e.g., SEEKER® Duo or TOPAS®)



Highly effective

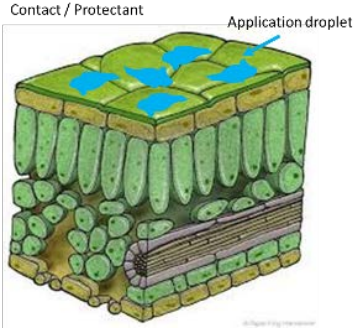
Lower effect

Redistribution properties

Type

Timing

Technique

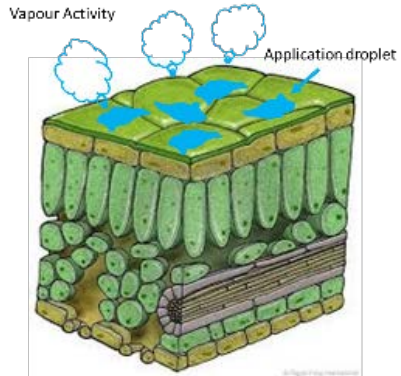
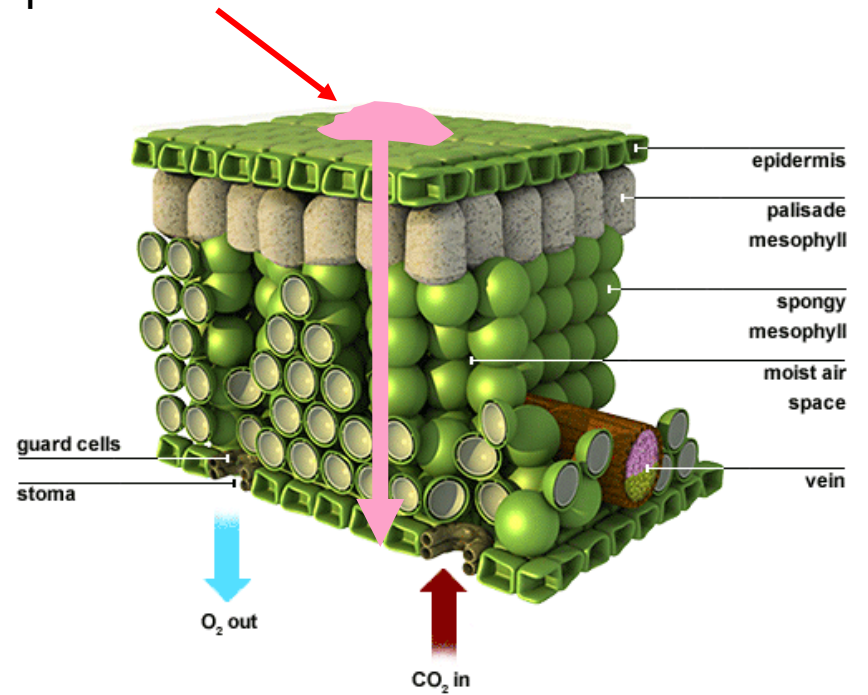


Protectant / Contact products:

Droplets spread out on the surface where deposited (nonsystemic)

Translaminar

Active compound absorbed into tissue and protects underside



Volatile (vapour activity)

A compound that after being applied to the plant can volatilize and redistribute to other areas within the canopy

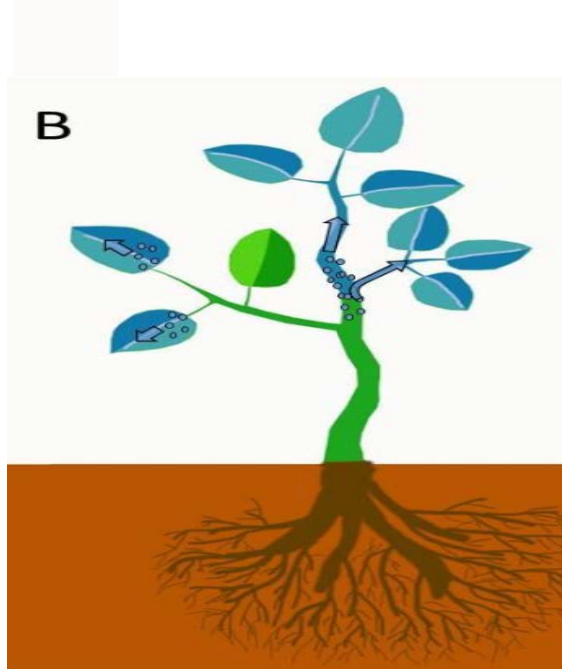
Redistribution properties

Type

Timing

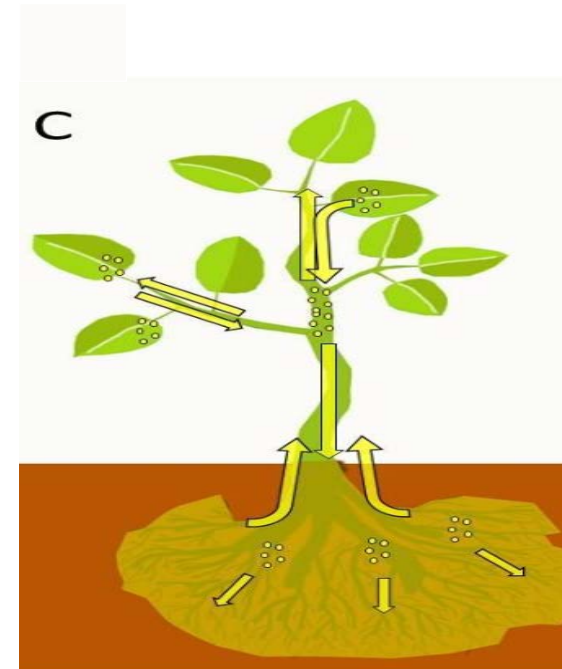
Technique

Translocation



Xylem mobile

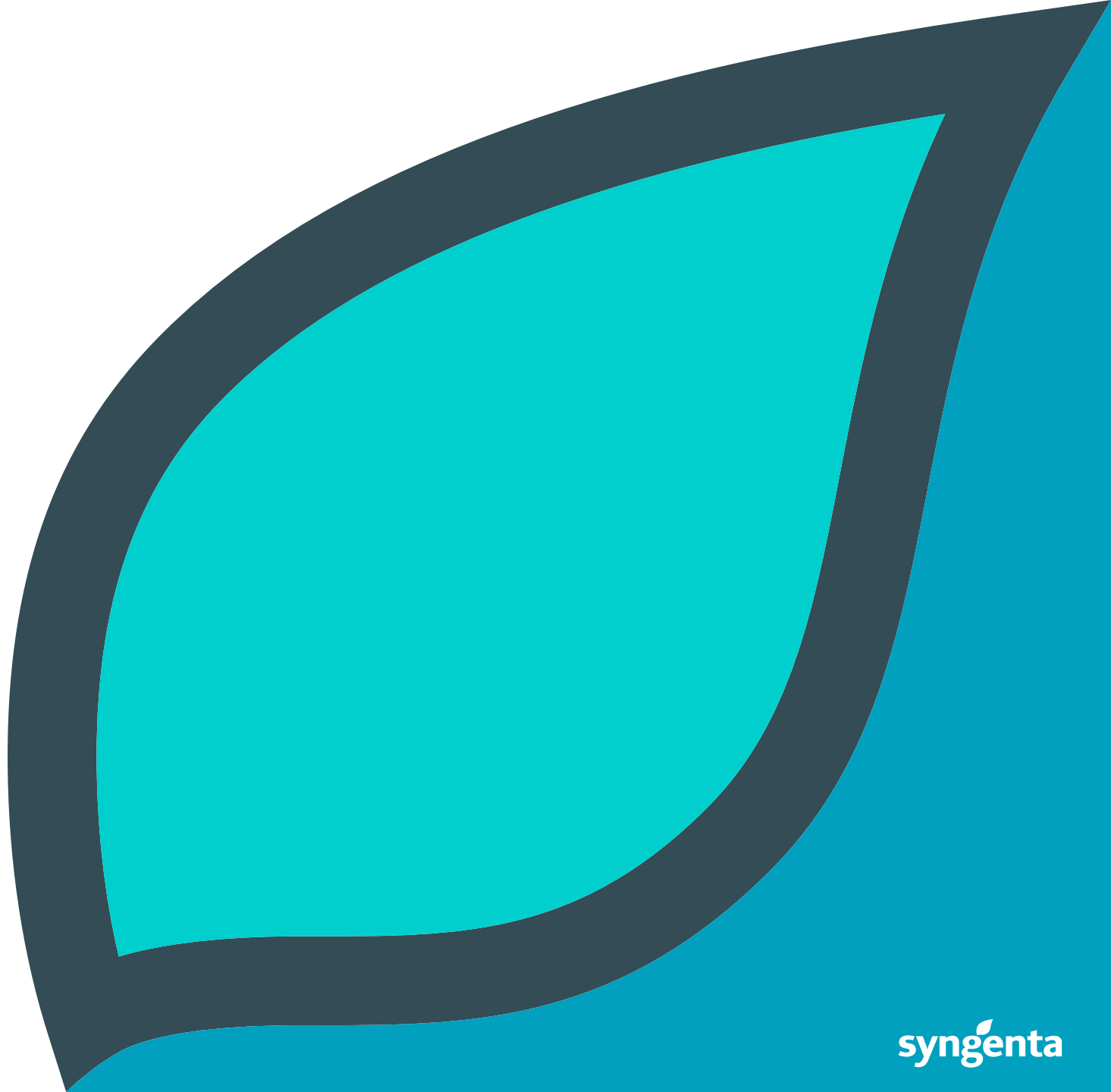
A compound which is translocated only in direction of the xylem stream; movement is upwards / outwards the growing point of the plant (acropetal direction)



Phloem mobile

Bi-directional movement (acropetal & basipetal) through phloem and xylem

TIMING



Crop growth stage

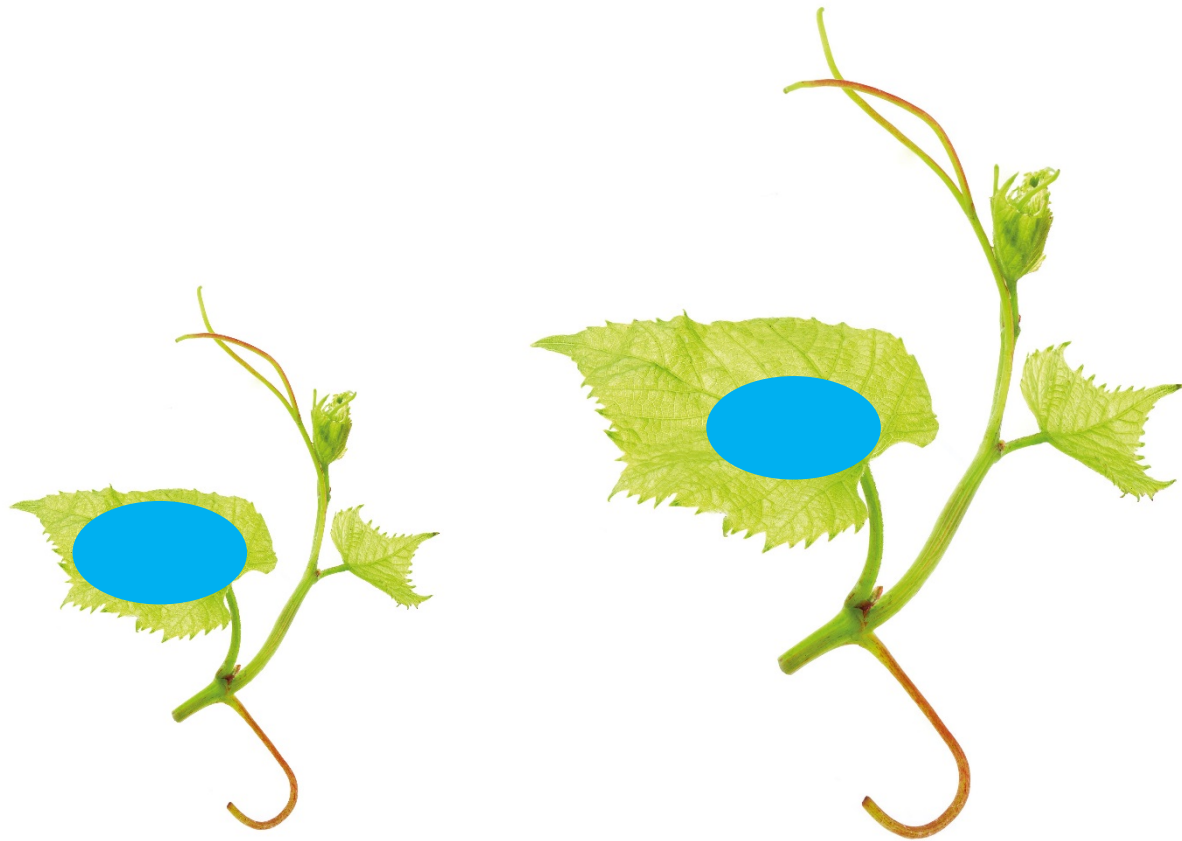
- Rate of vegetative growth

Type



Timing

Technique



Growth dilution

Radioactivity concentration



High

Low

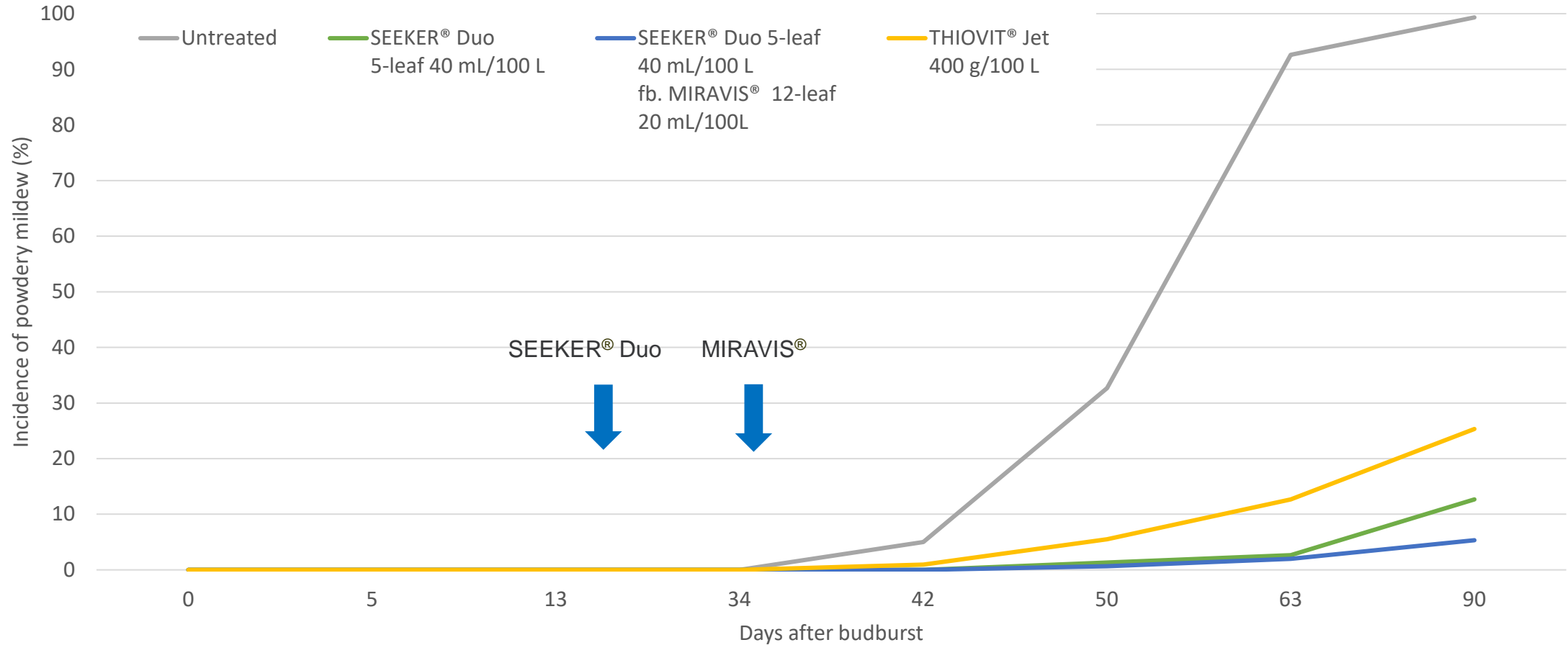
Xylem mobile products can protect expanding tissues

Early applications reduce powdery mildew development

Type



Technique



Development of powdery mildew on untreated vines (cv. Chardonnay) compared to vines treated with SEEKER® Duo fungicide. Comparison of one application SEEKER® Duo at 5-leaf stage (E-L12) and SEEKER® Duo followed by MIRAIVIS® fungicide at 12-leaf stage in a sulphur-based spray program containing 7 X THIOVIT® Jet fungicide applications at EL1, EL7, EL12, EL13, EL15, EL26, EL31. Lyndoch, SA (2023/24). Trial conducted by AgXtra.

Target lifecycle

Type

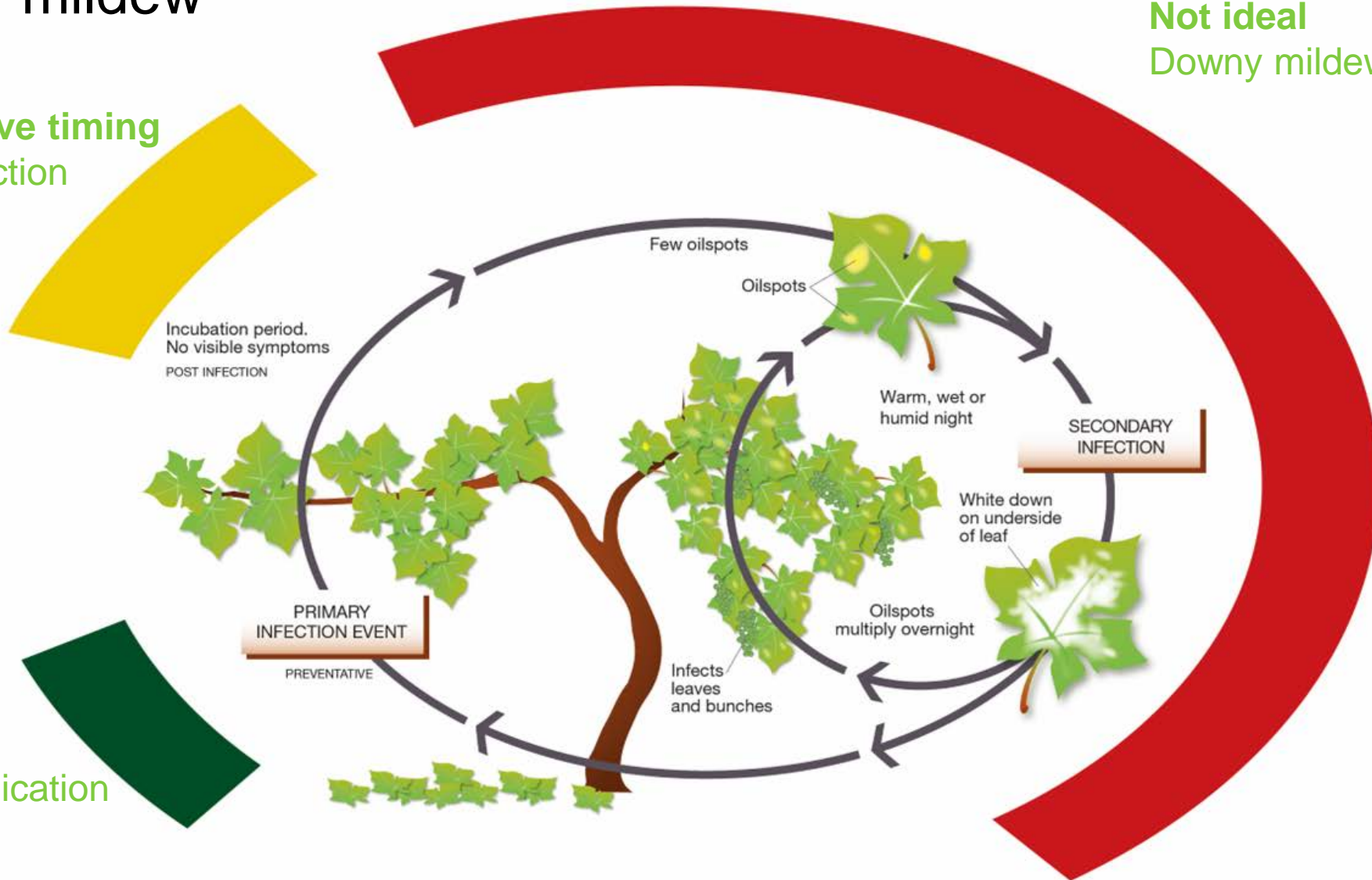


Technique

- Downy mildew

Not ideal
Downy mildew visible

Alternative timing
Post infection



Ideal timing
Preventative application

Yarra Valley case study (2023-24)

Type

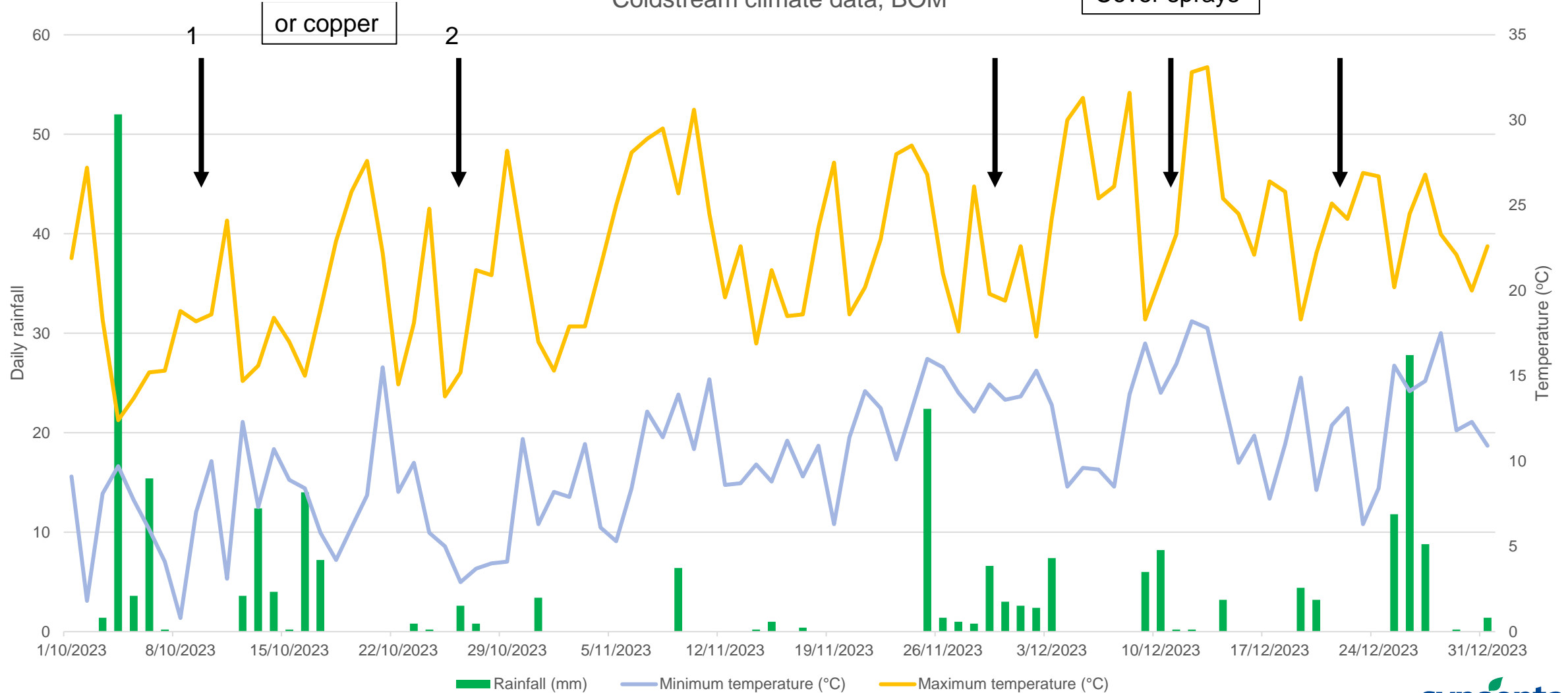


Technique

Keybri[®]Ultra

Coldstream climate data, BOM

Cover sprays



Yarra Valley case study (2023-24)

Type

Timing

Technique

A well timed, early pre-infection application of KEYBRI® Ultra fungicide was critical for reducing disease risk later in the season

A series of mid-late season recovery sprays did not control disease in the untreated

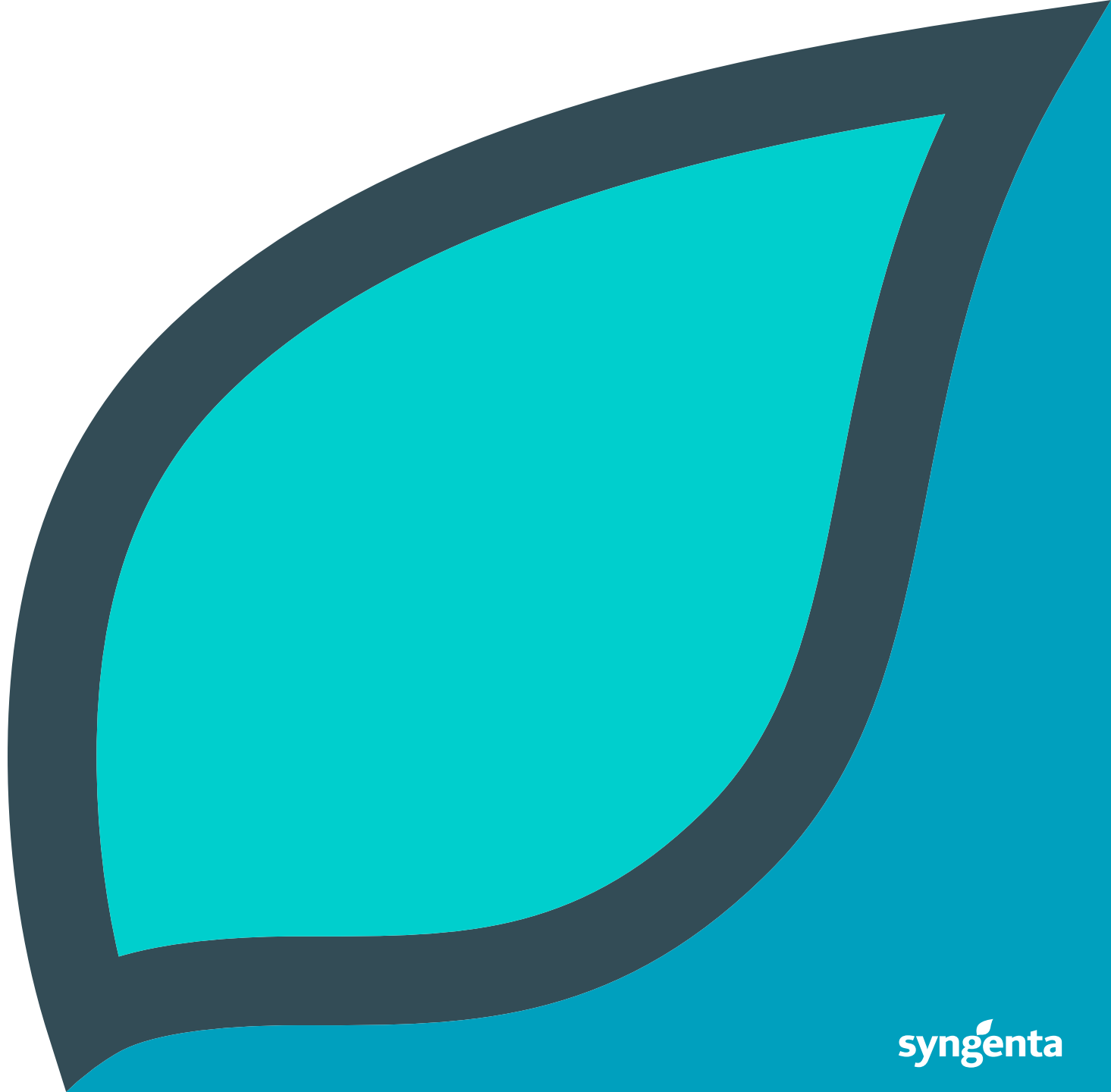
2 x KEYBRI® Ultra fungicide

Untreated



Incidence and severity of downy mildew (*Plasmopara viticola*) on grapevine leaves and bunches (cv. chardonnay) following two applications at E-L 16 & E-L 18 (21-day interval). Disease assessed 110 days after second application. Research Solutions, Coldstream 2023. Photo taken 15/2/24.

TECHNIQUE



Spray application technique

Technique



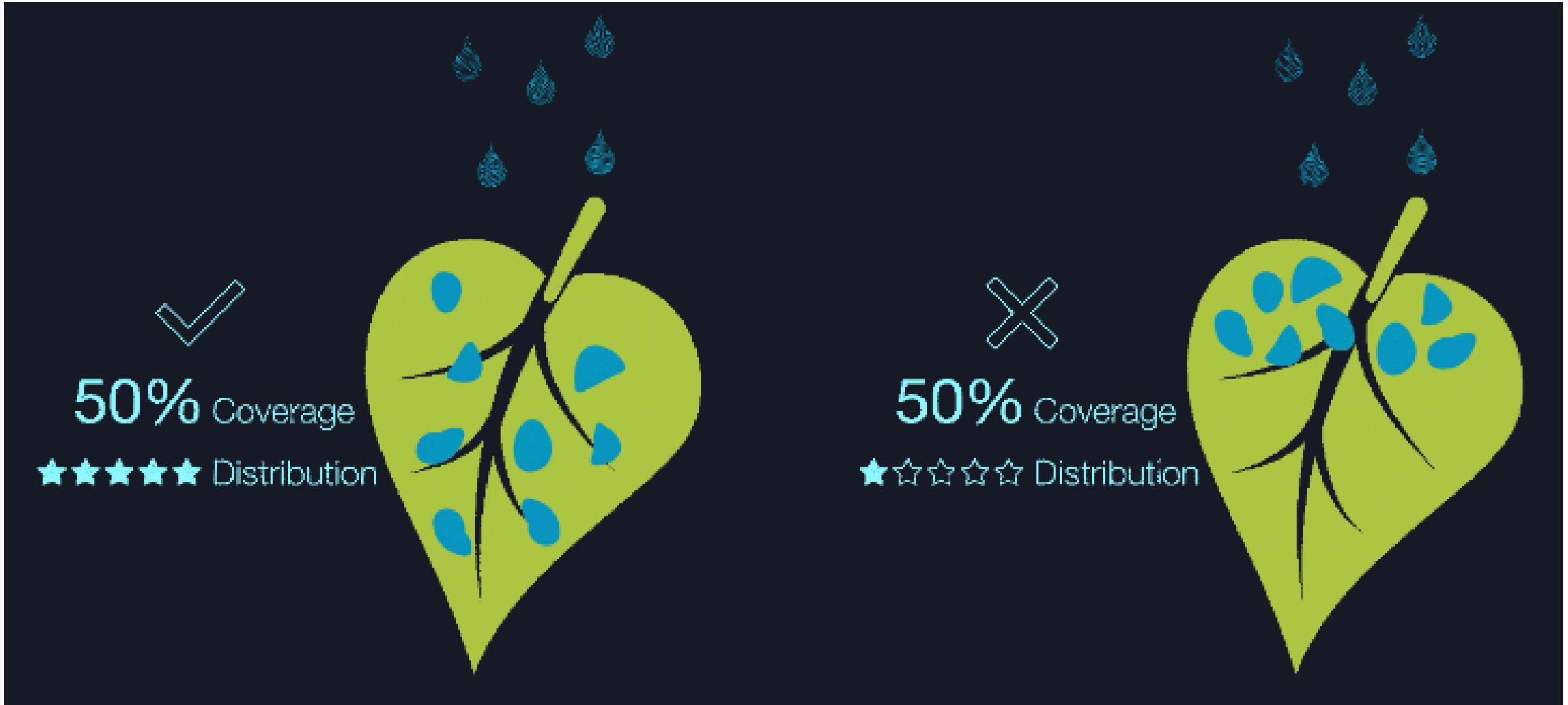
- Equipment selection & calibration
- Nozzle selection
- Water rate
- Coverage
- Product dose rate
- Target identification
- Mixing

Coverage and distribution

Type

Timing

Technique

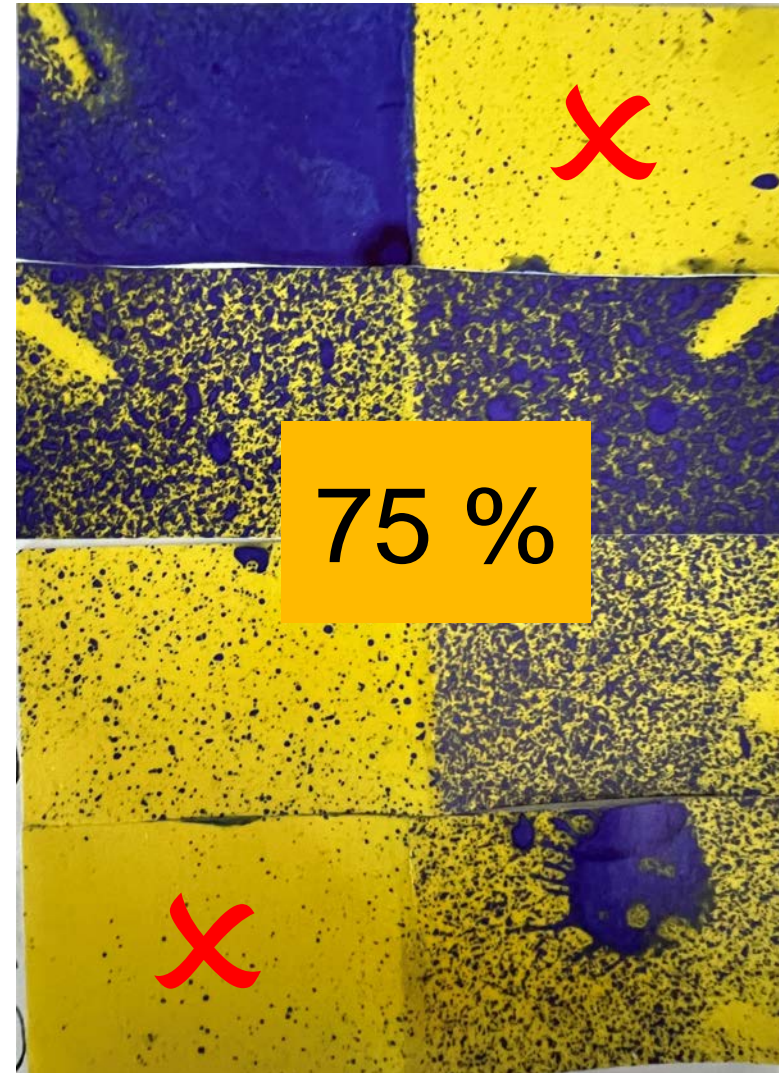
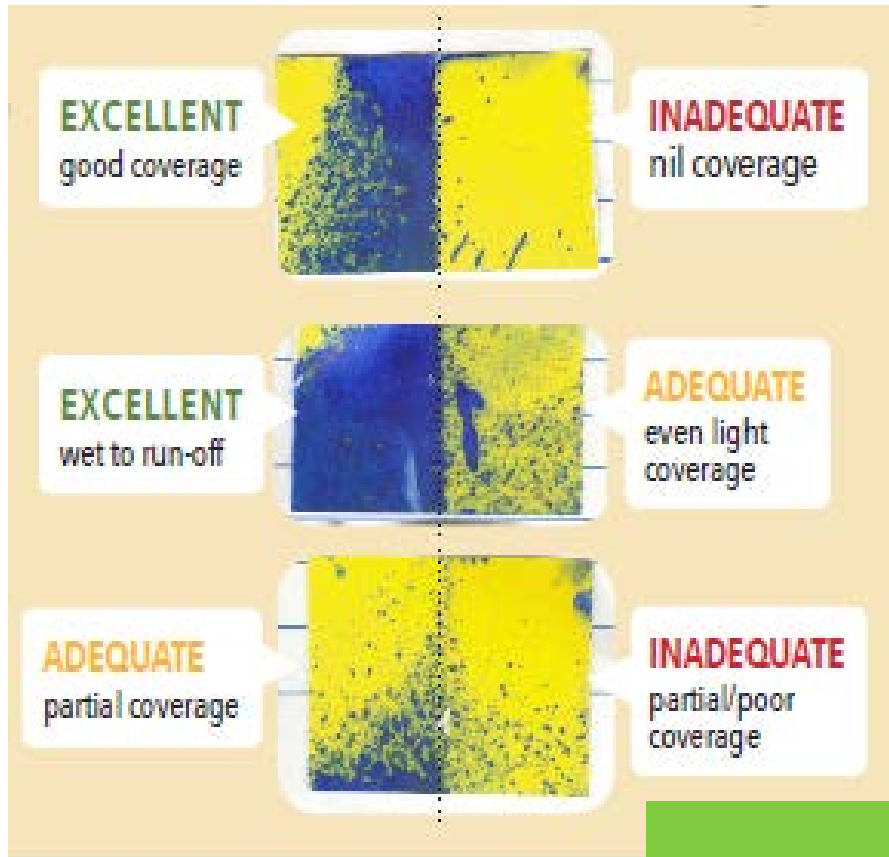


Assessing coverage

Type

Timing

Technique



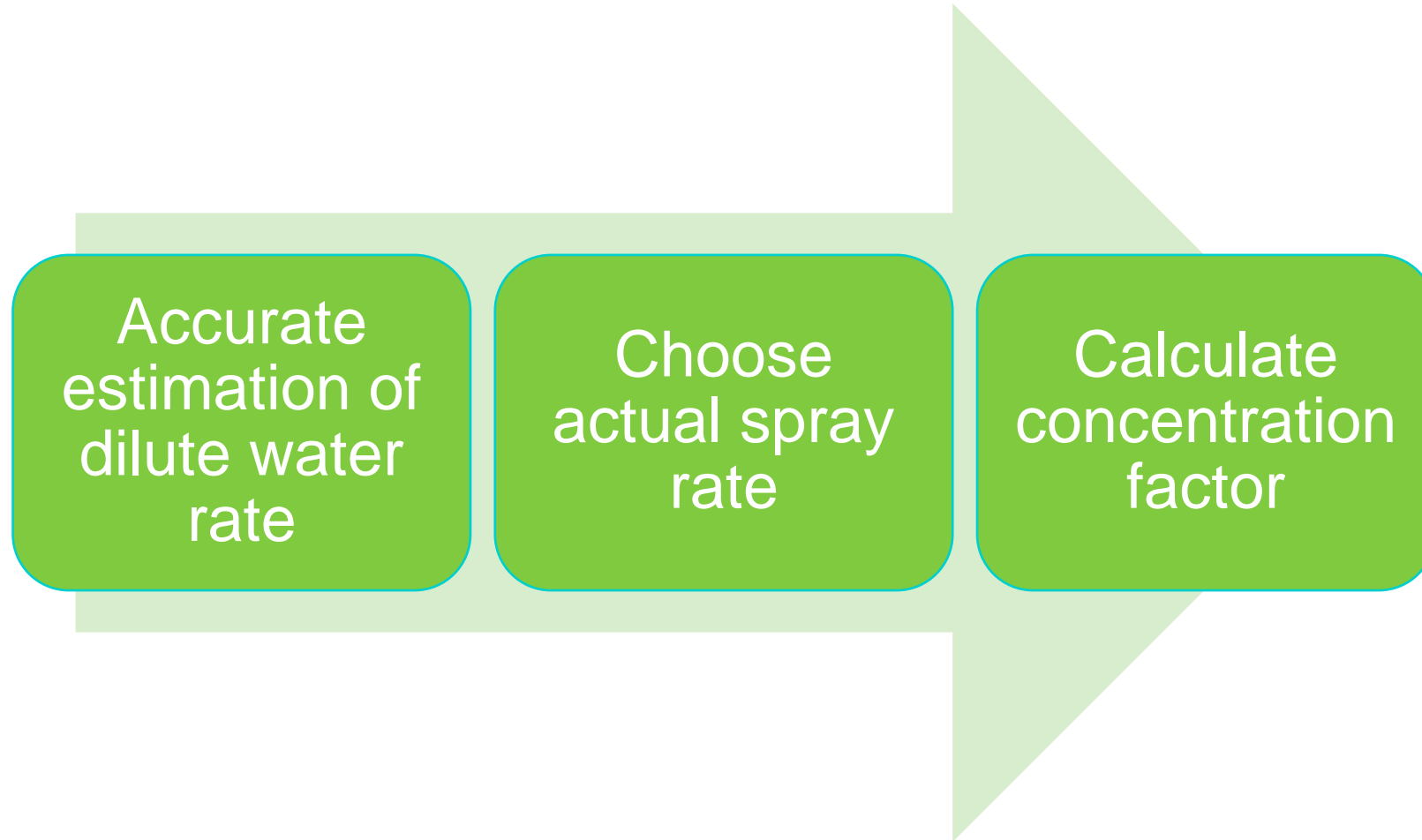
Target: 80%
excellent or
adequate

Getting the dose right

Type

Timing

Technique



Dilute volume can increase up to 30% between applications due to vine growth

Applying type, timing & technique to reduce cost



	Fungicide 1	Fungicide 2
Rainfast	No	Yes
Length of protection	5-14 days	14-21 days
Controls disease life stage	Pre-infection	Pre and post infection
Growth dilution	Yes	Offset by mobility & high intrinsic toxicity
Shelf price (per L or kg)	\$31.50	\$122
Cost per 100 L tank mix	\$3.15	\$7.30

Economic comparison: Three-week period of moderate-high disease pressure		
Number of applications	2	1
Chemical cost (ha)	\$50	\$58
Application cost (ha)	\$200	\$100
Total cost (ha)	\$250	\$158

Take home messages



**Consider cost verse value
of products**

Prevention, not cure

Utilise the three T's



syngenta

Bringing plant potential to life