



Trusted by high quality producers to provide superior pest control and plant health.

Don Yadon CA,HI,AZ Sales Manager

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"feeding the present without starving the future"

- *Sym-Agro Inc serves the horticulture and agricultural specialty markets with a comprehensive assortment of pesticides, biologicals and bio-stimulates.*
- *From our headquarters in Visalia, California, we represent, develop and acquire high-quality products to anticipate the evolving markets for pest control and plant health.*
- *We're carefully curating a growing portfolio that blends the latest technology with novel formulations.*
- *This offering, along with the extensive experiences and insights of our global management team, uniquely positions Sym-Agro to anticipate needs and add value for customers across a wide range of industries and operations.*

Sym Agro

2022 Product Portfolio



INSECTICIDE



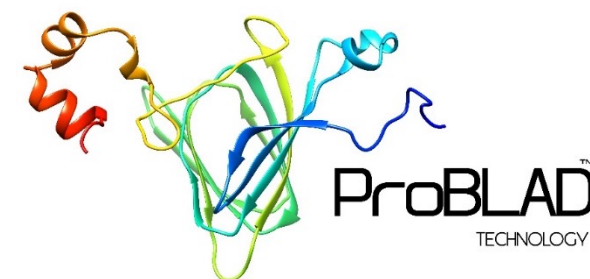


ProBlad[®]
Verde

SymAgro

A NEW MULTI-SITE FUNGICIDE

DECISIVE DISEASE MANAGEMENT



Official Active Ingredient : BLAD *Bande de lupinus albus doce*

20% BLAD 20 kDa polypeptide of B-conglutin

NEW FRAC CATEGORY : BM01

BM (Biologicals with multiple modes of action)

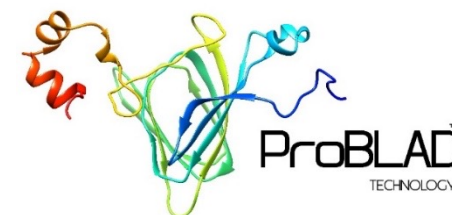
Exempt from Maximum Residue Levels (MRLs)

Non-toxic active ingredient

Pre-Harvest Interval (PHI) = 1 day

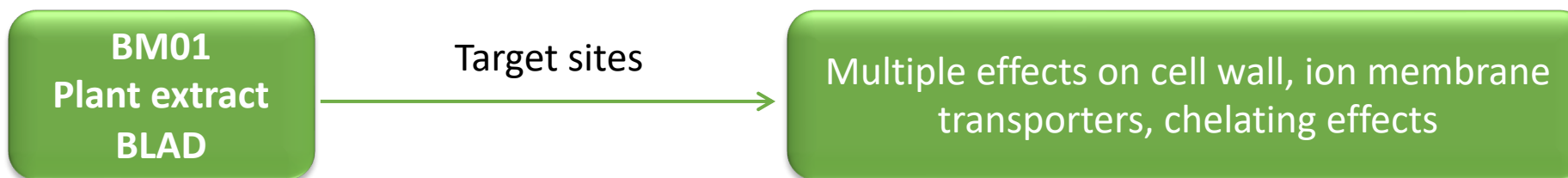
Re-Entry Interval (REI) = 4 hours

Fast and total bio-degradation



FRAC (Fungicide Resistance Action Committee) classification

The highly complex, multitarget and novel mechanism of action of BLAD, has been corroborated by its inclusion in a NEW sub-category M12 (specifically created for BLAD) in the 2016 issue of the FRAC Code List©. It is now a NEW CATEGORY – BM01 (BM - Biologicals with multiple modes of action)



Problad Verde can be mixed with most other registered products and used as a key product in disease management programs

PROBLAD – The biofungicide

Biodegradability

FATE OF BLAD IN THE SOIL

The environmental fate of PROBLAD and BLAD was studied under GLP conditions and OECD guidelines.

Summary

PROBLAD along with its active ingredient, BLAD, have been demonstrated to be readily biodegradable according to the conditions of OECD test guideline 301 B (CO₂ evolution test) and/or OECD test guideline 301 D (closed bottle test).

Quoting: “It can therefore be concluded that PROBLAD and BLAD will degrade readily and completely within natural soil systems, without the formation of any potentially relevant soil metabolites. Thus further studies to investigate the route of degradation in soil were not considered necessary”.

Route of degradation

Biological degradation is considered to be by far the most significant route of dissipation of PROBLAD in soil. It degrades into small peptides and aminoacids. **Susceptible to proteolytic attack**

Rate of degradation in the soil (half-life; DT₅₀)

A first order DT₅₀ of 2.5 days was calculated for PROBLAD.

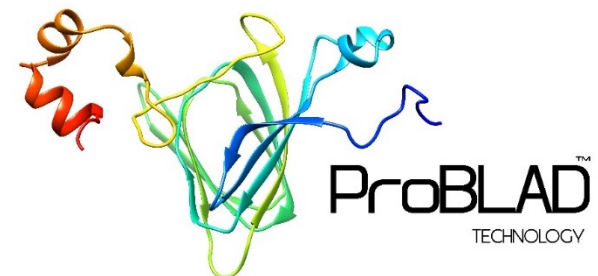
- **Sec 24C Approved in HI April 13,2022 for Coffee/Coffee Leaf Rust**

Master Label Crops

- **Fruiting Vegetables:** *Botrytis, Powdery Mildew*
- **Cucurbits:** *Powdery Mildew*
(podospharea, erysiphe, sphaerotheca, golovinomyces)
- **Strawberry, Stone Fruit, Pome Fruit**

Proven Performance

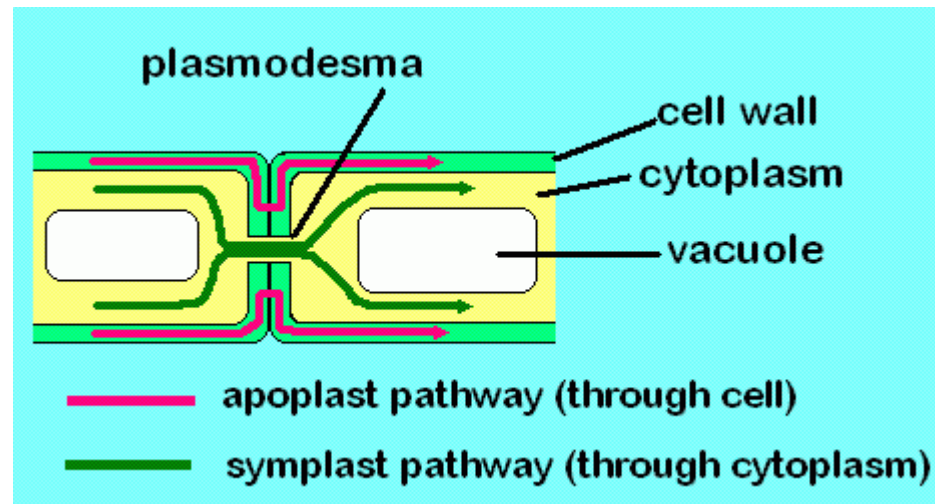
- Disease Prevention
- Disease Knock Down..... Curative
- Reach Back Activity (7 days) Residual without residue
- Translaminar Properties
- Duration of Control 10-14 days
- Natural Chemistry: Not Alien to host plant



PROBLAD – The biofungicide

Translaminar activity

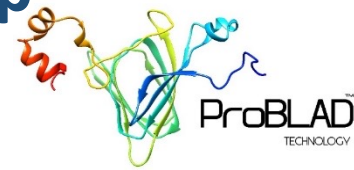
➤ Field trials clearly demonstrate a translaminar activity

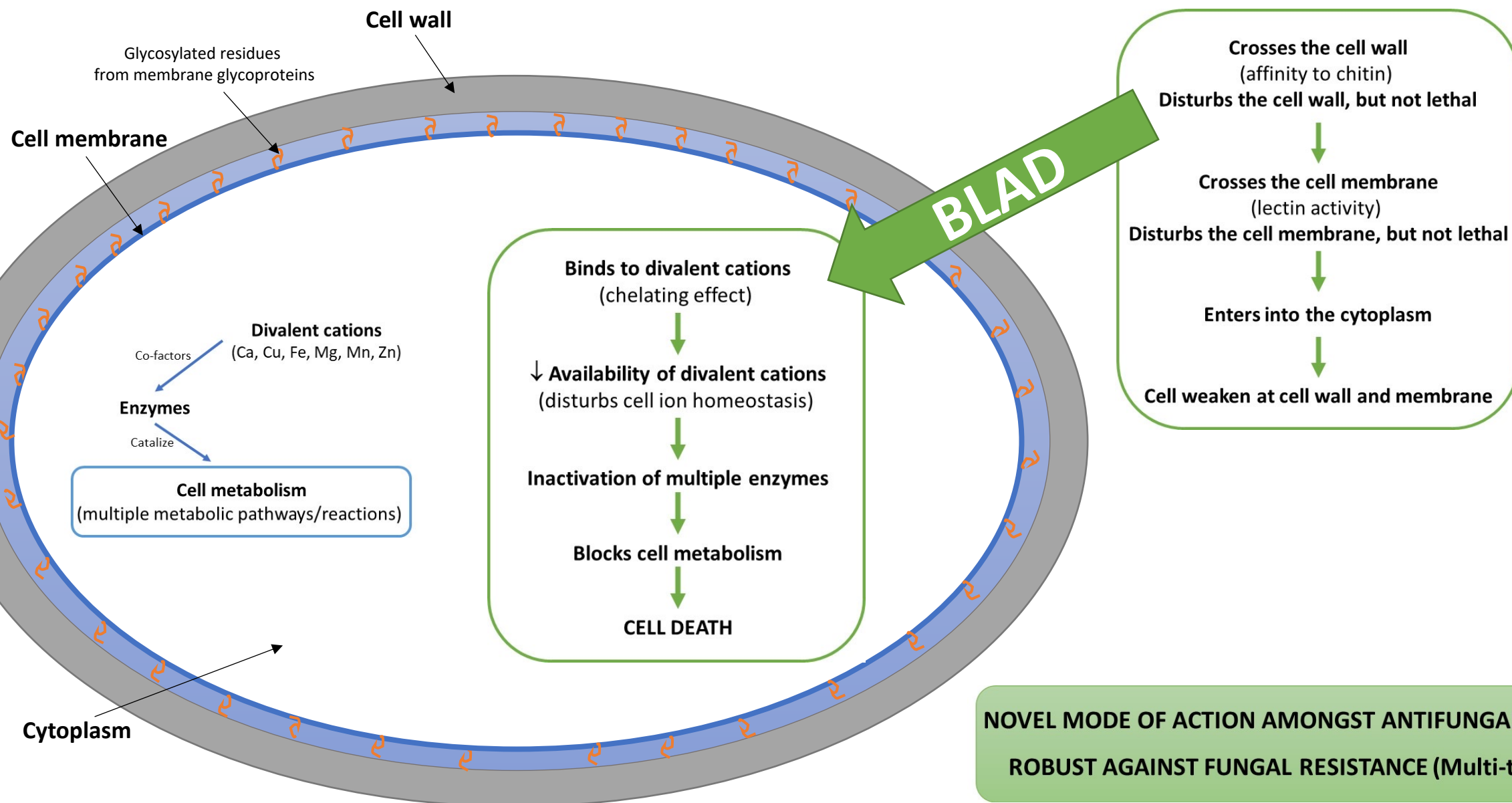


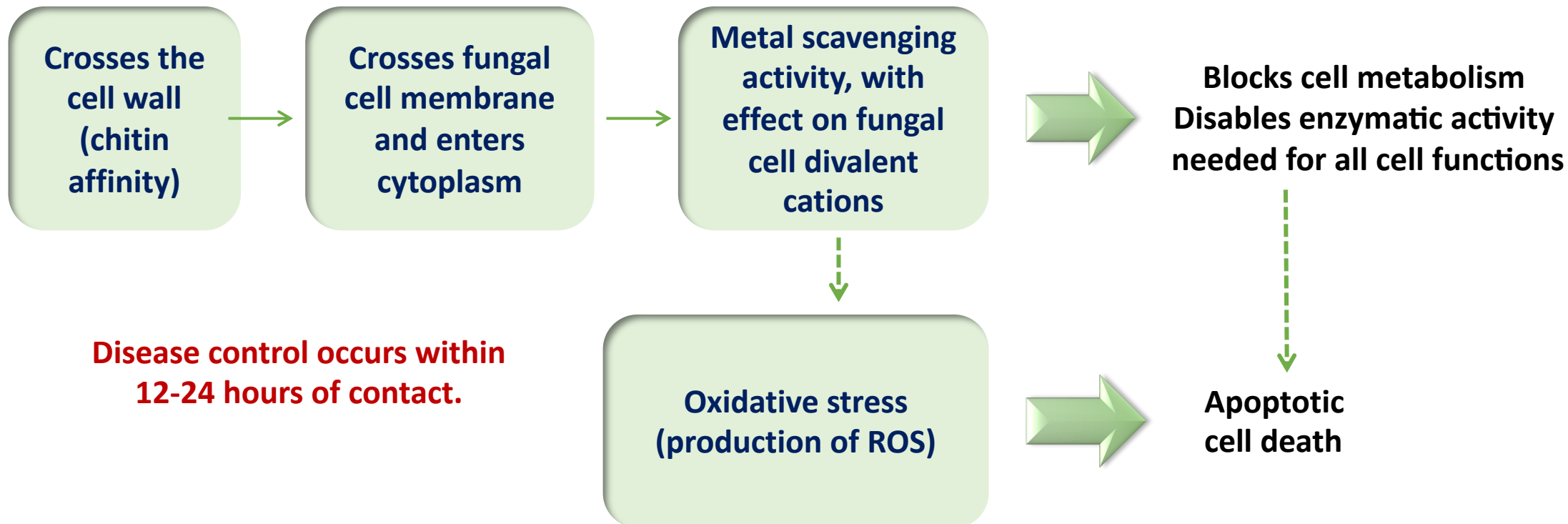
- ✓ Cuticle barrier (waxes – hydrophobic) – formulation with a penetration enhancer
- ✓ Translocation by the apoplastic route (affinity to glycosylated moieties; cell wall rich in polysaccharides – cellulose, hemicellulose and pectin)
- ✓ Translocation by the symplastic route (water soluble)
- ✓ Diffusion is promoted by the concentration gradient

Novel Effective Mode of Action

- Multiple multi-site affects on disease
- Unlike many bio-fungicides, we know exactly how it works.
- Stops and kills most life stages of disease
- Fast – Effected diseases are terminated in 12-24 hours.
- Broad spectrum towards fungi & bacteria
- Translaminar to penetrate infected tissue
- Very low resistance potential
 - No known fungal resistances and very unlikely to develop





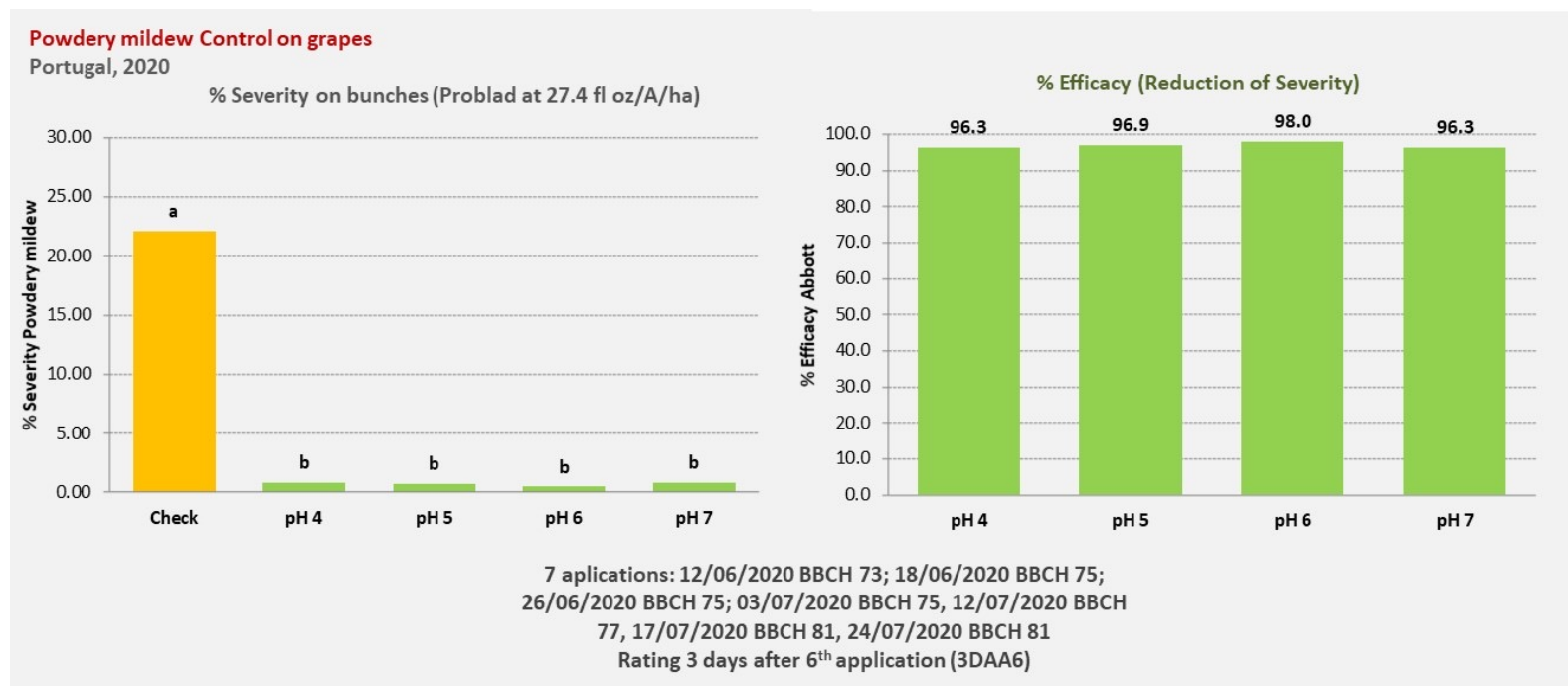


Multiple effects on: cell wall, ion membrane transporters, chelating effects



Objective of the trial

To study the effect of different pH values (within the range 4.0 to 7.0) of the tank mix on the efficacy of Problad for the control of powdery mildew in grapes



➤ Good disease pressure.

➤ Four assessments were made (3DAA3, 4DAA4, 3DAA6, 4DAA7) with similar results. The figure represents rating at 3DAA6, which was the one with the highest disease pressure.

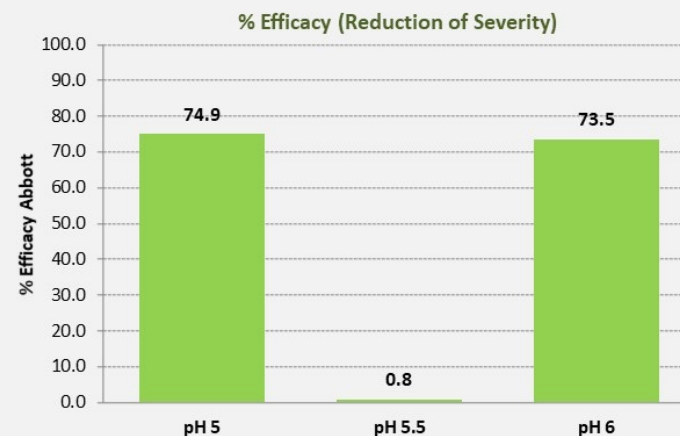
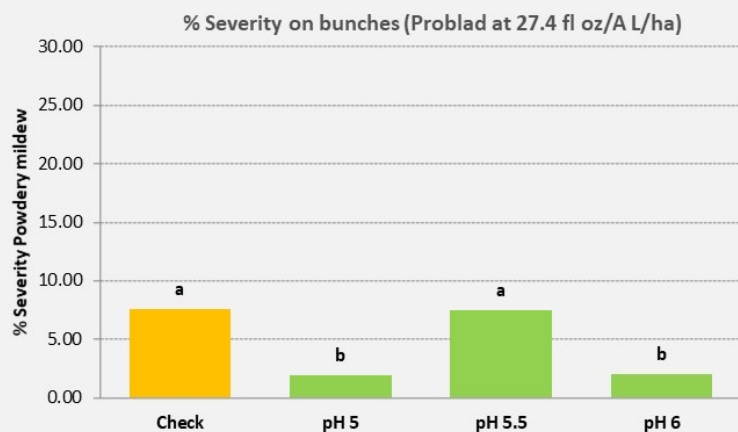
➤ For both assessments (% incidence and % severity) the differences between treatments were not statistically significant ($P < 0.05$), but they were all significantly different from the untreated.

In conclusion, under the conditions of this trial, a pH range of 4.0 to 7.0 did not significantly influenced the efficacy of ProBlad. But the pH of the isoelectric point (5.5) was not tested in this trial. A specific trial was conducted for this purpose

Objective of the trial

To study the effect of the specific pH value of the isoelectric point of BLAD/BCO (pH 5.5) in the tank mix on the efficacy of Problad for the control of powdery mildew in grapes

Powdery mildew Control on grapes
Portugal, 2021



8 applications: 27/04/2021 BBCH 55; 06/05/2021 BBCH 57;
14/05/2021 BBCH 57; 21/05/2021 BBCH 71, 28/05/2021 BBCH 71,
04/06/2021 BBCH 73, 14/06/2021 BBCH 75, 23/06/2021 BBCH 75
Rating 9 days after 8th application (9DAA8)

➤ Medium disease pressure with a lower overall efficacy of Problad than in the trial of 2020. The CRO has reported a lack of uniformization in the application, that might explain these results.

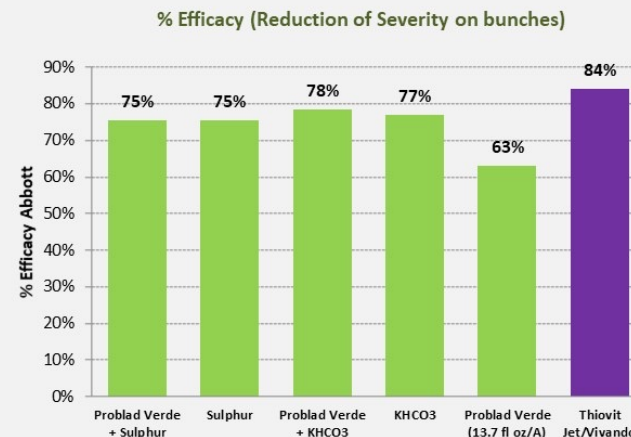
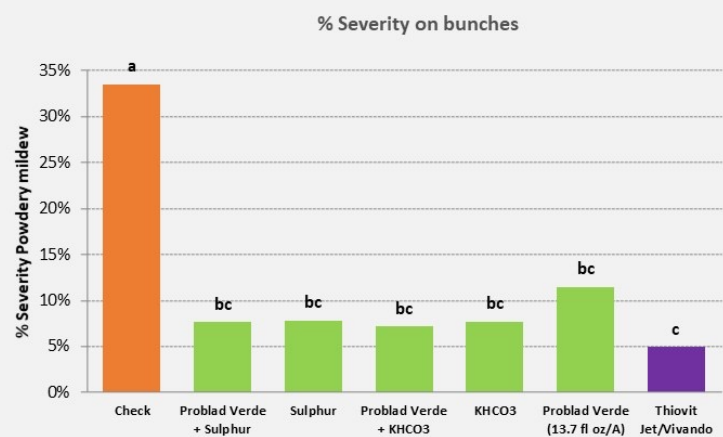
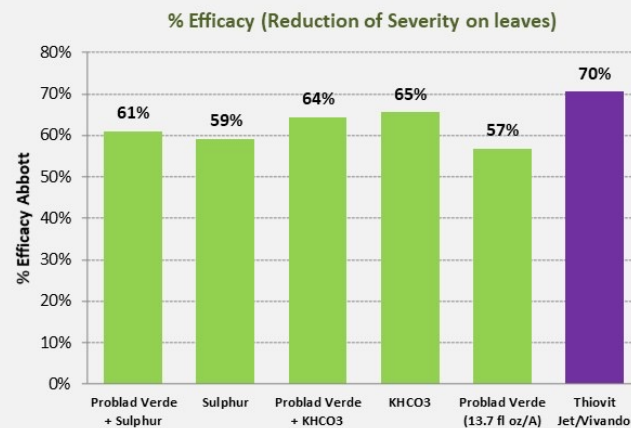
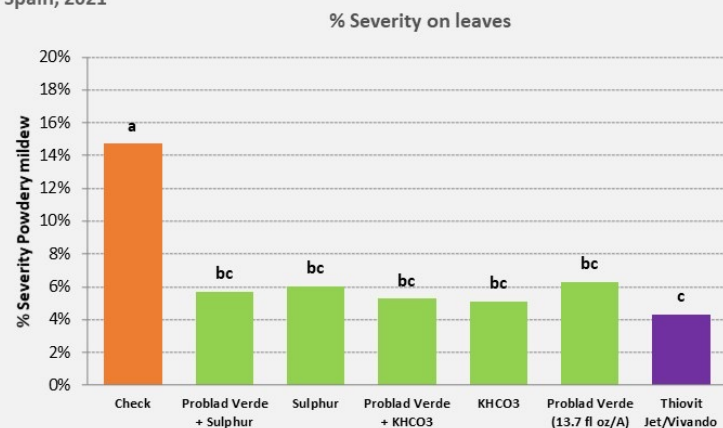
➤ Only two assessments were made (7DAA7 and 9DAA8) with similar results. The figure represents rating at 9DAA8, which was the one with the highest disease pressure.

➤ For both assessments (% incidence and % severity) pH 5.5 was statistically ($P < 0.05$) similar to the untreated but different from the other pH values, which were similar among them (pH 5.0 and 6.0).

In conclusion, under the conditions of this trial, a pH value of 5.5 completely neutralized Problad, which confirms the theory of the effect of the isoelectric point over the bioactivity of BLAD/BCO.

Compatibility of Problad Verde with organic fungicides

Powdery mildew Control on grapes
Spain, 2021



6 applications (BBCH 55-77)
Rating 14 days after 6th application (14DAA6)

Conclusions

- Good disease pressure, specially on bunches.
- Even at half of its recommended dose, Problad Verde alone achieved an acceptable efficacy.
- Statistically ($P=0.05$), no differences were found between all treatments, including the standard. This means that when mixed with Problad Verde at half rate, both sulphur and potassium bicarbonate were as effective as when applied at full (recommended) rates.
- These results clearly show that not only Problad Verde is compatible with sulphur and potassium bicarbonate in tank mix, but, most importantly, that such mixtures achieve as good results as, or even better than, the individual components, even at much lower dose rates.

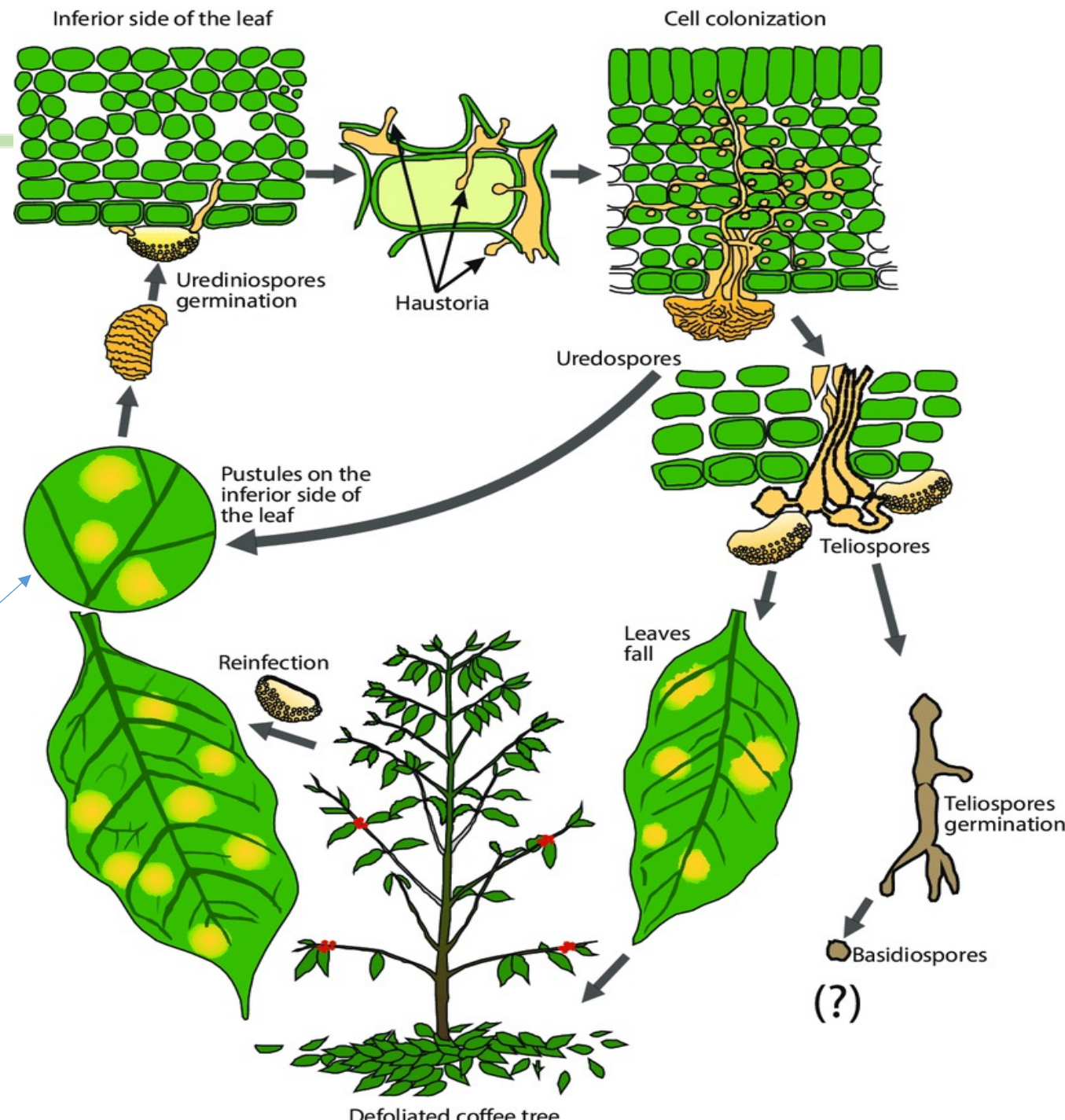
BLAD: Fungal Targets

Hyphae: Blad acts upon contact. If too developed (many hyphae intertwined) it will be difficult to reach every cells. Furthermore, the amount of Blad might not be enough to deplete all cells of cations. That is why Problad Verde is mostly preventative, although it has also a curative activity, particularly in the early stages of infection.

Spores (uredniosproes, uredospores): It is active.

Haustoria: In principle yes, because if the product reaches the cell, it will enter and disturb cell metabolism by the mechanism of metal cation's depletion.

Start ProBlad Verde Treatments Prior to Visual Expression.



Typical Conventional Fungicides Life Stage Effects for Preventative Control.

How to identify and manage gaps in MOA .

Product	AI	FRAC GRP	MOA Type	MOA	Resistance Risk	LIFE STAGE EFFECTS						
						Spore	Conidia	Hyphae	Mycelium	Retards Growth	Sporulation	Systemic
Problad	Blad Polypeptide	BM01	Cell Disruption, Chelating	Multi Site	Low	Yes	Yes	Yes	Yes	No	Yes	Translaminar
Priaxor	QoI (pyraclostrobin)	11	Blocks respiration	Single	High	Yes	Yes	No	No	No	no effect	Yes
	SDHI	7	Blocks respiration	Single	High	No	No	?	Yes	Yes	unknown	No
	Coppers	M1	Disrupts Cellular Protein	Multi Site	Low ?	Yes	Yes	No	No	Yes	no effect	No

**** yes/no less than lethal concentrations are fungistatic**

ProBlad prevents, stops & kills active disease stages
Ideal cornerstone fungicide for a resistance management strategy

Tank Mix Options for Disease Control

Contact Fungicides Cell								FUNGUS LIFE STAGE EFFECTS							
Product	AI	FRAC GRP	MOA Type	MOA	Resistance Risk	Control Duration	Reach Back	Spore	Conidia	Hyphae	Mycelium	Hauatoria	Residual Control	Prevents Sporulation	Systemic
Problad	Blad Polypeptide	BM01	Cell disruption / Chelation	Multi site	Low	7-10	8 Days	Yes	Yes	Yes	Yes	Yes	yes	Yes	Translaminar
Cinnerate	Cinnamaldehyde	NC	Cell wall & Cell Membrane Disruption	Multi site	Low	3-5	3 Days	Yes	Yes	Yes	Yes	No		Yes	No
Oxidate	Peroxyacetic acid	NC	Oxidizer	Oxidizer	Low	3-5	?	Yes	Yes	Yes	Yes	No		?	No

Curative products clean the surface but do not penetrate tissue

Most standard fungicides cannot be tank mixed with Oxidizers (denatures active ingredient)

ProBlad Verde – provides translaminar disease control + residual control

➤ **Tank Mixing:**

- Tank mix compatibly with most fungicides, insecticides

➤ **Spray Solution pH:**

- Broad range 4-8, except pH at 5.5 (isoelectric point)

➤ **Surfactant Use:**

- Use a good spreader or silicone type of surfactant

➤ **Rain Events:**

- ProBlad Verde requires 2-3 hours drying time. Nu Film P extends rainfast.
- Heavy rain 12 hours after application will require new application in 4 days

➤ **Disease Control Expectation**

- Contacted susceptible diseases cell death in 12-24 hours

➤ **Application Timing:**

Early Season: as part of a prevention strategy

- Less canopy / biomass assists with thorough coverage
- Effective on spores and hyphae of disease providing excellent sanitation

Mid Season: Rotation for resistance management

- Good timing shortly after rainfall to stop latent disease

Late Season:

- Contain latent disease

Resistance Management:

- Make application to replace any resistant group fungicide
- Ideally in the early season disease prevention time period

Right Copper
Right Place
Right
Concentration



Smart Effective *Copper*



Rain Proof



Longer Duration



Superior Protection



Active Ingredient: Copper Sulfate Pentahydrate 21.27%

Copper as Metallic: 5.4% / 0.55 lbs. of metallic copper per gallon

Use Rates: 10-40 oz / acre

Application pH: Ideal 5.5 – 6.5 ** **Do not go above 7.5**

Tank Mixing: Compatible with many pesticides

Rain Fast: 3-4 Hours / after INSTILL has dried, it will NOT wash off

True Solution: Easy to mix and handle / won't settle out

Crop Safety: Excellent – safe for in-season use on fruit

Regulatory: 0 Day PHI, 48 Hour REI, MRL Exempt

Expect Full Crop EPA label to Include Coffee 2022.



Active Ingredient: Copper Sulfate Pentahydrate 21.27%

Copper as Metallic: 3.1% / 0.32 lbs. of metallic copper per gallon

Use Rates: 18-68 oz / acre

Application pH: Ideal 5.5 – 6.5 ** **Do not go above 7.5**

Tank Mixing: Compatible with many pesticides

Rain Fast: 3-4 Hours / after INSTILL has dried, it will NOT wash off

True Solution: Easy to mix and handle / won't settle out

Crop Safety: Excellent – safe for in-season use on fruit

Regulatory: 0 Day PHI, 48 Hour REI, MRL Exempt

Organic: OMRI Version Pending.

Copper Fungicide Overview

Standard Copper	Fixed Copper Larger copper particles	Cuprofix Ultra Disperse, Basic Copper Sulfate,	Basic copper sulfate
		Nordox	Copper oxide
		Kocide, Champ,*Badge X2 , Nucop	Copper hydroxide *Copper Oxychloride
Low Dose Copper	Fixed Coppers Micronized	Cueva	Copper Octanoate (Copper Soap) Copper ions linked to fatty acids and other organic molecules
		Previsto	Copper hydroxide embedded in a propriety natural polymer matrix
	True Solution Coppers – Water Soluble -		
	Single Chelated	Magna Bon- CS 2005 MasterCop	Copper Sulfate Pentahydrate 1. Reacted with ammonia to create a copper formate complex
	Double Chelated	Instill	Copper Sulfate Pentahydrate 1. Reacted with ammonia = copper formate 2. Chelated with organic acid = copper tannate/formate complex

Instill Bactericide Fungicide Benefits

- Low Use Rates: 20-30 oz
- Tank Mix Options – compatible with many pesticides
- No Visible Residue on Treated Surface
- Easy to Handle - Mixes easily “True Solution Formulation”
- Easy Cold-Water Mixing
- Rain fast – after INSTILL has dried, it will NOT wash off
- Eliminates risk re-activating copper ions – lower russetting risk
- Active Ion Copper Absorption providing superior disease control duration
- Superior control of systemic diseases
- Novel inside out systemic activity
- Can be used up to the day of harvest





Broad Spectrum Fungicide
Fast Acting Insecticide / Miticide
Low Predator Impact
Multi-site Mode of Action

Product Details

Active Ingredient:	60% Cinnamon oil
Formulation:	EC - Emulsifiable Concentrate
Use Rate:	13-64 oz. – *per 100 gallons water <i>2ee for expanded pest and higher use rate</i>
Regulatory:	25b Exempt // OMRI Certified 0 REI / 0 PHI / MRL Exempt
Signal Word:	Caution
Crop Safety:	10 Years of Crop Safety on Fruit
No sulfur restrictions:	Use with, before or after sulfur applications
IPM Compatible:	High level of safety towards beneficial predators
Key Benefits:	Fast Acting -High efficacy - low use rates

CINNERATE acts by contact:

Sealing the spiracles - Causing death by asphyxiation

Altering the nervous system

Softens exoskeleton

Promotes dehydration

OVICIDE

Kills mite eggs on contact

REPELLENCY EFFECT – Reduce/slow return infestations.



Thank you

To learn more about our portfolio of unique, effective, and sustainable products please visit www.sym-agro.com

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