GRAPE
TRIAL RESULTS

EUROPE, RUSSIA, MIDDLE EAST & NORTH AFRICA

ORO AGRI

EUROPE, RUSSIA, MIDDLE EAST & NORTH AFRICA

ORO AGRI

CONTENTS

PREV-AM®

WETCIT™

PREV-AM IS BENEFICIAL FRIENDLY

The following international trials illustrate classification as soft on bees, parasitoids and predators.
For more information please see our individual trials.

TOXICITY FOR HONEY BEES

Tatsuya Sekine (Agronomist), IBACON GmbH • Germany • 2013

→ ACUTE ORAL TOXICITY OF PREV-AM FOR HONEY BEES (*Apis mellifera* L.)

LD_{50} (oral, 24, 48, 72 and 96 hours) > 326 µg/bee (OECD 213).

→ ACUTE DORSAL CONTACT TOXICITY OF PREV-AM FOR HONEY BEES (*Apis mellifera* L.)

LD_{50} (contact, 24, 48 hours) > 200 µg/bee, with a dose response at 252,3 µg/bee after 48 hours (OECD 214).

These acute tests showed some behavioural impairments such as loss of movement coordination (apathy), and intensive cleaning (the most sensitive organ of bee is the respiratory tract). These observations are consistent with the impact of the less toxic natural oils already used for Varroa treatments in hive.

Considering the low persistence of **PREV-AM** on the treated plants, the ubiquity of orange oil components in the environment i.e. citrus orchards pollinated by bees, the chronic impact on bees, supported by field studies does not appear as relevant.

When used as directed, **PREV-AM** is safe to honey bees.

TOXICITY ON PREDATORY MITES

UNDER FIELD CONDITIONS, WHEN ASSOCIATED WITH SULPHUR, ON GRAPE
M. Broklova, BioCont Labs • Czech Republic • 2009

The effect of plant protection product **PREV-AM** on the population of predatory mite (*Typhlodromus pyri*) was evaluated under field conditions in a vineyard.

In the first plot treated only with **PREV-AM** (plot A) and in the second plot treated with **PREV-AM** + sulphur (plot B) a slight decrease of the population was found in all assessments carried out during the season.

In Plot A the highest decrease was observed after the 7th treatment (22,60 %) and at Plot B after the 2nd treatment (20,45 %). However, the differences between treated plots and Untreated Control were statistically not significant. These treatments are therefore classified as non toxic.

On the other hand, in Plot C (**PREV-AM** + standard treatment) statistically significant differences (on the level 95 %) were observed in comparison with control after the 5th and 7th treatment. The standard treatment was mainly based on sulphur and copper applications. These combinations of treatments are considered as slightly toxic.

Under field conditions, treatments with **PREV-AM** are compatible with population development and natural habitat of *Typhlodromus pyri*.

TOXICITY FOR NON-TARGET TERRESTRIAL ARTHROPODS

D. Juan, Enigma • France • 2008

Predatory mites: LR_{50} (*Thyphlodromus pyri*) = 1746,18 ml of **PREV-AM**/ha with a spray volume of 200 l/ha.

Parasitic wasp: LR_{50}* (*Aphidius rhopalosiphi*) = 3153,51 ml of **PREV-AM**/ha with a spray volume of 200 l/ha.

PREV-AM is of low risk to in-field and off-field habitats for terrestrial arthropods. * LR_{50} = lethal rate when 50% mortality was observed.

TOXICITY ON PREDATORY MITES

UNDER FIELD CONDITIONS, ON STRAWBERRY
Dr. Michael Nelson, Plant Sciences, Inc. • California • 2003

The application of **PREV-AM** did not reveal a significant decrease in predatory mite (*Phytoseiulus persimilis*) motiles in comparison with the Untreated Control. In contrast, motile counts in the Acramite® (bifenazato) treatment were significantly lower than those of the control at two of the evaluations on September 5 (14 DAA) and September 18 (27 DAA).

Predatory mite eggs were less for **PREV-AM** treatments at the first evaluation on August 28 compared with the control, but subsequent evaluation dates only showed insignificant decreases. The Acramite (bifenazate) treatment, used as the reference item, however showed relevantly lower counts compared with the control at three of the five evaluations.

Predatory mite. Image courtesy of Ben Welling.

IMMEDIATE CONTACT EFFECT ON ADULT PREDATOR LADYBUGS

BY MIST APPLICATION
W. van de Pypekamp, QMS agri Sciences • South Africa • 2010

Mineral oil caused a significant decline in the *Cryptolaemus montrouzieri* numbers at 2 and 4 DAA whereas **PREV-AM** did not. In the case of the *Chilocorus nigritus* neither **PREV-AM** nor mineral oil resulted in a statistically significant decrease compared to the UTC.

PREV-AM

Side Effects Rating

according to IOBC (International Organization of Biological and Integrated Control) scale

IPM Impact, Mr. G. Sterk • Kuringen • Belgium

ACTIVE INGREDIENT	PRODUCT	g/l or kg	CAT.	TEST SPECIES	SPECIES GROUP	CAT. OF TEST	DOSE TESTED (% v/v product)	IOBC TOX. CLASS	PREDATOR / PREY RATIO	REMARKS
Orange Oil	**PREV-AM**	60	I, F, A	*Phytoseiulus persimilis*	Predatory mite	semi-field	0,40 %	1	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Phytoseiulus persimilis*	Predatory mite	semi-field	0,60 %	1	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Amblyseius swirskii*	Predatory mite	semi-field	0,40 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Amblyseius swirskii*	Predatory mite	semi-field	0,60 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Amblyseius cucumeris*	Predatory mite	semi-field	0,40 %	1	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Amblyseius cucumeris*	Predatory mite	semi-field	0,60 %	1	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Amblyseius andersoni*	Predatory mite	semi-field	0,40 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Amblyseius andersoni*	Predatory mite	semi-field	0,60 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Ambyseius limonicus*	Predatory mite	semi-field	0,40 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Ambyseius limonicus*	Predatory mite	semi-field	0,60 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Typhlodromips montdorensis*	Predatory mite	semi-field	0,40 %	1	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Typhlodromips montdorensis*	Predatory mite	semi-field	0,60 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Orius laevigatus*	Predatory hemiptera	semi-field	0,40 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Orius laevigatus*	Predatory hemiptera	semi-field	0,60 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Macrolophus caliginosus*	Predatory hemiptera	semi-field	0,40 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Macrolophus caliginosus*	Predatory hemiptera	semi-field	0,60 %	2	positive	-
Orange Oil	**PREV-AM**	60	I, F, A	*Encarsia formosa*	Parasitic hymenoptera	semi-field	0,40 %	2	positive	adults
Orange Oil	**PREV-AM**	60	I, F, A	*Encarsia formosa*	Parasitic hymenoptera	semi-field	0,60 %	3	positive	adults
Orange Oil	**PREV-AM**	60	I, F, A	*Encarsia formosa*	Parasitic hymenoptera	semi-field	0,40 %	1	positive	black scales
Orange Oil	**PREV-AM**	60	I, F, A	*Encarsia formosa*	Parasitic hymenoptera	semi-field	0,60 %	1	positive	black scales
Orange Oil	**PREV-AM**	60	I, F, A	*Aphidius colemani*	Parasitic hymenoptera	semi-field	0,40 %	1	positive	adults
Orange Oil	**PREV-AM**	60	I, F, A	*Aphidius colemani*	Parasitic hymenoptera	semi-field	0,60 %	2	positive	adults
Orange Oil	**PREV-AM**	60	I, F, A	*Aphidius colemani*	Parasitic hymenoptera	semi-field	0,40 %	1	positive	mummies
Orange Oil	**PREV-AM**	60	I, F, A	*Aphidius colemani*	Parasitic hymenoptera	semi-field	0,60 %	2	positive	mummies
Orange Oil	**PREV-AM**	60	I, F, A	*Aphidius ervi*	Parasitic hymenoptera	semi-field	0,40 %	2	positive	adults
Orange Oil	**PREV-AM**	60	I, F, A	*Aphidius ervi*	Parasitic hymenoptera	semi-field	0,60 %	2	positive	adults
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	topical	0,40 %	1	-	drones
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	topical	0,60 %	2	-	drones
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/sugarwater	0,40 %	2	-	drones
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/sugarwater	0,60 %	2	-	drones
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/pollen	0,40 %	1	-	drones
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/pollen	0,60 %	1	-	drones
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	topical	0,40 %	1	-	toxicity
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	topical	0,60 %	1	-	toxicity
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/sugarwater	0,40 %	1	-	toxicity
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/sugarwater	0,60 %	1	-	toxicity
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/pollen	0,40 %	1	-	toxicity
Orange Oil	**PREV-AM**	60	I, F, A	*Bombus terrestris*	Pollinator	oral/pollen	0,60 %	1	-	toxicity

IOBC STANDARD CLASSIFICATION:

Harmless **Slightly harmful** **Moderately harmful** **Harmful**

ORO AGRI

TDB 0097

EFFICACY EVALUATION OF COPPER AND **PREV-AM**® AGAINST DOWNY MILDEW ON MOSCATO GRAPES

PREV-AM

BASIC INFORMATION

TARGET	Downy mildew (*Plasmopara viticola*)
CROP	Wine grape, cv. Moscato (*Vitis vinifera*)
SPRAY VOLUME	1000 l/ha
LOCATION	Alba, Piedmont • Italy
TRIAL DATE	May – October 2005
RESEARCHER(S)	T. Hoppe, **BioEco**

CONCLUSIONS

- **PREV-AM** 0,4 % had a similar level of performance against downy mildew as copper based fungicide formulations.
- **PREV-AM** applied every week as preventive fungicide provided a good efficacy against downy mildew.

FIELD SITUATION

The experimental plot size was 30 m^2 and a randomized complete block design was used with 4 replications. There were 4 treatments including King NEW (copper), King (tribasic copper sulphate) and **PREV-AM**. 11 applications were made in the disease control program at 7 – 10 day intervals, starting on 20 May 2005 and ending on 1 August 2005. The percentages of leaves and clusters infected with downy mildew were evaluated 11 days after the last application.

TREATMENT TABLE

	TREATMENTS	RATE
1	Untreated control	-
2	King NEW (copper)	200 ml/100 l
3	King (tribasic copper sulphate)	200 ml/100 l
4	**PREV-AM** at 0,4 %	400 ml/100 l

'OIL SPOTS' ON GRAPE LEAF UPPER EPIDERMIS *Plasmopara viticola*

WHITE DOWN (SPORES) ON GRAPE LEAF LOWER EPIDERMIS *Plasmopara viticola*

FIGURE **1**

Downy mildew on Moscato grape leaves

after 11 spray treatments at 7 - 10 day intervals

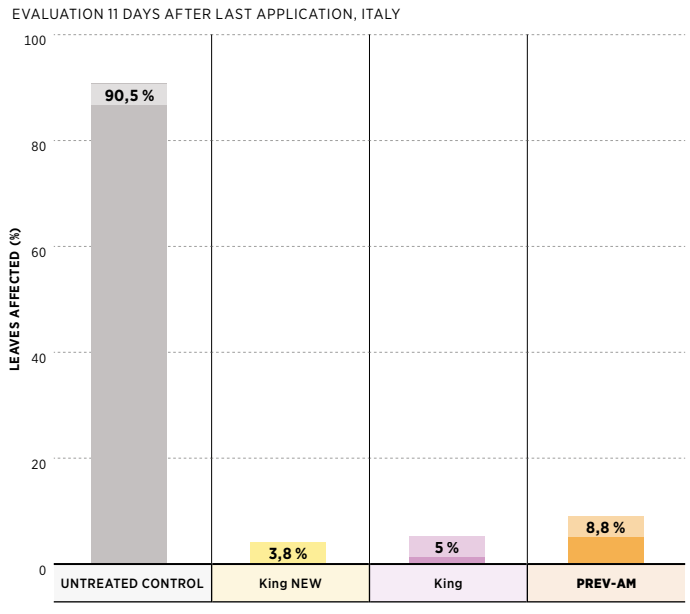
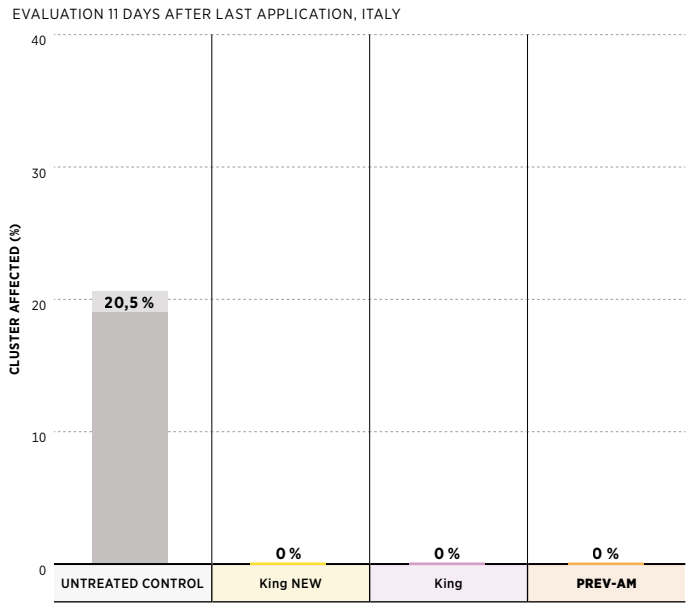


FIGURE **2**

Downy mildew on Moscato grape clusters

after 11 spray treatments at 7 - 10 day intervals



VITVIPLASVI0097ENG

ORO AGRI

TDB 0142

TESTING THE EFFICACY OF **PREV-AM**® AGAINST DOWNY MILDEW ON BARRANTES WINE GRAPES

PREV-AM

BASIC INFORMATION

TARGET	Downy mildew (*Plasmopara viticola*)
CROP	Wine grape, cv. Barrantes (*Vitis vinifera*)
SPRAY VOLUME	820 l/ha
LOCATION	Corbillon-Villanova de Arousa, Galicia • Spain
TRIAL DATE	June – July 2004
RESEARCHER(S)	Joaquín Soler Álvarez, **AgroSoler S.L.**

FIELD SITUATION

A trial to determine the efficacy of **PREV-AM** for downy mildew control in wine grapes was established on a vineyard in Corbillón-Vilanova de Arousa (Pontevedra), an area in the North-West of Spain where downy mildew in grapes is endemic.

Curzate® C (Cymoxanil 3 %, Copper 22,5 %) was used as a comparative standard treatment.

Four spray applications were made on 9 June, 17 June, 28 June and 8 July respectively, with four replicates per treatment and intervals of between 8-11 days between applications.

Treatments were applied using a motorized backpack sprayer operating at 18 bar that delivered a final spray volume of 820 litres of water per hectare.

Evaluations were made on 8 and 19 July (10 DAA-3 and 11 DAA-4, respectively). The first symptoms of downy mildew were detected on leaves of the untreated plots after the third application.

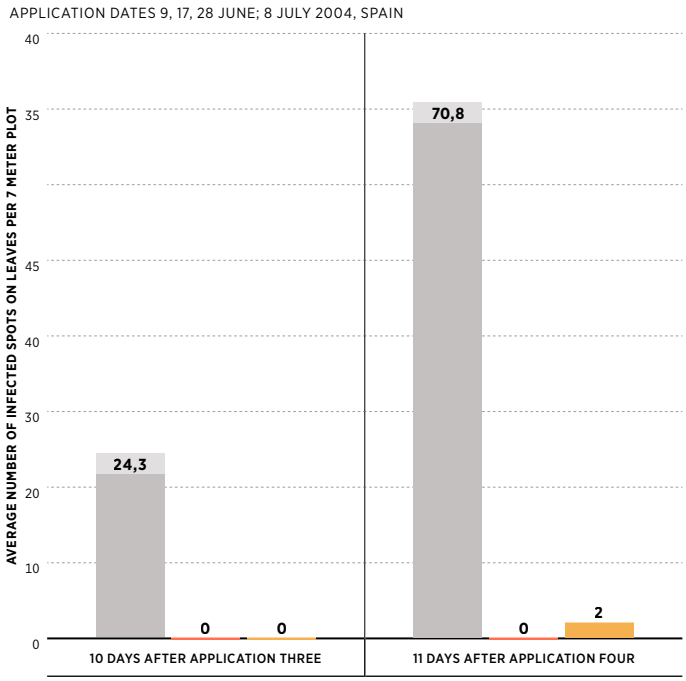
TREATMENT TABLE

	TREATMENTS	RATE
1	Untreated control	-
2	Curzate® C (Cymoxanil 3 %, Copper 22,5 %)	4 kg/ha
3	**PREV-AM** 0,4 %	400 ml/100 l

FIGURE **1**

Incidence of downy mildew

on Barrantes grape leaves after indicated spray treatments



CONCLUSIONS

- The efficacy level of **PREV-AM** was excellent and provided outstanding disease control, comparable to the performance of the Curzate® spray.
- The spray interval of 8-11 days was adequate to provide control.
- The application of **PREV-AM** when the disease pressure is particularly high resulted in a good control of the pathogen.

DOWNY MILDEW ON LEAVES AT THE LAST EVALUATION. UNTREATED PLOT.

HEALTHY BUNCHES AT THE LAST EVALUATION.

ORO AGRI

TDB 0936

EFFICACY EVALUATION OF SULPHUR AND **PREV-AM**® AGAINST POWDERY MILDEW ON BLAUFRÄNKISCH GRAPES

PREV-AM

BASIC INFORMATION

TARGET	Powdery mildew (*Erisyphe necator*)
CROP	Grape, cv. Blaufränkisch (*Vitis vinifera*)
SPRAY VOLUME	1000 l/ha
LOCATION	Brno, Southern Moravia • Czech Republic
TRIAL DATE	June - August 2016
RESEARCHER(S)	Tomáš Richter, **Ekovin**

FIELD SITUATION

There were 4 replications with plots of 82m^2. A total of seven applications were made weekly from June to August using a backpack sprayer.

Dose rates of tested products used within this trial were:

- **PREV-AM** 0,4 %
- **PREV-AM** 0,6 %
- Kumulus® WG (sulphur 80 %) 3 kg/ha

Damage was monitored on 100 leaves. The INCIDENCE and SEVERITY of infection were evaluated.

TARGET: POWDERY MILDEW *Erisyphe necator*

TREATMENT TABLE

	TREATMENTS	RATE
1	Untreated control	-
2	Kumulus® WG (Sulphur 80 %)	200 ml/100 l
3	**PREV-AM** 0,4 %	400 ml/100 l
4	**PREV-AM** 0,6 %	600 ml/100 l

CONCLUSIONS

- **PREV-AM** showed a good level of efficacy, mainly at dose rates of 0,6 %, compared to sulphur treatment.
- The application of **PREV-AM** when the disease pressure is particularly high resulted in a good control of the pathogen.
- The use of **PREV-AM** instead of sulphur, especially close to the harvest, means less sulfur dioxide during the vinification process.

FIGURE **1**

Powdery mildew severity

on Blaufränkisch leaves

FOLLOWING A SPRAY PROGRAM WITH 7 DAY INTERVALS FROM JUNE TO AUGUST

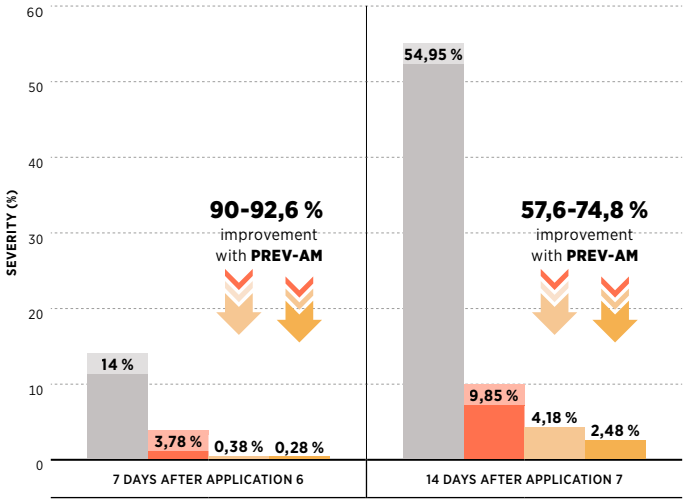
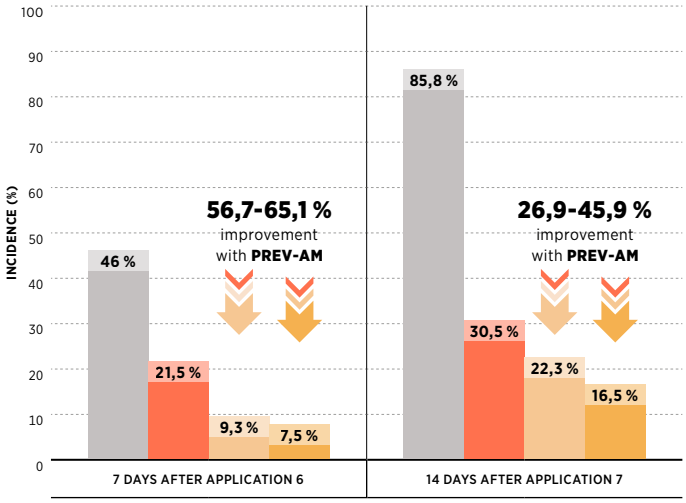


FIGURE **2**

Powdery mildew incidence

on Blaufränkisch leaves

FOLLOWING A SPRAY PROGRAM WITH 7 DAY INTERVALS FROM JUNE TO AUGUST



ORO AGRI

TDB 0330

EVALUATION OF **PREV-AM**® TOXICITY ON PREDATORY MITES IN GRAPEVINE

PREV-AM

BASIC INFORMATION

TARGET	Predatory mite (*Typhlodromus pyri*)
CROP	Wine grape, cv. Blauer Portugieser (*Vitis vinifera*)
SPRAY VOLUME	500 l/ha
LOCATION	Pavlov, Brno • Czech Republic
TRIAL DATE	May - August 2009
RESEARCHER(S)	Markéta Broklová, **Biocont Laboratory**

FIELD SITUATION

A spray program with **PREV-AM** 0,4 % + Kocide® 2000 (Copper 53,8 %) 1,5 kg/ha and a standard program were applied on a vineyard. The standard program also included Kocide® 2000 at the same rate and the same timings. Other products applied in the standard treatment were VitiSan®, Myco-Sin®VIN, AquaVitrin K and Sulikol K. There were 4 replications with 10 plants per plot. In total 7 spray applications were made from May to August 2009. Evaluation of 30 leaves per plot was performed 5 times during the season. This was compared to an Untreated Control.

CONCLUSIONS

- Only slight and statistically not significant decreases of the populations were found in the treatments with **PREV-AM** + Kocide® 2000 compared to untreated control. This treatment was therefore classified as **non-toxic**.
- It can be concluded that the treatment with **PREV-AM is compatible with the use of *Typhlodromus pyri***.

TREATMENT TABLE

TREATMENTS	**DATE**	GROWTH STAGE
1	May 20th 2009	(EL 17) Inflorescence fully developed
2	June 12th 2009	(EL 25) Late flowering
3	June 24th 2009	(EL 27) Fruit setting
4	July 3rd 2009	(EL 29) Berries small
5	July 13th 2009	(EL 31) Berries pea-size
6	July 24th 2009	(EL 33) Berries touch
7	August 4th 2009	(EL 34) Cluster closing

FIGURE **1**

Reduction in predatory mite numbers

in comparison with untreated control (all evaluations)

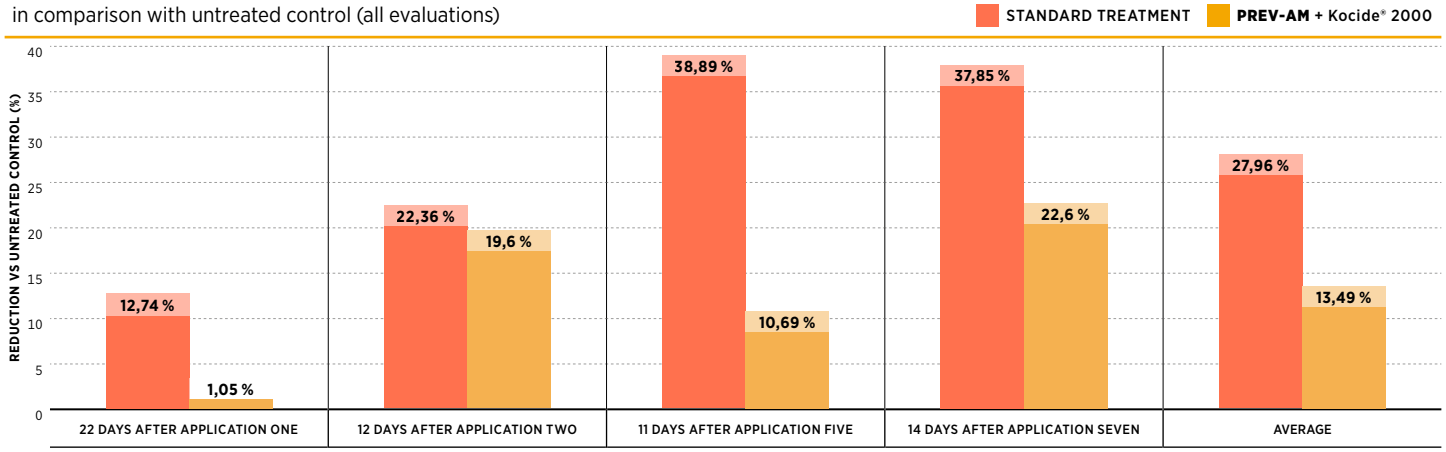
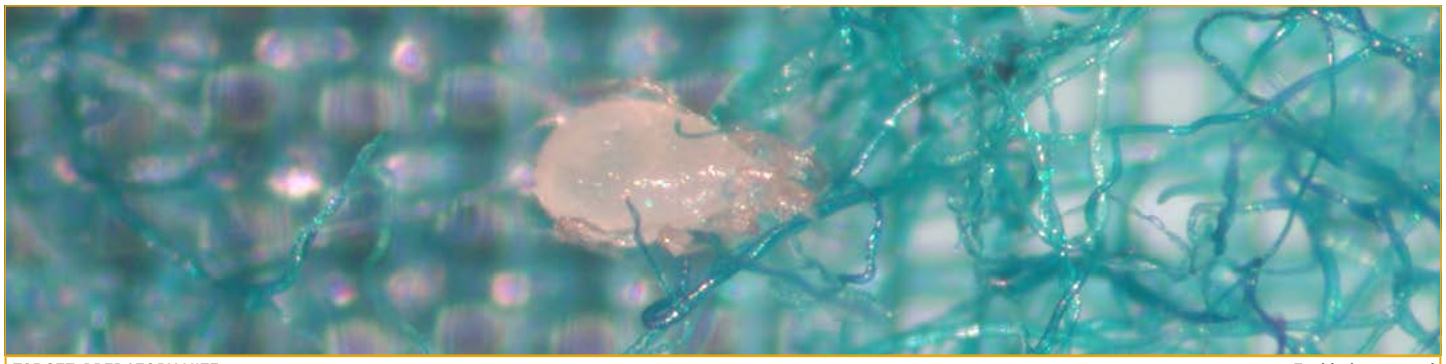


FIGURE **2**

According to IOBC scale all **PREV-AM** treatments were considered 1 (not harmfull) whereas the standard treatment was considered 2 (slightly harmfull).



TARGET: PREDATORY MITE. *Typhlodromus pyri*

VITVITYPLPY0330ENG

ORO AGRI

TDB 0337

EVALUATION OF **PREV-AM**® FOR THE CONTROL OF MEALYBUG ON PINOT GRIGIO GRAPES

PREV-AM

BASIC INFORMATION

TARGET	Mealybug (*Planococcus ficus*)
CROP	Wine grape, cv. Pinot grigio (*Vitis vinifera*)
SPRAY VOLUME	1280 l/ha
LOCATION	Lodi, California • USA
TRIAL DATE	July - August 2010
RESEARCHER(S)	D. Dunbar, **R3 Ag Consulting LLC**
	B. Bauer, **Two Bees Agricultural Research**

FIELD SITUATION

The spray program consisted of **PREV-AM**, Movento® SC (spirotetramat) and Applaud® 70WP (buprofezin).

Although the mealybugs were later to develop this year due to the cool weather, the infestation was considered moderate to heavy. At the time of the application the mealybugs were just moving across the cordons and beginning to infest the grape bunches.

Spray application was done on 24 July 2010 using a mistblower sprayer.

There were 4 replicates with 3-4 vines per plot.

Dead and live mealybugs were counted 6 days after application and the percentage dead were calculated.

TREATMENT TABLE

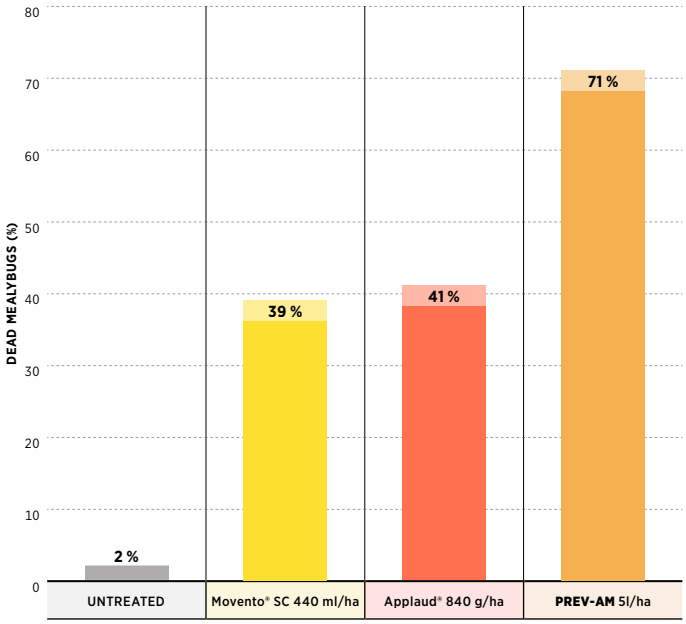
	TREATMENT	RATE
1	Untreated control	-
2	Movento® SC (spirotetramat)	**440 ml/ha**
3	Applaud® (buprofezin)	**840 g/ha**
4	**PREV-AM** (0,4 % v/v)	**5 l/ha**

FIGURE **1**

Percentage dead mealybugs

out of total infestation

AFTER DIFFERENT SPRAY PROGRAMS, SIX DAYS AFTER APPLICATION



CONCLUSIONS

- **PREV-AM** applied at 0,4 % provided a numerically higher mortality of mealybug than Movento® and Applaud®.
- The result showed as **PREV-AM** has an high knock-down effect against mealybug.

PHOTO BY: TIM BUCHHEIM

TARGET: MEALYBUG *Planococcus ficus*

ORO AGRI

TDB 0703

EVALUATION OF THE EFFECT OF **PREV-AM**® ON THE BLOOM STRUCTURE OF GRAPES ON MERLOT VINEYARDS

PREV-AM

BASIC INFORMATION

TARGET	Bloom structure (cuticle and epicuticular wax)
CROP	Wine grape, cv. Merlot (*Vitis vinifera*)
SPRAY VOLUME	500 l/ha
LOCATION	Somerset West, Western Cape • South Africa
TRIAL DATE	January – February 2014
RESEARCHER(S)	M. Matthew, **ORO AGRI SA (Pty) Ltd**

FIELD SITUATION

Two rows of a Merlot vineyard in Somerset West were used in this trial. One row was treated with **PREV-AM** 0,4 % and one row was kept as the Untreated Control. Two applications were conducted, 2 weeks and 1 week before harvest.

During berry growth and ripening, the cuticle and epicuticular wax (bloom) passes through various developmental stages. This serves as a protective barrier against water loss and pathogen attack.

The most common genera of wild yeasts found on grape skins include *Metschnikowiaceae, Pichia, Candida and Zygosaccharomyces*. Wild yeasts can produce high-quality, unique-flavored wines; but they are often unpredictable and may introduce less desirable traits to the wine.

Few wild yeast, lactic and acetic acid bacteria naturally live on the surface of grapes. Traditional wine makers, particularly in Europe, advocate use of wild yeast as a characteristic of the region's terroir; but many winemakers prefer to control fermentation with predictable cultured yeast.

CONCLUSIONS

- No significant differences could be seen on any photos for the Untreated or **PREV-AM** treated. The waxy layer was present at the 250x magnification as lighter streaks across the surface for both treatments. The photos with a brushed off bloom looked significantly different.
- We conclude that **PREV-AM** applied at 0,4 % does not wash off the bloom.

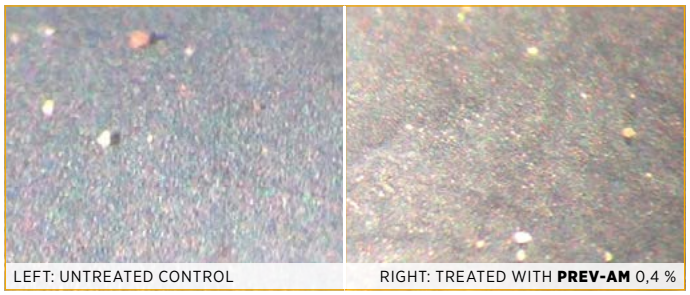
FIGURE 1

Grape bunches just before harvest on 24 february 2014. No significant differences were observed.

LEFT: UNTREATED CONTROL | RIGHT: TREATED WITH **PREV-AM** 0,4 %

FIGURE 2

Light microscope photos of the berry skin on the same day as harvest. No significant differences were seen.



LEFT: UNTREATED CONTROL | RIGHT: TREATED WITH **PREV-AM** 0,4 %

FIGURE 3

Field photo of the bloom which has been brushed off by leaves on the top of the bunch. Significant difference was seen when the bloom was removed.

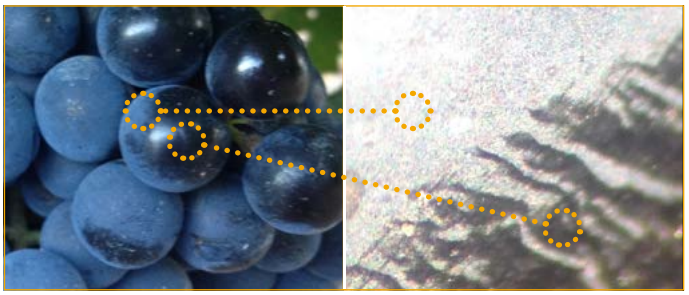
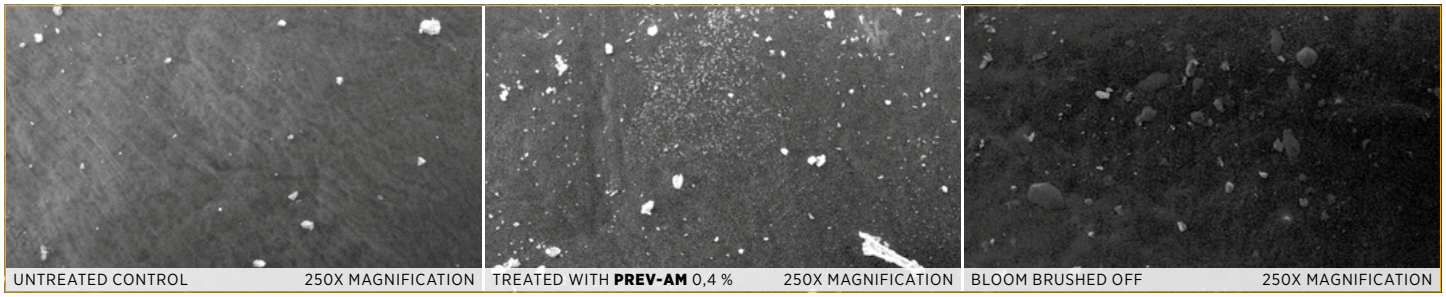


FIGURE 4

Electron Microscope photos (Stellenbosch University) one day after harvest using the Variable Pressure method.



UNTREATED CONTROL 250X MAGNIFICATION | TREATED WITH **PREV-AM** 0,4 % 250X MAGNIFICATION | BLOOM BRUSHED OFF 250X MAGNIFICATION

VITVI0703ENG

ORO AGRI

TDB 0906

EVALUATION OF THE EFFICACY OF **PREV-AM**® ON BOTRYTIS IN GRAPEVINE

PREV-AM

BASIC INFORMATION

TARGET	Grey mould (*Botryotinia fuckeliana*)
CROP	Wine grape, cv. Neuburger (*Vitis vinifera*)
SPRAY VOLUME	1000 l/ha
LOCATION	Brno, Southern Moravia • Czech Republic
TRIAL DATE	September 2015
RESEARCHER(S)	Tomáš Richter, **Ekovin**

TARGET: GREY MOULD *Botryotinia fuckeliana*

FIELD SITUATION

Applications were carried out 3 times during BBCH 85 (first application was carried out on 8.9.2015), using a backpack sprayer on Neuburger grapes which is a very sensitive variety.

Dose rates of tested products used within this trial were:

- **PREV-AM** 0,4 %
- **PREV-AM** 0,6 %
- Switch® 62,5WG 0,96 kg/ha

Damage was monitored on 50 bunches. Evaluation was done on observation of SEVERITY, because all applications were made after sufficient level of infestation of *Botryotinia fuckeliana* across the trial area.

CONCLUSIONS

- The late treatment with **PREV-AM** against *Botryotinia fuckeliana* in grapes provides a good control.
- Only very few products are registered for the use against Botrytis in grapes later than BBCH 75 (pea-sized berries).
- **PREV-AM** can therefore be considered a very useful tool to control Botrytis and protect yield quality shortly before harvest.

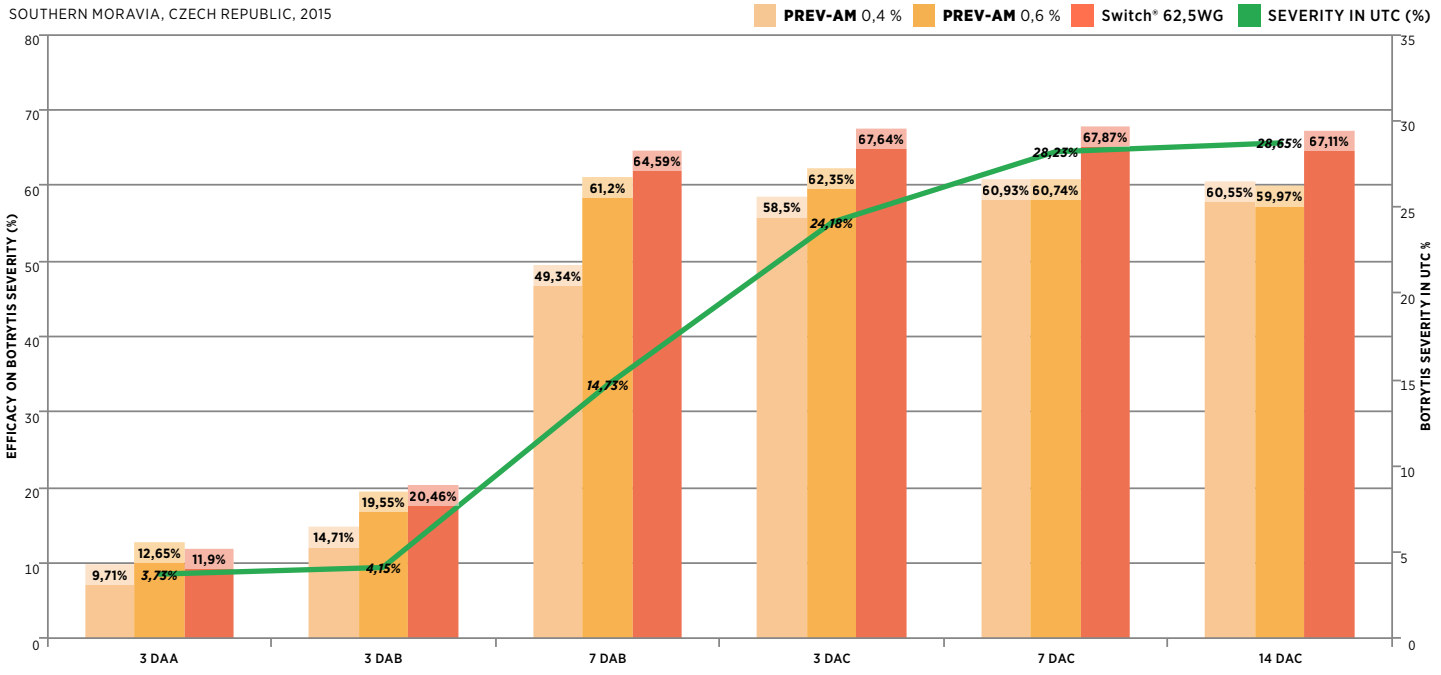
TREATMENT TABLE

TREATMENTS							
1	**PREV-AM** 0,4 %	400 ml/100 l	2	**PREV-AM** 0,6 %	600 ml/100 l	3	Switch® 62,5WG 96 g/100 l

FIGURE **1**

Efficacy on Botrytis infestation

on Neuburger wine grapes



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ORO AGRI

TDB 0681

THE EFFECT OF **PREV-AM**® FOR THE CONTROL OF GRAPEVINE MEALYBUG IN MOSCATO VINEYARDS

PREV-AM

BASIC INFORMATION

TARGET	Mealybug (*Planococcus ficus*)
CROP	Table grape, cv. Moscato (*Vitis vinifera*)
SPRAY VOLUME	1000 l/ha
LOCATION	Takelsa • Tunisia
TRIAL DATE	June - July 2008
RESEARCHER(S)	R. Mansour, **National Agronomic Institute of Tunisia**

FIELD SITUATION

The spray program consisted of **PREV-AM** and Movento® 150 OD (spirotetramat).

Each insecticide treatment was applied on June 12, precisely one day after the first summer vine mealybug male presence peak was noted, and when mealybug population consisted of mainly young instar nymphs, the most susceptible stages.

Treatments were replicated 3 times in a randomized complete block design. Each replicate encompassed 13 vines.

Five vines were randomly selected per replicate for mealybug counts.

TREATMENT TABLE

	TREATMENTS	RATE
1	Movento® 150 OD (spirotetramat)	1,2 l/ha
2	**PREV-AM**	2 l/ha

PHOTO BY: SABINO LORUSSO

TARGET: MEALYBUG *Planococcus ficus*

CONCLUSIONS

- **PREV-AM** proved a good control on *Planococcus ficus* populations, considering L1-L2 and L3 nymphs on vine trunks.
- The timing of the **PREV-AM** application is important. According to the results, **PREV-AM** should be applied early in the season, before mealybug population has overlapping generations.

FIGURE **1**

Efficacy (Abbott %)

of insecticide treatments on vine mealybug (L1-L2) nymphs on vine trunks

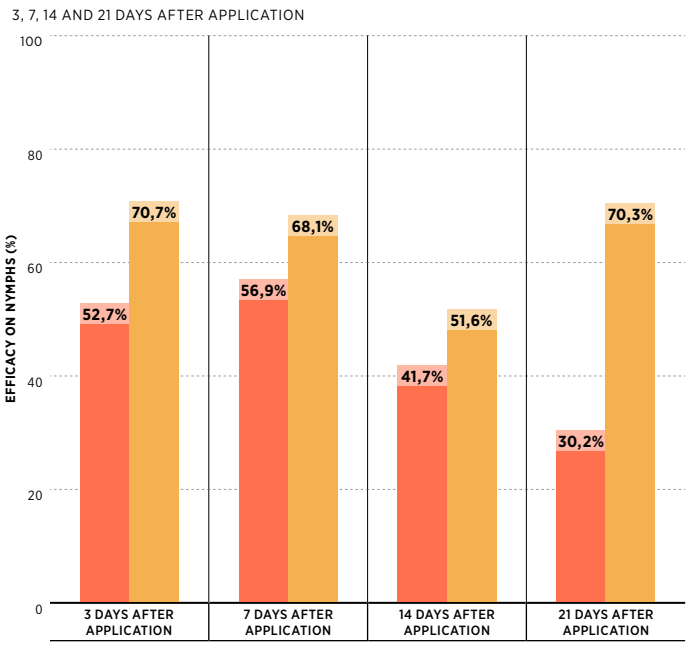
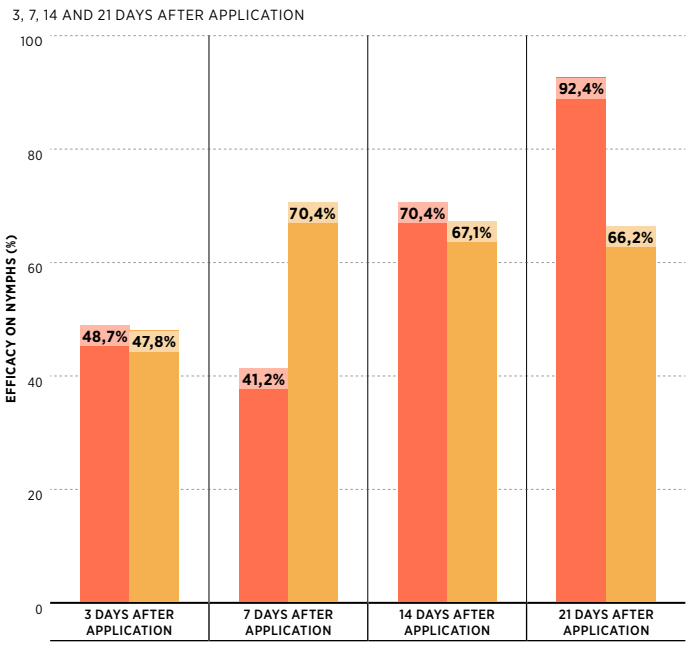


FIGURE **2**

Efficacy (Abbott %)

of insecticide treatments on vine mealybug (L3) nymphs on vine trunks



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ORO AGRI

TDB 0923

EFFICACY AND SELECTIVITY EVALUATION OF **PREV-AM**® AGAINST AMERICAN GRAPEVINE LEAFHOPPER IN GRAPEVINE

PREV-AM

BASIC INFORMATION

TARGET	American grapevine leafhopper (*Scaphoideus titanus*)
CROP	Wine grape, cv. Erbaluce (*Vitis vinifera*)
SPRAY VOLUME	1000 l/ha
LOCATION	Settimo Rottaro (Turin), Piedmont • Italy
TRIAL DATE	June 2015
RESEARCHER(S)	Daniele Ronco, **Sagea**

FIELD SITUATION

The trial was set up on vineyard (Erbaluce variety) of Settimo Rottaro (Torino district), in Piedmont region, where population of *Scaphoideus titanus* was medium-high.

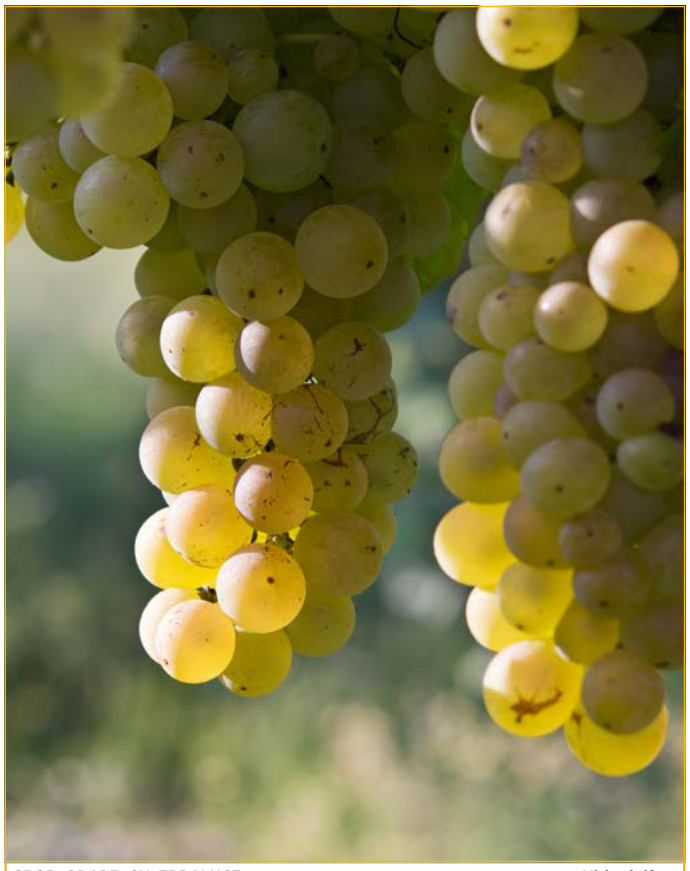
Only one spray application was done on 17 July 2015 using a motorized backpack for both thesis:

- Actara® 25WG (thiamethoxam) 200 g/100 l
- **PREV-AM** 0,5 %

There were 4 replicates per each thesis.

Adults of *Scaphoideus titanus* were counted 14 days after application and the percentage of efficacy was calculated using Henderson-Tilton method.

Before the treatment, an high presence of individuals of *Scaphoideus titanus* at young stages was detected (mainly 25 individual per plot).



CROP: GRAPE, CV. ERBALUCE *Vitis vinifera*

PHOTO BY: YERPO, VIA WIKIMEDIA COMMONS

AMERICAN GRAPEVINE LEAFHOPPER (F) ON A GRAPEVINE LEAF *Scaphoideus titanus*

CONCLUSIONS

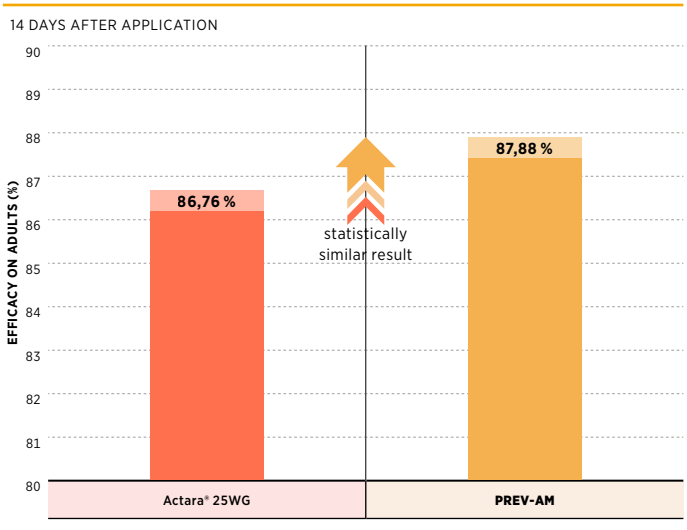
- The data of this experimental study showed an high control of *Scaphoideus titanus* given by **PREV-AM**, showing a similar performance compared with reference insecticide Actara® 25 WG.
- If applied regularly during the season, starting as soon as the first growth stages of *Scaphoideus titanus* are observed, **PREV-AM** will provide a constantly and high control of the leafhopper.

TREATMENT TABLE

	TREATMENTS	RATE
1	Actara® 25WG (thiamethoxam)	200 g/100 l
2	**PREV-AM** 0,5 %	500 ml/100 l

FIGURE **1**

Efficacy against *Scaphoideus titanus* (%)



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ORO AGRI

TDB 0832

STUDY ON THE EFFECTS OF **PREV-AM**® ON VINIFICATION OF CABERNET SAUVIGNON GRAPES

PREV-AM

BASIC INFORMATION

TARGET	Vinification in red wine
CROP	Wine grape, cv. Cabernet Sauvignon (*Vitis vinifera*)
SPRAY VOLUME	250 l/ha
LOCATION	Faenza (RA), Emilia Romagna, Italy
TRIAL DATE	April 2014 - January 2016
RESEARCHER(S)	Nicola Graziani, **ASTRA Innovazione e Sviluppo**

FIELD SITUATION

A trial in open field conditions was performed in order to evaluate on red grapevine the unintentional effects of **PREV-AM** on ripeness, on wine-making processes and on the organoleptic characteristics of the red wine. The results obtained were compared with the Untreated control.

The trial considered the following treatments:

1. **PREV-AM** at 0,8 % (6 applications with 8±1 days of spray interval and 2 days of PHI);
2. UNTREATED CONTROL

The applications were carried out with a special self-moving pneumatic mist-sprayer on plots with 3 repetitions; each plot included 18 plants (59 m^2).

FIGURE 1

Test results on harvested bunches

* data expressed as H_2SO_4

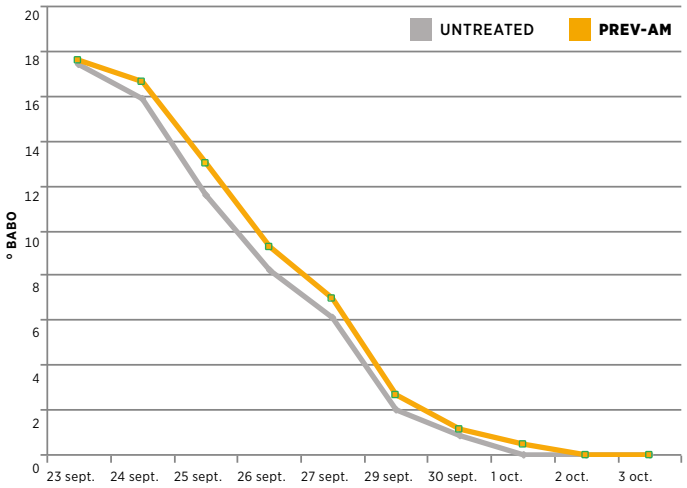
ASTRA Innovazione e Sviluppo • Italy

THESIS	ANALYTICAL PARAMETERS		
	SUGAR (°BRIX)	TOTAL ACIDITY* (g/l)	pH
PREV-AM	**16,4**	**7,62**	**3,13**
UTC	16,93	7,6	3,13

FIGURE 2

Fermentation trend of must

and complete transformation of the sugars to alcohol



LAB & PROCESSING SITUATION

The evaluation of the unintentional effects was carried out with:

- chemical analysis on bunches samples collected at harvest;
- various assessments performed during the wine making process;
- chemical analysis on must and finished wine samples collected during the wine-making;
- tasting tests on young wine (about one month and half after the bottling) and aged wine (about twelve months after the bottling).

CONCLUSIONS

The results of this oenological study performed on red grapevine reveal that the field treatments with **PREV-AM** did not cause negative effects on:

- the ripeness process of the grapes;
- the fermentation process of the must (the most important phase of the grapes processing into wine);
- the main chemical compounds of must and finished wine;
- the organoleptic characteristics of the finished wine tasted at two different times (about one month and half after the bottling and after about one year of storage at low temperature).

FIGURE 3

Test results on must

ASTRA Innovazione e Sviluppo • Italy

ANALYTICAL PARAMETERS	THESIS	
	UTC	PREV-AM
Reducing sugars (g/l)	166,2	**159,4**
pH	3,01	**2,97**
Total acidity (g/l)	6,16	**6,30**
Volatile acidity (g/l)	0,05	**0,05**
Available nitrogen (g/l)	147	**148,4**
Potassium (mg/l)	1367	**1295**
Total SO_2 (mg/l)	9	**9**

FIGURE 4

Test results on finished wine

ASTRA Innovazione e Sviluppo • Italy

ANALYTICAL PARAMETERS	THESIS	
	UTC	PREV-AM
Actual alcohol (% vol.)	10,6	**10,47**
Residual sugar (g/l)	< 1,0	**< 1,0**
pH	3,72	**3,68**
Total acidity (g/l)	4,74	**4,64**
Volatile acidity (g/l)	0,21	**0,19**
Total phenol index (d280)	20,6	**20,1**
Optical density 420 nm, 520 nm, 620 nm	0,570-0,749-0,098	**0,555-0,711-0,091**
Colour intensity Od420 + Od520 + Od620	1,417	**1,357**
Colour tonality Od420 ÷ Od520	0,761	**0,781**
Total and free SO_2 (mg/l)	118/42	**113/42**

VITVI0832ENG

ORO AGRI

TDB 0833

STUDY ON THE EFFECTS OF **PREV-AM**® ON VINIFICATION OF CHARDONNAY WINE GRAPES

PREV-AM

BASIC INFORMATION

TARGET	Vinification in white wine
CROP	Wine grape, cv. Chardonnay (*Vitis vinifera*)
SPRAY VOLUME	250 l/ha
LOCATION	Faenza (RA), Emilia Romagna, Italy
TRIAL DATE	April 2014 - January 2016
RESEARCHER(S)	Nicola Graziani, **ASTRA Innovazione e Sviluppo**

FIELD SITUATION

A trial in open field conditions was performed in order to evaluate on white grapevine the unintentional effects of **PREV-AM** on ripeness, on wine-making processes and on the organoleptic characteristics of the white wine. The results obtained were compared with the Untreated control.

The trial considered the following treatments:

1. **PREV-AM** at 0,8 % (6 applications with 8±1 days of spray interval and 2 days of PHI);
2. UNTREATED CONTROL

The applications were carried out with a special self-moving pneumatic mist-sprayer on plots with 3 repetitions; each plot included 20 plants (55 m²).

LAB & PROCESSING SITUATION

The evaluation of the unintentional effects was carried out with:

- chemical analysis on bunches samples collected at harvest;
- various assessments performed during the wine making process;
- chemical analysis on must and finished wine samples collected during the wine-making;
- tasting tests on young wine (about one month and half after the bottling) and aged wine (about twelve months after the bottling).

CONCLUSIONS

The results of this oenological study performed on white grapevine reveal that the field treatments with **PREV-AM** did not cause negative effects on:

- the ripeness process of the grapes;
- the fermentation process of the must (the most important phase of the grapes processing into wine);
- the main chemical compounds of must and finished wine;
- the organoleptic characteristics of the finished wine tasted at two different times (about one month and half after the bottling and after about one year of storage at low temperature).

FIGURE 1

Test results on harvested bunches

* data expressed as H_2SO_4

ASTRA Innovazione e Sviluppo • Italy

THESIS	ANALYTICAL PARAMETERS		
	SUGAR (°BRIX)	TOTAL ACIDITY* (g/l)	pH
PREV-AM	**17,27**	**7,73**	**2,86**
UTC	17,33	7,56	2,83

FIGURE 2

Fermentation trend of must

and complete transformation of the sugars to alcohol

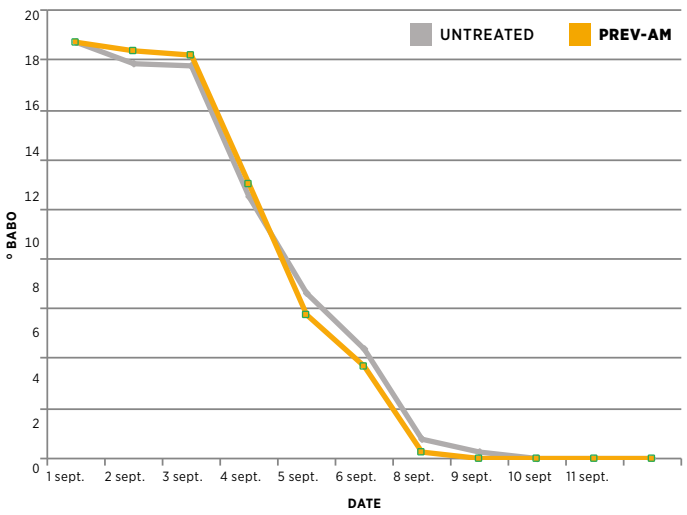


FIGURE 3

Test results on must

ASTRA Innovazione e Sviluppo • Italy

ANALYTICAL PARAMETERS	THESIS	
	UTC	**PREV-AM**
Reducing sugars (g/l)	151,5	**151,1**
pH	3,06	**3,1**
Total acidity (g/l)	6,34	**6,32**
Volatile acidity (g/l)	0,05	**0,05**
Available nitrogen (g/l)	289,8	**302,4**
Potassium (mg/l)	1241	**1332**
Total SO_2 (mg/l)	9	**9**

FIGURE 4

Test results on finished wine

ASTRA Innovazione e Sviluppo • Italy

ANALYTICAL PARAMETERS	THESIS	
	UTC	**PREV-AM**
Actual alcohol (% vol.)	10,79	**10,69**
Residual sugar (g/l)	< 1,0	**< 1,0**
pH	3,28	**3,34**
Total acidity (g/l)	4,85	**5,01**
Volatile acidity (g/l)	0,17	**0,13**
Total phenol index (d280)	3,1	**3,4**
Optical density 420 nm, 520 nm, 620 nm	0,028	**0,029**
Total and free SO_2 (mg/l)	105/51	**106/46**

VITVI0833ENG

ORO AGRI

TDB 297.1

COMPARING THE EFFECT OF QUINOXYFEN AND **WETCIT™** COMBINATIONS AGAINST POWDERY MILDEW ON CHARDONNAY GRAPES

BASIC INFORMATION

TARGET	Powdery mildew (*Erisyphe necator*)
CROP	Grape, cv. Chardonnay (*Vitis vinifera*)
SPRAY VOLUME	started at 935 l/ha, increased to 1870 l/ha
LOCATION	Courtland, CA • USA
TRIAL DATE	April 2009
RESEARCHER(S)	W. Douglas Gubler • Christopher N. Janousek • Ian S. Bay
	Dept. of Plant Pathology • University of California, Davis

FIELD SITUATION

The quinoxyfen and quinoxyfen plus **WETCIT** treatments referred to in this document were part of a series of trials performed by the Department of Plant Pathology, University of California, Davis, during the 2009 season.

Trials were laid out as complete randomised designs with 5 replicates.

Treatments were applied with handgun sprayers delivering 935 litres per hectare pre-bloom, increasing to 1870 litres per hectare in the late part of the season.

TARGET: POWDERY MILDEW *Erisyphe necator*

TREATMENT TABLE

	TREATMENT	RATE	FREQUENCY
1	Untreated control		
2	Quintec® (quinoxyfen)	0,3 l/ha	Every 14 days
3	Quintec® (quinoxyfen) + **WETCIT**	0,3 l/ha 0,25 %	Every 14 days

FIGURE **1**

Severity of powdery mildew

On Chardonnay clusters at start of veraison

FOLLOWING 6 DIFFERENT SPRAY TREATMENTS AT 14-DAY INTERVALS, FROM END-APRIL TO MID-JULY 2009

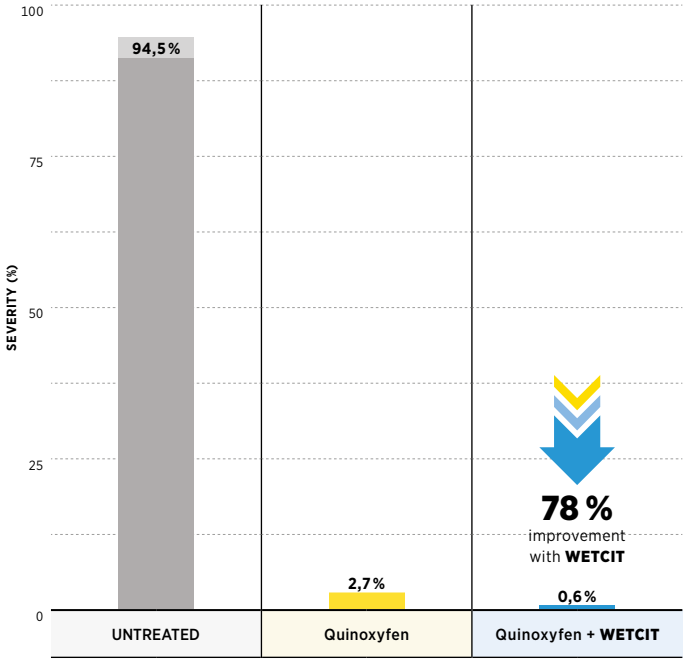
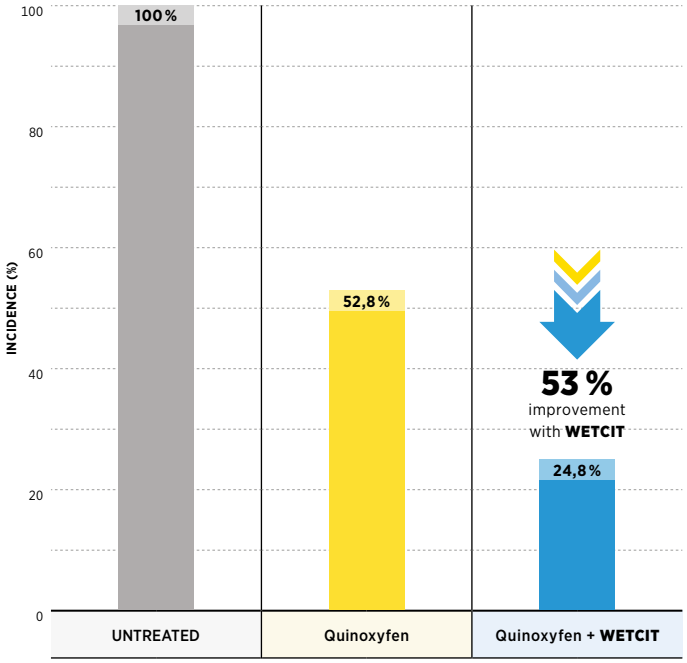


FIGURE **2**

Incidence of powdery mildew

On Chardonnay clusters at start of veraison

FOLLOWING 6 DIFFERENT SPRAY TREATMENTS AT 14-DAY INTERVALS, FROM END-APRIL TO MID-JULY 2009



TDB 297.2

COMPARING THE EFFECT OF TRIFLOXYSTROBIN AND **WETCIT™** COMBINATIONS AGAINST POWDERY MILDEW ON CHARDONNAY GRAPES

BASIC INFORMATION

TARGET	Powdery mildew (*Erisyphe necator*)
CROP	Grape, cv. Chardonnay (*Vitis vinifera*)
SPRAY VOLUME	started at 935 l/ha, increased to 1870 l/ha
LOCATION	Courtland, CA • USA
TRIAL DATE	April 2009
RESEARCHER(S)	W. Douglas Gubler • Christopher N. Janousek • Ian S. Bay
	Dept. of Plant Pathology • University of California, Davis

FIELD SITUATION

The trifloxystrobin and trifloxystrobin plus **WETCIT** treatments referred to in this document were part of a series of trials performed by the Department of Plant Pathology, University of California, Davis, during the 2009 season.

Trials were laid out as complete randomised designs with 5 replicates.

Treatments were applied with handgun sprayers delivering 935 litres per hectare pre-bloom, increasing to 1870 litres per hectare in the late part of the season.

TARGET: POWDERY MILDEW *Erisyphe necator*

TREATMENT TABLE

	TREATMENT	RATE	FREQUENCY
1	Untreated control		
2	Flint® (trifloxystrobin)	140 grams/ha	Every 14 days
3	Flint® (trifloxystrobin) + **WETCIT**	140 grams/ha 0,25 %	Every 14 days

FIGURE **1**

Severity of powdery mildew

On Chardonnay clusters at start of veraison

FOLLOWING 6 DIFFERENT SPRAY TREATMENTS AT 14-DAY INTERVALS, FROM END-APRIL TO MID-JULY 2009

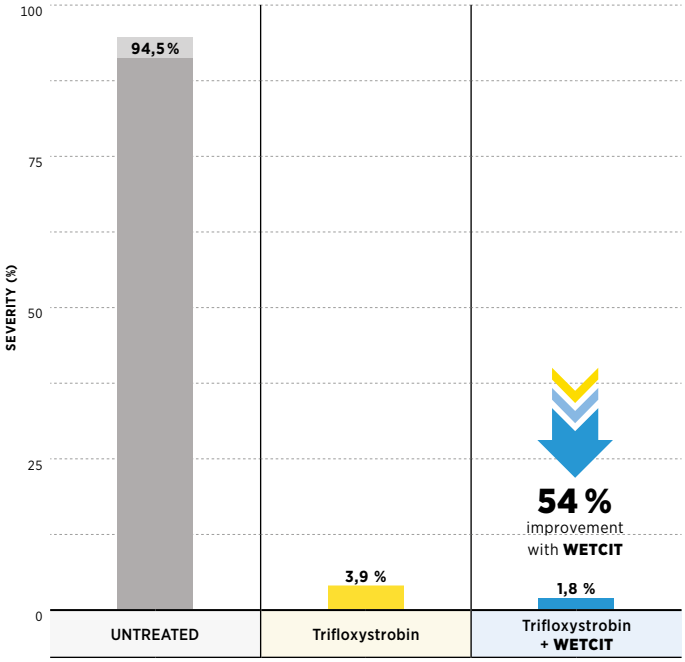
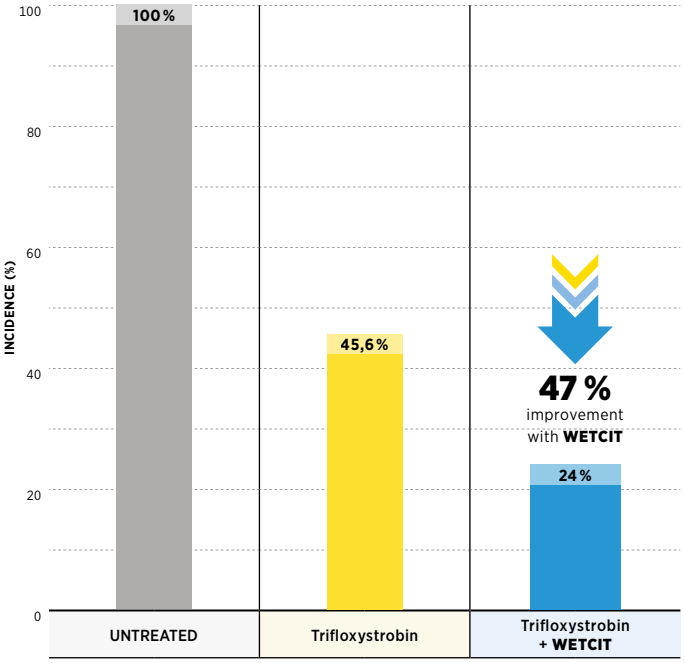


FIGURE **2**

Incidence of powdery mildew

On Chardonnay clusters at start of veraison

FOLLOWING 6 DIFFERENT SPRAY TREATMENTS AT 14-DAY INTERVALS, FROM END-APRIL TO MID-JULY 2009



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TDB 297.3

COMPARING THE EFFECT OF SULPHUR AND **WETCIT™** COMBINATIONS AGAINST POWDERY MILDEW ON CHARDONNAY GRAPES

WETCIT

BASIC INFORMATION

TARGET	Powdery mildew (*Erisyphe necator*)
CROP	Grape, cv. Chardonnay (*Vitis vinifera*)
SPRAY VOLUME	started at 935 l/ha, increased to 1870 l/ha
LOCATION	Courtland, CA • USA
TRIAL DATE	April 2009
RESEARCHER(S)	W. Douglas Gubler • Christopher N. Janousek • Ian S. Bay
	Dept. of Plant Pathology • University of California, Davis

FIELD SITUATION

The micronised sulphur and micronised sulphur plus **WETCIT** treatments referred to in this document were part of a series of trials performed by the Department of Plant Pathology, University of California, Davis, during the 2009 season.

Trials were laid out as complete randomised designs with 5 replicates.

Treatments were applied with handgun sprayers delivering 935 litres per hectare pre-bloom, increasing to 1870 litres per hectare in the late part of the season

TARGET: POWDERY MILDEW *Erisyphe necator*

TREATMENT TABLE

	TREATMENT	RATE	FREQUENCY
1	Untreated control		
2	Microthiol® 80 WG (sulphur)	5,6 kg/ha	Every 14 days
3	Microthiol® 80 WG (sulphur) + **WETCIT**	3,4 kg/ha 0,25 %	Every 14 days
4	Microthiol® (sulphur) + **WETCIT**	5,6 kg/ha 0,25 %	Every 14 days

FIGURE **1**

Severity of powdery mildew

On Chardonnay clusters at start of veraison

FOLLOWING 6 DIFFERENT SPRAY TREATMENTS AT 14-DAY INTERVALS, FROM END-APRIL TO MID-JULY 2009

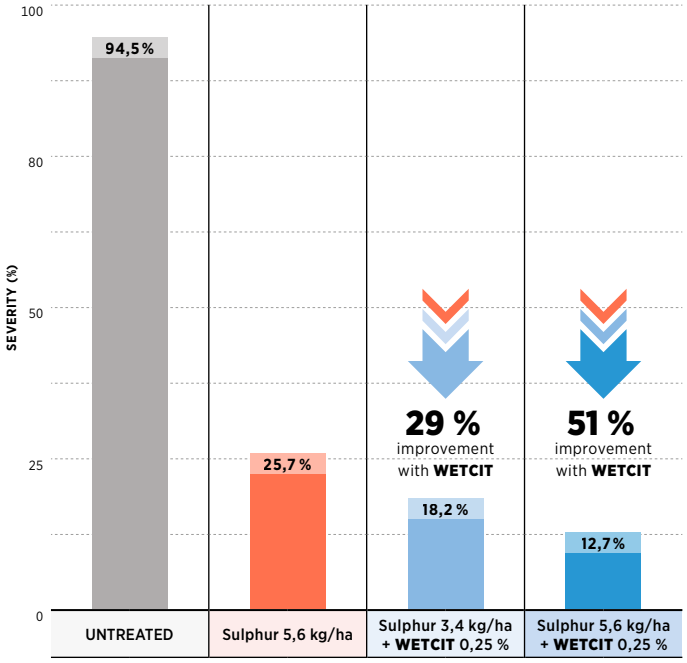
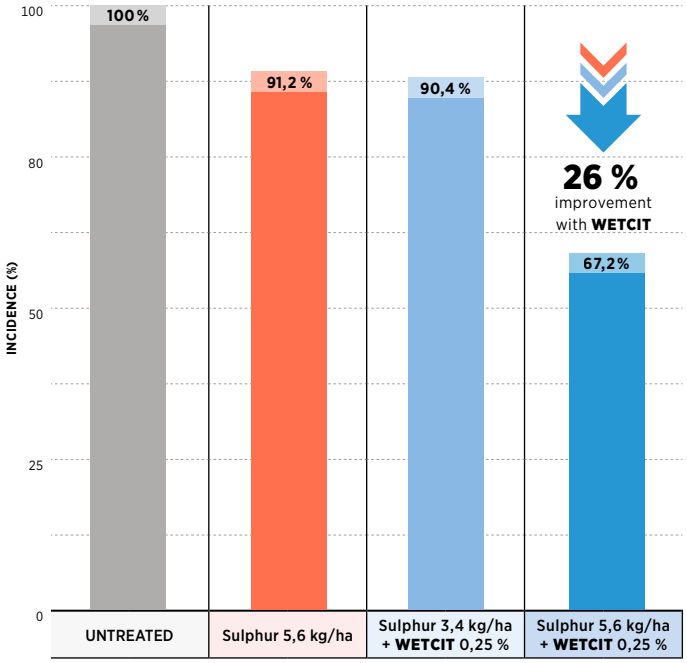


FIGURE **2**

Incidence of powdery mildew

On Chardonnay clusters at start of veraison

FOLLOWING 6 DIFFERENT SPRAY TREATMENTS AT 14-DAY INTERVALS, FROM END-APRIL TO MID-JULY 2009



ORO AGRI

TDB 0335

POWDERY MILDEW CONTROL ON CHARDONNAY GRAPES USING **WETCIT™**

BASIC INFORMATION

TARGET	Powdery mildew (*Erisyphe necator*)
CROP	Grape, cv. Chardonnay (*Vitis vinifera*)
SPRAY VOLUME	started at 935 l/ha, increased to 1870 l/ha
LOCATION	Courtland, CA • USA
TRIAL DATE	April – July 2010
RESEARCHER(S)	I.S. Bay • J.D. Eynard • A. Sutherland • W.D. Gubler
	Dept. of Plant Pathology • University of California, Davis

TRIAL AIM AND DESIGN

A replicated study was conducted on an experimental field at the Department of Plant Pathology of the University of California (Davis) to assess **WETCIT** in a tank mix with Rally® (myclobutanil) alternating with Quintec® (quinoxyfen) against both products as a standalone treatment.

Treatments were applied to their pre-defined blocks in between April and July at a 21 day interval using a handgun sprayer.

Spray volumes:

- 700 l/ha first spray
- 935 l/ha pre-bloom in mid-April
- 1400 l/ha pre-bloom to pea-sized berries
- 1870 l/ha late season

TREATMENT TABLE

	TREATMENT
1	Untreated control
2	Rally® (myclobutanil) 350 g/ha alternating with Quintec® (quinoxyfen) 480 ml/ha
3	Rally® (myclobutanil) 280 g/ha + **WETCIT** 0,25 % alternating with Quintec® (quinoxyfen) 480 ml/ha + **WETCIT** 0,25 %

PHOTO BY: OLIVER MACDONALD

TARGET: POWDERY MILDEW *Erisyphe necator*

HARVEST & DATA COLLECTION

Disease was assessed on 21 July. 20-25 clusters were evaluated for powdery mildew incidence and severity in each plot. Severity was determined by estimating the percentage of berries in a cluster that was infected; the severity value of all clusters was then averaged to give a plot wide estimate of disease severity.

RESULTS AND CONCLUSION

In spite of a very high level of disease pressure both treatments performed well. The standard program could achieve a control of 61,7 % on a high infection of powdery mildew in Chardonnay vines. The addition of **WETCIT** at a rate of 0,25 % improved the efficacy of the products by 19,3 % reaching a good control level of 73,6 %. It has to be specially noted that Rally® (myclobutanil) was applied a reduced rate when mixed with **WETCIT**.

It can be concluded that the addition of **WETCIT** results in a better control of powdery mildew when compared to the standard products alone and can be a tool to minimize the input of regular chemistry to the crop.

FIGURE **1**

Powdery mildew severity

On Chardonnay clusters

FOLLOWING A SPRAY PROGRAM WITH 21 DAY INTERVALS FROM APRIL 2010 TO JULY 2010

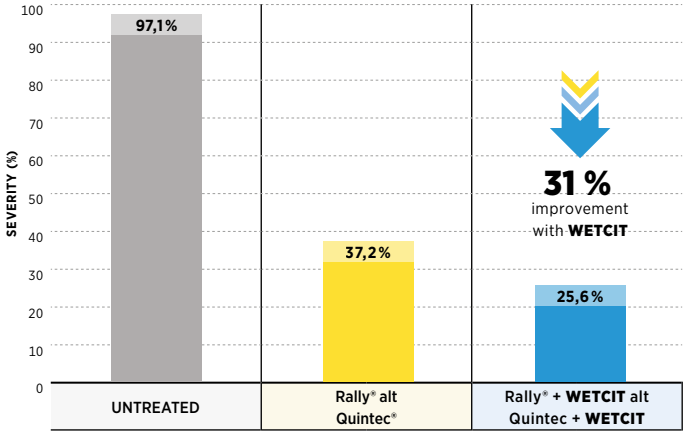
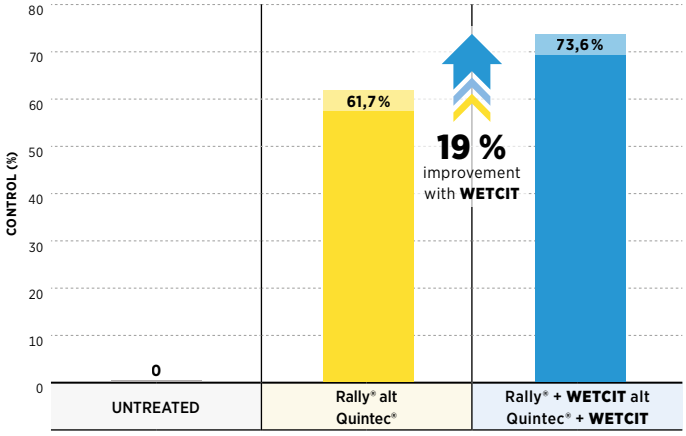


FIGURE **2**

Control efficacy of powdery mildew

On Chardonnay clusters

FOLLOWING A SPRAY PROGRAM WITH 21 DAY INTERVALS FROM APRIL 2010 TO JULY 2010



TDB **0603**

TEST THE EFFICACY OF DOWNY MILDEW CONTROL PROGRAMS WITH AND WITHOUT THE ADDITION OF **WETCIT™**

WETCIT

BASIC INFORMATION

TARGET	Downy mildew (*Plasmopara vitícola*)
CROP	Grape, cv. Tinta Barocca (*Vitis vinifera*)
SPRAY VOLUME	620 l/ha to 1142 l/ha
LOCATION	Paarl, Western Cape • South Africa
TRIAL DATE	October 2012
RESEARCHER(S)	J. Kotze, **Oro Agri SA (Pty.) Ltd.**

FIELD SITUATION

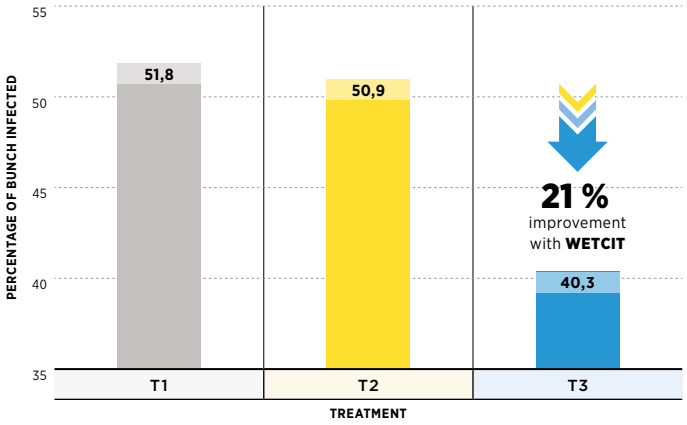
Applications were made using air assisted motorized knapsack sprayers applying 620 l/ha to 1142 l/ha spray mixture. The first application was made at 20 – 45 cm shoot length and a total of 5 applications were made. Due to adverse weather conditions the interval between the 1st and 2nd application was 25 days, which is not optimal since the small bunches are extremely sensitive to infection by downy mildew at this stage. An evaluation of percentage bunch infection was done on 12 December, 1 week after the 4th application. A 5th application was made on 20 December, but the trial was abandoned at this stage.

FIGURE **1**

Average downy mildew infection (%)

per bunch on 12 december 2012

RUITERSVLEI; PAARL, WESTERN CAPE • SOUTH AFRICA



TARGET: DOWNY MILDEW *Plasmopara vitícola*

CONCLUSIONS

Due to downy mildew infection during the extended interval between the 1st and 2nd application it is extremely difficult to make conclusions from data generated in this trial.

Indications are, however, that treatment program 3 (Mancozeb, 2 x Acrobat®, 2 x Cabrio® Top, all with **WETCIT** 100 ml/hl) resulted in significant reduction of downy mildew when compared with the standard treatment (treatment 1).

Also visible is the influence of **WETCIT** comparing treatment program 2 and 3, where without **WETCIT**, treatment program 2, didn't result in a significant reduction of downy mildew when compared with the standard treatment.

TREATMENT TABLE

	20 - **45** cm	EARLY FLOWERING	ALMOST PEA BERRY	**14** DAYS AFTER PEA BERRY	**28** DAYS AFTER PEA BERRY
T1*	Prosper® 60 ml (spiroxamine 500 g/l)	Prosper® 60 ml (spiroxamine 500 g/l)	Legend™ 25 ml (quinoxyfen 250 g/l)	Legend™ 25 ml (quinoxyfen 250 g/l)	Legend™ 25 ml (quinoxyfen 250 g/l)
T2	Standard treatment + Mancozeb 200g	Standard treatment + Acrobat® 200g *(dimethomorph 90 g/kg + mancozeb 600 g/kg)*	Standard treatment + Acrobat® 200g *(dimethomorph 90 g/kg + mancozeb 600 g/kg)*	Standard treatment + Cabrio® Top 200g *(F500® 50 g/kg + metiram 550 g/kg)*	Standard treatment + Cabrio® Top 200g *(F500® 50 g/kg + metiram 550 g/kg)*
T3	Standard treatment + Mancozeb 200g + **WETCIT** 100 ml/hl	Standard treatment + Acrobat® 200g *(dimethomorph 90 g/kg + mancozeb 600 g/kg)* + **WETCIT** 100 ml/hl	Standard treatment + Acrobat® 200g *(dimethomorph 90 g/kg + mancozeb 600 g/kg)* + **WETCIT** 100 ml/hl	Standard treatment + Cabrio® Top 200g *(F500® 50 g/kg + metiram 550 g/kg)* + **WETCIT** 100 ml/hl	Standard treatment + Cabrio® Top 200g *(F500® 50 g/kg + metiram 550 g/kg)* + **WETCIT** 100 ml/hl

* Treatment 1: standard powdery mildew treatment

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ORO AGRI

TDB 337A

EVALUATION OF **WETCIT™** IN TANK MIXTURES FOR THE CONTROL OF MEALYBUG ON PINOT GRIGIO GRAPES

BASIC INFORMATION

TARGET	Grapevine mealybug (*Planococcus ficus*)
CROP	Grape, cv. Pinot Grigio (*Vitis vinifera*)
SPRAY VOLUME	1280 l/ha
LOCATION	Lodi, CA • USA
TRIAL DATE	2010
RESEARCHER(S)	D. Dunbar, **R3 Ag Consulting LLC**
	B. Bauer, **Two Bees Agricultural Research**

TRIAL AIM AND DESIGN

A replicated study was conducted on a commercial field at the Eger Vineyard in Lodi on Pinot Grigio grapes to assess the adjuvant **WETCIT** mixed with standard products compared to the standard products applied alone on the grapevine mealy bug (*Planococcus ficus*).

Treatments were applied to their pre-defined blocks one time end of July.

TREATMENT TABLE

TREATMENT		6 DAA	13 DAA
Movento® SC (spirotetramat)	440 ml/ha	**89,2 %**	**98 %**
Movento® SC (spirotetramat) + **WETCIT**	440 ml/ha 0,25 %	**96,1 %**	**100 %**
Applaud® 70WP (buprofezin)	840 g/ha	**77,5 %**	**94,1 %**
Applaud® 70WP (buprofezin) + **WETCIT**	840 g/ha 0,25 %	**93,1 %**	**98 %**

HARVEST & DATA COLLECTION

Grapes were harvested on August 16th and 20 bunches were cut from the centre vine of each three vine plot and evaluated for percent mealybug infestation. Efficiency was calculated according to the Abbott formula based on the mealy bugs.

RESULTS AND CONCLUSION

All tested products provided good to very good control of grapevine mealy bug on Pinot Grigio grapes. The addition of **WETCIT** to the standard products Movento® and Applaud® resulted in a major increase of efficacy 6 and 13 days after the application (DAA). In the case of Movento®, the addition of **WETCIT** provided a total control at 13 DAA.

It can be concluded that the addition of **WETCIT** at 0,25 % is a powerful tool to improve the efficacy of standard products used to control grapevine mealy bug.

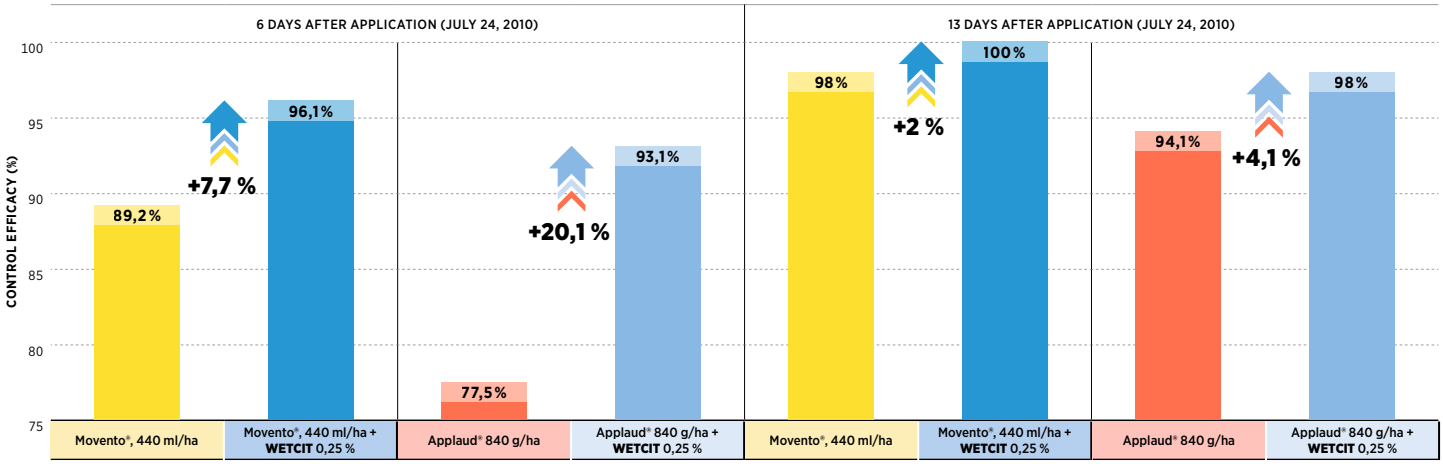
TARGET: GRAPEVINE MEALYBUG *Planococcus ficus*

FIGURE **1**

Control efficacy

On grapevine mealybug

AFTER DIFFERENT SPRAY PROGRAMS AT SIX AND THIRTEEN DAYS AFTER APPLICATION. LODI, CA, 2010



TDB 337B

EVALUATION OF **WETCIT™** IN TANK MIXTURES FOR THE CONTROL OF MEALYBUG ON PINOT GRIGIO GRAPES

BASIC INFORMATION

TARGET	Grapevine mealybug (*Planococcus ficus*)
CROP	Grape, cv. Pinot Grigio (*Vitis vinifera*)
SPRAY VOLUME	1280 l/ha
LOCATION	Lodi, CA • USA
TRIAL DATE	2010
RESEARCHER(S)	D. Dunbar, **R3 Ag Consulting LLC**
	B. Bauer, **Two Bees Agricultural Research**

FIELD SITUATION

The spray program consisted of Movento® SC without and with **WETCIT**. Spray application was on 24 July 2010. There were 4 replicates with 3-4 vines per plot. Spray volume was 1280 l/ha and a mistblower sprayer was used. On 16 August, the percentage of infested bunches and the severity of bunch infestation was calculated. The honeydew was also rated.

CONCLUSIONS

Both treatments significantly reduced the percentage of mealybug infested bunches compared to the untreated check. Although there was no significant difference between treatments in terms of reduction in the number of infested bunches, Movento® + **WETCIT** was the best treatment with 3 % infested bunches. Movento® + **WETCIT** was clearly the best treatment in this test with a ZERO severity rating. Movento® + **WETCIT** reduced the mealybug infestation to such a low level that there was little or no honeydew in that treatment.

TREATMENT TABLE

	TREATMENT	RATE
1	Untreated control	
2	Movento® SC (spirotetramat)	440 ml/ha
3	Movento® SC (spirotetramat) + **WETCIT** (0,25 % v/v)	440 ml/ha 3,2 l/ha

PHOTO BY: MARK SMITH

CROP: GRAPE, CV. PINOT GRIGIO *Vitis vinifera*

FIGURE **1**

Severity of bunch infestation

With mealybug

ON 16 AUGUST AFTER DIFFERENT SPRAY PROGRAMS AT LODI, CA, 2010

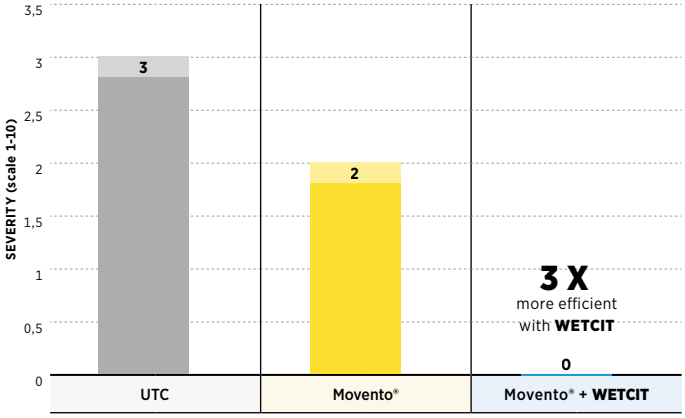


FIGURE **2**

Percentage bunches infested

With mealybug

ON 16 AUGUST AFTER DIFFERENT SPRAY PROGRAMS AT LODI, CA, 2010

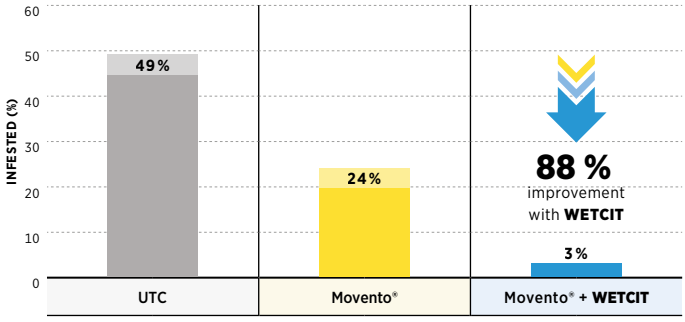
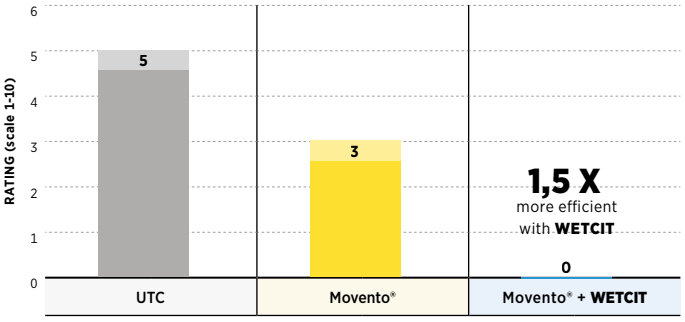


FIGURE **3**

Honeydew rating

On fruit, leaves and stems

ON 16 AUGUST AFTER DIFFERENT SPRAY PROGRAMS AT LODI, CA, 2010



TDB 0722

TEST THE EFFICACY OF MEALYBUG CONTROL APPLICATIONS WITH AND WITHOUT THE ADDITION OF **WETCIT™**

WETCIT

BASIC INFORMATION

TARGET	Mealybug (*Planococcus spp*)
CROP	Grape, cv. Cabernet Sauvignon (*Vitis vinifera*)
SPRAY VOLUME	1975 l/ha
LOCATION	Paarl, Western Cape • South Africa
TRIAL DATE	February 2013
RESEARCHER(S)	J. Kotze, **Oro Agri SA (Pty.) Ltd.**

FIELD SITUATION

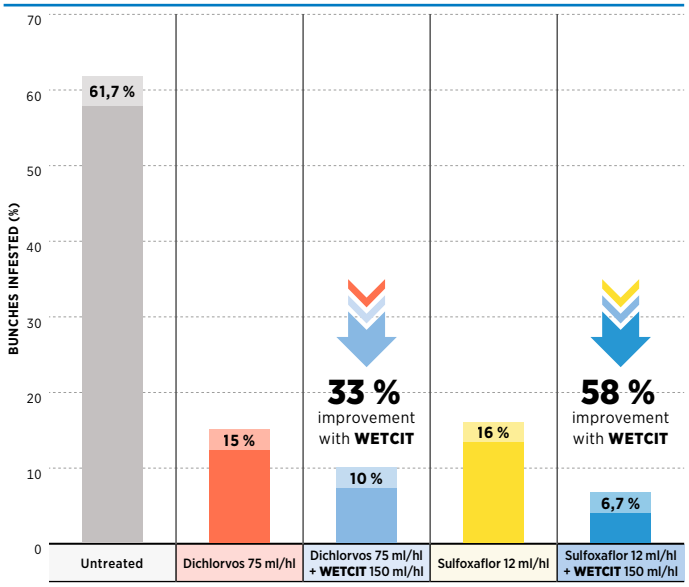
A trial was done in Cabernet Sauvignon wine grapes suffering from a heavy bunch infestation of vine mealybug (*Planococcus spp*). A single application with air assisted knapsack sprayers was done and a evaluation done 7 DAA. At application bunches with mealybug infestation were tagged and at evaluation these were evaluated. One or more live mealybugs per bunch resulted in such a bunch being rated as infested. As a result of the high infestation there was a lot of honeydew present, on the leaves as well as on the bunches.

TREATMENT TABLE

	TREATMENTS		RATE	ADJUVANT	RATE
1	Untreated				
2	Dichlorvos	1000 g/l	75 ml/hl	-	-
3	Dichlorvos	1000 g/l	75 ml/hl	**WETCIT**	150 ml/hl
4	Sulfoxaflor	240 g/l	12 ml/hl	-	-
5	Sulfoxaflor	240 g/l	12 ml/hl	**WETCIT**	150 ml/hl

FIGURE **1**

Percentage bunches infested



CROP: GRAPE, CV. CABERNET SAUVIGNON *Vitis vinifera*

PHOTO BY: TIM BUCHHEIM

TARGET: MEALYBUG *Planococcus ficus*

CONCLUSIONS

- The addition of **WETCIT** to both sulfoxaflor and dichlorvos had a clear beneficial effect on the treatment with a lower level of bunches infested at the time of evaluation.
- As a result of the high infestation there was a lot of honeydew present, on the leaves as well as the bunches. At evaluation treated bunches had a lot less glossy appearance, with most of the honeydew dried up and less sticky. This occurrence was even more evident where **WETCIT** was added to treatments.
- Dead ladybirds were noticed in the sulfoxaflor treatments.
- Dead sclolothrips were noticed in one of the sulfoxaflor treatments.

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TDB 0638

TEST THE EFFICACY OF BUD MITE CONTROL APPLICATIONS WITH AND WITHOUT THE ADDITION OF **WETCIT™**

BASIC INFORMATION

TARGET	Bud mite (*Colomerus vitis*)
CROP	Table grape, cv. Bonheur (red grape) (*Vitis vinifera*)
SPRAY VOLUME	730 - 1300 l/ha
LOCATION	Paarl, Western Cape • South Africa
TRIAL DATE	September 2013
RESEARCHER(S)	J. Kotze, **Oro Agri SA (Pty.) Ltd.**

FIELD SITUATION

Pre-season bud mite infestation was determined by doing bud analyses (3 buds on each of 6 cuttings per plot) in the dormant period during the winter of 2012. Plots were selected (all had an infestation level of approximately 50 % of buds analyzed being infested with bud mite) and treated three times at 14 day intervals, with the first treatment applied shortly after bud burst. A bud infestation analysis was again done on the same plots in the dormant period of the winter 2013.

TREATMENT TABLE

	TREATMENT		RATE	NOTES
1	Untreated		-	*Do three applications using motorized knapsack. Ensure thorough wetting of vines. Do first application when last buds break and follow up with 2 more applications at 14 day intervals.*
2	Pride®	fenazaquin 200 g/l	50 ml/hl	
3	Pride® + **WETCIT**	fenazaquin 200 g/l alcohol ethoxylate	50 ml/hl 150 ml/hl	
4	Flo sulphur	sulphur 700 g/l	600 ml/hl	
5	Flo sulphur + **WETCIT**	sulphur 700 g/l alcohol ethoxylate	600 ml/hl 150 ml/hl	

PHOTOS BY: ROLF GEBHARDT

GRAPE LEAF UPPER (L) AND LOWER (R) EPIDERMIS INFESTED WITH ERIOPHYID MITE

CONCLUSIONS

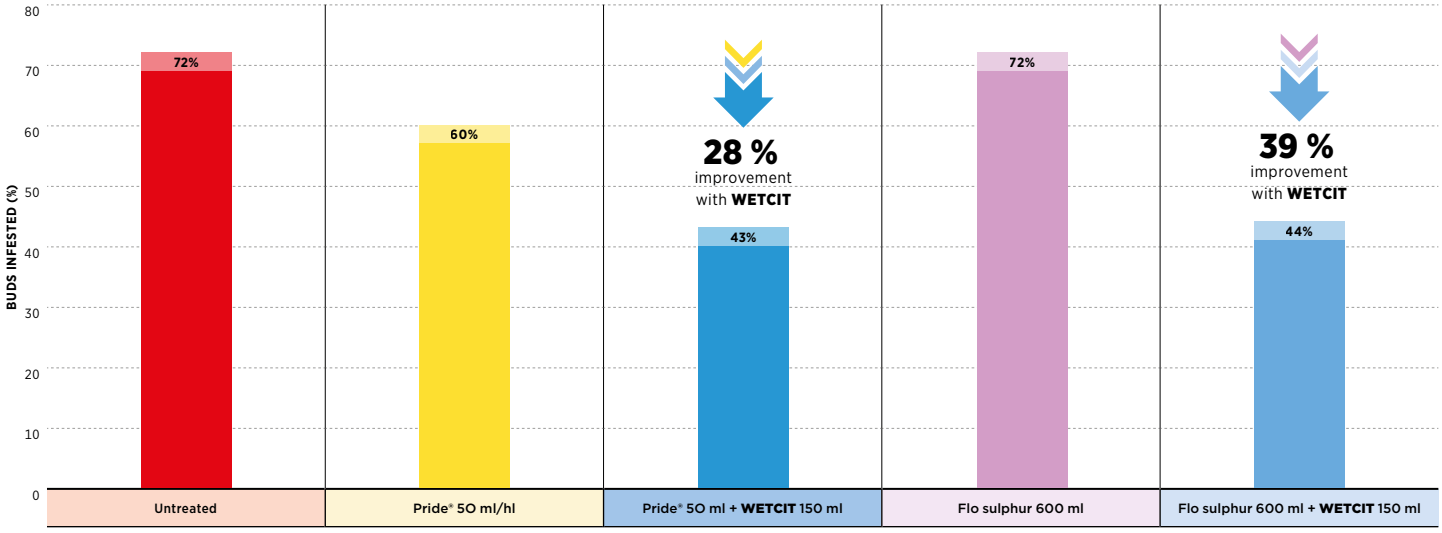
Both Treatment 2 and 4 show low control ability over buds infestations at the 2nd evaluation, but the addition of **WETCIT** in treatment 3 and 5 at 150 ml/hl provide an efficacy increase of 28 % and 39 % over the Pride® and Flowable Sulphur treatments dropping down significantly the population of budmites and buds infestations.

FIGURE **1**

Percentage buds infested

post treatment

AFTER THREE TREATMENTS AT 14 DAY INTERVALS. PAARL, WESTERN CAPE, SA, 2013



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TDB **0639**

TEST THE EFFICACY OF BUD MITE CONTROL APPLICATIONS WITH AND WITHOUT THE ADDITION OF **WETCIT™**

BASIC INFORMATION

TARGET	Bud mite (*Colomerus vitis*)
CROP	Table grape, cv. Sundance (white grape) (*Vitis vinifera*)
SPRAY VOLUME	730 - 1300 l/ha
LOCATION	Simondium, Western Cape • South Africa
TRIAL DATE	September 2013
RESEARCHER(S)	J. Kotze, **Oro Agri SA (Pty.) Ltd.**

FIELD SITUATION

Pre-season bud mite infestation was determined by doing bud analyses (3 buds on each of 6 cuttings per plot) in the dormant period during the winter of 2012. Plots were selected (all had an infestation level of approximately 50 % of buds analyzed being infested with bud mite) and treated three times at 14 day intervals, with the first treatment applied shortly after bud burst. A bud infestation analysis was done again on the same plots in the dormant period of the winter 2013.

GRAPE LEAF UPPER (L) AND LOWER (R) EPIDERMIS INFESTED WITH ERIOPHYID MITE

TREATMENT TABLE

	TREATMENT	RATE	NOTES
1	Untreated	-	*Do three applications using motorized knapsack. Ensure thorough wetting of vines. Do first application when last buds break and follow up with 2 more applications at 14 day intervals.*
2	Pride® (fenazaquin) 200 g/l	50 ml/hl	
3	Pride® (fenazaquin) 200 g/l + **WETCIT** (alcohol ethoxylate)	50 ml/hl 150 ml/hl	

CONCLUSIONS

The trial site was very heavily infested with bud mite, with the pre-treatment counts reflecting 90 % to 98 % infestation.

Although the bud analyses showed a 10% reduction in the Untreated, the standard treatment 2 (Pride® 50 ml/hl) did not reduce the bud mite infestation. In treatment 3, where **WETCIT** was added to Pride®, the reduction in infestation was improved. The standard treatment with Pride® at 50 ml/hl resulted in a lower increase of bud mite infection than the Untreated, but did not succeed in decreasing the infestation after 3 applications in spring. The addition of **WETCIT** at 150 ml/hl increased the efficacy of Pride® in 30 % on the reduction in infestation.

FIGURE **1**

Percentage buds infested

Pre and post treatment

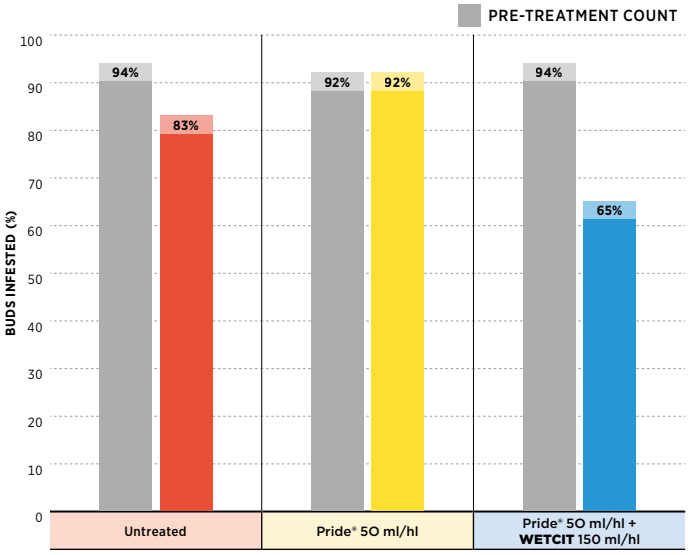
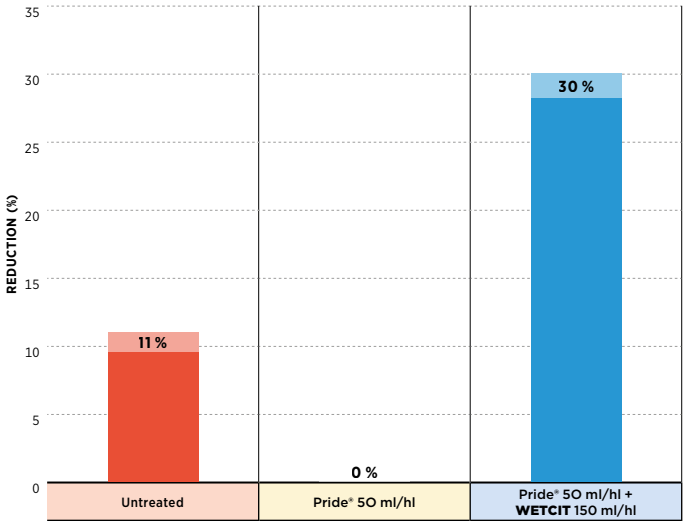


FIGURE **2**

Percentage reduction in infested buds



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TDB 0839

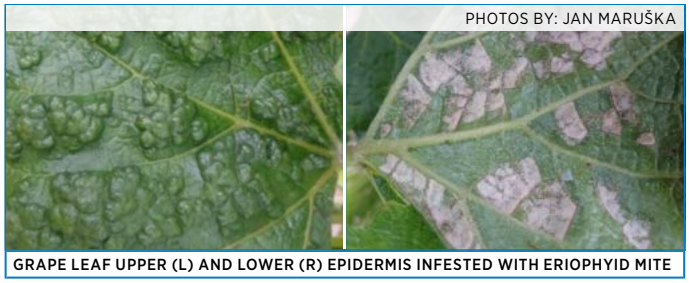
TEST THE EFFICACY ON ERIOPHYID MITE CONTROL APPLICATIONS WITH AND WITHOUT THE ADDITION OF **WETCIT™**

BASIC INFORMATION

TARGET	Eriophyid mite (*Colomerus vitis*)
CROP	Grape, cv. Blaufränkisch (*Vitis vinifera*)
SPRAY VOLUME	250 l/ha
LOCATION	Velké Pavlovice • Czech Republic
TRIAL DATE	April 2014
RESEARCHER(S)	Markéta Broklová, **Biocont Laboratory**

FIELD SITUATION

Standard small plot trial with control plots placed within blocks. Number of repetitions: 4. Number of plants on the plot: 12 vines. Growth stage during the application: BBCH 13 Leaf development (3rd leaves unfolded). Applicator type: Backpack hand motor sprayer STIHL SR340. Sample size per plot: 30 leaves. Assessment 6DAA.



GRAPE LEAF UPPER (L) AND LOWER (R) EPIDERMIS INFESTED WITH ERIOPHYID MITE

CONCLUSIONS

- The initial population escalated rapidly showing a high intensity of the pest was present.
- The addition of **WETCIT** to Kumulus® at standard rate and reduced rate had a clear effect on the efficacy of the treatment being also the only treatments where the population didn't increase over time.
- A reduction of 25 % in the rate of Kumulus® (in combination with **WETCIT** 0,2%) did not cause a statistically significant reduction in the efficacy of the treatment, compared to Kumulus 2% + **WETCIT** 0,2%) and the lower rate showed a much higher level of control when compared to Kumulus® alone or Kumulus® plus AquaVitrin K.

FIGURE **1**

Efficacy percentage

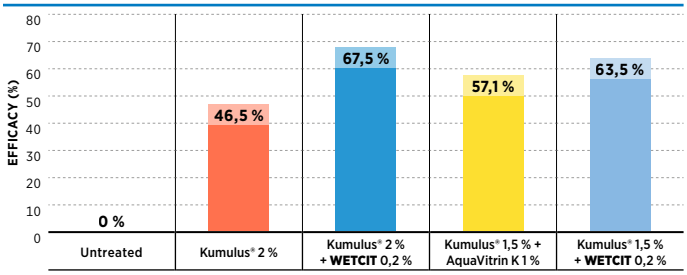


FIGURE **2**

Increase of mite population %

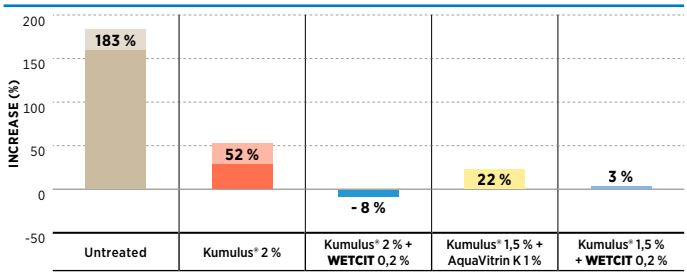
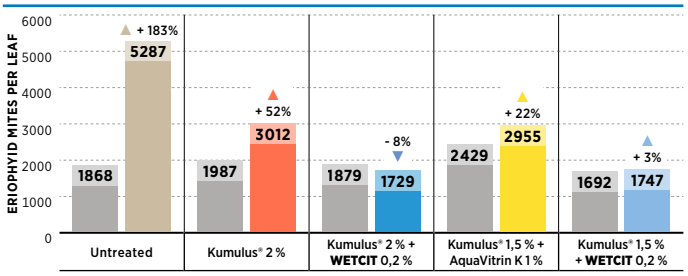


FIGURE **3**

Population Eriophyid mites per leaf

Pre and post treatment



TREATMENT TABLE

	TREATMENT	ACTIVE	RATE kg/ha	ADJUVANT	RATE l/ha
1	Untreated	-	-	-	-
2	Kumulus® 2 %	Sulphur 80 %	5	**WETCIT** 0,2 %	0,5
2	Kumulus® 1,5 %	Sulphur 80 %	3,75	**WETCIT** 0,2 %	0,5
3	Kumulus® 2 %	Sulphur 80 %	5	-	-
3	Kumulus® 2 %	Sulphur 80 %	5	AquaVitrin K*	2,5

* AquaVitrin K is BASF product containing 8 % of K_2O and 20 % of SiO_2

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Due to varietal and climatic differences **ORO AGRI** suggest you always test on small scale first to ensure your results are similar to studies portrayed in this brochure.

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