GRAPE SPRAY GUIDE

ORO AGRI
GROW WITH CONFIDENCE

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OROBOOST

ORGANIC ADJUVANT: PENETRANT-SPREADER-WETTING AID FOR USE WITH ORGANIC PESTICIDES

VINTRE

ADJUVANT FOR TREE & VINE CROPS

VINTRE® is an excellent tank-mix partner for your pesticide and fertilizer sprays. It can be a versatile alternative to other types of adjuvants and surfactants, such as crop oils (COC), methylated seed oils (MSO), silicone surfactants (SS) and non-ionic surfactants (NIS).

INSECTICIDE/FUNGICIDE/MITICIDE PROGRAMS

- Penetrates waxy cuticles to move systemic pesticides into the plant quickly
- Is an excellent spreader, at low rates, for contact pesticides
- Knocks down mite webbing and leaves no sticky residue to attract dust and cause mite flare-ups
- Unlike crop oil sprays it does not decrease stomatal conductance
- If use of another type of adjuvant is required by the pesticide label, VINTRE can also be added to improve spreading and penetration

HERBICIDE PROGRAMS

- TransPhloem™ Technology delivers MORE post-emergent, systemic herbicide to the weeds' roots FASTER than other types of adjuvants
- Superior spreading, wetting, and penetrating properties compared to other adjuvants
- Enhanced rainfastness due to fast cuticle penetration
- Ideal for herbicide resistance management

FOLIAR NUTRITIONAL PROGRAMS

- Ensures complete coverage for better nutrient distribution
- Increases uptake and distribution of nutrients throughout the plant

SUPERIOR SPREADING

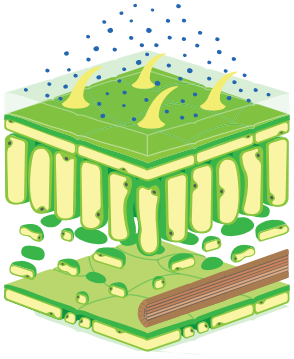
TransPhloem™ TECHNOLOGY

Trans Phloem TECHNOLOGY

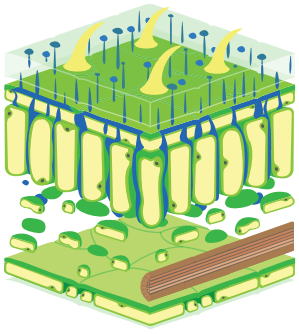
TransPhloem technology is the ability of Oro Agri foliar adjuvants to accelerate movement of pesticide active ingredients and nutrients into a plant's phloem for translocation throughout the plant.

SUPERIOR PENETRATION

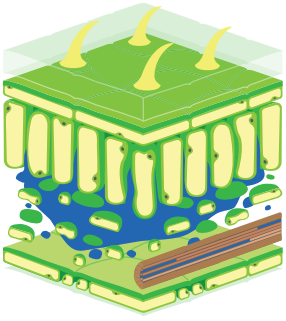
PRODUCT DEPOSITION



MOVEMENT THROUGH THE EPICUTICULAR WAX



TRANSLOCATION MOVEMENT



VINTRE

POWDERY MILDEW CONTROL ON CHARDONNAY GRAPES WITH VINTRE® ADJUVANT + QUINOXYFEN

TARGET	Powdery mildew *(Uncinula necator)*	**CROP**	Chardonnay grape *(Vitis vinifera)*
TRIAL DATE	April 2009	**LOCATION**	Courtland, California
RESEARCHER	W. Douglas Gubler, Christopher N. Janousek, Ian S. Bay. Department Of Plant Pathology, UC Davis		

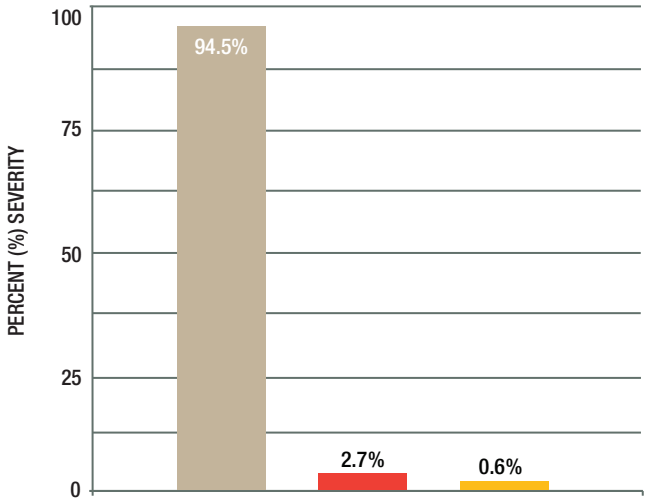
APPLICATION

The quinoxyfen and quinoxyfen + VINTRE treatments were part of a series of trials performed by the Department of Plant Pathology, University of California, Davis. Trials were laid out as complete randomized designs with 5 replicates. Treatments were applied with handgun sprayers delivering 100 gallons per acre pre-bloom, increasing to 200 gallons per acre in the late part of the season.

- UNTREATED
- Quinoxyfen (4 fl. oz.) (Every 14 Days)
- Quinoxyfen (4 fl. oz.) (Every 14 Days) + VINTRE (0.25%)

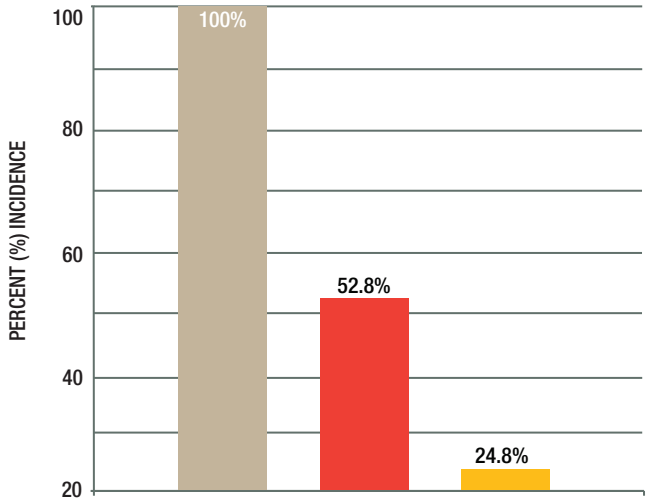
SEVERITY OF POWDERY MILDEW ON CHARDONNAY CLUSTERS AT START OF VERAISON

FOLLOWING DIFFERENT SPRAY TREATMENT PROGRAMS AT 14-DAY INTERVALS, FROM MID-APRIL TO MID-JULY 2009



INCIDENCE OF POWDERY MILDEW ON CHARDONNAY CLUSTERS AT START OF VERAISON

FOLLOWING DIFFERENT SPRAY TREATMENT PROGRAMS AT 14-DAY INTERVALS, FROM MID-APRIL TO MID-JULY 2009



ADDING VINTRE TO QUINOXYFEN IMPROVED ITS EFFICACY AGAINST POWDERY MILDEW

V.TBL.MILDEW.USA.09.297.1

VINTRE

POWDERY MILDEW CONTROL ON CHARDONNAY GRAPES WITH VINTRE® ADJUVANT + TRIFLOXYSTROBIN

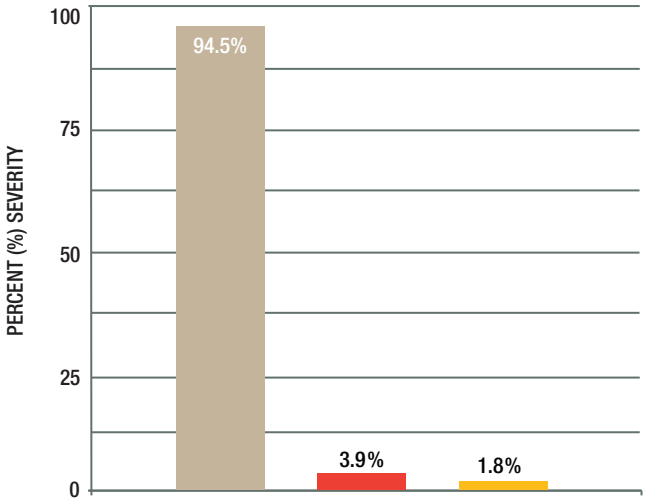
TARGET	Powdery mildew *(Uncinula necator)*	**CROP**	Chardonnay grape *(Vitis vinifera)*
TRIAL DATE	April 2009	**LOCATION**	Courtland, California
RESEARCHER	W. Douglas Gubler, Christopher N. Janousek, Ian S. Bay, Department Of Plant Pathology, UC Davis		

APPLICATION

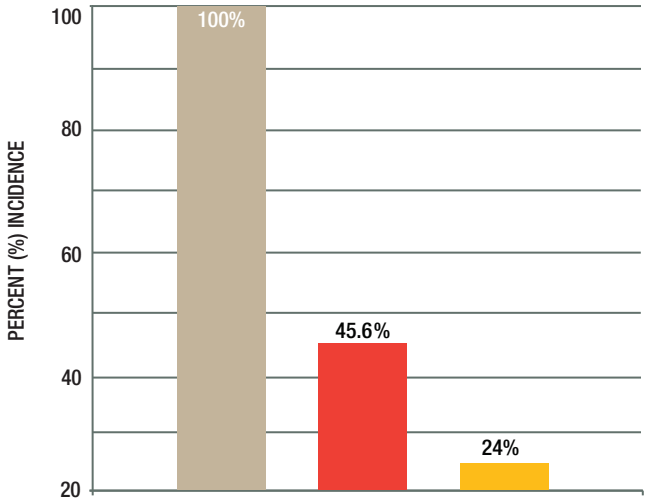
The trifloxystrobin and trifloxystrobin + VINTRE treatments were part of a series of trials performed by the Department of Plant Pathology, University of California, Davis, during the 2009 season. Trials were laid out as complete randomized designs with 5 replicates. Treatments were applied with handgun sprayers delivering 100 gallons per acre pre-bloom, increasing to 200 gallons per acre in the late part of the season.

- UNTREATED
- Trifloxystrobin (2 oz./a) (Every 14 Days)
- Trifloxystrobin (2 oz./a) + VINTRE (0.25%) (Every 14 Days)

SEVERITY OF POWDERY MILDEW ON CHARDONNAY CLUSTERS AT START OF VERAISON
FOLLOWING DIFFERENT SPRAY TREATMENT PROGRAMS AT 14-DAY INTERVALS, FROM MID-APRIL TO MID-JULY 2009



INCIDENCE OF POWDERY MILDEW ON CHARDONNAY CLUSTERS AT START OF VERAISON
FOLLOWING DIFFERENT SPRAY TREATMENT PROGRAMS AT 14-DAY INTERVALS, FROM MID-APRIL TO MID-JULY 2009



ADDING VINTRE TO TRIFLOXYSTROBIN IMPROVED ITS EFFICACY AGAINST POWDERY MILDEW

V.TBL.MILDEW.USA.09.297.2

VINTRE

POWDERY MILDEW CONTROL ON CHARDONNAY GRAPES WITH VINTRE® ADJUVANT + SULFUR

TARGET	Powdery mildew *(Uncinula necator)*	**CROP**	Chardonnay grape *(Vitis vinifera)*
TRIAL DATE	April 2009	**LOCATION**	Courtland, California
RESEARCHER	W. Douglas Gubler, Christopher N. Janousek, Ian S. Bay, Department Of Plant Pathology, UC Davis		

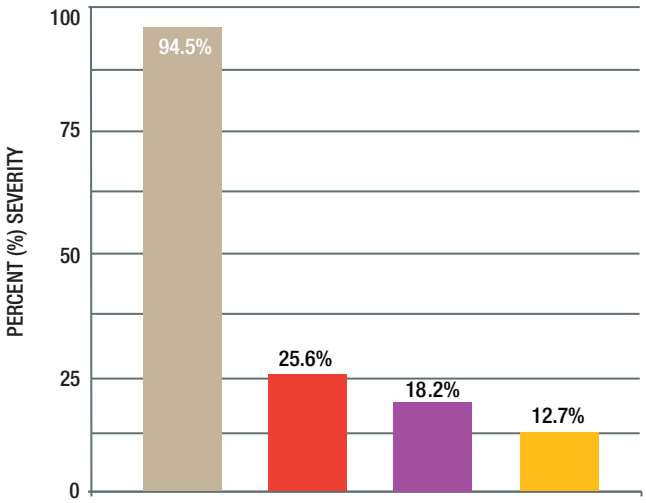
APPLICATION

The micronized sulfur and micronized sulfur + VINTRE treatments 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 randomized designs with 5 replicates. Treatments were applied with handgun sprayers delivering 100 gallons per acre pre-bloom, increasing to 200 gallons per acre in the late part of the season.

- UNTREATED
- Sulfur (5 lbs./a) (Every 14 Days)
- Sulfur (3 lbs./a) + VINTRE (0.25%) (Every 14 Days)
- Sulfur (5 lbs./a) + VINTRE (0.25%) (Every 14 Days)

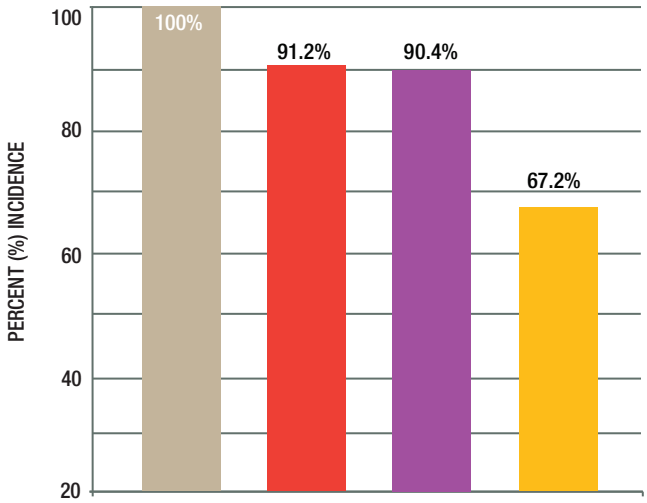
SEVERITY OF POWDERY MILDEW ON CHARDONNAY CLUSTERS AT START OF VERAISON

FOLLOWING DIFFERENT SPRAY TREATMENT PROGRAMS AT 14-DAY INTERVALS, FROM MID-APRIL TO MID-JULY 2009



INCIDENCE OF POWDERY MILDEW ON CHARDONNAY CLUSTERS AT START OF VERAISON

FOLLOWING DIFFERENT SPRAY TREATMENT PROGRAMS AT 14-DAY INTERVALS, FROM MID-APRIL TO MID-JULY 2009



The addition of VINTRE to a 40% reduced rate of sulfur (3 lbs/acre) results in a better level of control and percent incidence of powdery mildew compared to the full-rate of sulfur (5 lbs/acre) alone. The highest level control and lowest percent incidence was achieved with the addition of VINTRE to the full-rate of sulfur.

V.TBL.MILDEW.USA.09.297.3

VINTRE

POWDERY MILDEW CONTROL ON GRAPES WITH VINTRE® ADJUVANT + RALLY AND QUINTEC

TARGET	Powdery mildew *(Erisyphe necator)*	**CROP**	Chardonnay grape *(Vitis vinifera)*
TRIAL DATE	April - July 2010	**LOCATION**	Courtland, California
RESEARCHER	W. Douglas Gubler, Christopher N. Janousek, Ian S. Bay, Department Of Plant Pathology, UC Davis		

APPLICATION

Fungicide trials on Chardonnay grapes were conducted at Herzog Ranch, near Courtland, California. A complete randomized design was used with 5 replicates and handgun sprayers were used for application. The spray frequency had 21 day intervals. During the application period (mid-April to mid-July), vines were irrigated twice by flooding.

Spray volumes:

75 gal./a first spray
100 gal./a pre-bloom in mid-April
150 gal./a pre-bloom to pea-sized berries
200 gal./a late season

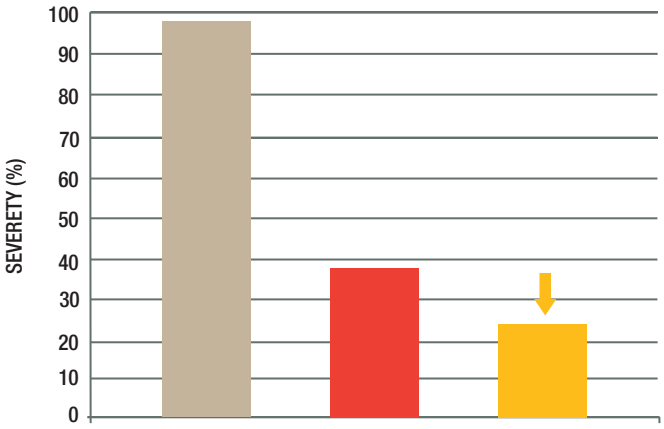
Disease was assessed on July 21. Clusters of 20-25 grapes were evaluated for powdery mildew incidence and severity in each plot. Severity was determined by estimating the percentage of berries in a cluster that was infected; the severity value of all clusters was then averaged to give a plot-wide estimate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

RESULTS

There was 31% lower severity of powdery mildew when VINTRE was added to the myclobutanil and quinoxyfen treatment.

- UNTREATED
- Rally *(myclobutanil)* (5 oz./a) alternated with Quintec *(quinoxyfen)* (6.6 oz./a)
- Rally *(myclobutanil)* (4 oz./a) + VINTRE 0.25% (v/v) alternated with Quintec *(quinoxyfen)* (6.6 oz./a) + VINTRE 0.25% (v/v)

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



31.2% Improvement with VINTRE and less Myclobutanil

V.TBL.MILDEW.USA.10.335

VINTRE

MEALYBUG CONTROL ON GRAPEVINES WITH VINTRE® ADJUVANT + MOVENTO AND APPLAUD (PART 1)

TARGET	Grapevine mealybug (*Planococcus ficus*)	**CROP**	Grape, var. Pinot Grigio
TRIAL DATE	July - August 2010	**LOCATION**	Lodi, CA
RESEARCHER	D. Dunbar, R3 Ag Consulting LLC, B. Bauer, Two Bees Agricultural Research & Consulting		

APPLICATION

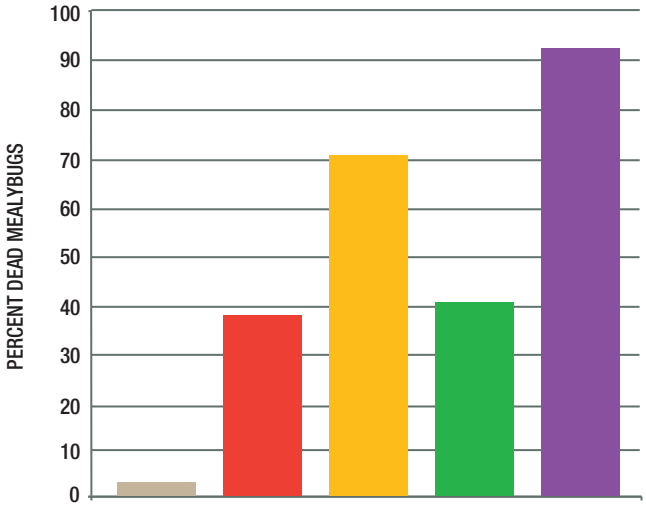
The initial spray program consisted of Movento SC and Applaud 70WP, with and without VINTRE. Spray applications were done on July 24 and August 7, 2010. There were 4 replicates with 3-4 vines per plot. Spray volume was 137 gal./a and a mistblower sprayer was used. Dead and live mealybugs were counted on the cordons and wood at 6 and 13 days after treatment and the percentage dead were calculated.

RESULTS

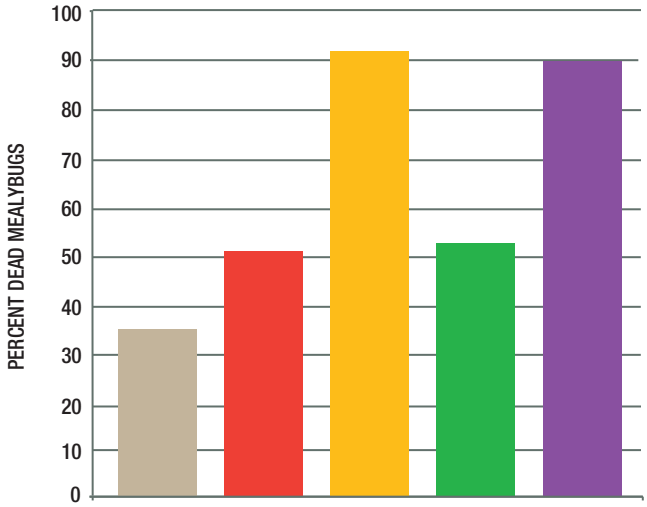
VINTRE combined with Movento or Applaud resulted in improved mealybug kill at 6 DAT and 13 DDT compared to Movento and Applaud applied alone. Apart from acceleration of the pesticides by penetrating and dissolving the waxy coating surrounding the mealybugs, VINTRE also aids in the removal of the honeydew which serves as a food source for ants.

- UNTREATED
- Movento SC *(spirotetramat)* (6 fl. oz./a) (7/24/10)
- Movento SC *(spirotetramat)* (6 fl. oz./a) + VINTRE (0.25% v/v) (44 fl. oz./a) (7/24/10)
- Applaud 70WP *(buprofezin)* (12 oz./a) (7/24/10 + 8/7/10)
- Applaud 70WP *(buprofezin)* (12 oz./a) + VINTRE (0.25% v/v) (44 fl. oz./a) (7/24/10 + 8/7/10)

PERCENT DEAD MEALYBUGS AT 6 DAYS AFTER TREATMENT



PERCENT DEAD MEALYBUGS AT 13 DAYS AFTER TREATMENT



V.TBL.MEALYBUG.USA.10.337.P1

VINTRE

MEALYBUG CONTROL ON GRAPEVINES WITH VINTRE® ADJUVANT + MOVENTO (PART 2)

TARGET	Grapevine mealybug (*Planococcus ficus*)	**CROP**	Grape, var. Pinot Grigio
TRIAL DATE	July - August 2010	**LOCATION**	Lodi, CA
RESEARCHER	D. Dunbar, R3 Ag Consulting LLC, B. Bauer, Two Bees Agricultural Research & Consulting		

APPLICATION

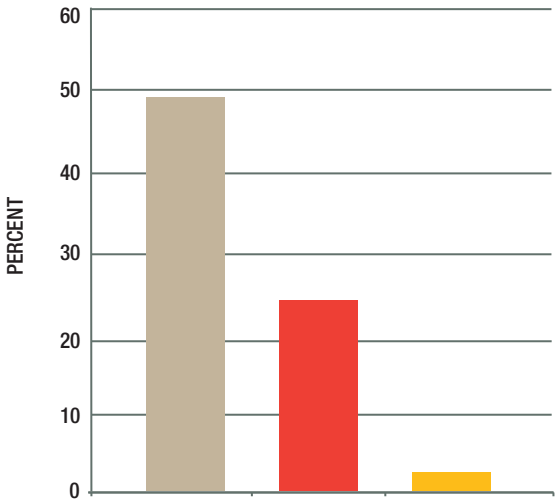
The spray program consisted of Movento SC applied with and without VINTRE. Spray application was on July 24, 2010. There were 4 replicates with 3-4 vines per plot. Spray volume was 137 gal./a and a mistblower sprayer was used. On August 16, the percentage infested bunches and the severity of bunch infestation were calculated. The severity of honeydew production was also rated.

RESULTS

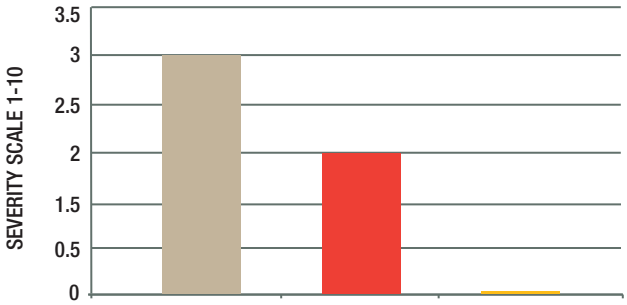
All treatments significantly reduced the percent mealybug infested bunches by 43-94% below that in the untreated check. Movento + VINTRE was the best treatment with 3% infested bunches. Movento + VINTRE was the best treatment in this test with a 0 severity rating. Movento + VINTRE reduced the mealybug infestation to very low levels so there was little to no honeydew.

- UNTREATED
- Movento SC *(spirotetramat)* (6 fl. oz./a)
- Movento SC *(spirotetramat)* (6 fl. oz./a) + VINTRE (0.25% v/v) (44 fl. oz./a)

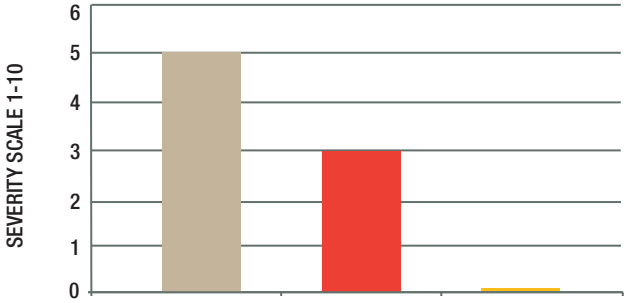
PERCENT BUNCHES INFESTED WITH MEALYBUG



SEVERITY OF BUNCH INFESTATION WITH MEALYBUG



HONEYDEW RATING ON FRUIT, LEAVES AND CORDONS



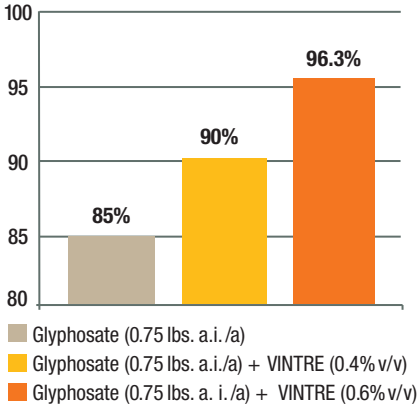
V.TBL.MEALYBUG.USA.10.337.P2

VINTRE

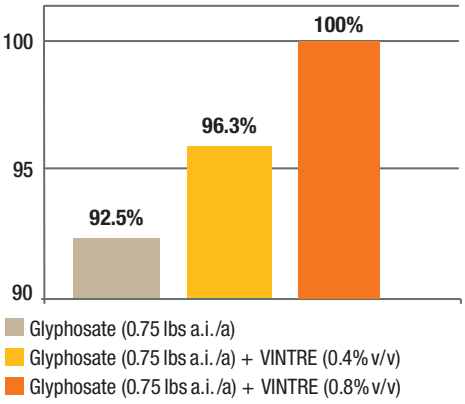
HERBICIDE BOOSTER

RESEARCHERS D. Dunbar, Ron Kukas, SurfAgri, Wilson & Hines and TRACS

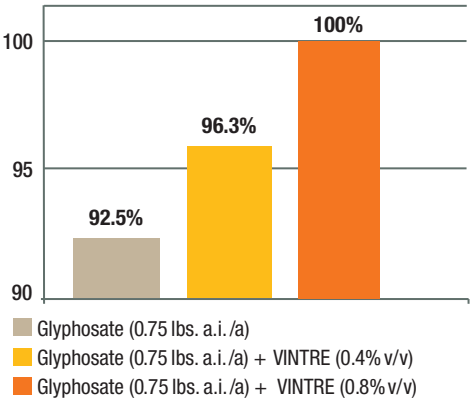
PERCENTAGE CONTROL OF JOHNSONGRASS ACHIEVED BY GLYHPHOSATE WITH AND WITHOUT THE ADDITION OF VINTRE®



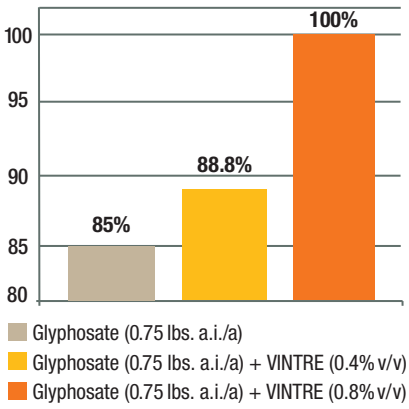
PERCENTAGE CONTROL OF COMMON CHICKWEED ACHIEVED BY GLYPHOSATE WITH AND WITHOUT THE ADDITION OF VINTRE



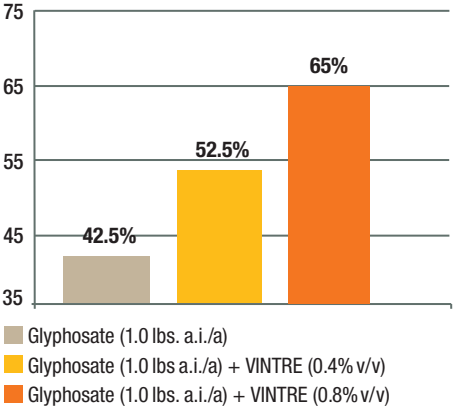
PERCENTAGE CONTROL OF ANNUAL BLUEGRASS ACHIEVED BY GLYPHOSATE WITH AND WITHOUT THE ADDITION OF VINTRE



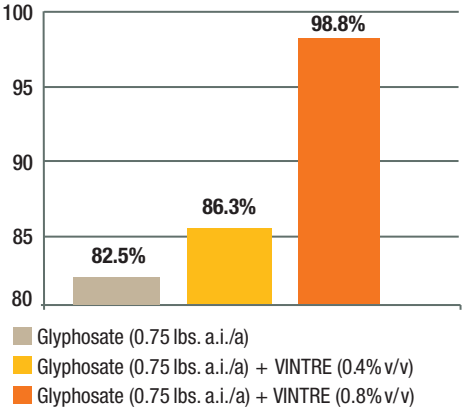
PERCENTAGE CONTROL OF SWINECRESS ACHIEVED BY GLYPHOSATE WITH AND WITHOUT THE ADDITION OF VINTRE



PERCENTAGE CONTROL OF FLAXLEAF FLEABANE ACHIEVED BY GLYPHOSATE WITH AND WITHOUT THE ADDITION OF VINTRE



PERCENTAGE CONTROL OF SHEPHERD'S PURSE ACHIEVED BY GLYPHOSATE WITH AND WITHOUT THE ADDITION OF VINTRE



A SOLID HERBICIDE BOOSTER

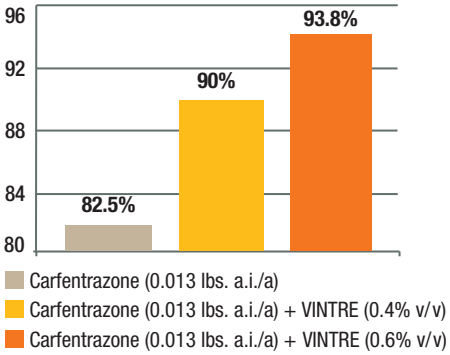
- **SUPERIOR** wetting, spreading and penetration properties
- **IMPROVES** herbicide efficacy on difficult to control weeds
- **ACCELERATES** response time of herbicides, insecticides, miticides and fungicides
- **REPLACES** other spreader and penetrant adjuvants
- **ORO AGRI** products are biodegradable - making them ideal for use in sustainable growing practices

V.USA.190

VINTRE

HERBICIDE BOOSTER

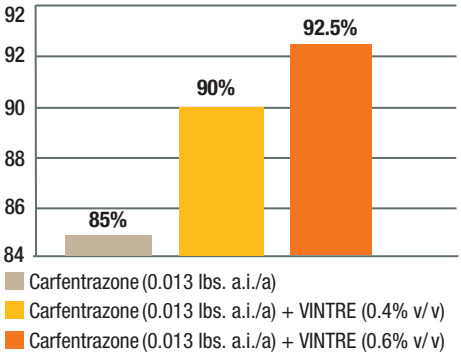
PERCENTAGE CONTROL OF REDSTEM FILAREE ACHIEVED BY CARFENTRAZONE WITH AND WITHOUT THE ADDITION OF VINTRE



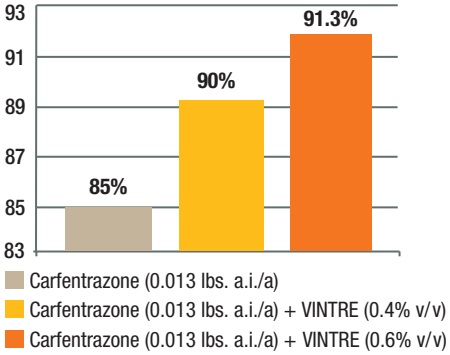
VINTRE
EQUIVALENT CONCENTRATIONS TABLE

PERCENTAGE PER VOLUME	OUNCES PER 100 GALLONS
0.2%	26
0.4%	50
0.6%	75
0.8%	100

PERCENTAGE CONTROL OF LONDON ROCKET ACHIEVED BY CARFENTRAZONE WITH AND WITHOUT THE ADDITION OF VINTRE



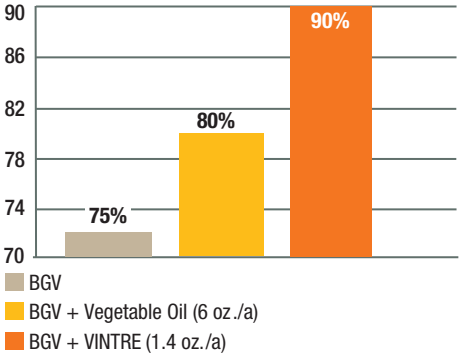
PERCENTAGE CONTROL OF COAST FIDDLENECK ACHIEVED BY CARFENTRAZONE WITH AND WITHOUT THE ADDITION OF VINTRE



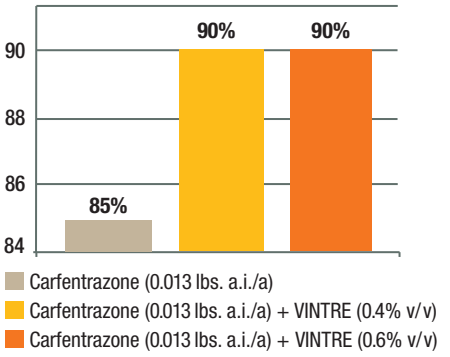
BGV HERBICIDE MIXTURE
CONSTITUENT INGREDIENTS

BETANAL NOVATION (TRADEMARK OF BAYER CROPSCIENCE)	
Ethofumesate Desmedipham Phenmedipham	14 oz.
GOLTIX (TRADEMARK OF MAKHTESHIM)	
Metamitron	6 oz.
VENZAR (TRADEMARK OF DU PONT)	
Lenacil	1.5 oz.

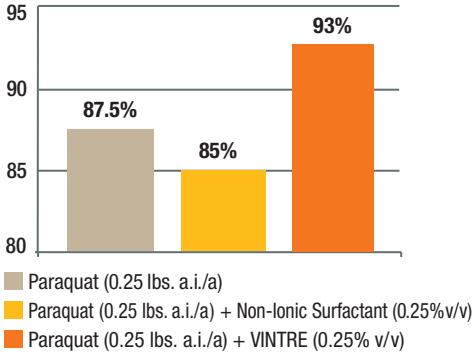
PERCENTAGE CONTROL OF ANNUAL MERCURY ACHIEVED BY BGV MIXTURE PLUS VEGETABLE OIL AND VINTRE



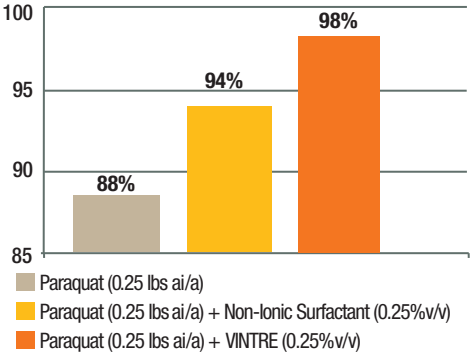
PERCENTAGE CONTROL OF SHEPHERD'S PURSE ACHIEVED BY CARFENTRAZONE WITH AND WITHOUT THE ADDITION OF VINTRE



PERCENTAGE CONTROL OF LAMBSQUARTERS ACHIEVED BY PARAQUAT IS IMPROVED BY THE ADDITION OF VINTRE



PERCENTAGE CONTROL OF SMOOTH PIGWEED ACHIEVED BY PARAQUAT IS IMPROVED BY THE ADDITION OF VINTRE



V.USA.190

PREV-AM

VERSATILE PESTICIDE WITH QUICK KNOCKDOWN

PREV-AM® is a 3-in-1 insecticide, miticide and fungicide. It is a contact pesticide that can be applied throughout the season without the danger of resistance and is perfect for controlling pre-harvest insect and disease infestations.

BENEFITS OF PREV-AM MODE OF ACTION

- Desiccating properties provide contact control resulting in a quick knockdown
- With a 24-hour REI and no PHI, it is a versatile alternative to conventional pesticides
- Is ideally suited for IPM and sustainable farming practices
- Is less harmful to bees and beneficial predators because it has no residual efficacy

PREV-AM AS AN INSECTICIDE AND MITICIDE

Insects/mites are protected by a water repellent layer that loses its effectiveness when contacted by a PREV-AM application. This allows the active ingredient to penetrate and destroy the soft, living tissues underneath. The insects/mites are then exposed to the loss of body fluids, causing death. Flying insects experience loss of the protective coverings and tension in the wings, making them unable to fly. Additionally, water repellent hairs protecting the flexing points in insects lose their effectiveness, allowing PREV-AM to penetrate to their susceptible body parts, which are then destroyed. On some insects/mites the ultra low surface tension of PREV-AM allows an influx into the respiratory organs, causing internal suffocation.

PREV-AM AS A FUNGICIDE

The PREV-AM solution wets the protective membranes of the superficial fungal mycelia (hyphae) and spores, allowing the active ingredient to penetrate and destroy the living tissues underneath. This exposes the organism to the drying effect of the atmosphere and causes collapse within 2 to 24 hours. Plant tissue damaged by the fungus may also dry out and prevent further spread of infection, but healthy tissue is not affected at the recommended application rate.

USE RATES

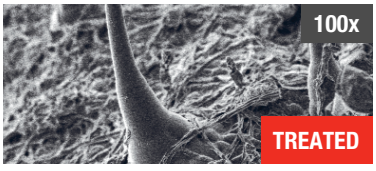
PREV-AM AS AN INSECTICIDE, FUNGICIDE AND MITICIDE

50 - 100 ounces per 100 gallons of water

See product labels for more complete information and application directions.

PREV-AM 0.4% - 24 hrs after treatment

PREV-AM 0.4% - 48 hrs after treatment



PREV-AM 0.4% - 2 days after treatment

Potato Aphid

Asian Citrus Psyllid

Mycelia growing up against leaf hairs

PREV-AM

POWDERY MILDEW CONTROL ON GRAPES WITH PREV-AM

TARGET	Powdery mildew *(Uncinula necator)*	**CROP**	Wine grape cv. Aurore		
TRIAL DATE	April 2010	**LOCATION**	Lawton, MI	**RESEARCHER**	A.M.C. Schilder, J.M. Gillett, & R.W. Sysak, MSU

APPLICATION

The experiment was conducted in a mature commercial vineyard in Lawton, MI. Vines were spaced at 7 x 9 ft. and treatments were applied to 3-vine plots and were replicated 4 times in a randomized complete block design. Sprays were applied with a R&D Research CO_2 cart-styled sprayer with a pressure regulator set at 55 psi, and a single XR TeeJet 8002VS nozzle on a 5-ft. spray boom. Spray volume was 50 gal./a.

Spray dates and approximate phenological stages were as follows: June 16 (full bloom), July 15 (bunch closure), August 10 (veraison: 9.5º Brix), and August 23 (pre-harvest). All plots, including the untreated control, received a cover spray of Sulfur 6L at 7 pt/.a on June 30 (BB sized fruit).

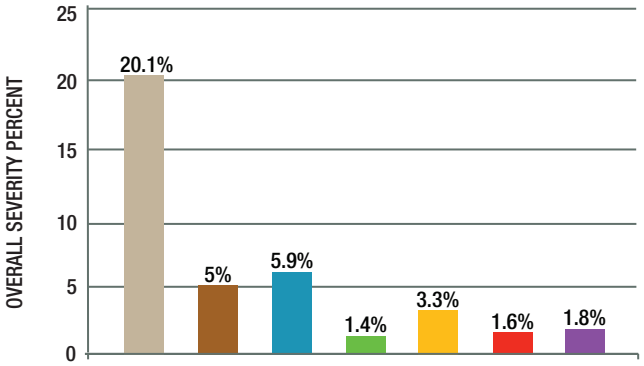
Disease was assessed on the center vine of each plot on Sept 6. Powdery mildew incidence (% leaves exhibiting disease) and severity (% leaf area infected on diseased leaves only) were visually estimated on 20 randomly selected leaves per plot. Overall severity was calculated as (incidence x severity)/100.

RESULTS

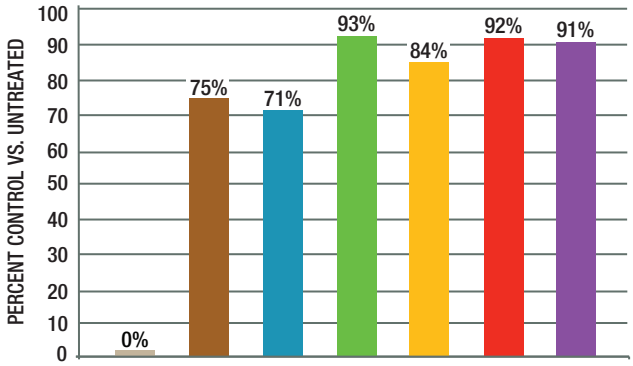
PREV-AM was equally as effective as all the other products. All treatments resulted in a statistically significant reduction in powdery mildew.

- UNTREATED
- Citrex 100 *(mineral oil)* (2.4 fl. oz./a) — Spray# 1 - 4
- Citrex 100 *(mineral oil)* (2.4 fl. oz./a) — Spray# 1 & 3
- Vanguard 75WG *(cyprodinil)* (10 oz./a) — Spray# 2 & 4
- Pristine 38 WG *(pyraclostrobin & boscalid)* (10.5 fl. oz./a) — Spray# 1 & 3
- Vanguard 75WG *(cyprodinil)* (10 fl. oz./a) — Spray# 2 & 4
- Elevate 50 WDG *(fenhexamid)* (1 lb./a) — Spray# 1 & 3
- Vanguard 75WG *(cyprodinil)* (10 fl. oz./a) — Spray# 2 & 4
- PREV-AM (50 fl. oz./a) — Spray# 1 - 4
- Endura *(boscalid)* (8 oz./a) — Spray# 1 - 4

OVERALL SEVERITY OF POWDERY MILDEW AFTER INDICATED SPRAY PROGRAMS WITH FOUR SPRAY DATES ON AURORE GRAPES



PERCENT CONTROL VS. UNTREATED CONTROL OF POWDERY MILDEW AFTER INDICATED SPRAY PROGRAMS WITH FOUR SPRAY DATES ON AURORE GRAPES



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PREV-AM

DOWNY MILDEW CONTROL ON NIAGARA GRAPES WITH PREV-AM

TARGET	Downy mildew *(Plasmopara viticola)*	**CROP**	Grape, var. Niagara *(Vitis vinifera)*		
TRIAL DATE	May-Sept 2006	**LOCATION**	Fennville, MI	**RESEARCHER**	A.M.C. Schilder, J.M. Gillett, & R.W. Sysak, MSU

APPLICATION

The trial was established in a 7 year old "Niagara" vineyard at the Trevor Nichols Research Complex in Fennville, Michigan. Plots measuring 6×10 ft and made up of 7 vines each were replicated four times in a randomized complete block design. Treatments were applied by means of an R&D Research CO_2 cart-styled sprayer equipped with six bottles (0.8 gal. each), a twin-gauge Norgren pressure regulator set at 55 psi and a single XR TeeJet 8002VS nozzle on a 5-ft spray boom, delivering a final spray volume of 30 gal./a.

Spray dates and approximate phenological stages were as follows: 1 · May 22: 1 inch shoot, 2 · June 1: 6 inch shoot, 3 · June 15: Immediate pre-bloom, 4 · June 27: 1st post-bloom, 5 · July 11: 2nd post-bloom, 6 · July 25: 3rd post-bloom, 7 · August 8: 4th post-bloom.

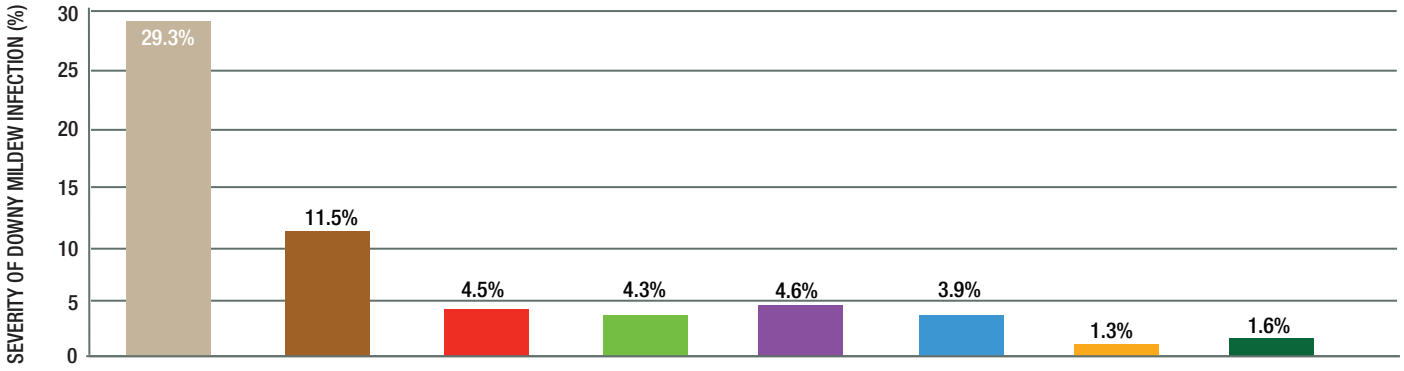
On 16 August, 25 clusters and leaves were randomly selected and assessed for downy mildew incidence and severity.
Overall severity was calculated as (incidence×severity) /100.

RESULTS

Disease pressure was moderate for downy mildew. All treatments, except for Agri-Fos, provided good to excellent control of downy mildew on the leaves. ProPhyt, Citrex, PREV-AM and Phostrol all provided statistically equivalent control. PREV-AM as a stand alone spray shows that it can be included in a resistance management program as an alternative active ingredient in a fungicide rotation.

- UNTREATED
- Agri-Fos *(K salts of phosphorous acid)* (4 pt./a) — Spray# 1 - 7
- PREV-AM (50 fl. oz./a) — Spray# 1 - 7
- Phostrol *(Na, K & NH_3 phosphites)* (4 pt./a) — Spray# 1 - 7
- Citrex 100 *(mineral oil)* (2.4 fl. oz./per a) — Spray# 1 - 7
- ProPhyt *(potassium phosphite)* (4 pt./a) — Spray# 1 - 7
- Sulfur 6L *(sulfur)* (10 pt./a) — Spray# 1
- Abound 2.08SC *(azoxystrobin)* (12 fl. oz./a) — Spray# 4
- Elite 45DF *(tebuconazole)* (40 oz./a) — Spray# 5
- Ziram 76DF *(zinc dimethyldithiocarbamate)* (3 lbs./a) Spray# 5
- Dithane Rainshield *(mancozeb)* (3 lbs./a) — Spray# 1,2,3
- Abound 2.08SC *(azoxystrobin)* (12 fl. oz./a) — Spray# 4
- Nova 40WP *(myclobutanil)* (5 oz./a) — Spray# 5,6
- Ziram 76DF *(zinc dimethyldithiocarbamate)* (3 lbs./a) Spray # 5,6,7

OVERALL SEVERITY OF DOWNY MILDEW INFESTATION ON NIAGARA GRAPE LEAVES



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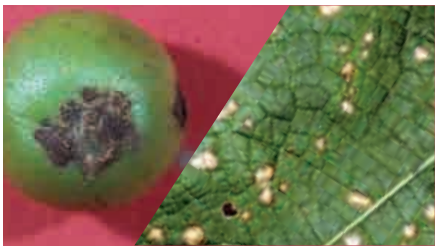
PREV-AM



BLACK ROT CONTROL ON NIAGARA GRAPES WITH PREV-AM®

TARGET	Black rot *(Guignardia bidwellii)*	**CROP**	Grape, var. Niagara *(Vitis labrusca)*		
TRIAL DATE	April 2010	**LOCATION**	Fennville, MI	**RESEARCHER**	A.M.C. Schilder, J.M. Gillett, & R.W. Sysak, MSU

APPLICATION

The trial was established in a 7-year old "Niagara" vineyard at the Trevor Nichols Research Complex in Fennville, Michigan. Experimental plots, each consisting of 7 vines spaced 6×10 ft., were replicated four times in a randomized complete block design. Treatments were applied by means of an R&D Research CO_2 cart-styled sprayer equipped with six bottles (0.8 gal each), a twin-gauge Norgren pressure regulator set at 55 psi and a single XR TeeJet 8002VS nozzle on a 5-ft. spray boom, delivering a final spray volume of 30 gal /acre.

Spray dates and approximate phenological stages were as follows: 1 · May 22: 1 inch shoot, 2 · June 1: 6 inch shoot, 3 · June 15: Immediate pre-bloom, 4 · June 27: 1st post-bloom, 5 · July 11: 2nd post-bloom, 6 · July 25: 3rd post-bloom, 7 · August 8: 4th post-bloom.

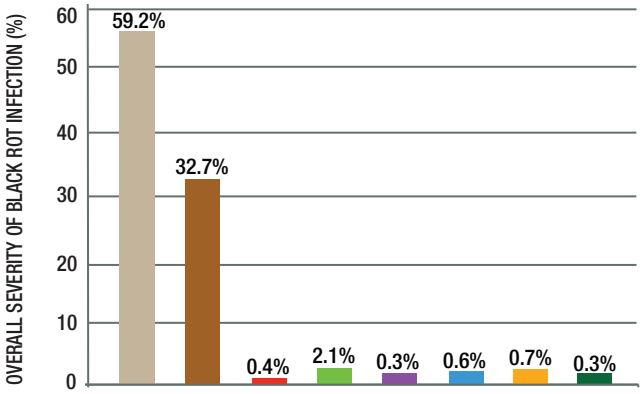
On August 16, 25 clusters and leaves were randomly selected and assessed for black rot incidence and severity.
Overall severity was calculated as (incidence×severity)/100.

RESULTS

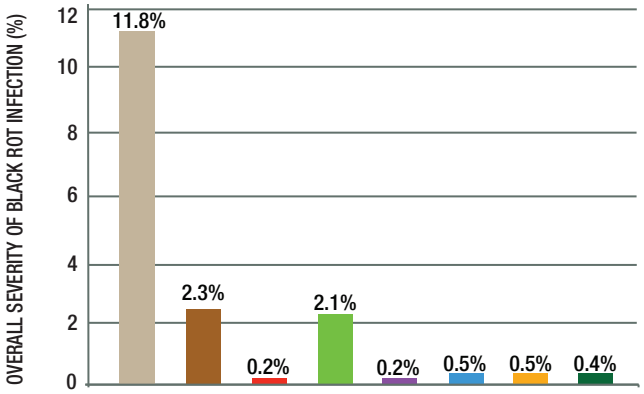
Disease pressure was moderately high for black rot. All treatments (except Agri-Fos) provided excellent control of black rot fruit infection, while black rot leaf spot severity was controlled well by all treatments. Results indicate that PREV-AM can be included in an existing fungicide program as a stand alone, reduced-risk fungicide spray in order to alternate and reduce the frequency at which other products are used.

- UNTREATED
- Agri-Fos *(K salts of phosphorous acid)* (4 pt./a) — Spray# 1 - 7
- PREV-AM (50 fl. oz./a) — Spray# 1 - 7
- Phostrol *(Na, K & NH_3 phosphites)* (4 pt./a) — Spray# 1 - 7
- Citrex 100 *(mineral oil)* (2.4 fl. oz./a) — Spray# 1 - 7
- ProPhyt *(potassium phosphite)* (4 pt./a) — Spray# 1 - 7
- Sulfur 6L *(sulfur)* (10 pt./.a) — Spray# 1
- Abound 2.08SC *(azoxystrobin)* (12 fl. oz./a) — Spray# 4
- Elite 45DF *(tebuconazole)* (40 oz./a) — Spray# 5
- Ziram 76DF *(zinc dimethyldithiocarbamate)* (3 lbs./a) Spray# 5
- Dithane Rainshield *(mancozeb)* (3 lbs./a) — Spray# 1,2,3
- Abound 2.08SC *(azoxystrobin)* (12 fl. oz./a) — Spray# 4
- Nova 40WP *(myclobutanil)* (5 oz./a) — Spray# 5,6
- Ziram 76DF *(zinc dimethyldithiocarbamate)* (3 lbs./a) Spray # 5,6,7

SEVERITY OF BLACK ROT INFECTION ON NIAGARA GRAPE BERRIES



SEVERITY OF BLACK ROT INFECTION ON NIAGARA GRAPE LEAVES



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PREV-AM

DOWNY MILDEW CONTROL ON BARRANTES WINE GRAPES WITH PREV-AM

TARGET	Downy mildew *(Viticola plasmopara)*	**CROP**	Wine grape, var. Barrantes *(Vitis vinifera L.)*		
TRIAL DATE	June 2004	**LOCATION**	Corbillon-Villanova de Arousa, Galicia, Spain	**RESEARCHER**	J. Alvarez, Nufarm Espana S.A.

APPLICATION

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 northwest 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 June 9, June 17, June 28 and July 8 respectively, with four replicates per treatment and intervals of about 8-11 days between applications.

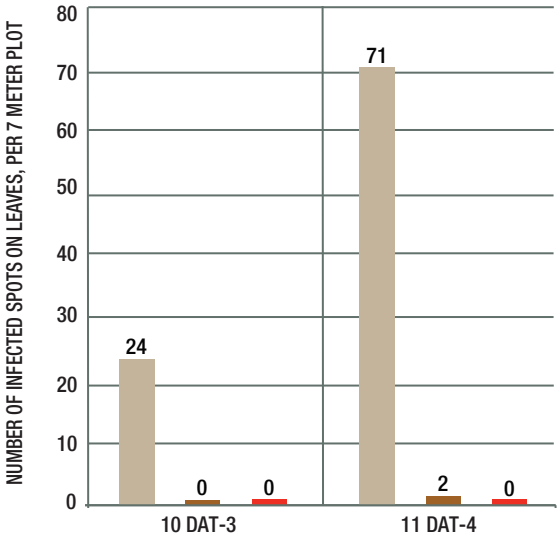
Treatments were applied using a motorized backpack sprayer that delivered a final spray volume of 88 gallons of water per acre. Evaluations were made on July 8 and 19 (10 DAT-3 and 11 DAT-4, respectively). The first symptoms of downy mildew were detected on leaves of the untreated plots after the third application.

RESULTS

PREV-AM demonstrated a high degree of activity against downy mildew in the vineyard.

- UNTREATED
- PREV-AM (50 fl. oz./100 gal.)
- Curzate C *(cymoxanil 3%, Copper 22.5%)* (57 oz./a)

INCIDENCE OF DOWNY MILDEW ON BARRANTES WINE GRAPE LEAVES



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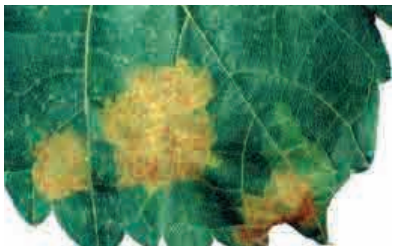
PREV-AM



DOWNY MILDEW CONTROL ON GRAPES WITH PREV-AM

TARGET	Downy mildew *(Plasmopara viticola)*	**CROP**	Wine grape, var. Moscato		
TRIAL DATE	May - Oct 2005	**LOCATION**	Alba, Piedmont, Italy	**RESEARCHER**	Hoppe BioEco

APPLICATION

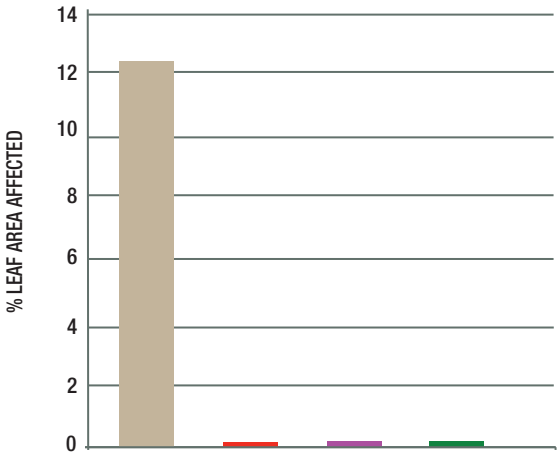
The experimental plot size was 323 square feet and a randomized complete block design was used with 4 replications.
There were 4 treatments including, King NEW (copper), King (tribasic copper sulphate) and PREV-AM.
Application volume: 107 gal./a.
11 applications were made in the disease control program at 7 – 10 day intervals, starting on May 20, 2005 and ending on August 1, 2005.
The percentages of leaf area and clusters infected with downy mildew were evaluated 11 days after the last treatment.

RESULTS

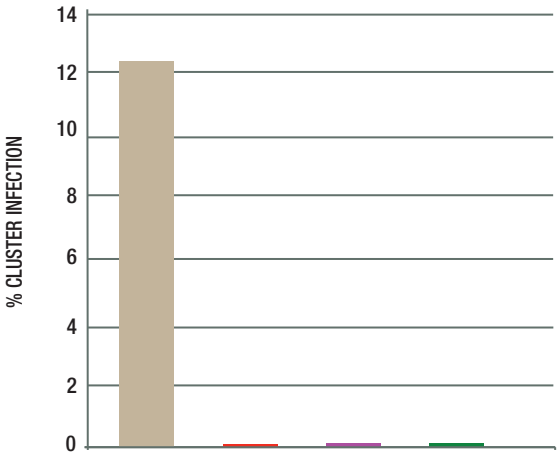
PREV-AM 0.4% had a similar level of performance against downy mildew as copper-based fungicide formulations.

- UNTREATED
- PREV-AM 0.4% (50 oz./100 gal.)
- King (tribasic copper sulphate) (25 oz. /100 gal.)
- King NEW (copper) (25 oz. /100 gal.)

DOWNY MILDEW *(PLASMOPARA VITICOLA)* ON MOSCATO GRAPE LEAVES AFTER 11 SPRAY TREATMENTS AT 7-10 DAY INTERVALS. EVALUATION 11 DAYS AFTER LAST APPLICATION



DOWNY MILDEW *(PLASMOPARA VITICOLA)* ON MOSCATO GRAPE CLUSTERS AFTER 11 SPRAY TREATMENTS AT 7-10 DAY INTERVALS. EVALUATION 11 DAYS AFTER LAST APPLICATION



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PREV-AM® AND WINE QUALITY

TRIAL DATE	Sept 2003	LOCATION	Stellenbosch, South Africa	RESEARCHER	ARC Infruitec - Nietvoorbij

RESULTS

Grapes of Chenin Blanc and Reisling were sprayed for a full season with PREV-AM at 0.5% and 0.75%. Harvested grapes were delivered to ARC Infruitec - Nietvoorbij for wine-making and organoleptic evaluation. The wines were evaluated by a tasting panel and all the judges agreed that PREV-AM had no negative effect on the quality of the wines produced from Chenin Blanc and SA Riesling.

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OROBOOST

POWDERY MILDEW CONTROL ON GRAPES WITH OROBOOST ADJUVANT + SULFUR

TARGET	Powdery mildew *(Erisyphe necator)*	**CROP**	Chardonnay grape *(Vitis vinifera)*
TRIAL DATE	April - July 2010	**LOCATION**	Courtland, California
RESEARCHER	I. S. Bay, J. D. Eynard, A. Sutherland & W. D. Gubler, Dept of Plant Pathology, Univ. of California, Davis campus		

APPLICATION

Fungicide trials on Chardonnay grapes were conducted at Herzog Ranch, near Courtland, California. A complete randomized design was used with 5 replicates and handgun sprayers were used for application. The spray frequency had 21 day intervals. During the application period (mid April to mid July), vines were irrigated twice by flooding.

Spray volumes:
75 gal./a - first spray
100 gal./a - pre-bloom in mid-April
150 gal./a - pre-bloom to pea-sized berries
200 gal./a - late season

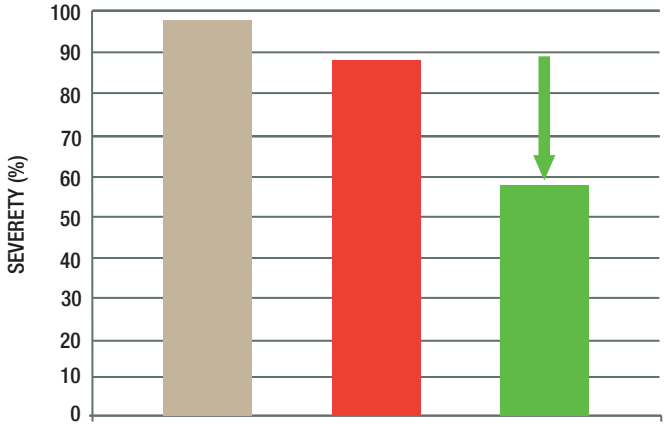
Disease was assessed on July 21. 20-25 clusters were evaluated for powdery mildew incidence and severity in each plot. Severity was determined by estimating the percentage of berries in a cluster that was infected; the severity value of all clusters was then averaged to give a plot wide estimate of disease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

RESULTS

There was 37% lower severity of powdery mildew when OROBOOST was added to the sulfur treatment.

- UNTREATED
- Thiosperse (sulfur) (3 lbs./a)
- Thiosperse (sulfur) (3 lbs./a) + OROBOOST (0.25% v/v)

POWDERY MILDEW SEVERITY FOLLOWING A SPRAY PROGRAM WITH 14 DAY INTERVALS FROM APRIL 2010 TO JULY 2010



37.5% Decrease with OROBOOST

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OROWET TECHNOLOGY IN SUSTAINABLE FARMING

ORO AGRI PRODUCTS THAT CONTAIN OROWET TECHNOLOGY SUCH AS PREV-AM®, WETCIT®, VINTRE®, OROCIT® AND OROCIT®, ARE IDEALLY SUITED TO IPM AND SUSTAINABLE FARMING PRACTICES.

- Studies have proven OROWET technology does not reduce photosynthesis
- Beneficial friendly because it has no residual effect
- Improves and accelerates the activity of pesticides and foliar applied nutrients
- Contains no harsh petroleum oil to clog stomata
- Reduces phytotoxic risk associated with petroleum-based spray oils
- Superior coverage for better pest control

THE TOXICITY OF PREV-AM ON PREDATORY MITES *(Typhlodromus pyri)* UNDER FIELD CONDITIONS

RESEARCHER	M. Broklová	INSTITUTION	Biocont Laboratory Spol. S r.O.	LOCATION	Czech Republic 2009

RESULTS AND CONCLUSIONS: Only slight and statistically not significant decreases of the populations were found with the PREV-AM and PREV-AM with sulfur. These treatments were therefore classified as non-toxic.

The PREV-AM with a standard treatment did show statistically significant decreases at two of the five evaluation dates and this treatment was classified as slightly toxic. The conclusion was that in this case the treatment with PREV-AM is compatible with the use of *Typhlodromus pyri.*

Typhlodromus pyri.

PREDATORY MITES ON STRAWBERRY PLANTS AFTER PREV-AM AND BIFENAZATE TREATMENTS

RESEARCHER	Dr. Michael Nelson	COMPANY	Plant Sciences, Inc.	LOCATION	California 2003

RESULTS: The application of PREV-AM did not result in a significant decrease in predatory mite *(Phytoseiulus persimilis)* motiles compared with the untreated control. In contrast, motile counts in the bifenazate treatment were significantly lower than those of the untreated control at two of the evaluations.

Predatory mite eggs did show a decrease for the PREV-AM treatments at the first evaluation compared with the untreated control, but subsequent evaluation dates only showed slight decreases, which were not significant. The bifenazate treatment, however, showed significantly lower counts compared with the untreated control at three of the five evaluations.

Strawberries

For more information visit www.oroagriusa.com or contact your local Oro Agri representative.

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