Large-scale application of a web-based Decision Support System for sustainable viticulture
Modified from Magarey, 2000
Alert dashboard

Current level of protection

Vine growth & development

Copper tank

Spray diary

Weather data & forecasts

Spray advice
Alert dashboard
Depletion of oospore dose
Germination dynamics of oospores
Infection periods
Predicted disease onset
Incubation progress
Current level of protection
Dynamic of fungicide protection
Vine growth & development
Downy mildew – take your decision

Before 1st leaf unfolded

Does the model simulate an infection?

No

Are grapevines between flowering and fruit set?

No

Treatment is not justified

Yes

Preventative treatment

Residual protection level

high medium low

Infection risk

low high

Treatment suggested

high low

Treatment justified

No

Did you apply any fungicide?

Yes

No

don’t spray

Spray

0.98

0.12
### Database of products

<table>
<thead>
<tr>
<th>Preparato (Crescente)</th>
<th>Distributore</th>
<th>p.a.</th>
<th>Peronospora</th>
<th>Oidio</th>
<th>Muffa grigia</th>
<th>Marciame nero (black-rot)</th>
<th>Materiale informativo</th>
<th>Profilo preparato</th>
<th>Dose consigliata</th>
<th>Applicabilità</th>
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<tbody>
<tr>
<td>Tribord</td>
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<td>Vebi Istituto Biochimico S.r.l.</td>
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### Target organisms

- Peronospora
- Oidio
- Muffa grigia
- Marciame nero (black-rot)

### Product characteristics

- Materiale informativo
- Profilo preparato
- Dose consigliata
- Applicabilità

### Recommended dose

- Recommended scheduling

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Efficacy of the spray: distribution, absorption, translocation
vite.net® in 2011-12: pilot application

2011 e 2012
21 pilot farms
vite.net® in 2011-12: pilot application

- Pilot farm
- Weather station(s)
- Training of users
- Demonstration vineyards
- Visits with stakeholders
- Feedback & Communication
<table>
<thead>
<tr>
<th>Area</th>
<th>Year 2011</th>
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<tr>
<td></td>
<td>Usual farm practice</td>
<td>DSS</td>
<td>Untreated</td>
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<tr>
<td></td>
<td>Leaves</td>
<td>Bunches</td>
<td>Leaves</td>
<td>Bunches</td>
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<tr>
<td>South</td>
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<td>% reduction by DSS</td>
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<td></td>
<td># sprays</td>
<td>Cu++ kg/ha</td>
<td># sprays</td>
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<td>9.5</td>
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<td>12.0</td>
<td>8.2</td>
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<td>South</td>
<td>8.5</td>
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## vite.net® in 2012: results

### Year 2012

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<td>Bunches</td>
<td>Leaves</td>
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### % reduction by DSS

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</table>
Same protection than the grower’s schedule

- # sprays/season: 9 vs 12 - 24%
- Kg copper/spray: 0.56 vs 0.68 - 18%
- Kg copper/season: 5.1 vs 8.1 - 37%
- Cost of protection: -195 €/ha
vite.net® in 2011-12: feedback from users

Did you use the DSS:
- Occasionally 7%
- Almost never 0%
- Regularly 93% ~ 31,000 logins

Did the use of DSS change over time:
- No 37%
- Increased 63%
- Decreased 0%
It helps in applying fungicides only when it is necessary; it didn't occur before

... it made decisions more robust but also more complicated

Very helpful at the beginning of the season and when it is difficult to take a right decision

... it was useful for decision-making about crop protection

It makes possible to protect the crop at the right time and apply products at the proper dose

... I consistently reduced time, work and costs with a relevant increase in grape health

It provides many details on pest biology

vite.net® in 2011-12: feedback from users
vite.net® in 2011-12: feedback from users

- Less time spent
- Easier decision-making
- Better awareness
- Better knowledge
- Better decisions

Score

- Friendliness
- Speed
- Clarity
- Confidence
- Usefulness
vite.net® in 2013: large-scale application

- Private advisors
- Public advisors
- Farmers >3,000 ha vineyards
- Staff

- Friuli
- Veneto
- Piedmont
- Lombardy
- Emilia-Romagna
- Tuscany
- Umbria
- Basilicata
- Apulia
- Sicily
vite.net® in 2013: large-scale application

Vite.net - 2013

Total = 88,903

22,374; 29%
54,666; 71%
Weather was very conducive to downy mildew in early spring.

Many fungicide sprays.

Yield losses in case of incorrect scheduling.
vite.net® in 2013: results

19 sprays

~ 60% incidence on bunches

15 sprays

No disease
vite.net® in the future: holistic view

Protection

Plant and bunches
- Berry mouth
- Leafhopper
- Mealybug

Stress
- Downy mildew
- Powdery mildew
- Grey mold
- Black-rot
- OTA
- PPPs
- Dose
- Dynamic of protection

Canopy management
- Topping
- Leaf removal
- Cluster thinning

Cropping
- Frost
- Drought
- Fertilization
- Weed control
- Irrigation

Vine growth
- Canopy development
- Ripening & pending yield
vite.net® in the future: holistic view

- Leaf removal
- Cluster thinning
- Downy mildew
- Powdery mildew
- Grey mould
- Grape berry moth
- Mediterranean vine mealybug
- American grapevine leafhopper
- Cold temperature damage
- Water stress
- Estimate pending yield
MoDeM
A web-based system for real-time Monitoring and Decision Making for Integrated Vineyard Management

BCA_grape
New biological agents for powdery mildew on grapevine

PURE
Pesticide Use-and-Risk reduction in European Farming systems with Integrated Pest Management

VineMan.org
Integration of plant resistance, cropping practices, and biocontrol agents for enhancing disease management, yield, and biodiversity in organic European vineyards

Innovine
Combining innovation in vineyard management and genetic diversity for a sustainable European viticulture
Thank you for your attention