

Web based decision support for sustainable crop management: vite.net case study

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HORT@

— From research to field —

Everyday at the side
OF THE FARMER



Spin Off di

UNIVERSITÀ
CATTOLICA
del Sacro Cuore

A woman with dark hair tied back, wearing a white lab coat, is standing in a lush green cornfield. She is holding a tablet computer in her left hand and looking at it. The background is filled with tall corn plants, and the overall scene is bathed in a soft, greenish-yellow light, suggesting a sunny day. The text is overlaid on the left side of the image.

Efficiently transfer the innovation coming
from research to practical agriculture

IS OUR MISSION

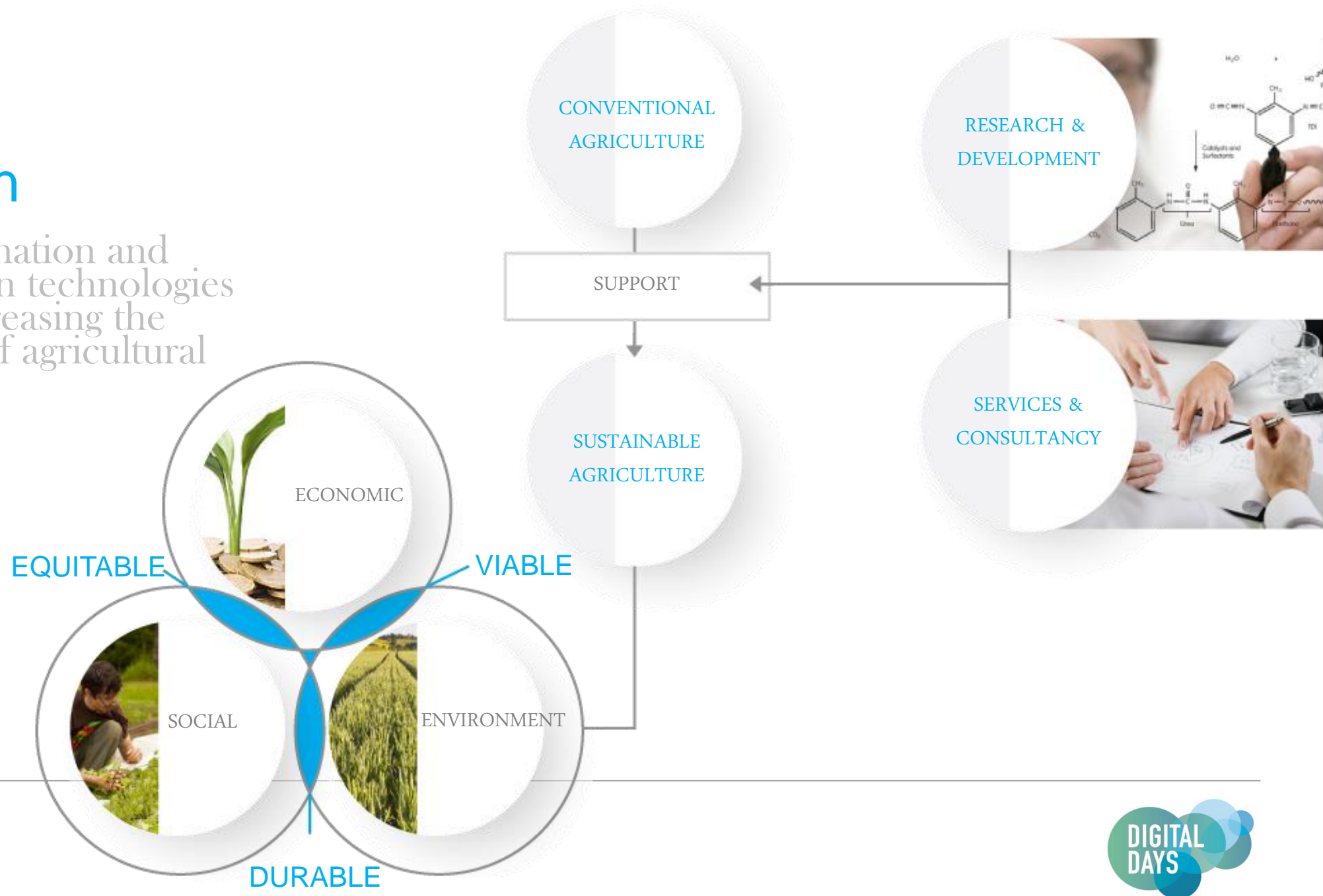
A person in a blue shirt is holding a tablet, looking at a map or data visualization. The background is a field of golden-brown crops. Overlaid on the image are several semi-transparent blue circular icons containing white symbols: a cloud, a clock, a calendar, a pie chart, a globe, a location pin, a bar chart, a line graph, a checkmark, and a magnifying glass. The text 'OUR VISION' is centered in large white letters.

OUR VISION

Use new information and communication technologies (ICTs) for increasing the sustainability of agricultural food chains

Our Vision

use new information and communication technologies (ICTs) for increasing the sustainability of agricultural food chains



Our business

Horta develops web-based, interactive Decision Support Systems (DSSs) for sustainable agriculture.

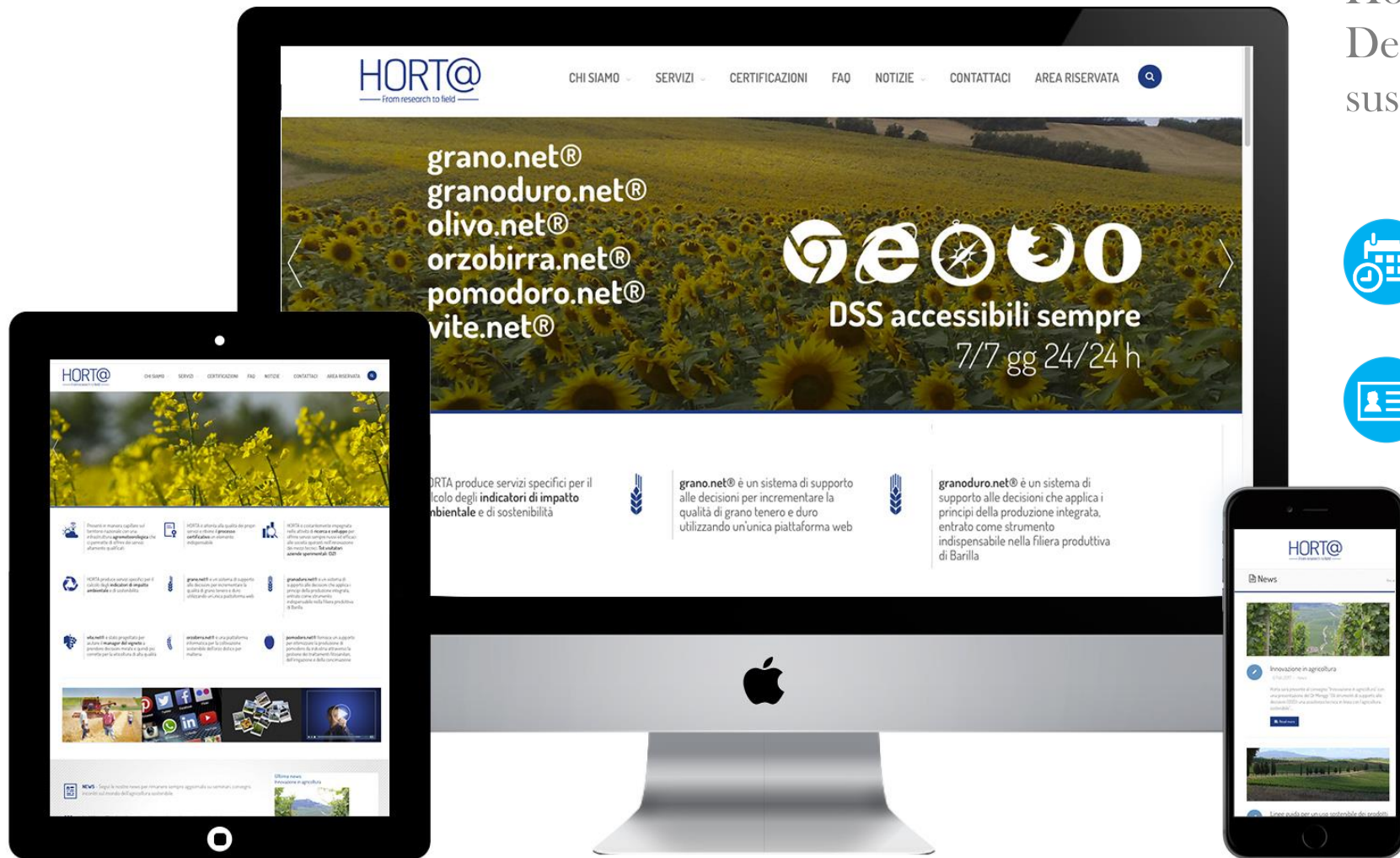


Accessible everywhere

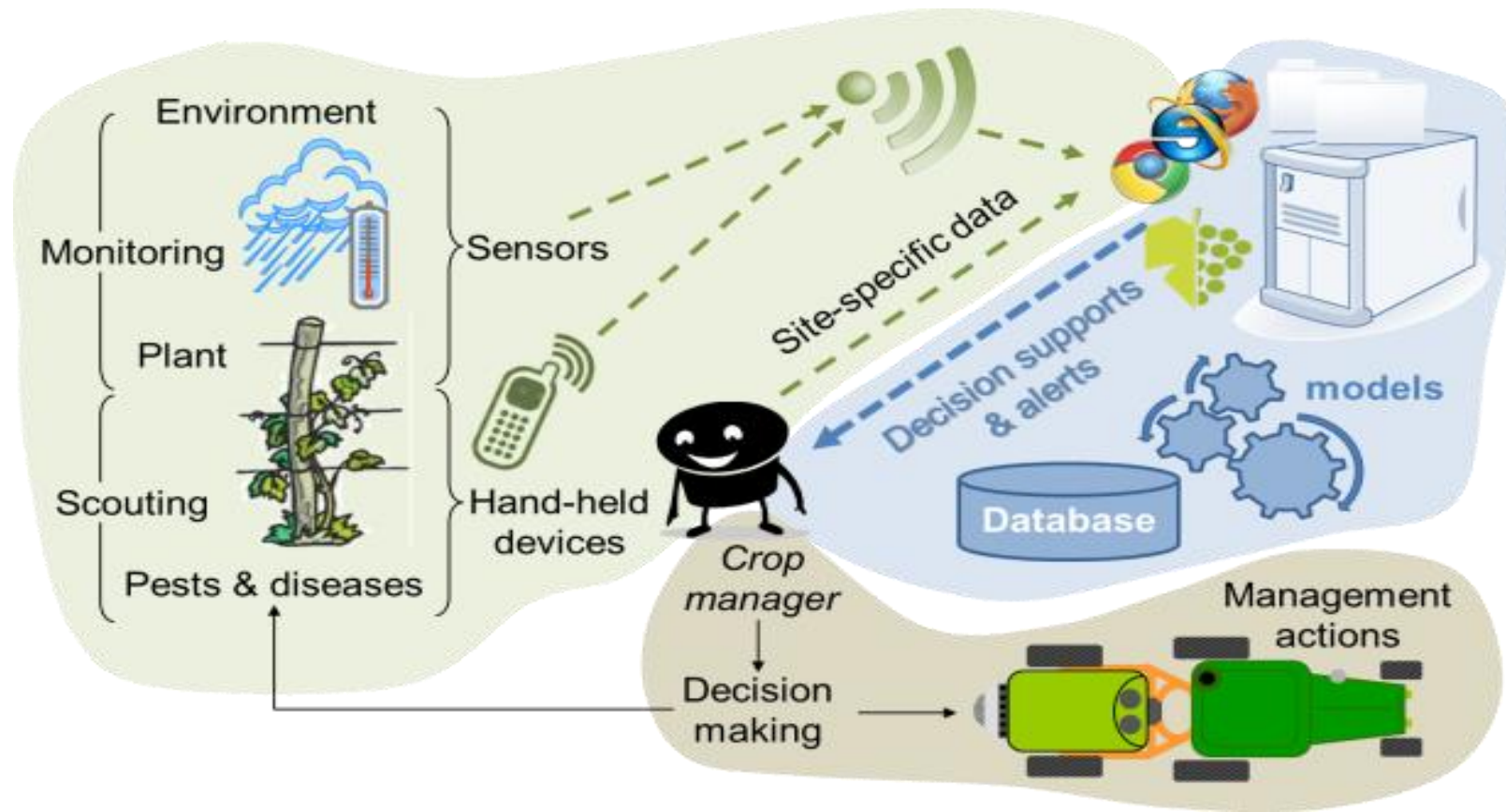
Connection 7/7 days
24/24 hours



The service is available real time
on the web platform through
username and password



Decision support systems for sustainable agriculture



DSSs include:

- i) an integrated system for the real-time monitoring of the field environment (air, soil, plant, diseases and pests) through IoTs (Internet of Things), and
- ii) web portal that, analysing these data through advanced modelling techniques and bigdata, provides information and alerts for supporting the decision by the crop manager.

How does the system work?

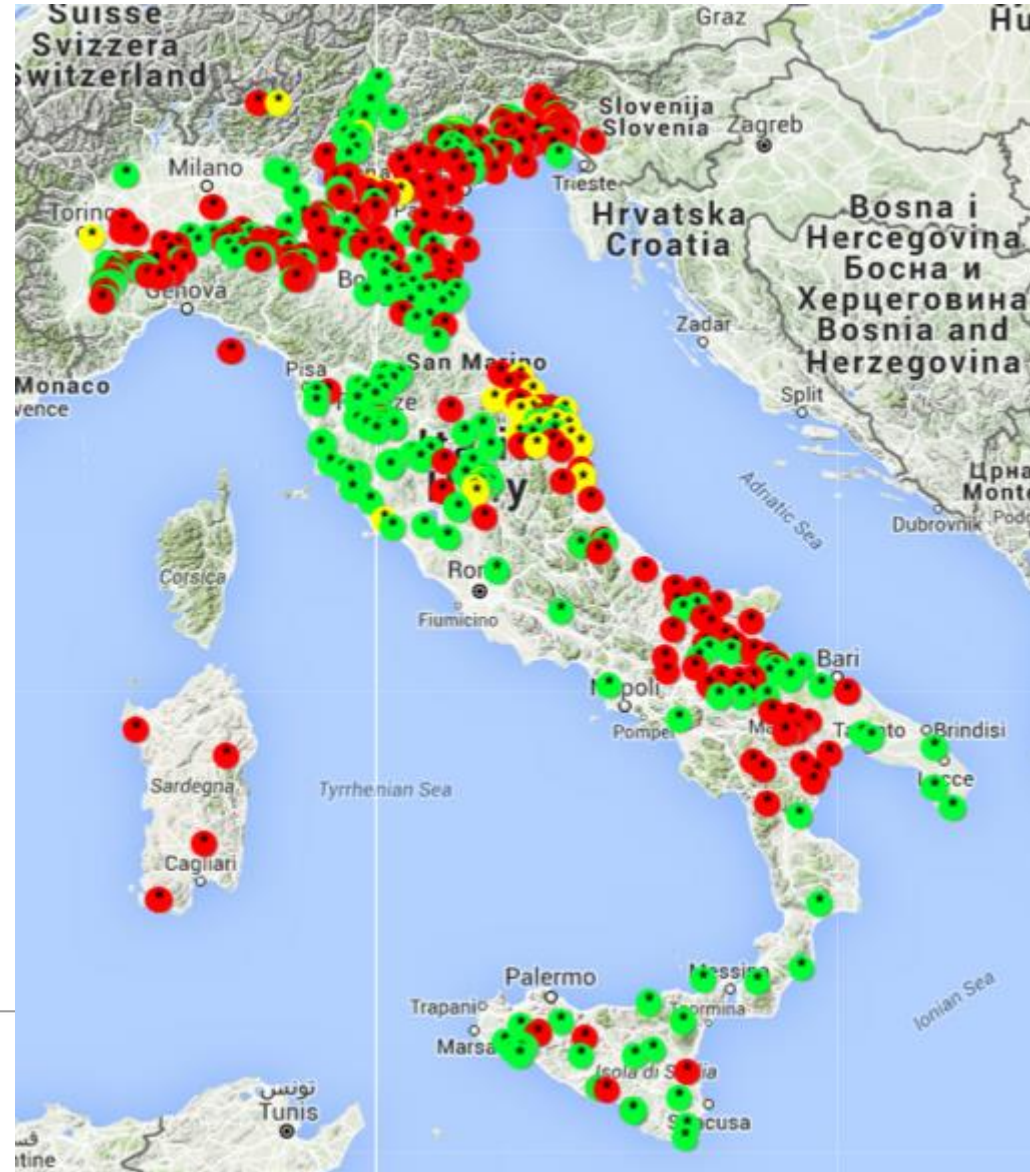
Weather station network

900 stations



**out of which 200 directly
owned by Horta**

Stations other countries:




**13 Greece, 44 Spain
6 Portugal, 16 Bulgaria,
17 Romania, 3 Hungary,
3 Sud America, 21 Isreal**











How does the system work?







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ELENCO UP ATTIVE










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Gestione	OP	Utente	Azienda	Descrizione	Nazione	Località	Coltivazione	Varietà	Funzionalità
    	-	ResUvae	ResUvae arl	Travazzano	Italia	Carpaneto piacentino	Integrato (difesa integrata volontaria)	Vite (generico)	         
    	-	ResUvae	ResUvae arl	vigna nuova B1	Italia	Castell'arquato	Integrato (difesa integrata volontaria)	Vite (generico)	         
    	-	ResUvae	ResUvae arl	BASF - Barbera	Italia	Castell'arquato	Integrato (difesa integrata volontaria)	Barbera	         





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Site specific



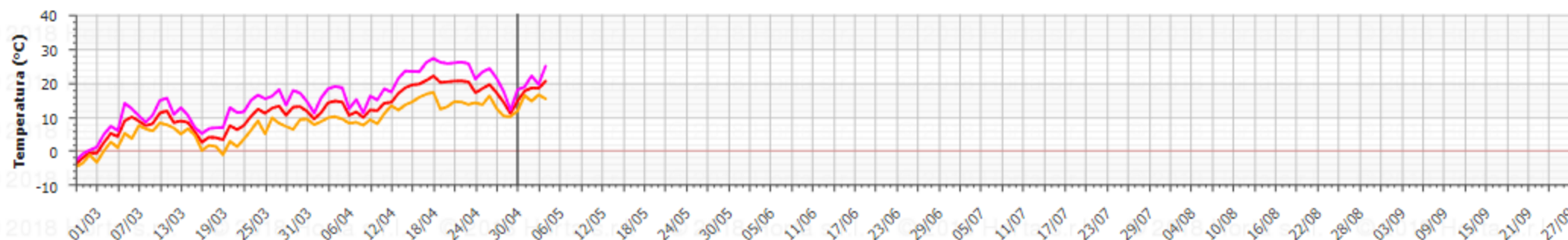
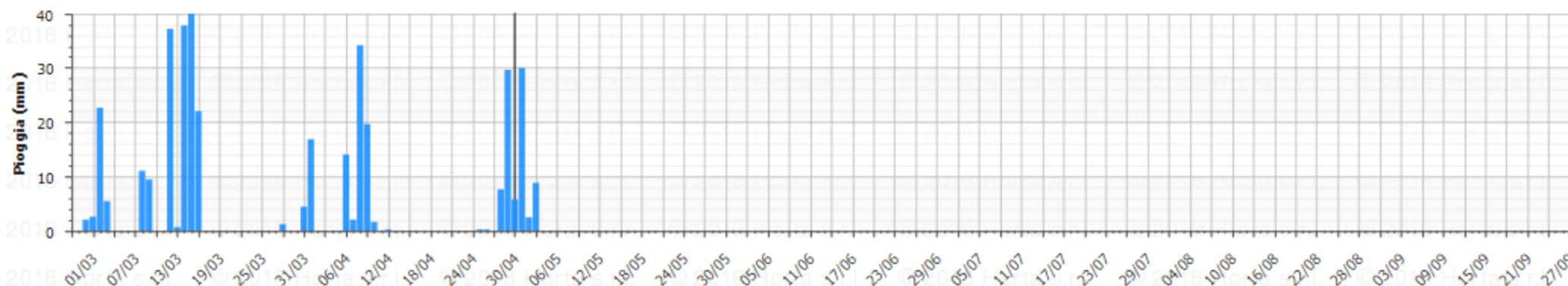
Stazione meteo Castell'Arquato, loc. Case Sparse

Situazione attuale

Ultime 72 ore

Stagionale

Previsioni meteo



med min max



Fenologia e sviluppo

Fase corrente: Sviluppo Infiorescenze



Holistic view

Easy and
clear

Malattie

Peronospora



Primaria

N. Infezioni: 2
Ultima: 03/05 Prevista: 04/05



Secondaria

N. Infezioni: 0
Ultima: --/-- Prevista: --/--



0% 50% 100%

Protezione

Oidio



Ascospore

N. Infezioni: 3
Ultima: 03/05 Prevista: 04/05



Conidi

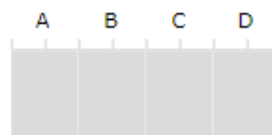
0% 50% 100%

Protezione

Botrite



Botrite



A B C D

Protezione

Black rot



Black rot

N. Infezioni: 2
Ultima: 03/05 Prevista: 04/05

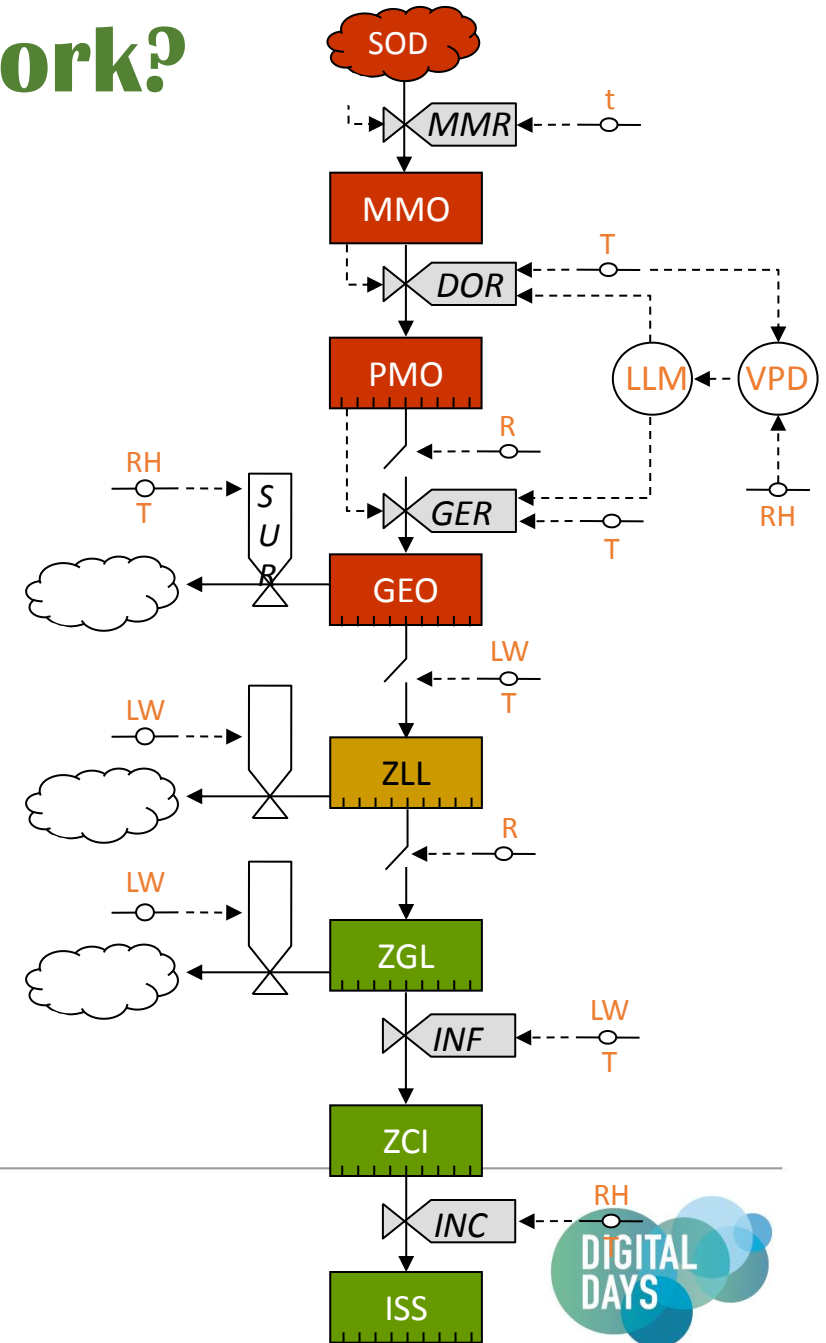
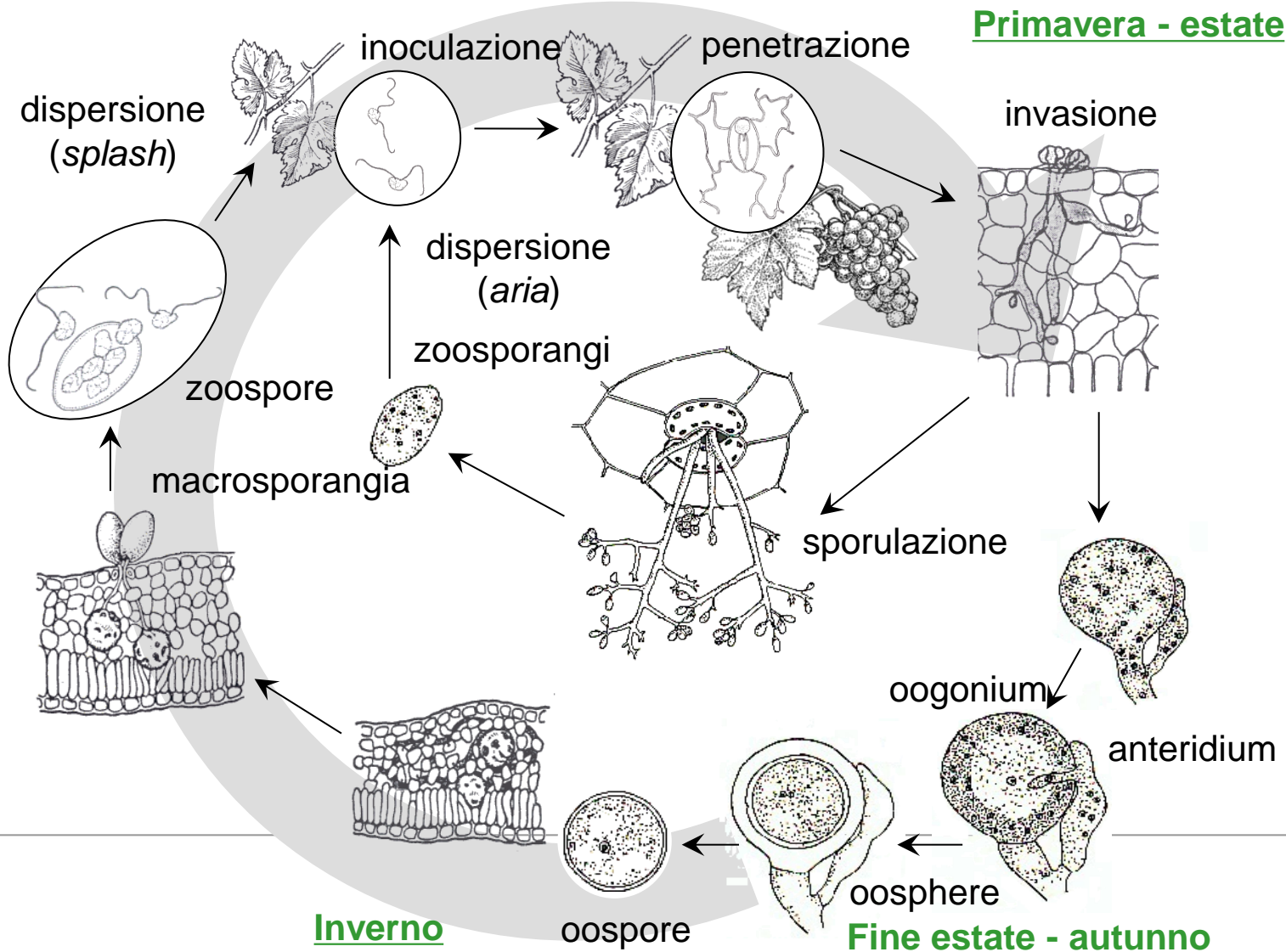
0% 50% 100%

Protezione

How does the system work?

Grapevine downy mildew

Primavera - inizio estate



How does the system work?

Summary

Detail

Es. Downy mildew

Support

Peronospora



Primaria

N. Infezioni: 2

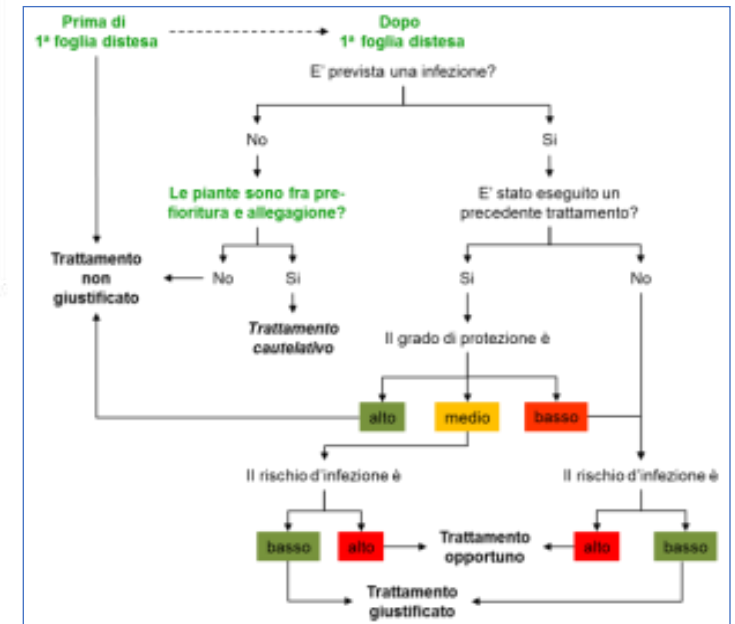
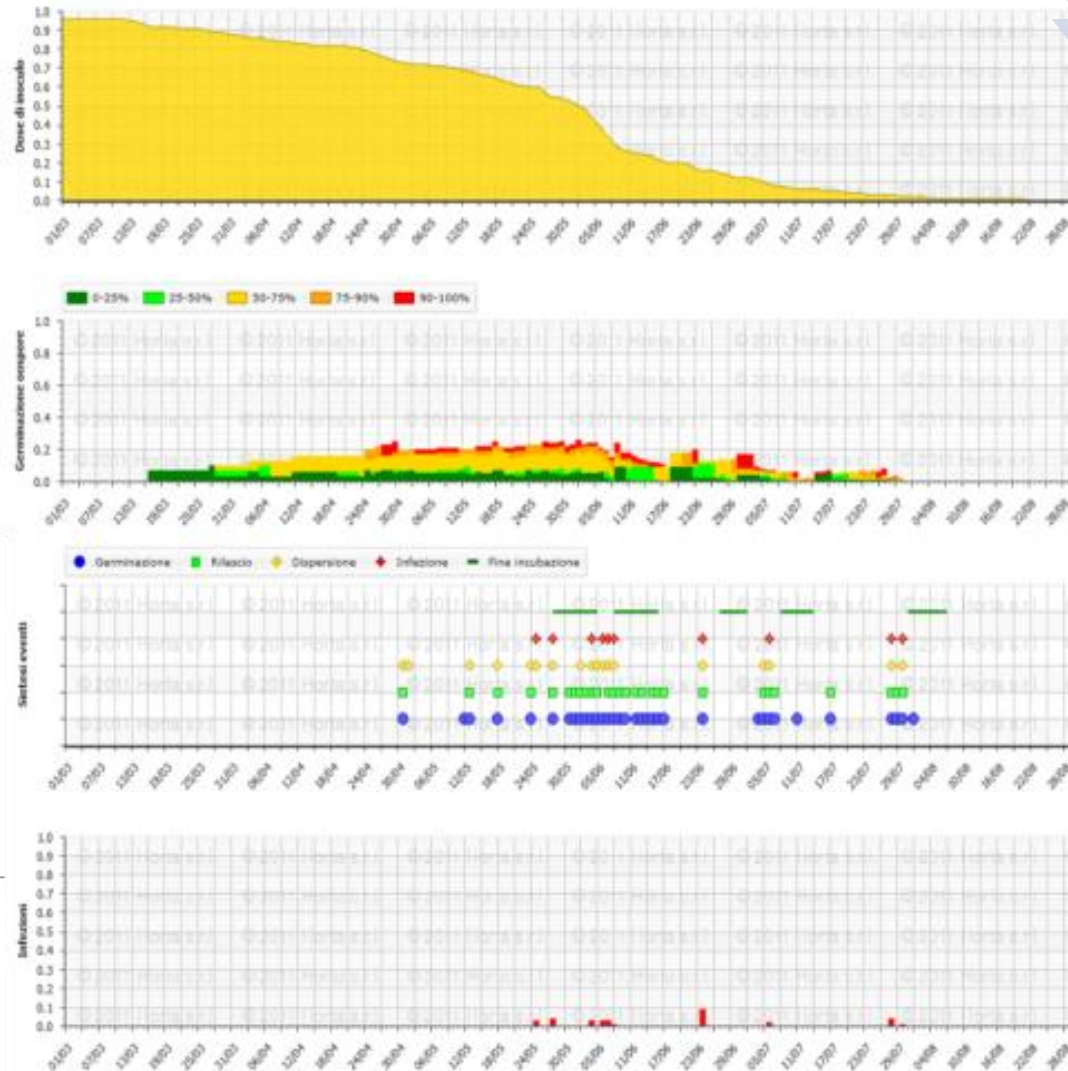
Ultima: 03/05 Prevista: 04/05



Secondaria

N. Infezioni: 0

Ultima: --/-- Prevista: --/--





Principi attivi

Attività sul bersaglio

Traslocabilità nella pianta

Preparati - Peronospora





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Preparato	Distributore	P.A.	Avversità				Profilo Preparato	Applicabilità
			Peronospora ⬆	Oidio ⬆	Muffa Grigia ⬆	Marciume Nero (Black Rot) ⬆		
Acrobat R 3B	Basf Italia Spa		*					
Agron	Sumitomo chemical Italia S.r.l.		*					
Airone Liquido	Gowan Italia		*					
Airone Più	Sumitomo chemical Italia S.r.l.		*					
Airone Più	Gowan Italia		*					
Airone più	Isagro S.p.A.		*					
Aktor Triplo Blu	UPL Italia S.r.l.		*					
Alfil	Agrimix S.r.l.		*					
Alfil duplo	Agrimix S.r.l.		*					
Alial Ramato	FMC Srl / Cheminova		*					
Alial System	FMC Srl / Cheminova		*					
Alial WG	FMC Srl / Cheminova		*					
Alial triple WP	Belchim Crop Protection Italia		*					
Alial triple WP	FMC Srl / Cheminova		*					
Alias DG	Agrowin Biosciences S.r.l.		*			*		


How does the system work?







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TRAVAZZANO
RESUVAE

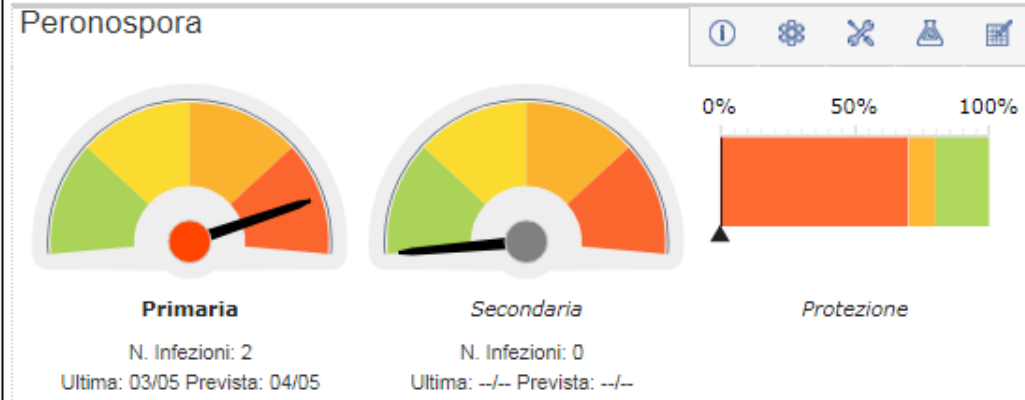


Elenco operazioni colturali

			Data	Tipo operazione	Descrizione
			30/04/2018	Trattamento di difesa / Fitoregolatori	Peronospora, Oidio (Vitene triplo R - Sipcam S.p.A., Duokar 20 EW - Dow Agrosiences Italia)

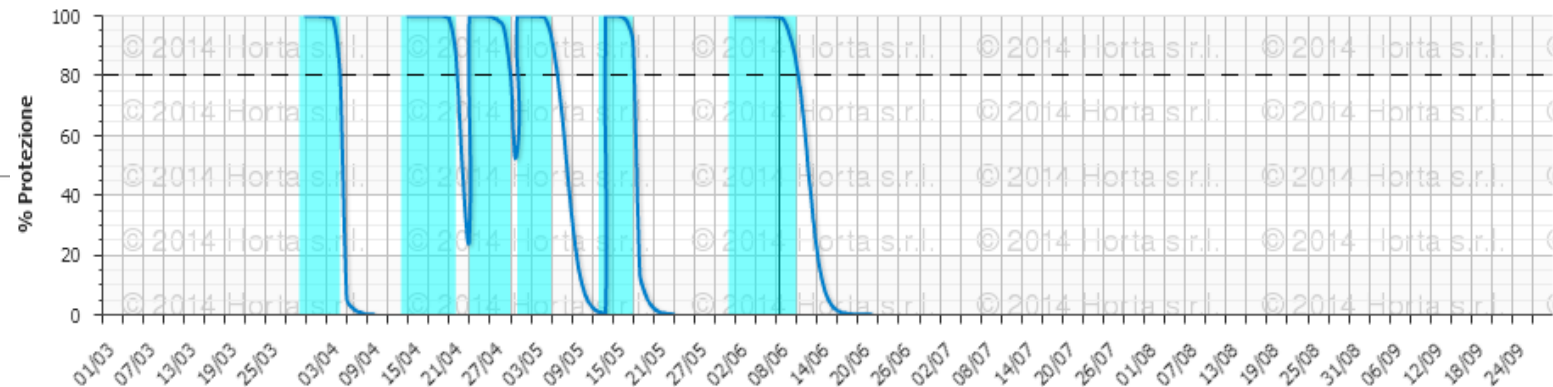
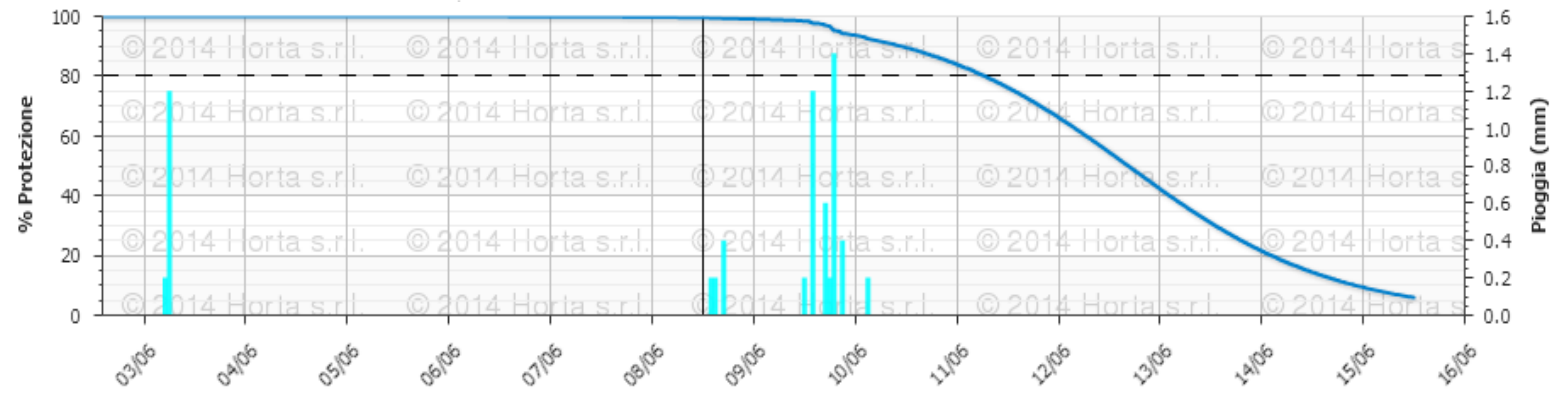
Interactive

How does the system work?



Summary

Detail



Results of the use of vite.net®

Better knowledge/awareness of what is happening in the vineyard

Better positioning of the PPPs applications

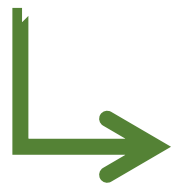
Same protection than the grower's schedule with important savings:

Organic

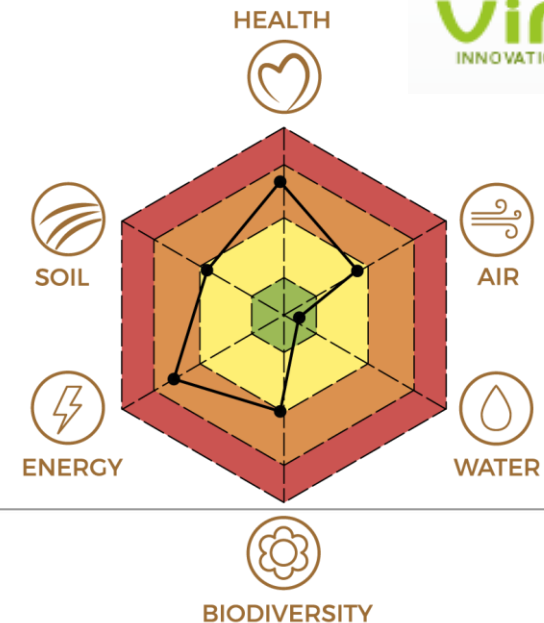
- Kg copper/season: **- 37%**
- Cost of protection: **-195 €/ha**

Integrated

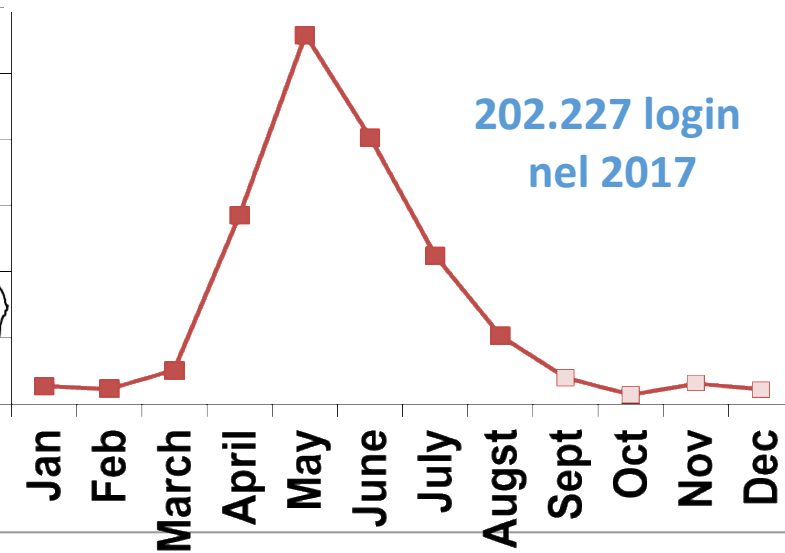
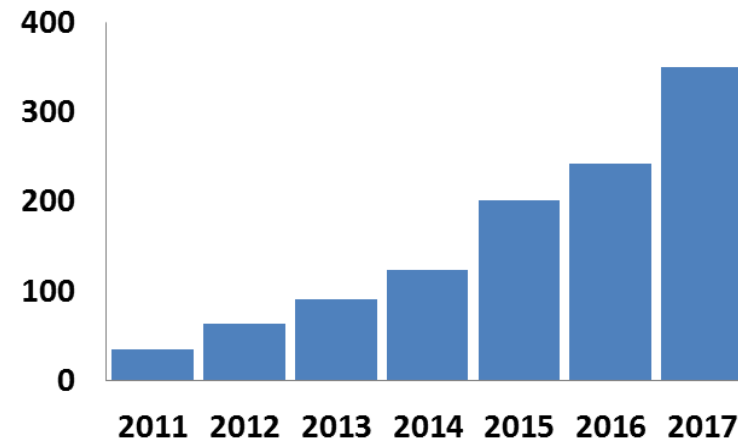
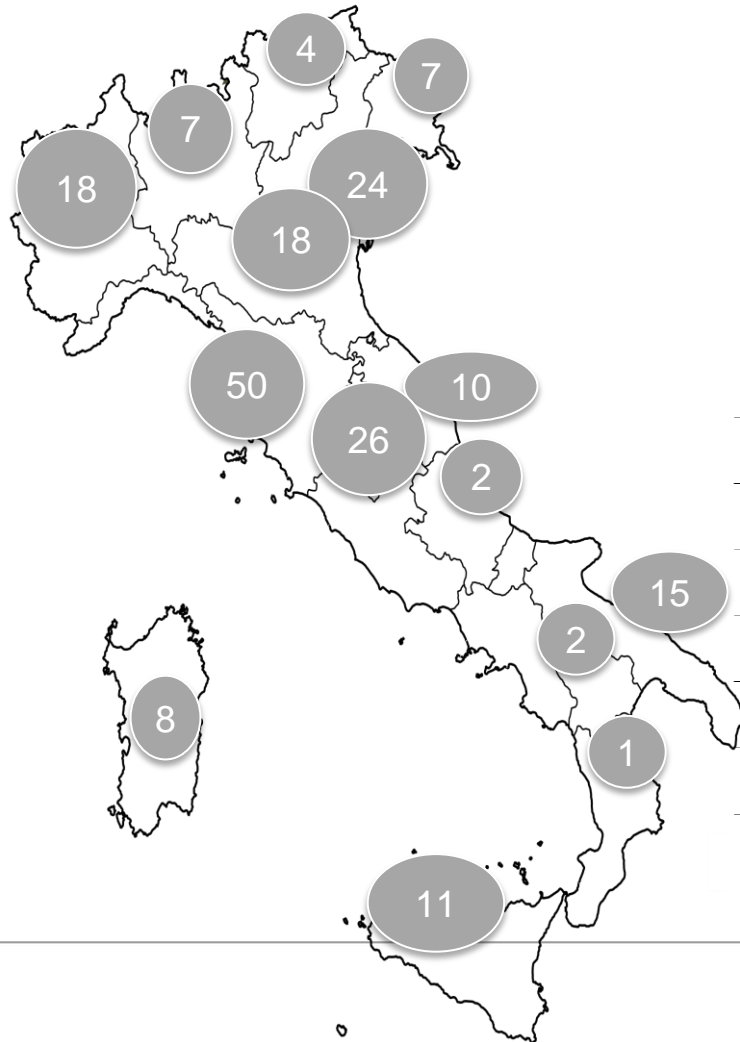
- PPPs/season: **- 30-40%**
- Cost of protection: **- 300€/ha**



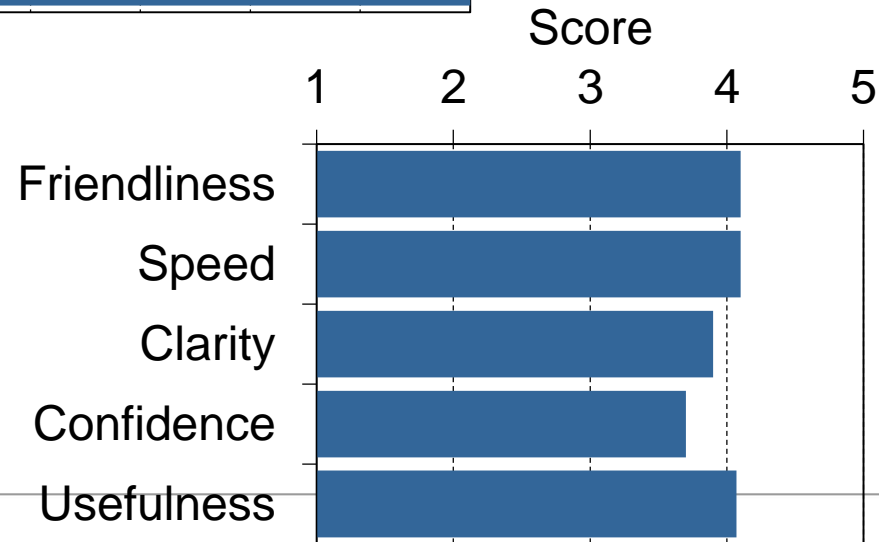
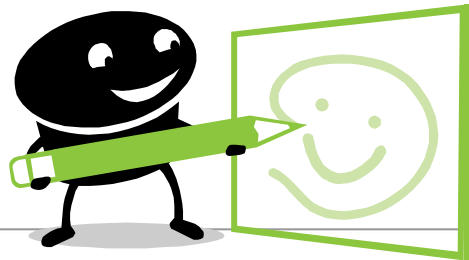
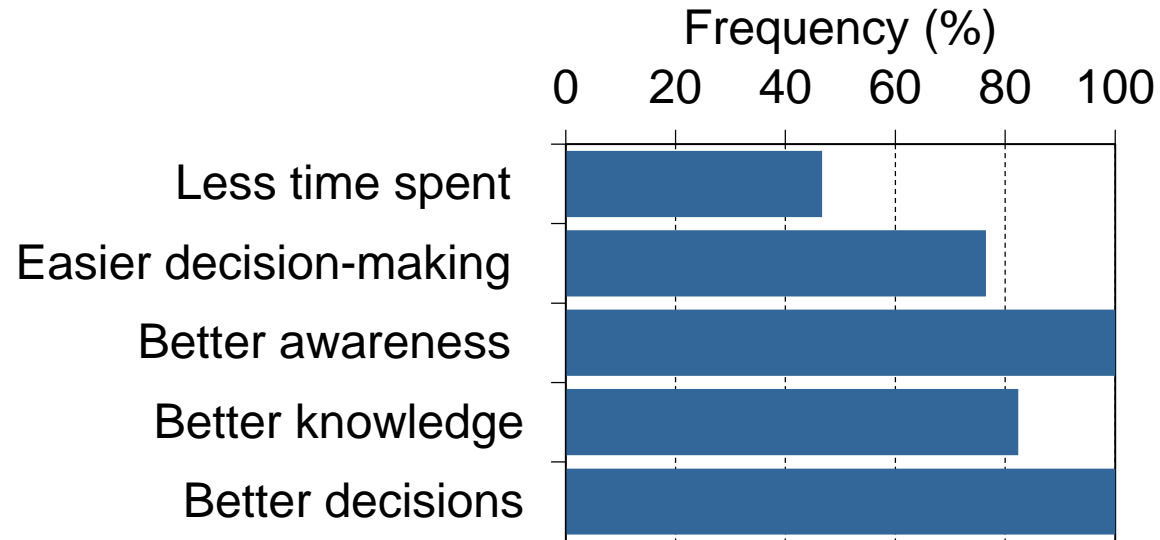
Lower environmental impact



vite.net® users in Italy



Users' feedbacks



Users' feedbacks



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 made decisions more robust but also more complicated

It helps in applying fungicides only when it is necessary; it didn't occur before

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

It provides many details on pest biology

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

