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JOURNÉES ANNUELLES LIEN DE LA VIGNE

VINELINK ANNUAL DAYS

PROGRAMME 2018

Prédiction, Détection et Prévention des Risques en Viticulture : Maladies, Ravageurs et Climat

Predicting, Detecting and Preventing grapevine risks: Diseases, pests and climate

Tools under development in Italy
Outil en développement en Italie

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Decision support systems

- can **simplify** complex **agronomic decisions** and / or the management of **cellar processes**

- from complex software to **user-friendly apps** on **mobile phone or tablets**

- **cheap** internet **connections and hardware**

- **good network coverage**

NEW OPPORTUNITIES ALSO IN AGRICULTURE

DSS in agriculture: IPM

- Several disease forecasting models

- Objective: to reduce the number of treatments (mainly targeting downy mildew)

- Estimating the risk of downy mildew infection (mainly identification of infection time)

- Limited uptake by the market

DO WE KNOW ALL THE REASONS?

Limiting factors

DSS often do not:

- cover all pests and pathogens
- always consider the susceptibility of the plant
- consider the microclimate (in weather forecast)
- consider the persistency of the last treatment
- merge treatments (more than one pest/pathogen)
- select the best active ingredient in term of efficacy and resistance risk
- calculate 'time to harvest'

Growers' needs
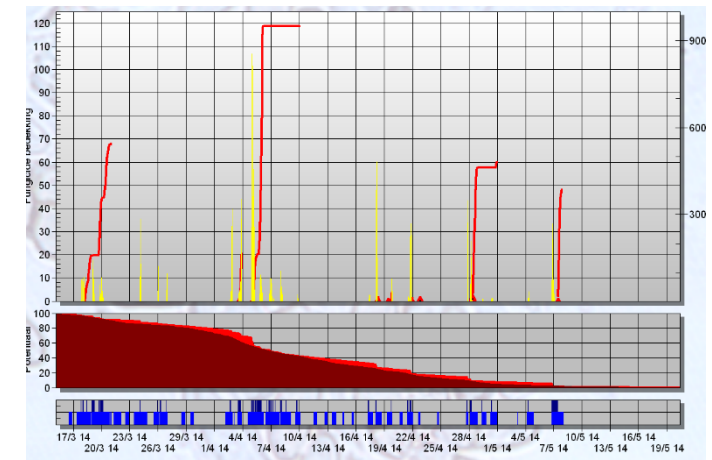
Growers need:

- recommendation rather than 'pictures' or scenarios

- keep record of the treatments done

- calculation of quantities and volumes of spray

- to combine treatments against two or more pests

- short term recommendation and medium term risk assessment

- flexibility (decisions, active ingredients, dosages, etc.)

User-friendly and apps

- user friendly interface
- app (to insert data and receive the recommendation) on mobile devices
- alerts or notifications
- frequent update based on short term weather forecast (flexibility operations)
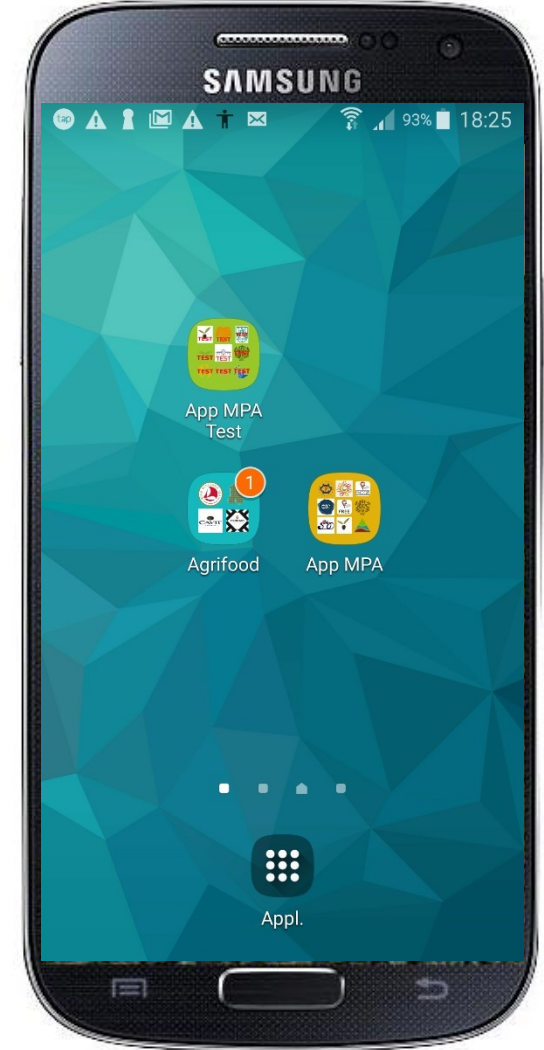
Management and inputs

- management of all pathogens and parasites of the crop
- DB of all vineyards
- link to agronomic practices and cellar management
- Inputs from growers must be minimized
- automatisms to determine the phenological stage, dosages, volumes, microclimate, etc.
- customization
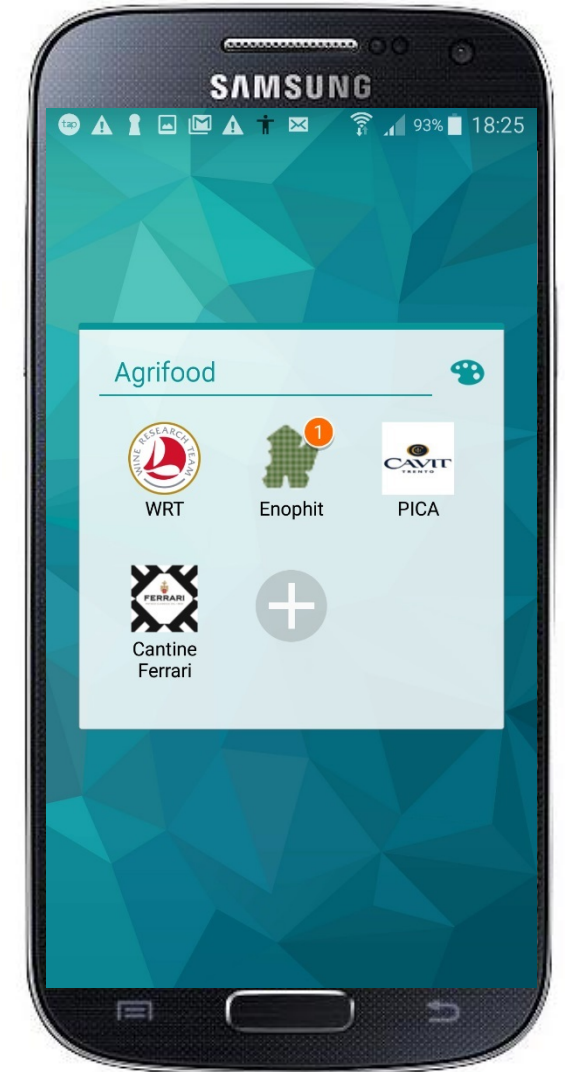
Records and archive

- Cadaster (all vineyards, size, variety, age, etc.)

- Geo-localization

- Pictures

- Records of monitoring

- Records of treatments (date, dosage, volume)

- Retrieve function

Record and retrieve

Assessment of disease/ pest

- automatic date, location, operator
- input (fix: scroll down menu; free)

Retrieve data (single data/aggregated data)
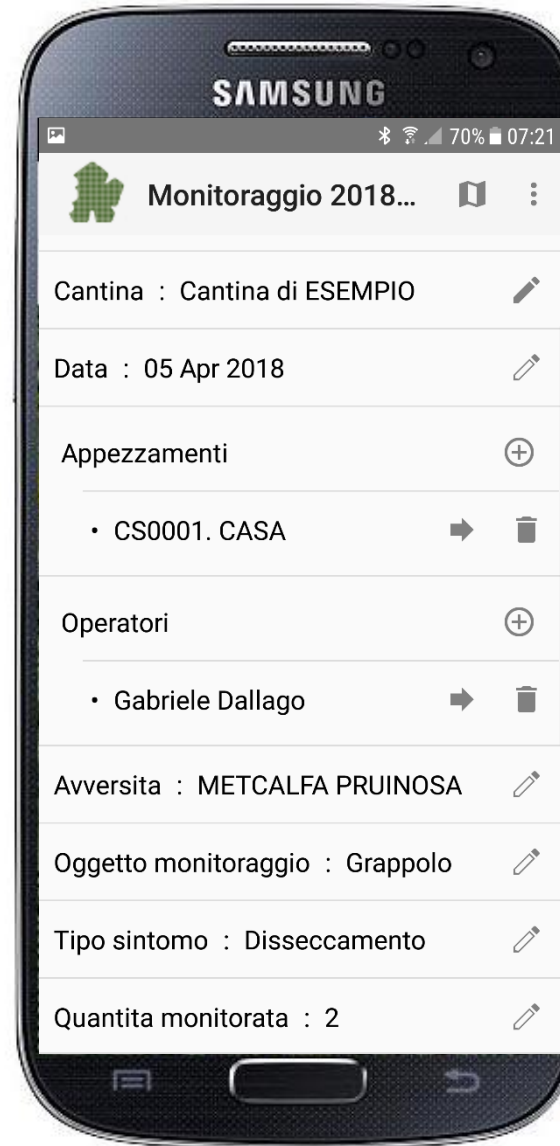
Recommendation

Customized (variety, phenological stage, risk, etc.)

- automatic date, location, operator

- Limited input from growers (i.e. monitoring disease presence)

- based on decision algorithm

Accepted or not by the grower
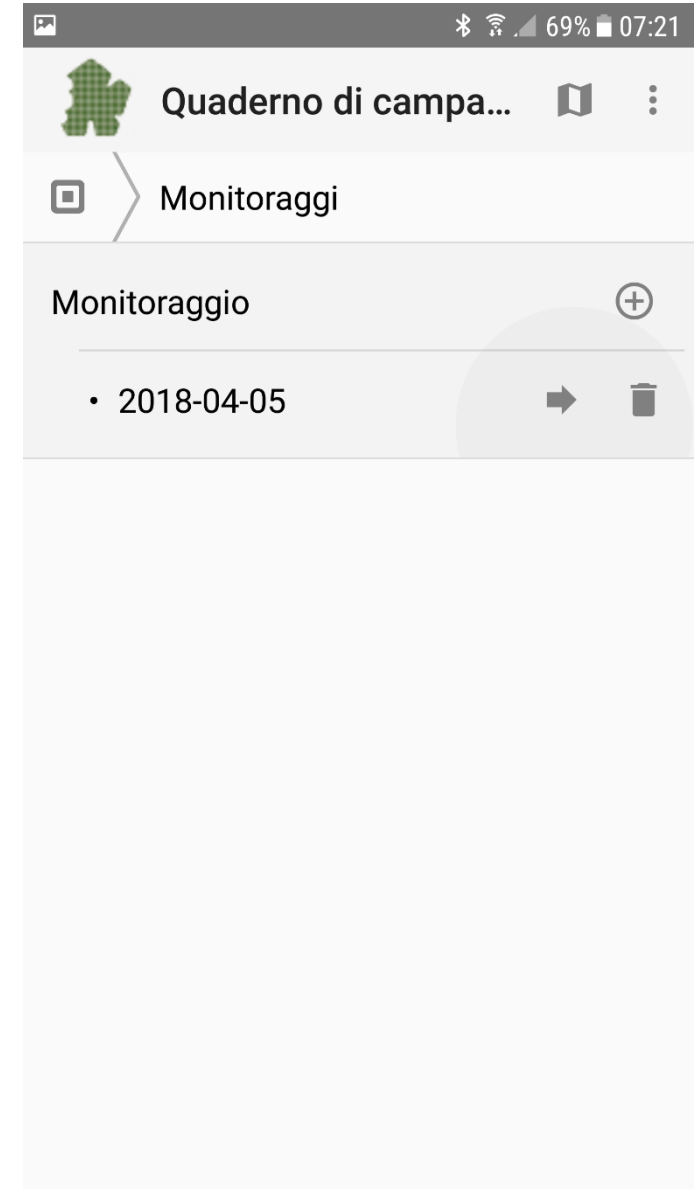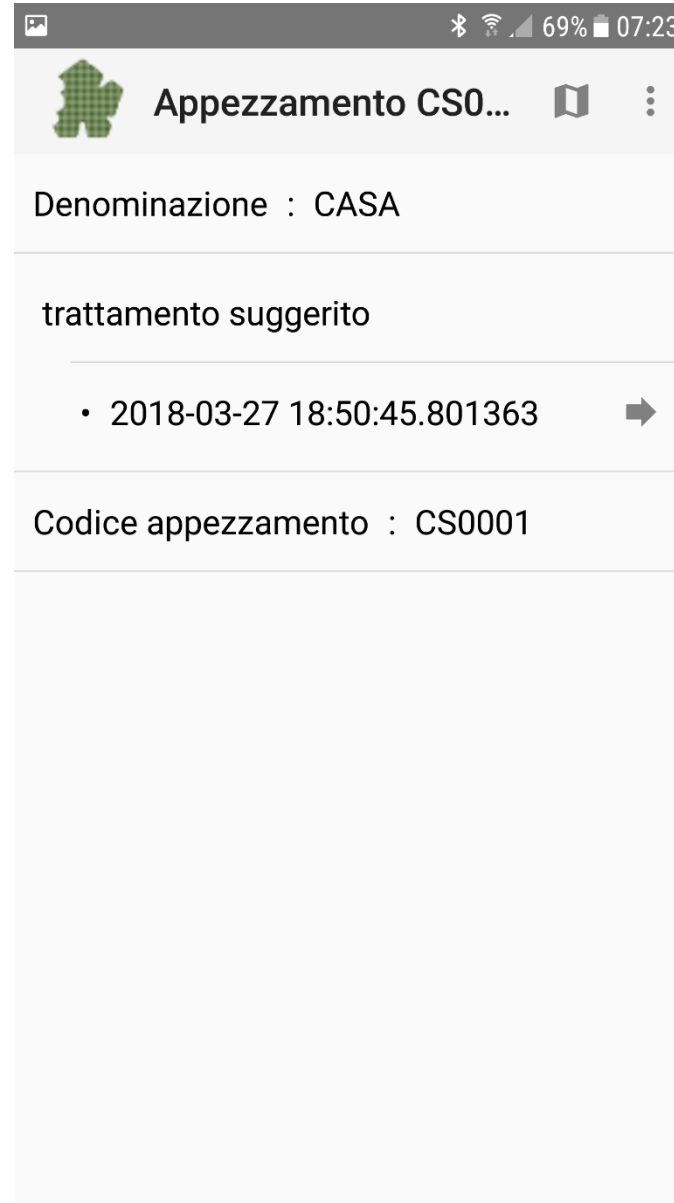
Laptop interface: intuitive... in few clicks...

Intuitive... in few clicks...

Weather and phenology (BBCH)
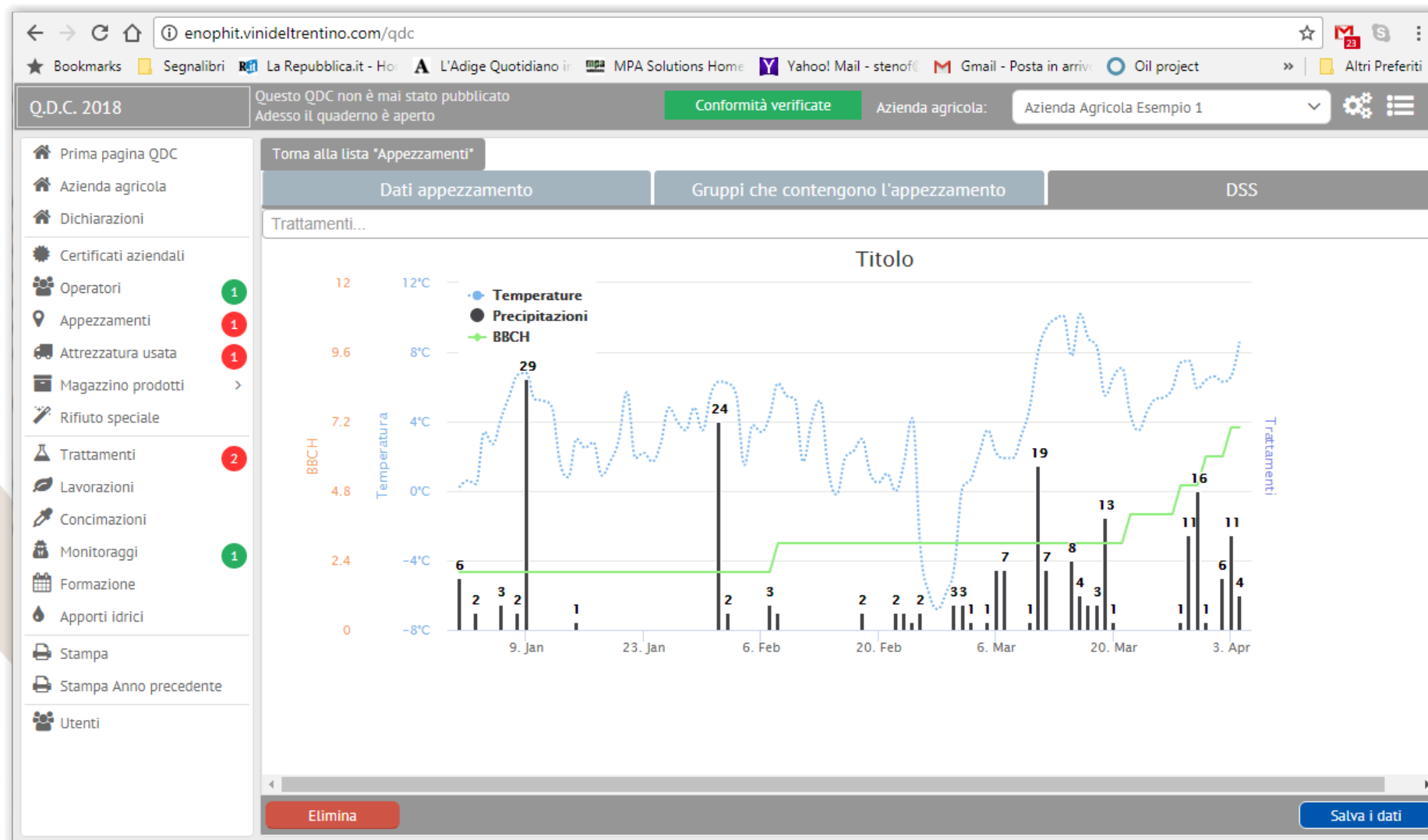
Disease risk in relation to persistence of treatments
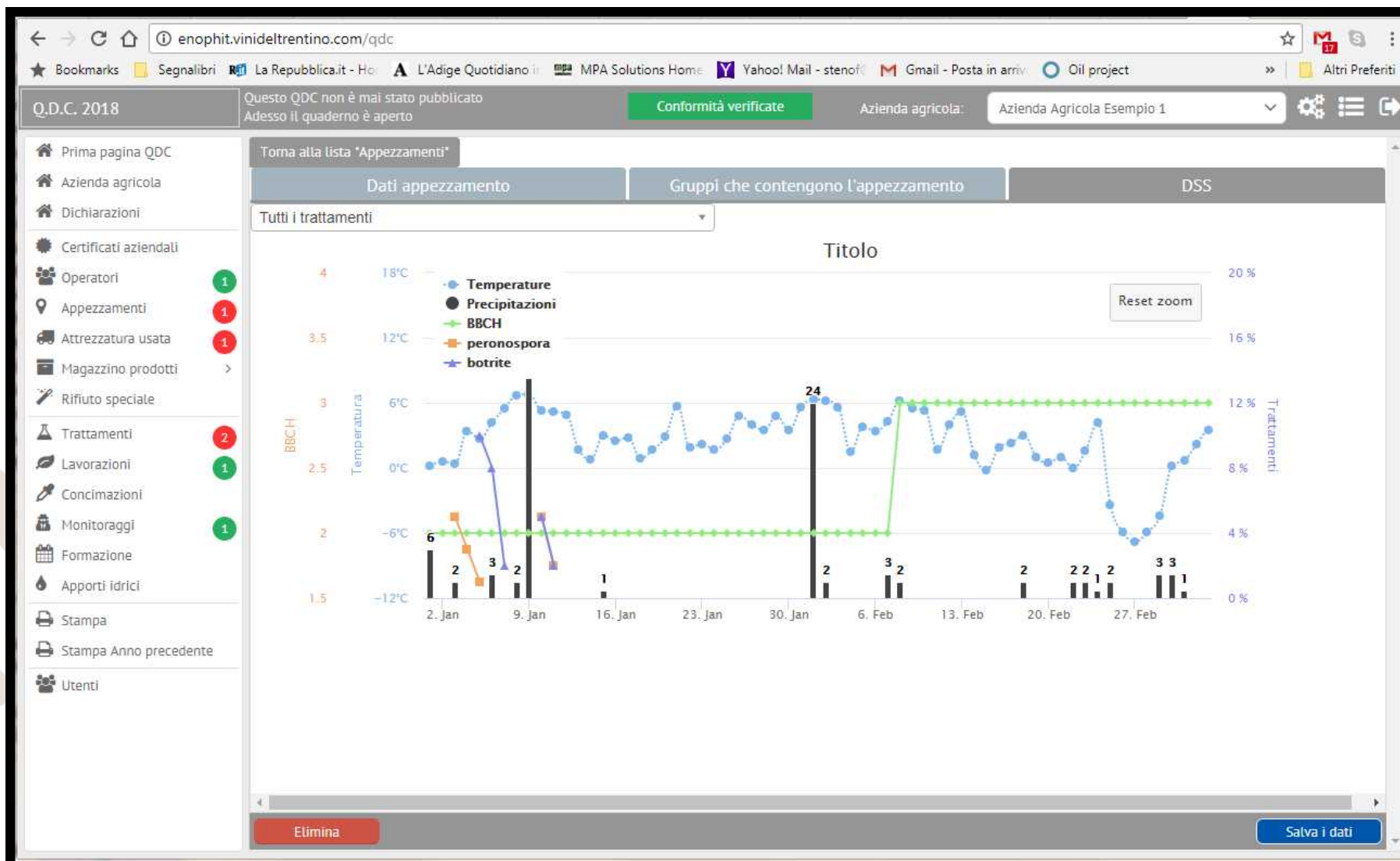
Decision flowcharts: complex reasoning made simple

- Last treatment done
- Persistence of the active substance(s) used (plant growth, rain, temperature)(past weather)
- Risk of infection/exceeding the population threshold (calculated by disease/pest forecasting models or assessed by the farmer) (environmental parameters)
- Susceptibility of the plant (phenological stage)
- (temperature)
- Future weather (weather forecast)
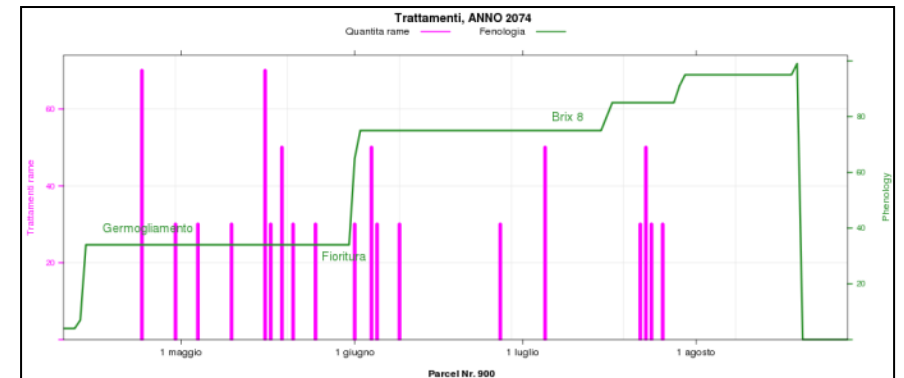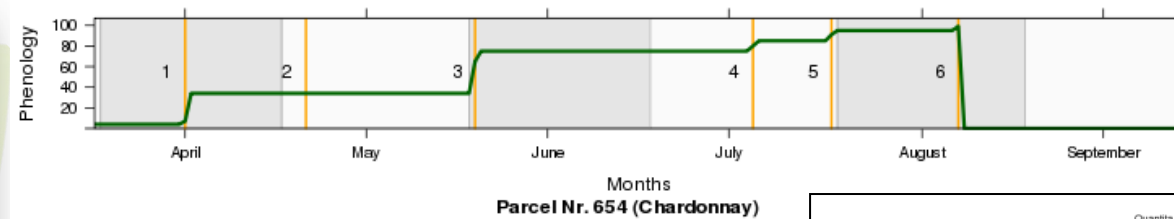- Recommendation: accept/reject
- the recommendation or modify it
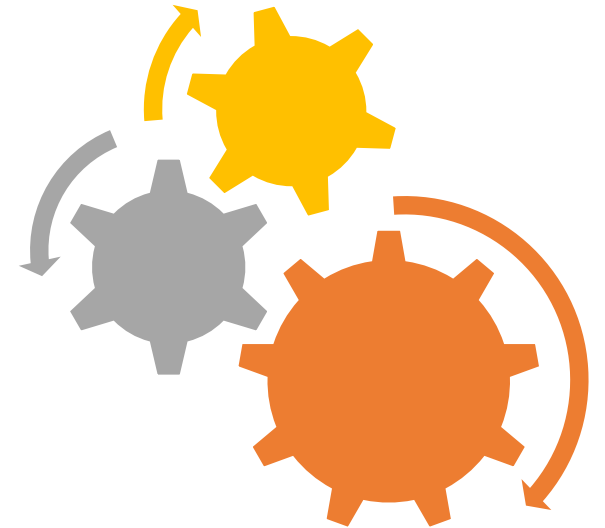
Critical issues

- Quality of weather forecasts
- Quality of microclimate downscaling (vineyard resolution)
- Self-correction of the model (phenology, disease, pest, etc.)
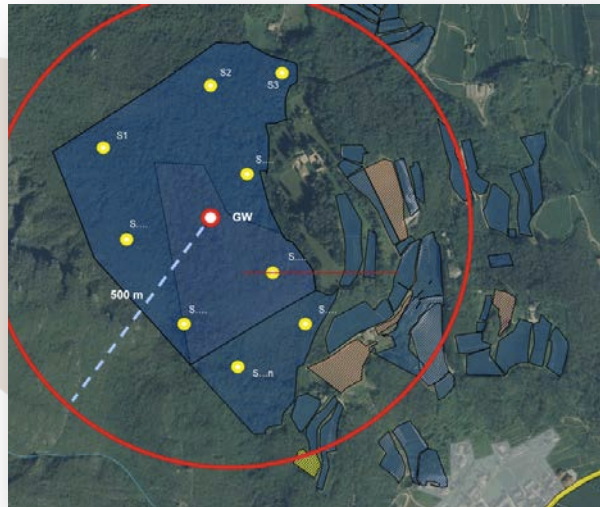
Thank you for your attention!

Question time