



Downy mildew of grapevine

FACTSHEET

Downy mildew results in severe loss in grapevines

Downy mildew is highly destructive in all grape-growing areas of the world. The symptoms, caused by the fungus *Plasmopara viticola*, firstly appear on the grape leaves 7-10 days after infection. Foliar symptoms appear as yellow circular spots with an oily appearance (oil spots). In order to control the pathogen, approved pesticides are used.



Control with help of DSS on platform.[ipmdecisions.net](https://platform.ipmdecisions.net)

The downy mildew model estimates infection from an organism's using cardinal temperatures (T_{min} , T_{opt} , T_{max}) and leaf surface wetness duration requirements for infection (W_{min} , W_{max}). The parameter W_{max} provides an upper boundary on the value of W since temperature is not always a limiting factor. The model is based upon a temperature response function which is scaled to the leaf wetness duration requirement. Hours of interruption to wetness are also important



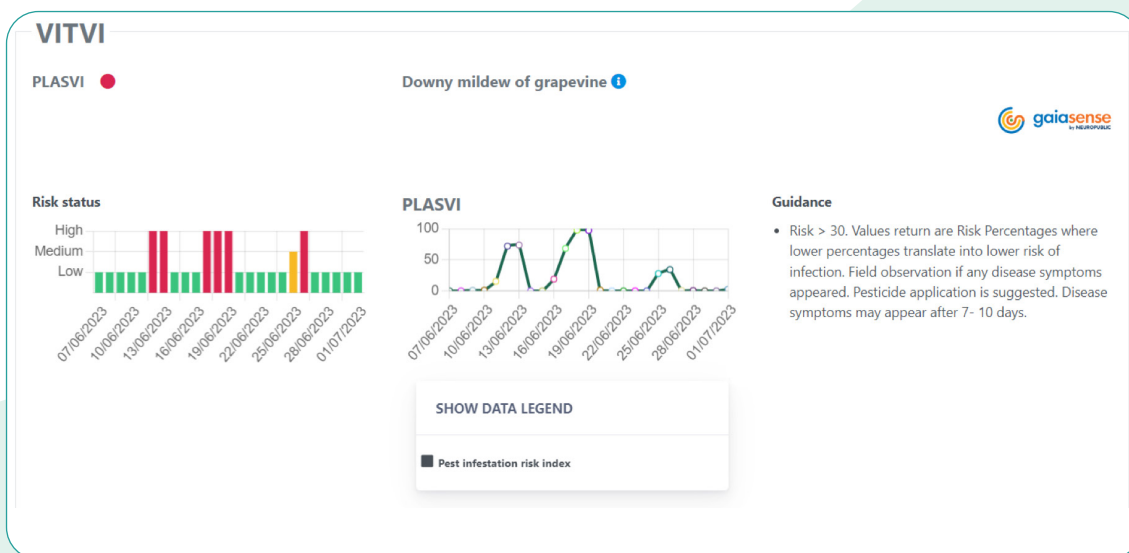
for estimation of infection from hourly weather data so this is also used as an input. The output of the model is normalized from 0-100, with 0 being the lowest risk index and 100 the highest.

DSS parameters

As mentioned, the model uses Tmin (°C), Tmax (°C), Topt (°C), Leaf Wetness min (hr) and Leaf Wetness max (hr) which are all recorded by the local weather station.

DSS output

The DSS gives information about the risk of downy mildew of grapevine from 0-100. What can be seen in the risk status and pest infestation risk index is that there are 3 peaks within the selected timescale that show a risk higher than 30. This means that pesticide application is suggested and disease symptoms may appear after 7-10 days.



Where can DSS be used

The DSS is created in Greece and part of the integrated "gaiasense" smart-farming solution. The prediction model is developed based on literature reviews and adaptations through experiments and observation on local conditions. This means that it is not yet validated in other countries and results should be treated with caution.

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