



## TOP QUALITY OF ORGANIC WINE WITH THE LEAST AMOUNT OF PESTICIDE RESIDUE

### CUSTOMER PROFILE

**Name:** Biocentrum Ltd.

**Location:** Slovakia



### AIMS OF THE PROJECT

- Deployment of a V40 station to capture reliable data and provide accurate forecasts on major diseases.
- To support the winery with a solution that helps the prediction of grey mold, black rot, powdery and downy mildew so that organic wine could be produced.

### RESULTS

- The V40 SmartVineyard™ models was deployed to provide reliable information on microclimatic conditions.
- Disease alerts and predictions are displayed on intuitive web-based interface to enable fact-based decisions.

### THE CUSTOMER

The company's main mission is not only the production of organic products, but also their subsequent processing, thereby can ensure a high added value to their products.

The company also focuses on production and processing biograpes. Processing of grapes brings another product of organic farming - wine. The wine cellar is more than 200 years old and therefore it has not only economic but also a historical value. Pesecká leánka (a famous type of wine) is an outstanding product of theirs. This cellar has a storage capacity of 105,000 litres of wine.

### THE PROBLEM – THE LEAST AMOUNT OF PESTICIDES TO BE USED

As the customer's mission is to produce and distribute top quality organic wines, their request was to implement a system that enables users to predict grape diseases and make their spraying / protection decisions accordingly.

The microclimatic conditions at the customer's vineyard are appropriate for increasing the risk of major grape diseases that contribute to serious losses in yield. To avoid this, the customer has to spray its grapes so intensively that the amount of pesticide residues in his wine do not allow him to call his wines to be organic.

Therefore our customer has two options: either to face serious losses in yield, or to use chemicals but risk giving up organic wine production. However, with SmartVineyard™ than came another option: to get accurate data on diseases and plan protection upon such diseases.

## GOALS

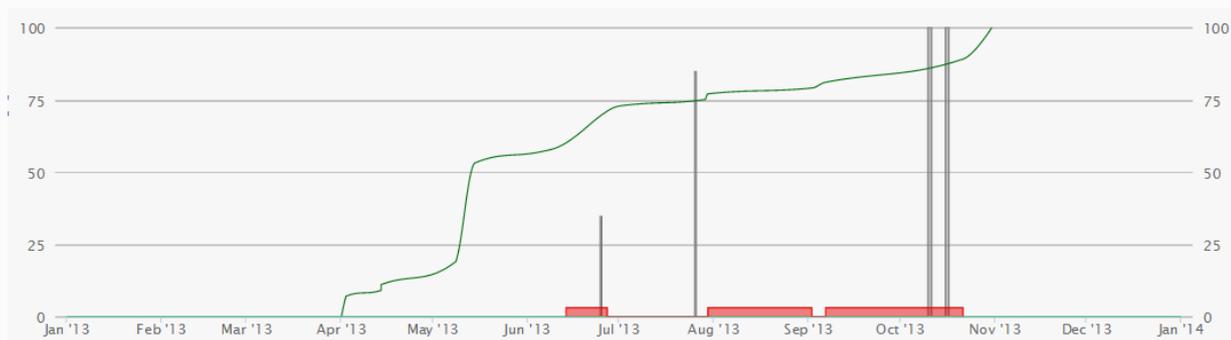
The customer was in seek of a solution that provides him reliable information on botrytis, black rot, downy and powdery mildew, and take accurate measurements of weather parameters that contribute to the risk of major diseases. Our company was dedicated to support the winery with a SmartVineyard™ solution to help plan grape protection processes.

## RESULTS

Due to the accurate information available, the continuous monitoring of disease helped our customer keep producing high quality organic wine. Furthermore, he could save expenses on pesticides due to the optimized spraying processes.

On the screenshots below you can see the information our customer received via our intuitive user interface. The green line indicates the phenology phase of the grape. The pikes reflects the intensity of each disease.

### BOTRYTIS



#### **What the graph displays**

*Grey mold / Botrytis prediction graph displays the probability of infection in a given interval. The risk depends on temperature and wetness: the risk is calculated if a wetness period lasts long enough.*

#### **What it represents**

*The graph visualizes if conditions were suitable for a possible infection during the selected interval. The mechanism is similar to the black rot diagram: a value around 100% means that all circumstances have been ideal for a long enough to allow development and spreading.*

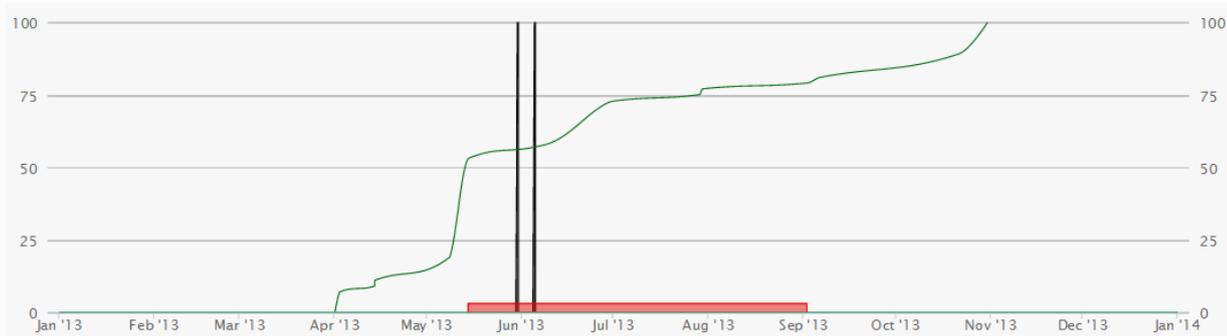
#### **Infection efficiency Risk Recommendations**

0-50 – Low - Occasional disease control is enough

50-95 - Medium - Treatment should be started

95-100 - High - Treatment should be started

## BALCK ROT



### What the graph displays

The graph displays the tendency of a probable disease evolution: under favorable climate the value constantly increases until reaching 100% which means ideal climate (favorable climate for long enough time period). The actual height of the black column depends on the climate conditions of the previous hour. The graph jumps back instantly to 0% when the climate is not suitable for black rot anymore.

### What it represents

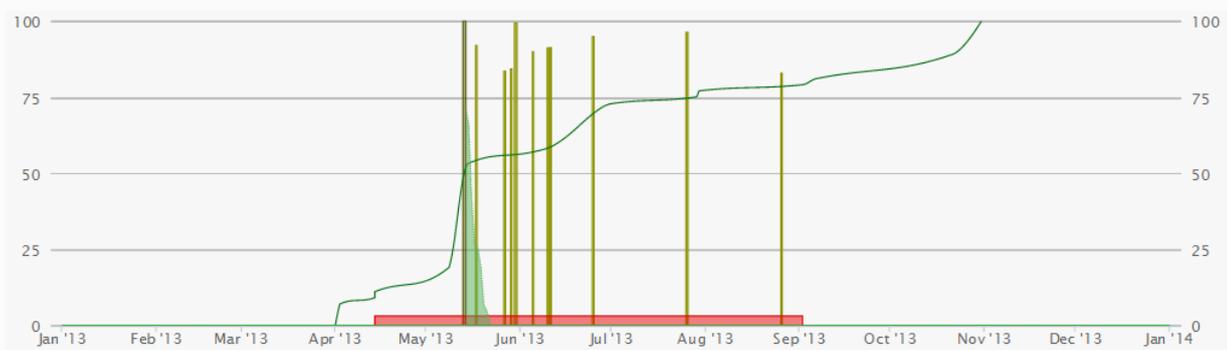
100% means that the climate is ideal for black rot. If the curve cannot reach 100% then the favorable conditions are not present long enough for the disease to evolve.

### Recommendations

The viticulturist decides about handling the risks. The creators of the model recommend the following:

- \* IE near 100% requires immediate fungicide treatment. Failure to do so results in symptoms appearing 2-3 weeks after infection which could be too late.
- \* Below 25% occasional disease control is enough.

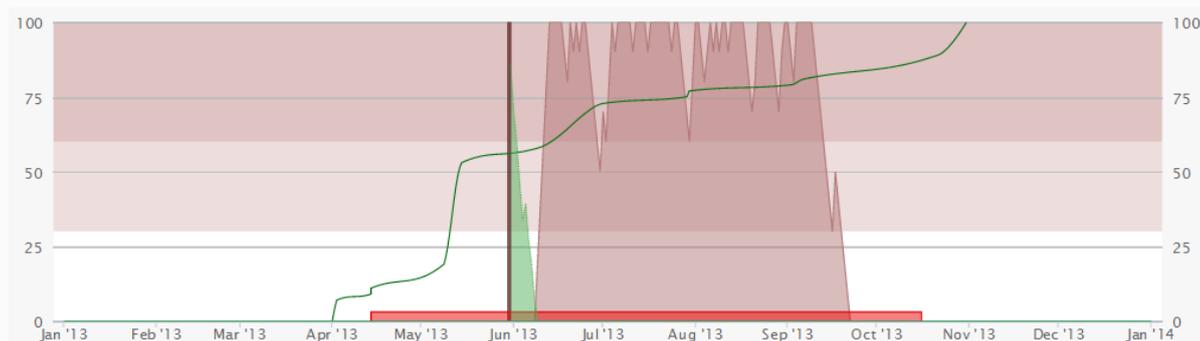
## DOWNY MILDEW



The graph displays the actual efficiency of fungal infection. Opposed to black rot and grey mould predictions this value represents high risk starting already at 50%.

The actual IE (the top of the green column) represents the ratio of the actual climatic conditions and the ideal conditions for infection. 100% represents a wetness period lasting for minimum of 15 hours with temperature around 18 °C. If spores are present in the area this climate guarantees infection and disease evolution.

## POWDERY MILDEW



### What the graph displays

The graph displays users both the time of a possible primer infection and the risk of disease evolution following. Users can determine the risk of infection and disease spreading.

### What it represents

After infection the value of IE can vary between 0 and 100. A value between 0 and 30 indicates a low risk: the disease requires rather long time (15 days) to develop under the current conditions. 30 to 60 means the disease requires about 10 days to evolve and spread. An IE above 60 indicates high risk: new population of fungus is generated in about 5 days. Based on these data the time of the infection can be predicted and the spreading can be deduced.

The winegrower decides about handling the risks, the creators of the model have recommendations.

Infection efficiency Time required for reproduction Infection risk Recommendations

- 0-30 - 15-12 days - low - Occasional disease-control is required.
- 30-60 - 12-8 days - medium - Start of chemical control is advised.
- 60-100 - 8-5 days - high - Frequent usage of fungicides is required.