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# OPTIPAON, A DECISION SUPPORT SYSTEM TO PREDICT THE RISK OF PEACOCK EYE OF OLIVE IN SOUTHERN FRANCE

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Peacock eye, caused by *Fusicladium oleagineum*, is a major disease in most olive production regions, including southern France. Its control relies mostly on fungicides, requiring up to 6 sprays per season. One possibility to reduce the use of fungicides (usually copper) would be to limit treatments according to the actual risk of disease development.

Work was conducted to develop a field-operational model for the prediction of disease outbreaks based on climatic conditions, using data from a 10-year survey. As outbreaks of disease are known to be linked to rain, models were evaluated for their ability to predict if infection would occur following a rain event, depending on air temperature and duration of relative humidity above 85%. We examined a total of 134 rain events followed by confirmed leaf infection and 191 rain events not followed by detectable infection. The field data were adequately fitted (both specificity and sensitivity > 0.97) with either a multilayer neural network or with 2 of 6 tested regression models describing high boundary values of high humidity duration, above which no infection occurred over the temperature range, and low boundary values below which no infection occurred. This provided a first model to describe conditions favourable to infection.

One problem associated with risk prediction of peacock eye is the long latent period (time between infection and the first detection of leaf spots) of this disease. We thus developed a second model to relate the duration of the latent period as a function of air temperature after the beginning of rain ( $R^2 > 0.98$ ).

Used together, these two models allowed to predict the numbers of ongoing latent infections. They were included in a decision support system (DSS), referred to as "OptiPaon", to help farmers optimize the number and timing of their treatments. In addition to estimating the ongoing latent infections, this DSS takes into account six other risk factors related to the location of the orchard and its recent history. They include the susceptibility of the cultivar, the mode of irrigation, the number of previously applied copper treatments, a global climatic risk linked to average rainfall in the production region, the type relief of the orchard and an estimation of disease incidence (percentage of diseased leaves). This latter information must be provided online by the grower at every use of the DSS.

This system is hosted on the website of CIRAME (Centre d'Information Régional Agrométéorologique) and is currently being evaluated by a group of farmers in Provence under the coordination of two national technical institutions (AFIDOL and CTO).

**Plant Protection Society of Serbia (PPSS),  
IOBC-EPRS and IOBC-WPRS**

on the occasion of the 60th anniversary of the PPSS organize

**VII Congress on Plant Protection:**  
Integrated Plant Protection – a Knowledge-Based Step towards  
Sustainable Agriculture, Forestry and Landscape Architecture  
November 24-28, 2014, Zlatibor, Serbia

**Second Announcement**



On behalf of the Plant Protection Society of Serbia (PPSS) and two sections of the International Organization for Biological and Integrated Control (IOBC-EPRS and IOBC-WPRS), we are glad to invite you to attend the VII Congress on Plant Protection with a motto: **“Integrated Plant Protection – a Knowledge-Based Step towards Sustainable Agriculture, Forestry and Landscape Architecture”**. The Congress intends to enable further exchange of up-to-date scientific and technical information on plant protection in Agriculture, Forestry and Landscaping among researchers, teachers, experts in extension and public services and the business community, as well as to continue to promote international cooperation.

**Conveners**

Brankica Tanović – vice president of PPSS

Milka Glavendekić – vice president of IOBC-EPRS

Philippe Nicot – president of IOBC-WPRS