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BOOK OF ABSTRACTS

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- Agronomy
 - Chemistry
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 - Physiological effects
 - Sustainability, climate changes

ExpeRoya, a comprehensive model to forecast the risk of coffee leaf rust on *Coffea arabica* in Central America

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RATIONALE

To anticipate socio-economic crises linked to epidemics of coffee leaf rust (CLR), we developed a bio-physical model to forecast the risk of increase of CLR at the territorial and plot scales.

METHODS

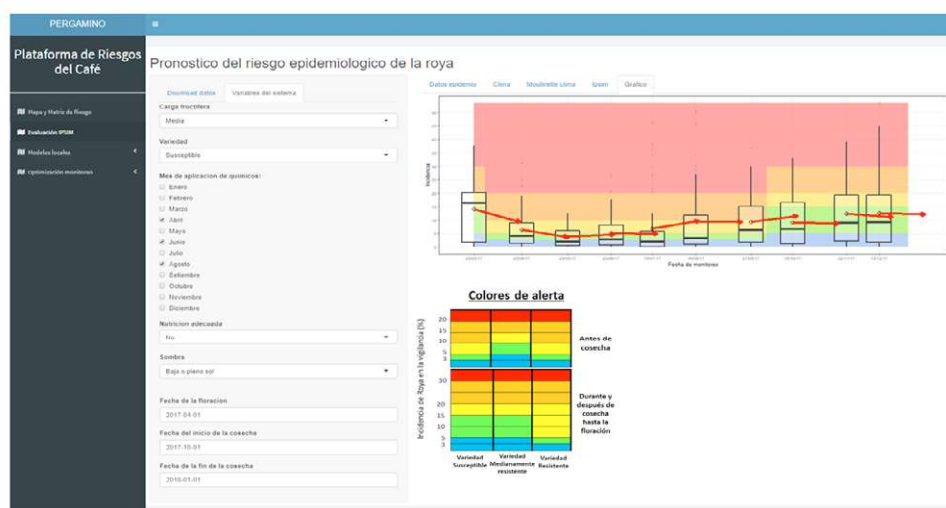
This model was built using the IPSIM (Injury Profile SIMulator) methodology, which has the advantage of representing in a simplified way the complex relationships that exist within agro-ecosystems and allows easy appropriation of the tool by the actors of the sector. ExpeRoya combines ordinal qualitative variables that describe the interactions between weather, pathosystem and crop management that affect CLR risk of increase each month.

RESULTS

Firstly, this model was socially evaluated in national workshops in Central America and Dominican Republic and through a survey with international rust experts. Secondly, it was numerically evaluated on CLR monitoring data. As the model fitted well the data it is currently used to produce monthly alerts in Honduras and Dominican Republic through “Pergamino”, an online platform.

CONCLUSIONS & PERSPECTIVES

ExpeRoya is a new promising tool to be used in association with a socio-economic model to form a risk management system of coffee crop.



ExpeRoya accessible on the Pergamino platform (<http://www.redpergamino.net/>). After uploading the epidemiological data and the weather data, the system variables are filled in the platform, e.g. the fruit load, the variety, the calendar for pesticide applications, the level of nutrition of coffee trees, the density of shade, the date of flowering, the date of beginning and end of harvest. The graph shows an example of forecast of the risk of growth of CLR for the 2017 monitoring campaign in Honduras. The boxplots represent the monthly monitored CLR incidences in the country and the red arrows represent the risk of change in the incidence forecasted by ExpeRoya for the next month. The horizontal blue, green, yellow, orange and red zones represent, in growing order, the alert levels, which may change according to (i) the periods considered (flowering and harvest) and (ii) the level of susceptibility of the varieties. The rules for changing the alert levels are specified in the box “Colores de alerta”.