

# VigiMildiou / BlightSurveyor: two mirror participative applications to monitor late blight primary infections and epidemics

R. MABON<sup>1</sup>, J.M. ARMAND<sup>2</sup>, R. CORBIERE<sup>1</sup>, M. GUIBERT-ROLLAND<sup>1</sup>, D. GAUCHER<sup>3</sup> & D. ANDRIVON<sup>1</sup>

An effective management of late blight requires accurate monitoring of primary infections, and on subsequent epidemic development. Such a monitoring is usually made by extension specialists and advisors, which target mainly commercial crops but have no or little access to other agro-ecosystems compartments, such as home gardens, which can play a critical role in the epidemic onset and progress.

The development of participatory research opens new possibilities for more complete observation networks, but require that easy to use, portable and informative tools are made available to a diversity of actors. We thus developed VigiMildiou and BlightSurveyor, two mirror, freely available applications (one in French and the other in English) operated on Apple or Android mobile platforms, to facilitate late blight tracking in participatory research projects.

## 1 Objectives of the mobile apps

- To provide a tool allowing as many actors as possible, from professional growers and advisory services to amateur gardeners, to feed a participatory observatory of blight infections in potato and tomato;
- To mobilise modern numerical technologies to set-up, expand and operate this participatory observatory ;
- To contribute to a more efficient control of late blight by anticipating local risk levels and possible epidemic spread.

## 2 App structure and design

VigiMildiou and BlightSurveyor are two mirror apps, organized across four main sections appearing as separate pages in the menu (see section 3 below for detailed contents).

Both were designed to be operated under either iOS or Android, on any mobile platform. They are can be downloaded for free from Appstore or GooglePlay.

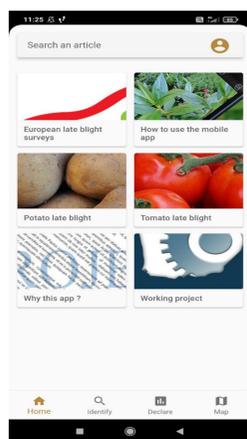
Both apps use proprietary design and software developed through the Ephytia portal; users need to register upon first use on Ephytia to transfer the data to proprietary databases for subsequent use.

## 3 Outlook on each app section

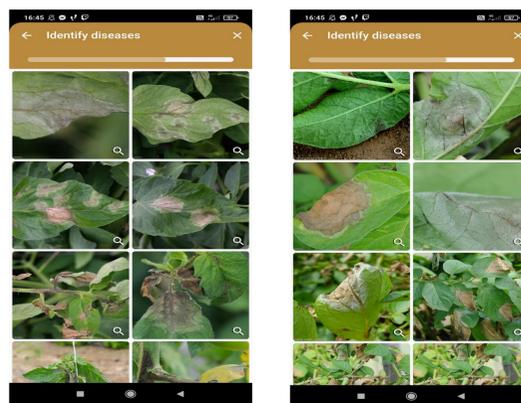
### 3.1 Home and information page

This page contains:

- **General information** about
  - \* late blight;
  - \* the app itself;
  - \* recent monitoring data;
- A **navigation bar** to browse through the various sections



### 3.2 Image-assisted diagnosis



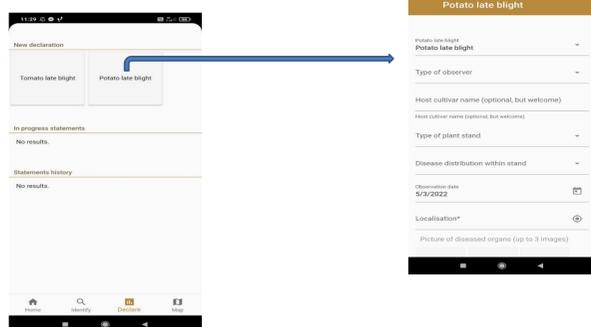
Like most apps developed for biovigilance within E-phytia, **VigiMildiou / BlightSurveyor** rely on image assisted identification of target symptoms or organisms.

They host two high quality photo galleries (one each for potato and for tomato late blights) showing typical symptoms on key plant organs.

### 3.3 Declaring an outbreak

Real simple indeed! Just open the relevant formular ('potato late blight' or 'tomato late blight') in the 'declare' section, fill in the few required fields using the roll-on menus, add one to three pictures (taken with your smartphone) of the symptoms you're observing, et voilà!

**With VigiMildiou / BlightSurveyor, it does not take more than 1-2 min to declare a new outbreak!**



### 3.4 Mapping declared outbreaks

After validation from the pictures taken and linked to each declaration, the interactive map is automatically updated.

**It allows VigiMildiou / BlightSurveyor users to easily and quickly assess local late blight pressure, and to follow epidemic progress over time and space.**



## 5 Downloading the apps – it's free!

❖ **VigiMildiou** (French version)



❖ **BlightSurveyor** (English version)



## 6 Acknowledgements

VigiMildiou/BlightSurveyor were developed as part of the SYNAPTIC project, funded by the French Ministries for an Ecological Transition, for Agriculture and Food, for Solidarity and Health and for Higher Education, Research and Innovation, with fees for diffuse pollution coming from the Ecophyto II+ plan and the financial support of the French Office for Biodiversity, as part of the call for research projects "Overall approaches to limit the use of phytosanitary products : coupling preventive and curative solutions within agricultural sectors from farmers to consumers".

Centre  
Bretagne - Normandie

<sup>1</sup> INRAE, UMR IGEPP, 35653 LE RHEU, France;  
<sup>2</sup> INRAE, UMR SAVE, 33883 VILLENAVE D'ORNON, France;  
<sup>3</sup> ARVALIS Institut Du Végétal, 91720 BOIGNEVILLE, France