



Potato is a major staple food and cash crop in Europe and worldwide. It is however vulnerable to many pests and diseases, among which early and late blight are of utmost economic importance in most, or all, growing regions. These diseases, caused by *Alternaria* spp. and *Phytophthora infestans* respectively, are damaging both to the foliage and the tubers of the plant.

Despite active research and recent breakthroughs, some important aspects of the biology and epidemiology of these pathogens are still unknown: how do they persist after harvest? what triggers an epidemic? why does epidemic intensity vary greatly between years? why are these diseases so difficult to control sustainably? Recently developed powerful genetic markers show that the pathogen populations are constantly evolving and are subject to repeated biological invasions by novel genotypes. Such genetic changes may jeopardize the ability to develop durably resistant cultivars and the sustainability of other control measures. It is essential to understand the mechanisms behind the changes and their relation to human intervention (e.g. pathogen transportation with plant material or cropping practice) and to the changing climate.

This was the rationale for establishing 'EuroBlight', a network of European scientists, initially supported by the European Union. EuroBlight is now a vibrant consortium of scientists and industry representatives and has met regularly since 1996 with a simple overall objective: to identify, evaluate and combine the best possible tools to predict, manage and control the pathogen populations in the field. This multidisciplinary approach to the acquisition of knowledge and its timely transfer to farmers through the extension chain is the raison d'être of EuroBlight.

The 14th EuroBlight Workshop brought together 90 participants from all parts of Europe, South America, Israel, China and India. EuroBlight is a unique collaborative platform dedicated to tackling the challenges that early and late blight pose in Europe and worldwide. Major past achievements, such as a comprehensive web-based resource hosting harmonized research protocols and extensive databases allowing the compilation and sharing of data on pathogen populations, host resistance and agrochemical characteristics, constitute some of the tools that the network develops and extends to the whole community of blight researchers and extension specialists



Statements:

Euroblight wishes to draw attention to major issues of relevance to policy making in Europe:

Rapid changes in *P. infestans* populations causing late blight in Europe, America and Asia, including the emergence of strains with altered pathogenicity or reduced fungicide sensitivity have been observed. Constant monitoring of populations and characterization of invasive genotypes in order to understand and predict changes is a prerequisite for the deployment of IPM strategies, as required by Directive 2009/128/EC on the sustainable use of plant protection products. It directly influences the development and deployment of resistant cultivars, the performance of disease warning systems and the efficacy of plant protection products. A coordinated and continuous monitoring effort would be best supported through National Action Plans relating to IPM implementation in EU member states.

Statement 1:
Monitoring of populations of major pathogens and pests

EuroBlight strongly recommends that pan-European population surveillance and monitoring using harmonized protocols, shared methodologies and integrated databases to store and exploit the data in real time, is a core activity in the IPM ERA-NET to be launched shortly. EuroBlight offers to serve as a pilot network to test the practicality of such an initiative within this ERA-NET.

Developing IPM strategies compliant with the Directive should rely on the use of optimal combinations of all best local practices. These strategies must take advantage of the population monitoring efforts described above to improve and adapt Decision Support Systems, which remain central for the optimal deployment of cultivars and plant protection products. This requires an association between pathogen genotypes (increasingly accessible in terms of methods and costs) and pathogen phenotypes. This remains a challenge that requires further cooperative research.

Statement 2:
Linking genotype and phenotype

EuroBlight recommends that the challenge of linking genotype and phenotype in *P. infestans* is explicitly included as a topic for collaborative research projects within the frame of H2020, and is willing to build and lead such a project.

Prediction of infection risk is a key element of IPM. EuroBlight has developed a Web platform for testing, comparing and sharing sub-models that can be incorporated in Decision Support Systems for late blight forecasting. Additionally, EuroBlight has developed platforms and collaborative workspaces (including databases, protocol repositories, and analytical tools), which are strategic assets in meeting the challenges posed by the sustainable management of late blight. This successful approach is now being replicated for early blight, and is being emulated by similar new initiatives such as the LatinBlight and AsiaBlight.

Statement 3:
EuroBlight offers to share its expertise and tools

EuroBlight offers to contribute its tools and platforms to establish these new networks. It will also take steps to transfer them for the implementation of similar networks on other major agricultural pests of important food crops.

Keeping – and when necessary improving - the tools and their use will require additional financial and staff resources. However, workshop participants are convinced that the resultant improvements in the management of these devastating diseases in a cost-effective, sustainable and environmental sensitive manner offers substantial benefits to growers and consumers while also protecting the European environment.

EuroBlight therefore strongly recommends that the three integrative activities outlined above: 1) population monitoring of major pathogens and pests 2) connecting genotype and phenotype for the improvement of Decision Support Systems and 3) development and maintenance of web based, collaborative information platforms be supported over time through the core funding dedicated to the implementation of the National Action Plans for IPM and to the European Research and Innovation agenda (Horizon 2020).

Contact

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