

Insights from the UK's Fight Against Blight initiative

By Lukie Pieterse (Photographs: Dr Eugenia Banks, Ontario Potato Board)



The Fight Against Blight (FAB) programme in the United Kingdom (UK) is a comprehensive campaign aimed at reducing pesticide use while preserving potato crops by improving our understanding of late blight and its management. The initiative was launched to address the knowledge gap identified in the epidemiology and integrated control of potato late blight.

The programme started in 2004 and since then, blight scouts have sent in well over 10 000 samples of potentially blight-infested potato plants for genotyping in designated laboratories across the UK. These scouts are trained to identify the disease and provide information to growers regarding the best strategies for managing it. They've received specialised training to identify and monitor outbreaks across the UK.



Late blight lesions.

Their role is to keep a watchful eye on potato fields during the growing season and to look for signs of late blight, which can include dark patches on leaves and stems, as well as white mildew-like growth. When they identify an outbreak, they report it to the relevant authorities as well as the growers in the area right away.

The information provided is critical in helping growers manage the disease effectively. Moreover, these scouts also provide detailed information to the growers regarding the best strategies for managing the disease. They help growers determine the appropriate timing and dosage of fungicide applications and provide guidance on crop management practices that can reduce the risk of the disease.

Tools and technologies

Another aspect of the campaign is the development of innovative tools and technologies for early disease detection. For example, the development of outbreak maps has been funded by the UK government to help growers identify high-risk areas and take preventive measures.

These maps use data collected from a network of scouts, weather monitoring stations and other sources to provide accurate information regarding the spread and severity of late blight outbreaks. The maps are updated regularly and show the locations of reported outbreaks, as well as predictions for future outbreaks based on weather patterns and other factors. This information is then used by growers to make informed decisions regarding crop management practices and fungicide applications.

The development of these maps is a significant advancement in early disease detection, as they provide growers with a means to monitor the disease at a regional level. The maps help to identify high-risk areas where the disease is likely to occur, enabling growers to take proactive measures to reduce the risks such as resistant varieties, early application of fungicides and other integrated pest management (IPM) strategies.

Understanding *P. infestans*

A significant objective of the FAB initiative is to improve our understanding of the local and international populations of *Phytophthora infestans*, the organism responsible for potato blight. This objective is integral to the development of more effective fungicides and other strategies to combat this destructive pathogen.

P. infestans is a highly adaptable and rapidly evolving organism that can develop resistance to fungicides, making it challenging to control. By improving our understanding of the characteristics and behaviour of different populations of *P. infestans*, researchers can gain valuable insights into how the pathogen adapts and evolves, as well as identify the factors driving its spread.

This information can help researchers develop more targeted and effective fungicides and management strategies specific to the particular strains of the pathogen present in a given area.

Having a better understanding of the pathogen's genetic makeup, virulence and other key characteristics can also help researchers predict future outbreaks, enabling growers to take proactive measures to prevent or minimise damage.

The FAB initiative has made significant advancements and developments in understanding the genetic makeup of *P. infestans* and how it affects virulence. Researchers have identified specific genetic markers that contribute to the pathogen's virulence, or ability to cause disease, in some strains of *P. infestans* more than others.

Moreover, by understanding the genetic basis of *P. infestans* virulence, researchers can predict how the pathogen will change and evolve. They can anticipate new strains that may emerge and develop methods to combat them before they spread.

Focus on IPM strategies

IPM strategies have become an increasingly important focus of the FAB initiative. IPM is an ecosystem-based approach to pest management that aims to reduce the reliance on chemical pesticides and minimise the risk of environmental harm. One of the key advantages is that it combines multiple approaches to pest control, making it more effective than any single method.



A stem infected by late blight.

For example, IPM strategies for managing late blight may include the use of resistant potato varieties that are less susceptible to the disease, crop rotation to reduce the build-up of inoculum in the soil, and biological control agents such as parasitic fungi that attack *P. infestans*. By combining these methods, growers can reduce the overall pesticide load on their crops, while also improving yield and quality, reducing production costs, and minimising the risk of environmental damage.

Moreover, IPM strategies are adaptable, allowing growers to tailor their pest management practices to their specific needs and the conditions on their farms. This flexibility makes it easier for growers to quickly respond to changes in the environment or emerging pest threats.

Lessons for other countries

The FAB initiative in the UK serves as an excellent example of potato blight prevention and management for potato producers in other countries. The initiative's success in developing IPM strategies, promoting sustainable farming practices and improving our understanding of the local and international populations of *P. infestans* can be replicated in other potato-producing countries.

One key takeaway is the importance of early detection and monitoring of late blight outbreaks. The establishment of a network of blight scouts, who monitor and report outbreaks of *P. infestans* across the UK, has proven an effective way to manage the disease. Producers in other countries could establish similar networks, or even participate in regional or international networks to share best practices for early detection and monitoring.

Another lesson is the value of using IPM strategies in combination with chemical pesticides. By focussing on a range of approaches such as resistant varieties, crop rotation and biological control agents, growers can reduce their reliance on chemical pesticides and promote more sustainable methods of pest management.



Late blight on several leaves.

Moreover, the development of innovative tools and technologies for early detection of the disease, such as outbreak maps, can also be applied in other countries. This technology enables producers to identify high-risk areas and take preventive measures to protect their crops.

Finally, the FAB initiative's emphasis on research and development is another crucial lesson for producers in other countries. For instance, the identification of specific genetic markers that make some strains of *P. infestans* more virulent than others led to the development of new fungicides that target these specific strains. This research provides valuable insights into the evolution and behaviour of *P. infestans*, which can aid effective pest management worldwide.

Overall, the FAB initiative is a good model for potato blight prevention and management in other countries. By learning from the successes and innovations of this initiative, producers worldwide can reduce their reliance on chemical pesticides, promote sustainable farming practices and manage potato blight more effectively. 🌱

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