

Late Blight Populations and Fight against Blight

Investment: R&D: £269k over 4 years, Knowledge Transfer activities: £16k p.a.,
Return: £2-5 million p.a.



Challenge

Late blight is the most serious disease for potatoes in Great Britain. As all fungicides are protectants, preventative programmes are needed even in the absence of disease. Late blight causes the largest loss in potential yield and quality with an industry value of about £55 million a year in a business as usual (BAU) scenario.

In years of moderate blight pressure and with applications of blight programmes it is estimated that harvest yield losses are still in the region of 7% and marketable yield by a further 0.3% due to problems in store, with a lost field potential of 430,000 tonnes¹.

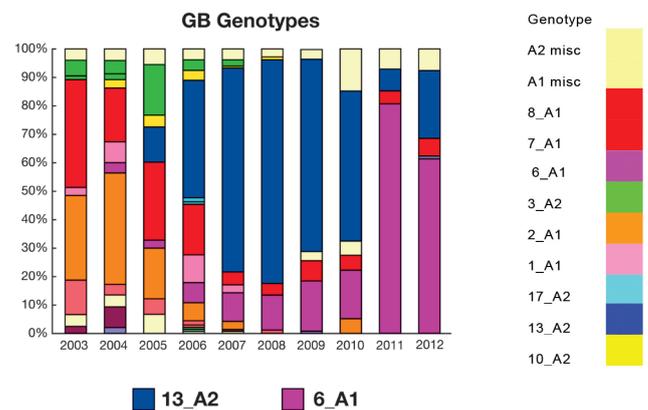
Blight population monitoring

Blight populations change with time and the national blight survey work funded by Potato Council at the James Hutton Institute since 2006 has been instrumental in identifying the introduction and confirming the establishment and spread of the 13_A2 (Blue 13) blight strain in Great Britain.



Agressiveness

Once the importance of this new blight population was identified, a review led by the James Hutton Institute, examined variation in “aggressiveness”. That research demonstrated that the more ‘aggressive’ 13_A2 blight strain could displace established populations. This occurred, in part, because it was able to multiply at lower temperatures, at a faster rate and overcome the blight resistance of established varieties. In 2011, the ongoing monitoring highlighted the switch to an equally aggressive strain called 6_A1 (Pink 6).



Bar charts indicating the frequency of *P. infestans* isolates within each SSR genotype over the course of eight seasons (2003-10). All colours above the heavy black horizontal line (except the yellow miscellaneous category) in each season are the A2 genotypes

Threat to production and supply

The blight strains 13_A2 (blue 13) and 6_A1 (Pink 6) posed a significant threat to the blight control programmes used by the industry and growers had to respond to the real challenge to their production and the supply into processors, packers and for the seed sector.

The changes required to address these threats:

- earlier start to the blight control programme
- reduced spray intervals
- careful fungicide choice
- awareness of varieties for resistance to new strains

Without these changes in practice as a result of the understanding the new blight strains it can be anticipated that production losses would have been substantially greater – at least until lessons were learnt the hard way on best practice.

Estimating by how much losses were restricted due to the survey of blight strains and their increased aggressiveness is conjecture but in a report by Dr Stuart Wale (Potato Dynamics) they were conservatively estimated to be in the range of £2m to £5m.

Although difficult to quantify these figures would represent only 0.6% to 1.7% of total losses which could occur if there was loss of actives and blight was not controlled.

This would represent an annual return on project spend of between 7.5:1 and 18.5:1

“I find the FaB project extremely useful for gauging the blight infection pressure in any given area. This information helps to guide my fungicide choice and spray interval. Retrospectively, the data also provides powerful justification for the control measures employed.” Dr John Keer, Richard Austin Agriculture.

Resources and costs

- Survey of GB Blight Populations (Potato Council research report Project R274) Cost £258,060
- Review of Blight Aggressiveness (Potato Council research report Project R282) Cost £11,200
- Fight Against Blight Campaign Cost £16,000 a year

The ‘Fight against Blight’ (FaB) campaign

The research on blight populations is part of the highly successful Potato Council campaign on blight management. The research was integrated into Fight Against Blight which involved enlisting scouts to report outbreaks and post in infected samples, as well as an alerting system for confirmed outbreaks and Smith periods. Samples collected from around the country for population monitoring originate from the scout sampling for outbreak monitoring. Potato Council also provides technical information on Blight via the Knowledge Hub www.potato.org.uk/knowledge-hub

Late blight fungicides are protectants, so need to be applied at regular intervals. The length of interval and the type of product can have a big impact on the cost of control. In a high pressure blight season the cost of control for GB can be up to **£72M***. In a low pressure year the cost could be **£39M***. The value of the alerting system is to help growers and advisors justify their fungicide programme when matching inputs to risk to achieve cost effective control. During high pressure, the most important consideration is to protect the crop from infection, during low pressure the secondary consideration of cost saving can be taken into account to realise some of the **£33M*** potential savings from using cheaper chemistry whilst protecting marketable yield.

“This service is particularly valuable when it is backed up with research into the significance of changes in blight populations and the possible impacts on variety resistance ratings” Mark Taplin, Agronomist, Tame Valley Potatoes.

*Data based on grower feedback and costs from Nix 2011.

	Seasonal pressure	Low £/ha	High £/ha
Application	Cost of application (Nix, 2011)	12.36	12.36
	Cost of cheapest product:	10.00	10.00
No. of sprays	Cost of dearest product:	22.00	22.00
	Cheapest product:	8	8
	Dearest product:	4	12
Cost of application	Cheapest product total cost:	178.88	178.88
	Dearest product total cost:	137.44	412.32
	Total cost:	316.32	591.20
	Difference (per ha)	274.88	
	Crop area:	121,600	121,600
	Fungicide cost:	£38,464,512	£71,889,920
	Difference:	£33,425,408	

¹ Pesticide availability for potatoes following revision of Directive 91/414/EEC: Impact assessments and identification of research priorities S Twining, J Clarke, S Cook, S Ellis, P Gladders, F Ritchie & S Wynn, ADAS. PCL project R415
<http://www.potato.org.uk/publications/r415-pesticide-availability>

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Potato Council
Cost Benefit Analysis - CB08

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