

Pilot Study Results:

Post-harvest testing of Scottish Pre-Basic crops for the management of potato blackleg disease

Background

Potato blackleg disease can be a significant issue for growers causing downgradings and rejections of potato seed crops from the Scottish Seed Potato Classification Scheme.

Control methods for the disease – caused by *Pectobacterium atrosepticum* (*Pba*) – appear to be increasingly ineffective and improving control of the disease is challenging as growers have little information to make informed disease management choices.

At present they have no knowledge of the incidence or extent of infection in seed potatoes at harvest, in store or when in receipt of a seed shipment.

Research project overview

Previous small scale studies at SASA have shown that *Pectobacterium atrosepticum* (*Pba*) can be present in up to 21% of PB1 crops tested, and the percentage of crops with *Pba* infection increases with each subsequent generation.

With support from AHDB, SASA are conducting a three year pilot study (2017-2019), based on similar studies performed in the Netherlands, to determine the level of infection in high grade seed potatoes.

The results from the laboratory tests will be compared to the growing crop inspection reports to determine any correlation. It is anticipated the results will allow growers to make informed decisions on future crop/disease management.

Around 150 Pre-Basic stocks will be randomly selected for testing in each year of the study, with further specific stocks chosen by producers also tested (approx. 50 p.a.)



Testing consists of taking peel samples from both the heel and rose end of the tuber, and a further tissue sample from the core ; peel samples are divided into 4 subsamples and core samples (200 cores in one bulk sample) are tested separately for the presence of *Pba*.

Table 1 (below) shows the number of samples which tested positive in the core and peel tests. A positive peel test is when between 1-4 of the subsamples are positive. These results follow a similar pattern to previous studies, where *Pba* is found in PB1 stocks, with the amount of stocks affected increasing with the generation of stocks.

	Core samples +ve	Peel samples +ve
PB1 (45 stocks)	5	9
	11.11%	20%
PB2 (62 stocks)	21	34
	33.87%	54.84%
PB3 (29 stocks)	12	18
	41.38%	62.07%
PB4 (4 stocks)	3	4
	75%	100%

Table 2 (below) shows the number of daughter crops which had blackleg compared with the lab results from the parent stock. The results show that when the peel and core test are both positive, there is an increased chance of having blackleg the next year, and when both tests are negative the risk of blackleg the following year is reduced.

However, it is difficult to draw any meaningful conclusions at this early stage, with more samples needed over the next two seasons to ensure the results are robust.

Field Generation	Total B/L (crops)	Peel / Core	
		+/+	-/-
2	10.53% (38)	33% (3)	9.68% (31)
3	34.65% (127)	60% (25)	17.57% (74)
4	35.56% (90)	43.9% (41)	5.88% (17)
5	60% (15)	80% (10)	N/A (0)
Total	33% (270)	53.16% (79)	13.93% (122)

This work is being performed alongside another AHDB funded project into blackleg disease of potatoes, entitled 'Improved seed management to minimise losses due to *Pectobacterium* species'.