Controlling pests in potatoes using brassica cover crops?

Harper Adams University
Current Postgraduate Research Briefing

Why brassica cover crops?

Damage to potato crops by the potato cyst nematode, is estimated to cost the UK potato industry approximately £26 million annually. As European Union regulations change, there is a need to replace synthetic chemicals for pest control with more sustainable methods.

One control option is to use brassica cover crops, such as brown (Indian) mustard. Typically, cover crops are grown in between food crops, for about three months, until they flower. They are then chopped and incorporated into the soil. Biochemicals within the plant are converted into toxic gases following chopping. It is these which kill nematodes and soil pathogens.

Farmers need recommendations on suitable species and varieties as well as reliable growing methods for maximising pest control.

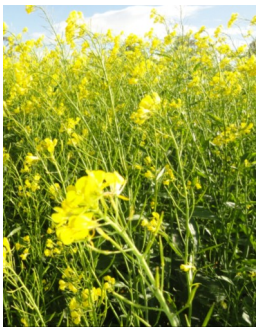
Study aim

This study aimed to investigate the potential of three brassica species on the management of the **potato cyst nematode** under field conditions.

Using The Princess Margaret Laboratories and Nematology Laboratory

After extensive glasshouse and field experiments, samples of the different brassica species are being analysed for the biochemicals using **High-Performance Liquid Chromatography** (see panel). Other equipment includes:

- a **spectrophotometer** – to measure enzyme activity in the soil;
- the **polymerase chain reaction equipment** – to identify species via their DNA;
- **microscopes** in **the Nematology Laboratory** – to examine cysts and check their egg viability.



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Study results

The results indicate that summer-sown brassicas produced more of the effective biochemical compared to autumn-sown overwintered plants. Some species performed better than others.

PhD programme

This briefing outlines the work of a three-year PhD research programme by **Bruno Ngala**, Postgraduate Researcher.

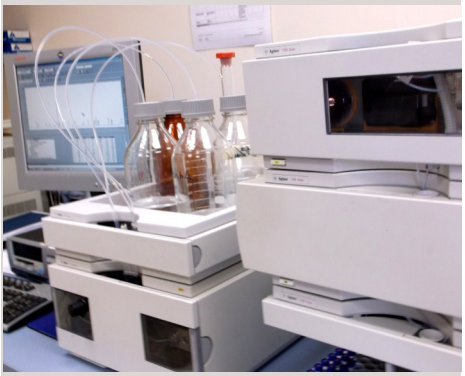
The Director of Studies is:

Dr Matthew Back, *Senior Lecturer/ Researcher in Plant Pathology and Nematology,*

Harper Adams University

High-Performance Liquid Chromatography (HPLC)

The **HPLC** separates component chemicals which are identified and quantified using appropriate software.



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