

Improving the use of brassicas to control pests in potatoes

Harper Adams University

Current Postgraduate Research Briefing



Loss of yield in potatoes

The most damaging pest of the potato crop in the UK is the potato cyst nematode. If no management procedures for this pest are in place the total potato crop yield may be lost.

Historically, potato growers have used synthetic nematicides to help control this devastating pest. But European regulations are changing and these chemicals may need replacing. One promising sustainable method of management is to grow brassica cover crops, such as brown (Indian) mustard, which are chopped and incorporated into the soil. When chopped, biochemicals within the brassica plant are converted into volatile gases which can kill nematodes. This is the **biofumigation** process.

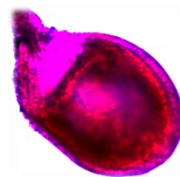
Some growers already use this methodology but a lack of information on the best practical ways to produce optimum quantities of gas has led to inconsistent **potato cyst nematode** management.

Study aim

This study aims to investigate the factors which affect the incorporation of the brassica cover crop residues into the soil. Initially, the machinery type and design, and the soil moisture levels at incorporation, are being examined.

The Nematology Laboratory

The Nematology Laboratory, is being used to count and test **potato cyst nematode** eggs, extracted from soil samples. Microscopes and imaging software provide a means of initial identification.



Stained cyst



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What next?

The project will ultimately aim to provide farmers and horticulturalists with information on chopping methods and field procedures when using brassica cover crops to manage **potato cyst nematode** most effectively. This work could lead to further pest and disease management experiments.

PhD programme

This briefing outlines the initial work of a three-year PhD research programme by **William Watts**, a graduate of Harper Adams University and now Postgraduate Researcher.

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Gas Chromatography-Mass Spectrometry (GC-MS)

The **GC-MS**, alongside appropriate software in **The Princess Margaret Laboratories**, is used to identify then quantify component gases.



Acknowledgements

The external funding from Frontier Agriculture Ltd. is gratefully acknowledged.



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