Grower Summary

FV 429

Towards the development of a laboratory based assay for the detection of Common Root Rot (*Aphanomyces euteiches*) in vining peas

Final 2015

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Use of pesticides

Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of this report, please email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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Project Number:	FV 429
Project Title:	Towards the development of a laboratory based assay for the detection of Common Root Rot (*Aphanomyces euteiches*) in vining peas
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GROWER SUMMARY

Headline

Root rot is a major problem for growers of peas in the UK. A soil diagnostic test is brought a step closer with the first year of a two year project looking at different methods to evaluate *A. euteiches* in soil.

Background

Peas are valuable crops for the environment, crop rotation, diet and human health. Production is threatened by increasing levels of soil-borne diseases as peas are grown in restricted areas in the UK due to climate and location of processing facilities. There are increasing incidences of pea root rot. Symptoms usually appear as the plants begin to flower or earlier if the plants are stressed by waterlogging or other factors. This can result in complete crop loss or in less severe incidences uneven maturity of the crop. Chemical control of soil borne pathogens is unavailable. Once the symptoms have been observed there is very little the grower can do to save the crop.

There are three main fungal species which cause the problem *Fusarium solani* pv *pisi*, *Phoma medicaginis* var *pinodella* and *Aphanomyces euteiches*. Infection is dependent on weather and soil conditions. Disease levels are favoured by high soil moisture and are often seen where there has been a history of soil compaction and water logging although this is not always the case. Another factor is drilling time; peas sown in cold wet soils appear to be more susceptible than those grown later in the season. There is a test available to identify the risk of root rot for *P. medicaginis* and *F. solani*. The test is used by growers to identify fields with a high disease risk and either lengthen the rotation or plant later in the season. The incidence of *A. euteiches* root rot is on the increase. Recent trials at PGRO have identified low levels of infection without obvious above ground symptoms. This could reduce yield without the appearance of diseased plants and also allow the fungal levels to increase in the soil undetected.

A. euteiches is a very resilient fungus and is able to survive in the soil as thick walled oospores which form in abundance in the decaying pea roots. The area of infection spreads out across the field between pea crops. Field infection cannot be predicted or tested for and identification is based on the symptoms and the oospores in the crop.

This project aims to evaluate methods used in research projects to identify *A. euteiches* in soil samples and to identify a time and resource efficient method for identifying *A. euteiches* from field samples.

Summary

Soils with confirmed *A. euteiches* infection were used in eight methods of isolating the fungus from soil samples. The initial test involved soil baiting. Peas were grown in soil and after approximately five weeks the plants were assessed for disease presence. This method is inefficient in terms of time, space and resources but allows the testing of large volumes of soil. Alternative methods used peas grown in boiling tubes, rolled paper towels and in petri dishes. These all had the benefit of more efficient use of time, space and resources. Although infection did occur, it was lower than that seen in the soil bait test.

An agar plate method was also tested using selective medias. This was inconclusive in the initial experiments. There is a huge diversity of fungi in soil and attempting to select one is complex.

Financial Benefits

Recommendations not available yet.

Action Points

Not identified as yet.