New Project

FV 219b/ HL01108

Link Project: Optimising field-scale control of fusarium basal rot and white rot of onion using trichoderma amended substrates and pellets, and onion residues

Project Number:	FV 219b/ HL01108
Project Title:	Link Project: Optimising field-scale control of fusarium basal rot and white rot of onion using trichoderma amended substrates and pellets, and onion residues
Project Leader:	Professor Ralph Noble
Contractor:	East Malling Research
Start Date:	1st March 2011
End Date:	31st August 2013
Project Cost (Total Project Cost):	£68,000 (£206,600)

Aims of Initiative

- Evaluate control of Fusarium basal rot and white rot of onion using substrates and/or pellet carriers amended with specific Trichoderma isolates and other commercial biopesticides in pot experiments.
- Test the best Trichoderma substrate and pellet carriers within planting row applications in the field, and establish any independent effects of the substrate carriers on the crop.
- Determine the minimum effective rates and optimum application timing of onion waste compost for controlling white rot in fields of different soil types, and establish the independent effects of the compost application on disease biocontrol, nutrition, and soil moisture availability to the onion crop.

Commercial and Technical Background

- White rot is still a major problem in the UK bulb and salad onion industry, and Fusarium basal rot of onion is an increasing problem, and is likely to increase further with predicted climate change.
- The only approved fungicide for Fusarium of onion is a seed treatment with thiabendazole + thiram.
- All commercial onion varieties are susceptible to white rot, and varieties that show resistance or tolerance to Fusarium basal rot do not have the same quality attributes of susceptible varieties.

The Problem/Opportunity

- *Trichoderma viride* S17A amended compost has been shown to be effective in controlling both white rot and Fusarium basal rot, with the Trichoderma population in the soil persisting for at least 2 years.

- In New Zealand, Tenet (*T. atroviride*) has been shown to suppress white rot and Fusarium on onion.

- The technology has been used at WHRI for amending compost with the Koppert product undergoing registration, Trianum (*T. harzianum* T22). GlioMix (*Gliocladium*) and Endofine (*Clonostachys rosea)* are also soon to be registered but have not been tested for control of white rot or Fusarium in onions.

- Methods are developed for applying composts and other substrates with a converted set planter within the band of the planting row, enabling the rate of application to be minimised to about 3 tonnes/ha.

- Preliminary tests with Trichoderma applied within the planting row have shown increased soil Trichoderma populations and a 30% reduction in white rot under very high disease pressure.

- Application of Trichoderma inoculum to seed has been developed in project HL0167 and Elsoms have seed pellet technology. Pellets or 'blank' seed pellets could be used as alternative delivery methods of Trichoderma and other microbial biopesticides into the soil using fertiliser applicators or at sowing.

- Composting of onion waste is now widely practised in the industry but the rate and timing of application for white rot control need to be optimised for different soil types.

Commercial benefits

Substrates or pellets amended with Trichoderma or other commercially available microbial biopesticides will be available to the UK onion industry for white rot and Fusarium basal rot control that persists over several seasons. The use of onion waste compost for control of white rot will be optimised for different soil types. Infested land will be brought back into production. There will be less reliance on chemical fungicides and the results will be usable for organic production.

Other benefits

- This project would reduce reliance on chemical fungicides, and develop more sustainable farming systems.

- The beneficial effects of composts and other organic by-products (e.g. paper pulp) identified in the project should develop increased demand, as local authorities and companies strive to meet recycling targets for organic wastes.

- Chemical inorganic fertiliser requirements (particularly P and K) would be lower, with savings of about £200/ha.

Disclaimer

Further information

Email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below:

HDC
AHDB
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

HDC is a division of the Agriculture and Horticulture Development Board.