

Vegetable ~~Matters of~~ Facts

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Horticulture Australia and the Department of Primary Industries-Victoria

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Brassica

On-farm test for Clubroot

- This is a rapid diagnostic test that can be completed on the spot.
- The test will take only 4 minutes to complete.
- The test is at the early prototype stage and is expected to be ready for field testing by the end of 2006.

What is clubroot?

Clubroot is soil-borne disease affecting brassica crops (cabbage, cauliflower, broccoli, brussel sprouts, Chinese cabbage, Chinese broccoli, buk choy, turnip and radish). Clubroot occurs in most of the major vegetable brassica growing regions of Australia and is probably the most serious disease of these crops world-wide. Infected plants wilt, become stunted and, in severe cases, die.

Infection occurs on roots at any stage of growth. Symptoms are not obvious until the final stages, when knotted swellings on the roots cause plants to be stunted and wilt, particularly in hot-dry weather.

The pathogen is able to survive in soil for up to 20 years even without a susceptible host. The spores will germinate in most conditions when a host is present and can multiply very rapidly. When the roots of infected plants decay, they release millions of spores into the soil, ready for another cycle.

Facts

- *Plasmodiophora brassicae*, which causes the clubroot disease, is responsible for up to 10% of crop losses each year in Australia.
- Currently, diagnosis of clubroot in soil is only possible with complicated DNA-based laboratory tests.
- Scientists from DPI Victoria and Warwick HRI in the United Kingdom are now working together to develop a rapid and inexpensive on-farm kit that will allow growers to conduct their own clubroot testing.

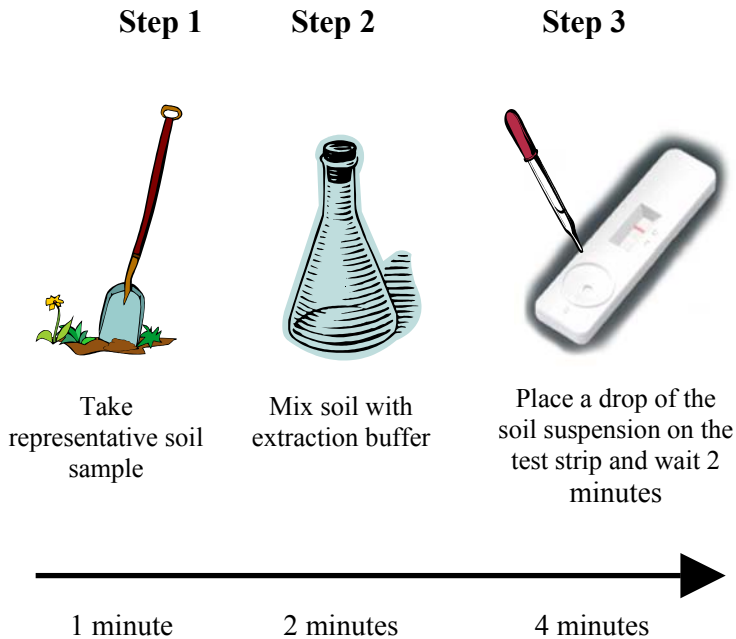


The test strip that forms the basis of the on-farm clubroot diagnostic kit (left) and clubroot-infested Chinese cabbage roots (right).

How does it work?

The on-farm kit is similar in concept to pregnancy test kits; it combines the best aspects of DPI's DNA-based diagnostic test for clubroot and Warwick HRI's antibody-based tests.

An antibody that recognises *P. brassicae* is immobilised on to a membrane. When a soil slurry containing *P. brassicae* is added to the test-strip well, a chemical reaction takes place that creates a solid band of colour in the membrane.



Where is it at?

- The on-farm kit is now in the early prototype stage while antibodies are tested against a range of clubroot isolates from Australia and the U.K.
- A full prototype, ready for field testing, is expected by the end of 2006. We will be looking for volunteers to help us field-test the kit.
- When finished, each test kit will cost about \$10.

For more information please contact:

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Keeping clubroot out

On farm Hygiene

- Clearly signpost limited access areas.
- Restrict access to the property if necessary.
- Require visitors to report to reception, the farmhouse or provide a mobile number for them to call before entering the property.
- Insist on the cleanliness of shared bins, trays and other equipment being returned to your property.
- Make your hygiene concerns known to visitors.

In the nursery Hygiene

- Restrict vehicle access.
- Have separate pick-up and loading areas.
- Concrete thoroughfares.
- Limit access to screen houses.
- Supply foot baths at the entrance to all work areas.
- Supply wash down facilities (high pressure)
- Wash all traces of soil off reused trays

This work is funded by Australian and British growers through AusVeg and the UK Horticulture Development Council, and by the Department of Primary Industries Victoria, Warwick HRI (UK) and Horticulture Australia Limited.

Are you on our mailing list?

If you would like to receive your own copy of **Vegetable Matters-of-Facts** please contact the editor: **Rob Dimsey T: 03 5152 0600**

Check us out and view our other fact sheets:

<http://www.dpi.vic.gov.au/agriculture->horticulture->vegetables->vegcheque>

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□ The State of Victoria, Department of Primary Industries, 2006.

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