

Root disease – will it bite in 2003?

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The drought and subsequently paddocks with failed crops present an interesting dilemma for many growers. Should the rotation continue as planned or can the same crop type be resown on those paddocks that failed? In the case of cereal crops root disease will present the greatest threat.

Development of root disease in 2003 will be dependent on the presence of a disease pathogen, a host and an environment conducive to the pathogen's development. Removing one or all of these elements will ensure disease does not inflict crop losses! This principle is generally well known in the industry and crop rotation, selection of resistant crop varieties, farm hygiene and chemical control methods are practiced as a result.

In April 2002 BCG-WFS conducted root disease risk assessments on 32 paddocks at its Farming Systems site. The assessment was conducted utilising the C-Qentec Predicta B test. This test has been developed based on DNA techniques to quantify the level of major pathogens or nematodes in soils with the aim to provide a comprehensive, pre-sowing, risk profile for common soil borne diseases.

Paddock histories varied and so to did the disease risk! Cereal Cyst Nematode (CCN) or Eelworm was categorised as a medium risk in two paddocks, Rhizoctonia was a medium-high risk in four paddocks, *Pratylenchus neglectus* was high-medium risk in 25 paddocks and *Pratylenchus thornei* a medium-high risk in three paddocks. Fusarium crown rot was considered to be a low risk in 12 paddocks.

In total 15 of the 32 paddocks were sown to cereals in 2002. 12 paddocks of wheat, two of malt barley and one of feed barley. All crops failed due to drought – five were harvested with the highest yield recording 460kg/ha.

Potentially these failed crops could be resown to the same crop type again in 2003 however the key to getting this management strategy right is knowing the shift in disease risk.

In order to generate this knowledge the BCG sampled and scored the roots of these crops in October, this shall be followed up again with another C-Qentec Predicta B test on paddocks suspected to be at a medium-high risk pre-sowing 2003. The results of October's monitoring indicated that the only two diseases present at significant levels were *Pratylenchus neglectus* and Fusarium crown rot.

Clearly, *Pratylenchus neglectus* (Prats) will pose a threat for consecutive cereals in these paddocks in 2003. Prats survive as dormant individuals in both dry soil and roots becoming active after rain so potentially much of the risk that was present pre-sowing 2002 will remain present in 2003. This must also become a consideration in paddocks that were sown to a break crop in 2002 due to high Prat numbers, as many may have remained dormant through out 2002.

Fusarium crown rot is favoured by dry springs and its survival is enhanced by dry summers and management practices that promote greater retention and slower decomposition of stubble residues. Crown rot may be an issue in 2003 should a dry spring prevail.

Although only categorised as a medium risk in two of these paddocks CCN is potentially a sleeping giant in many paddocks. In a normal season 85% of cysts hatch with the remaining 15% carrying over to subsequent seasons however under unusually dry conditions as many as 50% may remain dormant. The implication of this is that break crops in 2002 may not have been highly effective so consideration must be given to the 2001 crop and disease pressure.

Take-all will generally not be an issue as low inoculum levels result from multiple low rainfall years. Should inoculum be present it does decline quickly over the summer period if rainfall occurs and weed growth (host) is controlled.

Rhizoctonia is however favoured by dry seasons so an increase of crop loss due to this disease may well be expected in 2003. Rhizoctonia multiplies quickly on roots of actively growing plants so control of summer weeds and breaking the green bridge in autumn before sowing in 2003 will be necessary to ensure losses are minimised.

Clearly disease pathogens respond differently to seasonal conditions. When planning crop rotation in 2003 consideration must be given to the likely impact of root disease. There will be plenty of situations where consecutive cereals will be highly profitable in 2003 but the key to success will be measuring the risk and managing accordingly.