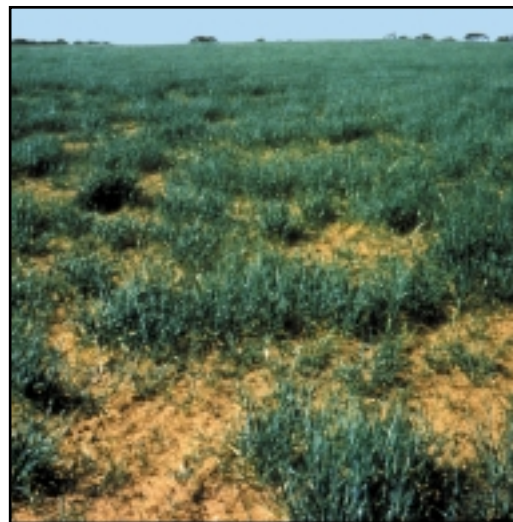


Research Projects

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Rhizoctonia Root Rot – Some Questions and Answers

Q. What is Rhizoctonia?

- A. It is a fungus which lives in the soil and rots the roots of plants. The fungus itself cannot be seen with the naked eye, but under magnification it can be seen as a three-dimensional network growing in the soil. The best way I can describe it is that it would look something like a string shopping bag.

Q. What plants are attacked?

- A. All cereals and all the crop and pasture plants that are likely to be grown in rotation with cereals.

Q. Are there any resistant plants or cultivars?

- A. No. There are some minor differences, for example the damage on barley often looks worse than wheat, but in practical terms there is little difference and a farmer would not notice any difference if different cultivars were grown side by side. The wide host range also means that break crops are not a good way of controlling the disease, as the break crops will

both suffer from the disease and carry it over to the next cereal crop.

Q. What do the field symptoms look like?

- A. In cereals, circular to irregular patches of stunted plants. As this is a seedling disease, in most districts maximum damage will be seen 4-8 weeks after sowing. In pastures and grain legumes the symptoms may not be as clearcut.

Q. What do the root symptoms look like?

- A. If plants are dug up and washed in water the roots will appear brown and rotted. Early in the disease the roots have sections which are thinner than the remaining root due to the outer root sheath being rotted off. Later, the roots are rotted through, leaving short stubby roots with characteristic pointed tips

Q. Will the diseased plants recover?

- A. There is often some recovery, particularly in a mild spring, but as the plants have lost many roots any stress will severely affect them. The plants that do survive will often have less tillers and heads than undiseased plants.



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Q. What are the losses due to *Rhizoctonia*?

A. Recent surveys over a large area of western Victoria by Frank Henry from Agriculture Victoria have shown that on light sandy soils losses in cereals vary from 8-16%. It should be remembered that these figures will be higher for badly diseased paddocks and zero for unaffected paddocks.

Q. Why do I get worse patches in some seasons?

A. Field observations have shown that there is more severe patches in seasons with high rainfall, particularly around the time of sowing. However, under these conditions there is often good recovery within patches in the spring, with only minor yield losses.

Q. How can I get rid of the disease?

A. You can't, like many weed problems, once you have got it you have got it forever, although unlike weed problems it is unlikely to have blown in from elsewhere (but rather was a part of the natural population of organisms). However, we do have some management strategies that can help reduce the damage caused by the disease.

Q. How can I manage the disease?

A. Four ways.

- Tillage
- Short Chemical Fallow
- Nutrition
- Herbicide/Disease Interaction Awareness

If only one way is chosen, minimum disease reduction can be expected. For maximum effect, as many of the approaches as possible should be adopted.

Tillage Pre-sowing tillage is an effective way to reduce the disease, but if severe no amount of tillage will eliminate the disease. If reduced tillage is practised, a cultivation

immediately before sowing – especially with narrow sowing points that cultivate below the depth of seeding – will help reduce the disease.

Short Chemical Fallow If using reduced tillage or direct drilling, weeds should be killed by herbicide 2 to 4 weeks before seeding as the weeds are a host to the pathogen.

Nutrition Two elements have been shown to influence damage by *Rhizoctonia*: nitrogen and zinc. Nitrogen in any form will not reduce the root damage caused by the fungus, but the plant will be able to grow better with optimum nitrogen and better recovery if conditions are suitable. If the plant is zinc deficient it will be more susceptible to the disease; however once the plant has optimum zinc, more zinc will not reduce the disease further.

Herbicides The sulfonyl urea herbicides, while extremely good at killing weeds, can cause increased damage due to *Rhizoctonia* if used in alkaline soils. If a history of *Rhizoctonia* exists then careful thought should be given before using these herbicides, especially in alkaline soils

Q. Can I cultivate dry in the summer and still control the disease?

A. Cultivation of dry soil will not normally reduce the impact of *Rhizoctonia*. The fungus is similar to a weed in that it needs some soil moisture before it starts to grow and before you can kill it with cultivation.

Q. When are we going to get a fungicide to control the disease?

A. There are fungicides that can control *Rhizoctonia* in other situations, for example in potatoes; unfortunately all the fungicides that have been tested in cereals to date have been both too expensive to use in a broadacre situation and, even worse, have had little effect on the disease.

The chemical companies are always looking for new chemicals and new applications, but it is unlikely one will be available for *Rhizoctonia* in the near future.

Q. I already do most of the above control measures but still get the disease, Why?

A. If you farm on an area that has regular severe disease it will be impossible with current strategies to reduce disease levels to zero. To put it another way, if you have very severe disease levels and manage to reduce it by half by using all the control strategies, you may still experience moderate disease.

Q. Are there any new methods of control being investigated?

A. Soils naturally suppressive to the development of disease caused by *Rhizoctonia* have been identified at a small number of sites. At one site which was closely monitored, disease rose between 1979 and 1983 and then declined between 1984 to 1990 to negligible levels which have been maintained since. Stubble was retained and either not grazed or only lightly grazed. Research is currently being undertaken to determine the cause of the suppression and to find management practices which will speed up its development.

For further information contact:

**Dr Stephen Neate
CSIRO
Land and Water,
PMB No 2,
Glen Osmond, 5064
ph: 08 8303 8523
fax: 08 8303 860
email: stephen.neate@adl.clw.csiro.au**