Liquid delivery controls rhizoctonia root rot

Broadacre
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Wheat seedlings with rhizoctonia root rot expressed as spear-tipped roots.

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Rhizoctonia root rot caused by the fungus Rhizoctonia solani AG8 occurs across the WA grainbelt and is estimated to cost the wheat and barley industry $27 million annually. A recent breakthrough has been in the use of liquid banding of fungicides to reduce the risk of rhizoctonia root rot in cereals.

Research in WA and SA has produced significant gains from liquid banding treatments. Two new in-furrow fungicides with new active ingredients, UNIFORM® and Evergol® Prime, were subsequently registered in 2015 with data from 10 DAFWA trials supporting the registrations. It is the first time that a chemical option to control rhizoctonia in barley and wheat has proven to consistently achieve significant yield responses.

For UNIFORM® trials, the banding treatments producing the most consistent results were applied as a split on the soil surface behind the press wheel and in-furrow 3 cm below the seed. For example, in wheat, at the 400 mL/ha rate, there was a 18% greater yield on average for all trials in WA and SA compared to the untreated. For barley, there was a 20% yield improvement when the fungicide was applied as a split application. A single banding of fungicide below the seed only produced 7-13% yield increases from the different rates in wheat and barley. The severity of the disease ranged from low to very high in trials conducted in paddocks with the natural rhizoctonia infections. (Fig 1)
Fungicides do not eliminate rhizoctonia and should be used as part of an integrated management program. DAFWA experiments have shown that sowing a break crop, specifically canola, or applying a chemical fallow, significantly reduces rhizoctonia inoculum in soils between successive cereal crops. Additionally, the severity and patch size of root disease from rhizoctonia were reduced in the cereal crop following canola.
HIGHLIGHTS

- New fungicide packages that minimise the impact of the cereal disease rhizoctonia bare patch, resulting in significant yield responses, have been developed through research involving DAFWA, SARDI and two chemical companies.
- Data from 10 DAFWA trials was used to support the registration of the new in-furrow fungicides, Uniform® and Evergol ® Prime, and the new seed-dressing fungicides, VibranceTM and Evergol® Prime.
- Significant and consistent yield improvements of 0.3 and 0.5 t/ha were obtained in wheat and barley, respectively, with the in-furrow fungicide.
- Canola and chemical fallow can significantly reduce rhizoctonia root rot in intensive cereal cropping.

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