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Barley Yellow Dwarf Virus in oats this year

Barley yellow dwarf virus (BYDV) causes a disease in barley, wheat and oats which can lead to stunting of plants and subsequent losses in yield and quality. It is spread by aphids from infected plants to healthy plants when they feed. Once infected, a plant cannot be "cured" and significant damage can be caused by only a few aphids moving through a crop.

The aphids rely on a green bridge over summer to thrive – they cannot survive on dead plant material. Significant rainfall over much of the southern NSW in January 2015 has initiated a green bridge, which has the potential to host large populations of aphids which can transmit viruses between growing seasons. This has increased the risk of inducing Barley Yellow Dwarf Virus (BYDV) in cereals this year. The risk is greater in early sown cereals, such as oats, as the aphids actively seek out the green material from these crops. So I thought I'd provide some brief information on this issue.

Where does BYDV come from?

Barley yellow dwarf virus (BYDV) is spread to cereal crops from infected perennial grasses by cereal aphid vectors. When infected aphids move to healthy plants and start feeding they cause spreading patches of BYDV. In medium to high rainfall zones, where aphids are more likely to arrive early in the life of the crop, the damage to crops has the potential to be greater as more aphids are likely to be carrying virus. However, when these zones experience prolonged dry conditions before the growing season, aphids arrive quite late and the risk of damage from virus is low.

How do aphids spread the virus?

Cereal aphids (usually oat or corn aphids) pick up the virus whilst feeding from the vascular tissues of infected plants and carry it in their salivary glands for the rest of their lives. They can transmit the virus to healthy plants when they feed on these. They need to probe right into the vascular tissue of the phloem in order to do this, which requires deep and relatively long feeding. This type of transmission is called persistent because the virus persists in the aphid, usually until it dies.

Symptoms of BYDV

BYDV infection affects the vascular tissues in the cereal plant, restricting movement of water and nutrients up the stem. Symptoms of BYDV include yellowing & reddening of the leaves & can be easily confused with nutrient deficiency (e.g. Nitrogen deficiency). Plants infected before the end of tillering are stunted and yields in sensitive wheat, barley and oat varieties can be decreased by up to 50%. In contrast, with late infection (post-tillering) of the crop, yield may be largely unaffected. In some cases the proportion of shrivelled grain increases, affecting quality. The effects on the plant may take several weeks to appear & can be magnified when plants are under stress such as in drought conditions.

Control

BYDV spread can be controlled using established management techniques including the use of seed treatments (containing Gaucho) &, to a lesser extent, the use of insecticides (e.g. pyrtheroids) on crops (commonly two applications after sowing, at around 4 & 6 weeks) to control the aphid vectors. Use BYDV resistant cultivars where ever possible.

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