LEADA

Stubble Guidelines

Managing Yellow Leaf Spot in Stubble Retained Systems on Lower Eyre Peninsula

Local Management Guideline for the GRDC Stubble Initiative Project (LEA0002)

Continuous wheat crops and retaining stubble significantly increase the risk of yellow leaf spot. Early sown susceptible varieties and extended wet conditions can result in an increased disease severity. It survives on wheat stubble.
On Lower Eyre Peninsula, yellow leaf spot has been observed in areas typically defined by soil type, even after a 12 month break. This is thought to be due to the slow breakdown of stubble on sandy soils and prolonged dewy mornings that occur through autumn.

Economic Importance - When is it a problem worth worrying about?

Generally, yellow leaf spot infections cause yield losses of less than 15%, however in years with high spring rainfall and on susceptible varieties this can increase to 30%. Heavy infestations of yellow leaf spot can increase yield loss especially when the flag and upper leaves become infected. In most years, yellow leaf spot only infects the lower leaves and is generally regarded as causing limited yield loss.
The use of varieties with at least MRMS resistance is the most cost-effective strategy in combating yellow leaf spot under high disease pressure situations.

What are the solutions?

Stubble management

Practices that reduce stubble density (tillage, burning or grazing) on the surface will reduce the level of inoculum. Stubble management will not reduce disease caused by spores blown in from other paddocks later in the growing season.
High levels of disease in spring will increase the risk to future crops. It is important to ensure spring inspection accurately identifies yellow leaf spot, and does not mistake it with either Septoria blotch or nutrient deficiencies.

Rotating susceptible crops with non-host crops.

One year planted to a break crop is typically enough to reduce the risk of yellow leaf spot to negligible levels. However in situations where an MS or worse variety has been planted in the paddock previously in a year of favorable spring conditions and on soil types that don't favour stubble breakdown, then a two year break or implementing other management practices to aid yellow leaf spot control may be necessary.

Using resistant wheat cultivars

Currently there are around 20 wheat varieties that may be suitable to grow on LEP. These have a wide range of resistance ratings to yellow leaf spot. Research conducted by LEADA and AGT concluded that varietal selection is a very effective method of reducing the risk of yield loss from yellow leaf spot. Many of the high yielding wheat varieties currently available have MRMS or better resistance to yellow leaf spot. Disease ratings are updated annually in the SARDI Cereal Disease Guide: http://www.pir.sa.gov.au/__data/assets/pdf_file/0010/276841/Cereal_Variety_Disease_Guide_2016_web.pdf

Applying foliar fungicides.

Yellow leaf spot fungus feeds on dead plant cells. This effects the way that fungicides will work to control yellow leaf spot. By killing wheat cells in advance of where it feeds, gives the yellow spot fungus the added advantage of preventing the movement of fungicides into that region of the leaf. Consequently, fungicides have difficultly accessing an established yellow spot infection to kill it.
For an applied fungicide to control an existing infection, it needs to be applied almost immediately after the infection has started. This issue is compounded by potentially continual release of spores from primary and secondary infections on stubble and on the lower leaves of the plant.

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Using this information, fungicides can form part of an effective yellow leaf spot control strategy, however on their own under high disease pressure they are not going to eliminate yield and quality loss.

There are a range of fungicides currently registered to control yellow leaf spot in Australia. The registration commonly states that yield will be protected if the top three leaves of the wheat plant are kept free of disease through fungicide application, however in severe disease situations control is enhanced if two applications are applied from GS31.

Trial work on the Lower Eyre Peninsula in 2014 indicated that variety choice has more impact on yield than does fungicide management strategy for yellow leaf spot management and is likely to lead greater profit.

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Further reading

http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/plant-diseases/grains-pulses-and-cereals/yellow-leaf-spot-of-wheat

https://grdc.com.au/Research-and-Development/GRDC-Update-Papers/2013/03/Management-of-yellow-spot-in-wheat-decide-before-you-sow

https://grdc.com.au/uploads/documents/Yellow%20leaf%20spotS%20Fact%20Sheet.pdf

http://www.agtbreeding.com.au/assets/docs/general/Managing-yellow-leaf-spot-with-fungicide-and-genetic-resistance.pdf

Photo: Hugh Wallwork, SARDI

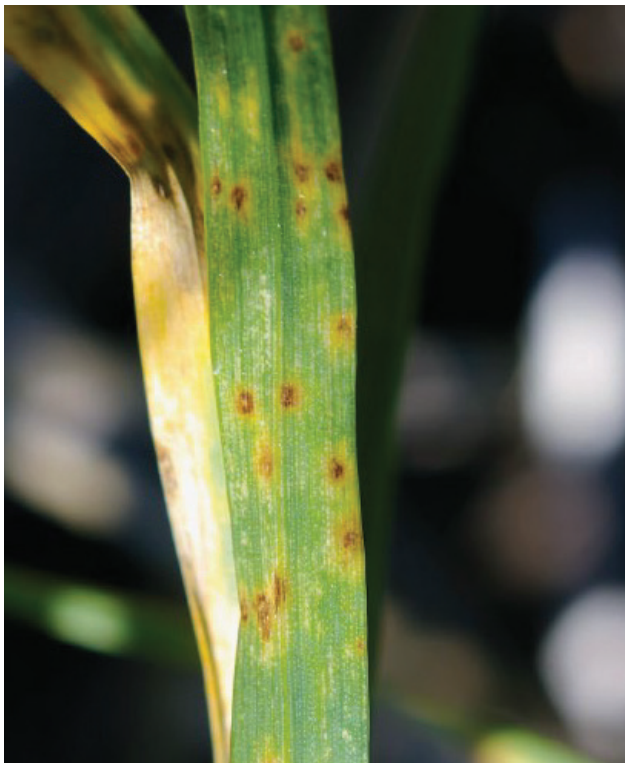

Photo: Hugh Wallwork, SARDI