

Crop grazing shows promise as disease tool

SOUTH Coast Western Australian researchers may have uncovered a new tool to help farmers manage barley powdery mildew – crop grazing.

Preliminary results from a Grains Research and Development Corporation (GRDC) supported trial at Gibson showed crop ‘grazing’ significantly reduced levels of the disease in barley, compared with ungrazed crops.

For ease of management, the trial used a roller and lawnmower to simulate the effects of livestock.

Barley powdery mildew causes annual losses of about \$30 million to WA’s barley crops, and the risk of damage has recently increased due to strains resistant to the triazole group of fungicides.

Alternative management options such as grazing, and reduced reliance on costly full spectrum seed fungicides, could help farmers deal with disease resistance resulting from selection pressure from fungicide use.

The trial is being conducted by the Department of Agriculture and Food (DAFWA) as part of the GRDC’s ‘barley agronomy for the western region’ project.

Information is being shared with

researchers undertaking the *Grain & Graze 2* program, funded by the GRDC and the Federal Government’s Caring for our Country initiative.

DAFWA researcher Andrea Hills said that in July, more than five per cent of the lower leaves of ungrazed Baudin barley in the trial were infected by powdery mildew – the level at which the crop would normally be sprayed with fungicide.

“But, visual scoring showed the ‘grazed’ Baudin barley plots were clean,” she said.

“Although this is an introductory trial, these initial results show that crop grazing could be a useful tool in an integrated



DAFWA researcher Andrea Hills and technical officer Bruce Simmonds in ungrazed barley, next to ‘grazed’ barley.

Infratec™ Sofia On-farm grain analyser

- ★ Wheat and barley – protein and moisture
- ★ Canola – oil and moisture
- ★ Results aligned with ALL bulk handler receival sites

FOSS



Why Infratec Sofia?

Infratec Sofia calibrations are based on those used in the Infratec™ 1241 grain analyser, the analyser used exclusively by ALL Australian bulk handlers. So the results you get on-farm with Infratec Sofia are what you will see at receival.



- Results in less than 3 minutes
- Stable calibrations – no adjustments required
- Upgradeable with new crop calibrations
- Compact and mobile (240VAC/12VDC), weighs 9kg
- Comprehensive support and back up Australia-wide

Questions? More information?

Email: infratec@foss.com.au

Phone: 1300 360 848

For more information, and product & customer feedback videos, visit www.foss.com.au/sofia



approach to early season disease management, with the huge added bonus of providing feed for livestock.

"We still need to find out if barley yields are reduced by crop grazing, if disease levels are still reduced in spring, and if there is any impact on barley grain quality for malting, which is critical."

Andrea said she conducted the trial following anecdotal evidence that crop grazing by sheep or cattle reduced the damage caused to local barley crops by powdery mildew.

"As far as I'm aware, no-one has previously studied the impact of grazing on disease in malting barley crops," she said.

Andrea said the primary aim of the trial was to find out if growers could avoid having to apply an early fungicide spray by grazing their crops.

In the trial, an inexpensive fungicide seed dressing – protecting the crop from smut but not powdery mildew – was applied to some plots while in others a dressing registered for early mildew control and insect protection was used.

"If grazing is able to reduce disease levels in the early stages of growth then the more expensive seed dressing may be unnecessary, saving money that may be better spent on the new generation fungicides that are still effective against barley powdery mildew," Andrea said.

"Seed dressings containing an insecticide also have longer withholding period before crop grazing can commence (up to 10 weeks post sowing)."

Baudin barley – a commonly grown variety susceptible to powdery mildew – was seeded on May 11, and rolled using a pea-roller to simulate the effect of livestock trampling the crop and levelling the furrows.

The crop was mowed for about a six week period until the 'first node' appeared on the crops – the critical point at which to stop grazing crops to avoid yield losses. ■



'Grazed' and ungrazed Baudin barley at the trial site, next to buffers of Hindmarsh barley (dark green plots).

Canopy trials aim to reduce risk

NEW research aims to produce canopy management principles that cereal growers can apply to increase their profitability and reduce risks.

The three-year project is being conducted by farm consultant company ConsultAg and funded by the GRDC.

ConsultAg agronomist Garren Knell said that while some canopy management research had been conducted in WA's high rainfall areas, no work had previously been done in the state's medium and low rainfall zones.

Canopy management refers to the management of the green surface area of the crop canopy to optimise crop yield and inputs.

Garren said canopy management principles such as reduced seeding rates and reduced nitrogen application early in the season should be applied to early sown, clean paddocks, and were not suitable for weedy paddocks.

"The new GRDC project aims to develop rules of thumb that growers can use to determine seeding rates and how much nitrogen to apply and when, allowing for rainfall to date and yield potential," he said.

"In WA, we tend to grow big, bulky cereal crops – we use high seeding rates and put out a lot of nitrogen early – and then crops can run out of moisture come grain filling time, resulting in a lower grain yield than would have been achieved with a thinner canopy.

"By not over-growing the crop canopy, growers can conserve soil moisture and allow their crops to finish better.

"If we can get the management of the canopy right, we can achieve plumper grain, with fewer but longer heads.

"Using canopy management principles involves matching seeding rates to time of sowing, and nitrogen rate and timing to soil moisture levels, so the green leaf area – or tiller number (canopy), matches seasonal conditions.

"Managing the canopy can also help reduce disease pressure and frost risk."

Garren said the project would validate canopy management principles already learnt under research in other grain growing areas including high rainfall zones in South Australia, Victoria and New Zealand.

"This research has led to the recommendation in those high rainfall areas of much lower cereal seeding rates – of about 40 kg per hectare – compared with seeding rates as high as 90 kg per hectare in WA," he said.

"They use much lower seeding rates and adjust the tiller density by timing of nitrogen to match the yield potential."

Garren said the use of canopy management principles could have benefited WA growers during last year's dry season, when many crops – boosted with too much nitrogen – ran out of moisture in spring.

The WA canopy management trials are being conducted at sites representing a range of rainfall zones including Kellerberrin, Kulin, East Wagin and Kojonup. ■



ConsultAg agronomist Garren Knell.