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Keep crown rot in check



Bob Freebairn

DOWN TO EARTH

CROWN rot is regarded as the worst wheat disease in northern NSW, as well as a major problem across central and southern NSW. It costs tens of million dollars a year.

What is less well-known is that root lesion nematodes (RLN) commonly add to the yield and quality losses attributed to crown rot.

Crown rot affects wheat's ability to extract moisture in dry finishing conditions and the presence of RLN, which also impact on wheat roots, adds to these debilitations.

In crown rot-infected situations wheats with tolerance to the disease often yield far better than susceptible varieties, although yield loss can still be high.

Where nematodes at damaging levels combine with crown rot, varieties with tolerance to both generally suffer far less yield loss than varieties with only tolerance to crown rot.

Research – for example studies conducted by Richard Daniel and his Northern Crop Alliance colleague – last year documented significantly less yield loss from crown rot when varieties had tolerance to RLN compared to susceptible ones.

The higher yield was a consequence of added RLN protection.

These studies confirm previous studies conducted by Queensland Department of Employment, Economic Development and Innovation nematode specialist, Dr John Thompson, and colleagues.

Yield losses from RLN of more than 50 per cent can occur where infestation levels are high.

Two main RLN species threaten wheat in NSW, *Pratylenchus thornei*, more common in north-central areas and Qld, and *P. neglectus*, common across the State.

Control of crown rot and RLN focuses on rotations with crops that have good resistance.

Growing tolerant wheat varieties to both threats is also important.

Soil tests, such as PreDicta B, help with identifying the risk from both conditions.

Crops resistant to *P. thornei*, for example, include canola, sunflowers, sorghum, cotton, Japanese millet, linseed, and many durum wheats.

Oats, maize and triticale are moderately resistant.

Faba beans, chickpeas, mung beans and soybeans are susceptible.

Genes for chickpea *P. thornei* resistance are being fast-tracked through the breeding program.

Few varieties have even reasonable tolerance to both RLN and crown rot although several have reasonable to good tolerance to either of the RLN species or crown rot.



There are few wheat varieties that combine good tolerance to crown rot and root lesion nematodes. Crop rotations, plus the release of improved varieties, are the best way to reduce the impact of these two problems.

EGA Wylie to date has the best combined tolerance to *P. thornei* and crown rot.

Many varieties have little tolerance to either.

Some breeders are working hard to develop RLN and crown rot tolerant varieties.

For example, the Narrabri arm of Australian Grain Technologies, led by Dr Meiqin Lu, aims to release, with seed available in 2011, a new variety, SUN440H, that combines crown rot tolerance equal to the best current variety (better in the pipeline), good tolerance to *P. thornei*, and high yield (similar to Livingston according to NVT trials).

Stem leaf and stripe rust resistance are good to

excellent, including against the world-threatening UG99 strain.

No varieties come close to having resistance/tolerance to diseases such as yellow leaf spot, crown rot, grain tolerance to wet weather, frost, black point, acid soils, septoria tritici blotch, as well as nematodes and common root rot.

As a general rule it is best to choose a range of varieties to cover these threats as well as to allow for a wide sowing window (early, mid and late maturing varieties).


■ Next week: Central West farmer ups beef productivity with subtropical pastures.

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Grazing management key to much-needed conservation

THE CUTTING EDGE

NUFFIELD AUSTRALIA
FARMING SCHOLARS

By GRAHAM FINLAYSON

THE Western Division represents something like 45 per cent of NSW and unfortunately for those of us who gladly and enthusiastically choose to live out here, we are under serious threat of becoming de-populated.

I believe this is to the long-term detriment of the communities, the economies and the landscape itself.

However, I am not a fatalist who simply accepts this is the way of the world and that we have to learn to live with this inevitability of amalgamation, corporatisation or surrender to the Government's national parks ideology.

As farmers, our challenge is to create the environment, both physically and attitudinally, that allows us the ability to generate real profitability with an alternative and positive way forward.

There has historically been the mistaken perception the west is all "marginal country" and therefore we need to protect it, at worst, or be super conservative at best.

On my Nuffield travels across the world, the idea of the conventional path to conservation, often referred

to as the "lock it up" mentality, was proven to be not only completely false, but actually had the opposite effect to what had been originally intended.

It was environmentalist, Aldo Leopold, who once said: "Conservation is a positive exercise of skill and insight, not merely a negative exercise of abstinence or caution".

What if we could improve the resilience, productivity and carrying capacity of our natural resource base beyond what conventional science says is possible?

What if planning for disasters such as drought, sometimes referred to as getting less rain than we expected, was just part of our everyday management?

As livestock producers in the west, we can take up this challenge because ruminants such as cattle, sheep and goats provide us with the very animals needed to address many of the ecological issues that confront the world's dry and brittle rangelands.

The falling carrying capacity, woody weed encroachment, increasing desertification causing more regular and devastating droughts, and the increasing severity of run-off and flooding are a common denominator throughout the world's rangelands.

It is our decisions about how we manage these wonderful hard-hoofed,



methane-belching, four-legged mobile grass-eating microbial nutrient and carbon converters that determines whether the end result for the landscape (and our planet) is good or bad. It is as simple as that.

Grazing management is the key.

Intensive management requiring people living out here and using a "positive exercise of skill and insight", as Aldo Leopold inferred, could see us successfully utilise the very animals that most in the conservation movement think are the cause of problems for the planet.

Of course this is going to take a fundamental change in how we think about grazing management.

I know I'm up for the challenge, as are plenty of others out west in the "marginal country".

■ Graham Finlayson is a grass farming enthusiast from north of Brewarrina, and a 2008 Nuffield Scholar. Visit www.bokharaplains.com

■ Visit www.nuffield.com.au