Management of spot form of net blotch in barley using foliar fungicides

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Take home messages

- *Avoid growing barley varieties that are very susceptible to spot form of net blotch (SFNB).*
- *SFNB caused minimal grain yield and grain quality loss in 2010.*
- *SFNB can be effectively suppressed with one or more applications of foliar fungicide between Z31 and Z39.*

Background

The spot form of net blotch (SFNB), caused by the fungus *Pyrenophora teres f. maculata*, occurs in most barley crops in Victoria. It can cause grain yield and quality losses where very susceptible varieties are grown and infected stubble is present. Foliar fungicides can be used to suppress SFNB symptoms and reduce production loss. However, it is important to apply foliar fungicides at critical growth stages to optimise benefits.

Aim

To determine the best time to apply foliar fungicides (propiconazole) for suppression of SFNB.

Method

The experiment was sown into a paddock with oat stubble from the previous season to minimise infection from barley pathogens other than SFNB. The barley variety Dash was chosen because of its susceptibility to SFNB and effective resistance to scald, NFNB, leaf rust and powdery mildew. Barley stubble naturally infected with *Pyrenophora teres f. maculata* was applied by hand to establish infection. Seed was sown using a tractor-mounted cone-seeder at a rate of 70 kg/ha with 100 kg/ha of MAP fertilizer (N: 10%, P: 21.9%, S: 1.5%) (Incitec Pivot Ltd). Barley plots were 8 m x 1.6 m with 6 rows and separated by wheat buffers to minimise inter-plot interference. Weeds were managed as required. No insecticide was used.

Location:	Lubeck
Replicates:	6
Sowing date:	13 May 2010
Seeding density:	Not measured
Crop type:	Dash barley
Seeding equipment:	Direct drill, tractor mounted cone seeder, 22.5cm row spacing

Six different treatments were applied (Table 1) including the Nil treatment which was not subjected to any disease management. Foliar fungicide treatments consisting of propiconazole at 250 ml/ha as Tilt 250EC were applied with a utility-mounted boom at 276 kPa.

Treatments were arranged in a randomised complete block design with six replicates. Disease severity (% leaf area affected with SFNB) on the top four leaves of ten arbitrarily selected tillers in each barley plot was assessed visually twice during the growing season. Plots were harvested at maturity and grain weighed to determine yield. A sub-sample was retained to determine grain screenings, retention and 1000-grain weight.

Table 1. Treatment details for SFNB fungicide management experiment at Lubeck 2010.

Treatment	Description/product	Method/timing	Rate
1. Nil	No disease management	NA	NA
2. Z25	propiconazole	tillering	250ml/ha
3. Z31	propiconazole	stem elongation	250ml/ha
4. Z39	propiconazole	flag emergence	250ml/ha
5. Z55	propiconazole	ear emergence	250ml/ha
6. Z25+31+39+55	propicoazole	all	250ml/ha

Results

A low level of SFNB developed at Lubeck during the 2010 growing season. Minimal infection of the top leaves at dough development (Table 2) meant that there was no grain yield or quality loss.

Foliar fungicide application at tillering (Z25) and stem elongation (Z31) provided the best suppression of SFNB. Application at flag leaf emergence (Z39) and ear emergence (Z55) did not significantly reduce SFNB severity.

Table 2. Percentage leaf area affected by spot form of net blotch, grain yield, screenings, retention, 1000-grain weight of var. Dash in response to foliar fungicide (propiconazole 250ml/ha) application.

Treatment	SFNB Severity (%LAA) 11/10/10	Yield (t/ha)	Screenings (%<2.2mm)	Retention (%>2.5mm)
Fortnightly	0.2	4.0	2	95
Z25	0.4	4.2	2	94
Z31	0.4	4.0	2	94
Z39	1.3	4.2	2	93
Z55	1.5	4.1	2	92
Nil	1.8	3.7	2	93
P	**<0.001**	**0.25**	**0.929**	**0.062**
LSD (0.05)=	**0.6**	**ns**	**ns**	**ns**

Interpretation

The cool weather conditions experienced during the 2010 growing season were not favourable for the development of SFNB. SFNB is likely to have caused minimal grain yield and quality loss in commercial crops during 2010. However, it is still a common disease, and will continue to pose a risk of causing grain yield and quality loss in 2011.

SFNB can be successfully suppressed using foliar fungicides which are most effective when applied between stem elongation (Z31) and flag leaf emergence (Z39). When SFNB is severe, two applications of foliar fungicide may be required to eliminate production loss.

Generally, crops sown into stubbles other than barley do not get enough SFNB to warrant spraying, as the crops grow away from the disease during spring/stem elongation. Foliar fungicides are generally only warranted where disease levels are severe, and the disease continues to progress during stem elongation. Avoid growing susceptible varieties were possible.

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