Effectiveness of fungicides for control of crown rust in forage oat in Australia

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Forage oat in Australia

- Main winter forage crop (500,000 ha/annum)
- Reliable high quality animal feed
- Long production season (Mar - Nov)
- Beef, dairy and sheep industries
Forage oat in Australia
Control of crown rust

• Difficult disease environment
• Breeding is preferred option
  – Lack of major gene resistance
• Fungicides are low cost option
• No information on economic thresholds for forage yield
• Recommendations for growers on economic benefit of fungicide application → when to spray?
Loss of forage yield
Methods

- Forage cutting trials over two years at two sites
- Apply fungicide treatments, measure disease incidence and forage yield
- Fungicides:
  - Propiconazole (Tilt)
  - Tebuconazole (Folicur)
  - Azoxystrobin+Cyproconazole (Amistar)
- Cultivars: Genie, Coolabah, Taipan, Drover
- Economic model to estimate:
  - Cost of reduction in live weight gain due to rust infection
  - Economic benefit of fungicide application
Fungicide use on forage oats
Fungicide use on forage oats
Forage yield at irrigated site

Number above bar is total yield relative to Control.
Forage yield at rain-fed site

Number above bar is total yield relative to Control.
Results

- Yield response to fungicide not significant when rust level low (<10% leaf area) & forage yield low
- Yield response to fungicide was significant when:
  - Infection levels moderate (>20% leaf area)
  - Forage yield is moderate to high
- Late maturity cultivars have higher forage yield
- Tilt and Folicur not significantly different, Amistar better in some cases
- Seed treatments not effective later in season
- Best application time 7-10 days after grazing
Conclusions

• Do not spray when crown rust infection is low (<10% leaf area) or when forage yield is low
• Spraying is beneficial when crown rust infection is moderate to high (>20% leaf area) or forage yield is high (irrigation/high rainfall)
• Net benefit sensitive to forage yield
  – Threshold around 3 t DM/ha for low infection and 2.5 t DM/ha for moderate infection
• Cultivar selection important
• Common fungicides give satisfactory control