Alternative carriers for Folicur – at sowing applications
Hoong Pung

Project VN05010

Background
- In 1990s, Folicur-lime super was found to be the most effective treatment for white rot control. This resulted its registered use in Tasmania.
- Growers in Tasmania rely solely on Folicur-lime super, applied at sowing for white rot control. Lime super production stop in 2007, other alternative carriers must be considered.
- Increased white rot incidence observed in recent years, raising concerns on the efficacy of Folicur.

Objectives
- Investigate efficacy and persistence of Folicur
- Determine levels of actives in Folicur-lime super
- Development of alternative carriers

Methodology

Laboratory studies (2006-2007)
- Folicur – sensitivity of pathogen
- Folicur – persistence/degradation in soil
- Folicur distribution on lime super/fertiliser mix
- Application method vs product levels in granules
- Alternative fungicide carriers

Laboratory Studies 2006-2007

Folicur (tebuconazole)
- No fungicide resistance
- No enhanced fungicide breakdown

Folicur in lime super
- Lime super – abrasive, low absorption capacity
- Fungicide in fine dust particles, not ideal for even mixing with fertilisers
- Only ~ 50% fungicide applied recovered from treated fertilisers
- Poor & uneven fungicide distribution in treated fertilisers

Other factors contributing to poor disease control
- Higher disease pressure – more paddocks infected by white rot
- Change to warmer soil temperature ??

Alternative carriers

Field studies (2007-2008)
- Alternative carriers & alternative fungicides - toxicities
- Field evaluations of in-furrow granule applications (3 trials)
  - Single super vs lime super (by fertiliser depot)
  - Bentonite clay (Eureka)
  - Slow release granules (Crop Care)
- Precision Gandy Applicator for low application rates
Fungistatic vs fungitoxic

Bayfidan  Folicur

Both fungicides are fungistatic, preventing pathogen growth but doesn’t kill it.

Fungus able to grow again normally when removed from fungicide plates.

Fungicide placement for maximum pathogen control

Particle size and number will affects fungicide placement and distribution in soil.

Carriers - optimum particle size & application rate

Optimum carrier size is 1-2 mm

30  20  10 kg/ha

Bentonite size  2-3 mm

Bentonite size  1-2 mm

Kindred Trial - 2007/08

Forthside Trial - 2007/08

Precision Gandy Applicator for chemical granule application

Folcar single super + triple super 250 kg/ha in fertilizer box

Folcar-bentonite 20 kg/ha using Gandy applicator

SR tebuconazole + imidaclopid (6 month release) 20 & 40 kg/ha using Gandy applicator
Outcomes - Summary

Efficacy of Folicur
- No fungicide resistant isolates
- No enhanced degradation in soils

Fungicide options
- Bayfidan – effective at 1.5 L/ha but phytotoxic at sowing
- Folicur – effective at 1.0 L/ha & not phytotoxic at sowing
- SR tebuconazole – need fine tuning with slow release formulation

Recommendations
- Folicur-single super – effective in preventing/reducing white rot ~ $270/ha
- Folicur-bentonite – estimated cost ~ $150/ha when applied at 20 kg/ha
  - must apply with Gandy applicator

Workshop on onion white rot control - Devonport, 23 May 2008
Acknowledgments

• Research facilitated by Onion Australia and Horticulture Australia Ltd
• Levy from onion growers and matching funds from the Australian government through Horticulture Australia Ltd
• Bayer CropScience Pty Ltd for chemical analysis
• Anthony Flynn of Eureka! AgResearch on alternative carriers
• Susan Cross, Pam Cox, Sarah Babcock and David Kohler of Peracto in laboratory and field studies
• Support from Ernie Burglund, Lyndon Butler, Harvest Moon, Premium Fresh Tasmania, Webster Fresh, Impact Fertilisers and Incitec Pivot