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Grain *zone* news

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FURTHER INFORMATION:
Tom McCue, 02 6272 5525 t.mccue@grdc.com.au

Diary dates More detailed diary dates are located on the GRDC website.

January 07

- 15 **Adjuvant Technologies for Spray Applications workshop**, University of Qld, Customs House, Brisbane
Contact: Andrew Hewitt, 0427 025 354, 07 5460 1293, a.hewitt@uq.edu.au
- 17 **Spray Drift & Application Modelling Workshop**, University of Qld, Customs House, Brisbane
Contact: Andrew Hewitt, 0427 025 354, 07 5460 1293, a.hewitt@uq.edu.au
- 19 **Aerial Application Workshop**, University of Qld, Gatton Campus
Contact: Andrew Hewitt, 0427 025 354, 07 5460 1293, a.hewitt@uq.edu.au

February 07

- 13-14 **Grains Research Update for Advisers (Southern Region)**, Wagga Wagga, NSW
Contact: Jon Lamb, 08 8362 5417, jlcom@chariot.net.au
- 13 **Central West Conservation Farming Association/ Stipa Native Grasses Association 2007 Conservation Agriculture Conference**, Wellington, NSW
Contact: Neville Gould, 02 6845 1044, cwcfabigpond.com.au
- 14 **Central West Conservation Farming Association/ Stipa Native Grasses Association 2007 Conservation Agriculture Field Day**, Wellington, NSW
Contact: Neville Gould, 02 6845 1044, cwcfabigpond.com.au
- 19 **Nyngan Grains Research Update**, Nyngan RSL, NSW
Contact: John Cameron or Erica McKay, 02 9482 4930, updaten@tpg.com.au, <http://www.icanrural.com.au>
- 20 **Coolah Grains Research Update**, Coolah Sporting Club, NSW
Contact: John Cameron or Erica McKay, 02 9482 4930, updaten@tpg.com.au, <http://www.icanrural.com.au>
- 21-22 **Dubbo Grains Research Update**, Dubbo RSL, NSW
Contact: John Cameron or Erica McKay, 02 9482 4930, updaten@tpg.com.au, <http://www.icanrural.com.au>
- 23 **CWFS Farm Machinery Field Day**, Condobolin Ag Station, NSW
Contact: Debbie, 02 6895 1001, debbie.o'neill@dpi.nsw.gov.au
- 28 Feb - 1 Mar **Goondiwindi Grains Research Update**, Goondiwindi Community Centre, Qld
Contact: John Cameron or Erica McKay, 02 9482 4930, updaten@tpg.com.au, <http://www.icanrural.com.au>

March 07

- 6-7 **ABARE Outlook 2007 Conference**
Contact: Yvonne Kingsley, Ph: 02 6272 2265, Email: ykingsley@abare.gov.au
- 27-28 **The 14th Australian Soybean Industry Conference "Success with Soybean"**, Bundaberg, Qld
Contact: Andrew Dougall, 07 4132 5539, andrew.dougall@dpi.qld.gov.au
Further information: http://www.australianoilseeds.com/soybeans/australian_soybean_conference_2007

VISIT AUSTRALIA'S GRAINS RESEARCH WEB PAGE
GRAINZONE www.grdc.com.au

Editor: John Cameron (02) 9482 4930,
PO Box 718, HORNSBY NSW 1630
Research writers: John Cameron, Erica McKay,
Stirling Tavener
Layout & Design: Lightning Designs (08) 8274 1648

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Grains Research
UPDATE
NORTHERN REGION



Green Vegetable Bug Adult Equivalent (GVBAEQ) - a new way to determine sucking pest thresholds

Like Dry Sheep Equivalent (DSE) calculations for stocking rates, a new threshold calculator is being developed by QDPI & F to calculate the Green Vegetable Bug Adult Equivalent for determining spray thresholds for sucking pests in pulse crops.

"The issue is that there are different growth stages of a number of different podsucking bugs and it is the cumulative damage that knocks you for six, so we need a combined rating system to account for them all" said Mr Hugh Brier from QDPI & F, Kingaroy.

"A complicating factor is nymphs. While a first instar nymph doesn't cause damage, it has future potential for damage that needs to be accounted for. Similarly later instar nymphs cause less damage than adults, but it is the cumulative damage they cause until they reach adulthood, and beyond (if the crop hasn't reached harvest) that needs to be considered. The level of damage potential depends on timing - the closer you are to harvest (and the crop being safe) the less damaging podsucking bugs will be, as early instar nymphs will not have time to reach a really damaging size, and late instars and adults will have less time to inflict damage," said Mr Brier.

In a new rating system, each species has been given a Green Vegetable Bug Adult Equivalent (GVBAEQ) rating. For example; brown bean bugs are considered equal to a green veggie bug, while red banded shield bugs are equivalent to 3/4 of a veggie bug, brown stink bugs are equivalent to 1/5 of a green veggie bug and so on.

Nymphs of each species are also given an adult GVBAEQ based on the time of scouting (days until

the crop is safe at harvest), and expected mortality of nymphs.

The rating system is being developed as an Excel spreadsheet. Data entered includes the number of days until harvest, how many nymphs in each instar and how many adults for each species, row spacing and estimate of number of seeds per square metre. From this data the spreadsheet calculates GVB adult equivalents and thresholds based on the time of scouting. From this it is easy to determine whether a spray threshold has been reached or not.

"The rating system assumes that you are scouting regularly and do not have large numbers of bugs there for weeks" said Mr Brier. "Thresholds are based on quality and are fairly low. For edible (human consumption) pulses, receival thresholds often only tolerate 2% damage so if insects have been there for weeks, this rating system and the associated thresholds will not apply as the critical level of damage may have already been reached or exceeded."

"Bugs are notoriously variable across a paddock and people must be careful to sample with high enough frequency. A rough guide is for every 10 ha sample 5 sites with 5 x 1m beat sheets per site, twice weekly during podding" said Mr Brier.

FURTHER INFORMATION:
If you are interesting in trialling this spreadsheet on your blackberry/palm pilot, contact Hugh Brier, 07 4160 0740, Hugh.Brier@dpi.qld.gov.au

Project code: DAQ000086

Midge – still requires careful monitoring



“Sorghum midge remains one of the most limiting factors to grain sorghum yield and requires careful management. While the release of commercial resistant hybrids with higher midge ratings has greatly reduced the impact of this pest, there are still crops that would benefit from better management of sorghum midge,” said QDPI Entomologist Adam Hardy.

A midge resistant sorghum with a ‘seven’ rating, is seven times more resistant than a susceptible (1 rated) hybrid. However the rating alone does not determine the spray threshold. The formula below takes a number of factors into account, enabling a spray threshold to be determined at flowering:

Spray if:

$$\frac{NM}{R} \text{ is greater than } \frac{COST \times W}{1.4 \times V \times \text{Residual}}$$

Where:

NM = number of midge per metre of row

R = midge rating of hybrid used of 1-7

W = row width in cms

V = value of crop in \$/tonne

COST = cost of control in \$/ha

Residual = residual life of chemical used in days

The formula determines if midge pressure is high enough to make spraying economical. It's known that one midge laying eggs removes ~1.4 grams of grain on a susceptible hybrid (rated 1). Hybrids with a rating of 7 will reduce this damage by a factor of seven. The decision to spray (or not) should consider crop damage, cost of spraying and crop value.

Monitoring should be conducted from pre-flowering until the last plants have completed flowering. It is best done on emerged panicles mid-morning (9-11am) at several locations throughout the crop. Most sprays such

as synthetic pyrethroids, have about a 4-day residual. In the days after spraying, new midge may move into a crop from elsewhere, even though effective chemical control has been applied. Such midge will lay only a few eggs before they die and a new spray decision should only be considered after the residual effect of the chemical is gone.

While use of the midge formula assists in determining spray thresholds, a management plan for midge should begin before the variety is purchased. The following practices will assist in avoiding midge damage.

BEST MANAGEMENT PRACTICES TO AVOID MIDGE DAMAGE

- Plant highly resistant hybrids. 8+ rated hybrids are immune to midge damage under moderate midge pressures.
- Ensure plants flower evenly to avoid second generation midge damage.
- Eradicate nearby Johnson grass, flowering forage sorghum and grain sorghum regrowth.
- Avoid planting crops that flower in succession with other nearby sorghum crops.
- Determine economic spray thresholds using the midge formula.

Midge complete their life cycle in only 2 weeks in summer and can build up at an exponential rate if given access to sequential flowering sorghum crops. They can also blow in from many kilometres away on changing weather.

FURTHER INFORMATION:
Adam Hardy, 07 4688 1310,
Adam.Hardy@dpi.qld.gov.au
 GRDC Code: DAQ00062

New durum in 07

‘Line E’ (name soon to be released) is a new durum variety to be released in time for the 2007 winter crop. “The new variety is a fast maturing durum particularly suited to central and southern Qld and northern NSW. It has a significant yield advantage in preferred areas over Wollaroi,” said durum breeder Dr Ray Hare from NSW DPI, Tamworth.

“Disease resistance is slightly better for rusts than Bellaroi, with similar high resistance to stem rust and good resistance to stripe rust and leaf rust. The new variety also has good resistance to yellow leaf spot, common root rot, common bunt and flag smut. However, like all durum varieties it is still susceptible to crown rot and Fusarium head blight. Standability and threshability are similar to Wollaroi.

“Quality is superior to Wollaroi, but not quite as good as Bellaroi. Under similar conditions, protein levels were not quite as high, but protein quality was the same if not better than Bellaroi. Yellow colour is not quite as good as Bellaroi, but equal to if not better than Wollaroi. Pasta made from the new variety is very high quality – a trait essential for the high quality export market.

“Genetically the new variety is quite dissimilar to all other durum varieties currently grown in Australia - thus extending the genetic diversity of the Australian durum crop,” said Dr Hare.

‘Line E’ will be covered under PBR and end point royalties will apply. It is being commercialised through AWB Seeds.

FURTHER INFORMATION:
Ray Hare, 02 6763 1232,
ray.hare@dpi.nsw.gov.au
 GRDC Code: DAN323

Does stocking affect the next crop?

Research at the University of New England’s Douglas McMaster Research Station, Warialda, is investigating the impact grazing has on soil compaction and the performance of following crops.

“This research will provide insight to the longer term sustainability of incorporating pasture and legume phases into crop systems” says UNE Project leader, Dr Chris Guppy.

In its current pilot phase, the project is evaluating the impact of different stocking rates on soil-compaction. In addition to conventional ‘point measures’ of soil compaction, numerous precision agriculture (PA)-based technologies are also being employed to measure the impacts on the soil. These include EM38 soil surveying, optical crop canopy sensors such as CropCircle, UNE’s multi-spectral airborne imaging system and on-the-go grain yield and quality mapping.

According to Assoc Prof David Lamb of UNE’s Precision Agriculture Research Group; “Having the PA data gives added insight into how the forage crop and subsequent grain crops respond to grazing-induced compaction. This is especially powerful when superimposed on the natural variability of the field where the trial is being conducted. We are also assembling 20 home-built GPS collars to track and measure cattle foraging pressure across a larger-scale

trial scheduled for commencement later in the year. This will help us view the impact of grazing on cropping not only on the black cracking clays, but also up the slopes and into the ridge country,” said Dr Lamb.

The trial is being conducted by staff of the Primary Industries Innovation Centre, a joint initiative of the University of New England and NSW DPI and funded by the National Grain and Graze project and the Border Rivers-Gwydir Catchment Management Authority. The trial will continue into 2007 and 2008.

FURTHER INFORMATION:
David Lamb, 02 6773 3565,
dlamb@une.edu.au

Simple principles keep the chemicals in the paddock

QDNRM&W research on the off farm movement of chemicals has found that limiting off farm chemical movement is relatively easy.

Researcher Dan Rattray said; “While we found only very small amounts of chemical moving off farm, chemical levels were found to be higher than water quality limits at the very edge of the paddock. The good news is that by the time any chemicals reached the creeks and rivers, tests showed it was generally below water quality limits.”

“Many current practises help minimise the risk of off farm movement. Good examples are band spraying and split applications. Waterways and grassed areas can be helpful in cleaning water up before it gets to the stream, as can the widespread adoption of stubble retention no-till farming systems. The technology exists but it just needs to be implemented.

“Most chemicals we were interested in (residuals) dissolve in water, but we still found that zero till and controlled traffic reduced the amount of chemical that moved off farm even though the chemical wasn’t moving with the sediment,” said Mr Rattray.

The project has developed a booklet on best management practices to reduce off farm chemical movement and a pesticide risk assessment tool, both are available on the GRDC website www.grdc.com.au

FURTHER INFORMATION:
Dan Rattray, 07 4688 1146,
dan.rattray@dpi.qld.gov.au
 GRDC Code: DNR00002