

## New guide to feathertop Rhodes grass

Managing the problem grass weed 'feathertop Rhodes grass' is the topic of a new GRDC-supported brochure.

Brochure compiler DPI&F Principal Weeds Agronomist Vikki Osten said "feathertop Rhodes grass requires an intensive and integrated approach to managing this difficult weed".

"Some of the key components in an effective management strategy include:

- Stopping seed set to reduce future weed burdens,
- Targeting small (pre-tillering) actively growing weeds when spraying,
- Optimising efficacy of pre-emergent herbicides by using when there is little or no weed cover,
- Regular monitoring for escapes with timely follow-up spot spraying,
- Double knock tactics using two herbicides can be very effective,
- Strategic tillage has a role but may not suit all situations,
- Competitive crops sown on narrow rows with high crop populations will assist," said Vikki Osten.

*Further information:*

Visit [www.grdc.com.au/weedlinks](http://www.grdc.com.au/weedlinks) or contact the CQ weeds project team on 07 4983 7400

*Project code: DAQ00105*

## And the grass kept growing!

"Thanks to the alertness of a farm consultant and testing for herbicide resistance, 2 separate populations of liverseed grass have now been confirmed as resistant to glyphosate," said NSW DPI Weeds Specialist Andrew Storrie.

"Both populations are from the Moree area of northern NSW and in both cases the paddocks have been

predominantly no till winter crop for at least the past 5 years, with glyphosate the only in-fallow control in this summer dominant rainfall area.

"This is a very similar scenario to the glyphosate resistant awnless barnyard grass recently identified in the same region and type of farming system. Interestingly, these are the same rotations that produce rampant herbicide resistance in wild oats to herbicide mode of action Groups A, B & Z," said Mr Storrie.

"While management options do exist to enable environmentally friendly no-till systems to continue, these do not have the 'silver bullet efficacy' of glyphosate on a susceptible weed population. They will cost more than glyphosate, and some are based on other herbicide modes of action that are far more prone to developing resistance than glyphosate. These developments pose an immediate and serious threat to sustainable farming practices in the region.

Growers and advisers should implement an integrated weed management (IWM) strategy in all paddocks to delay or stop the development of serious resistance issues to glyphosate, or risk losing the main tool that drives profitable and sustainable no-till farming systems," said Mr Storrie.

*Further information:*

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**GRDC Weedlinks (links to a range of IWM documents, manuals and other weeds related publications)**  
[www.grdc.com.au/weedlinks](http://www.grdc.com.au/weedlinks)

*Project code: DAN00079*

## New mungbean varieties

Two new Mungbean varieties will be released for the 2008/09 season under licence by the Australian Mungbean Association (AMA) and subject to Plant Breeders Rights (PBR).

**Crystal<sup>®</sup>** – large-seeded bright green mungbean.

A cross between White Gold, Emerald<sup>®</sup> and CPI 109897, Crystal, has been a consistent performer in all regions, yielding up to 20% higher than Emerald and 4% higher than

White Gold. Crystal has superior grain quality to other commercial varieties under both dryland and irrigated production.

Across some 35 trial sites and a wide range of seasonal conditions between 2003 and 2007, Crystal showed superior evenness of colour, brightness and shape when compared to current varieties.

Crystal is erect and has similar lodging resistance to Emerald. It has moderate resistance (MR) to powdery mildew and tan spot and is rated as moderately susceptible (MS) to halo blight. Low levels of hard seed further increase its attractiveness to both the cooking and processing markets.

Crystal has broad adaptation to a range of planting times and is suitable for both “spring plantings” due to its weathering ability and “summer plantings” because of its level of powdery mildew resistance.

#### **Satin II<sup>Ⓛ</sup>** – *dull-seeded green mungbean.*

Satin II is a dull-seeded line to replace Satin with the following key advantages over Satin;

- Superior seed quality with increased seed size and improved evenness of seed colour, shape and size,
- 20% increased yield potential,

- Improved resistance to both powdery mildew and tan spot,
- Improved lodging resistance and equal plant maturity compared to Satin.

Released in 1988, Satin was the only dull-seeded variety available in Australia. In recent years, the area sown to Satin has declined to virtually nil. This has been due to issues with grain quality and marketability due to genetic drift within the variety, which has resulted in unevenness of bean colour, lustre and size.

The release of Satin II will reinstate access to this niche market for Australian growers which is expected to grow to ~10% of current mungbean production.

**Key Considerations:** Seed segregation and varietal integrity are critical if growing more than one mungbean variety. Varietal mixtures are unacceptable in the market place for premium cooking, processing and sprouting grade beans and will attract substantial discounts.

Unless seeding equipment, harvest equipment and storage facilities can be thoroughly cleaned, plantings should be limited to one variety only.

Growers should consult their local AMA processor when determining which variety to produce prior to seeding, to determine the current market requirements.

**Table 1: Grain yields (t/ha) average for 5 growing seasons, also shown as a percentage of the Emerald yield for each of the 3 main growing regions**

Variety	Location Central Qld	Yield - % Emerald	Location Southern Qld	Yield - % Emerald	Location NSW	Yield - % Emerald	Overall Mean	Yield - % Emerald
Crystal	1.32	114	1.10	123	0.95	125	1.13	120
White Gold	1.32	114	1.05	118	0.87	114	1.09	116
Satin	1.21	104	0.92	104	0.82	108	0.99	106
Delta	1.25	108	0.91	102	0.80	105	1.00	106
Berken	1.12	96	0.92	103	0.79	105	0.94	100
Green Diamond <sup>Ⓛ</sup>	1.11	95	0.81	91	0.69	91	0.88	94
Celera	1.04	90	0.75	85	0.63	83	0.81	87
No of sites	14 sites		10 sites		11 sites		35 sites	

**Table 2: Disease reactions of current and the two new varieties**

Description	Tan Spot	Powdery Mildew	Halo Blight
Resistant			
Moderately Resistant	Celera, <b>Crystal</b>		
	White Gold, <b>Satin II</b>	Celera, <b>Crystal</b> , Emerald	Regur
Moderately Susceptible		Green Diamond, White Gold, <b>Satin II</b>	White Gold
	Delta, Emerald, Green Diamond	Delta	<b>Crystal</b> , Delta, Emerald, Green Diamond, Satin, <b>Satin II</b>
Susceptible			Berken
	Berken, Satin	Berken, Satin	Celera
Very Susceptible			

*New GRDC national disease resistance rating scale.*

Production agronomy for both of these new varieties is equivalent to current varieties. Best Management Practice (BMP) for mungbean is the use of AMA Approved Seed and growing your crop along with the services of a certified mungbean agronomist, a list of which can be found at [www.mungbean.org.au](http://www.mungbean.org.au)

To reduce the incidence of seed borne diseases like tan spot and halo blight, and to keep the crop genetically pure, new seed should be purchased at least every 3 years. The release of these two new mungbean varieties provides an ideal opportunity for growers to replace their older planting seed whilst capturing the production advantages associated with these new varieties.

*Further information:*

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*GRDC Project Code: DAQ00128*

## Multiple fumigations breed resistance

Principle entomologist with DPI&F Dr Pat Collins warns that long term storage, multiple applications of phosphine and poor hygiene have combined to breed an insect with hitherto unseen levels of resistance in Australia to the grain fumigant phosphine.

The insect ‘the flat grain beetle (*Cryptolestes*)’ can develop levels of resistance that current best management fumigation practice with phosphine may not control. This makes it the first significant pest of grain in Australia with a level of resistance that threatens our current best management practice recommendations” said Dr Collins.

“The problem is one of our own making. Insects that have one copy of the resistance gene (heterozygotes) are relatively easy to control using good fumigation practice. It’s when we repeat fumigations and chronically under dose that we provide an environment that allows the heterozygotes to survive. Surviving heterozygotes can then breed together and produce the very resistant homozygous individuals with two copies of the resistant genes (R/R).

To complicate the matter further, this insect species has at least two types of phosphine-resistance genes. Insects with only one gene, whether that gene is homozygous or heterozygous, can be controlled by fumigating in sealed silos but it’s when we get insects that have both genes and two copies of each gene (R1R1 + R2R2) that we are in real trouble. These insects are very, very difficult to control.

The only feasible way to deal with the double homozygote insects is to prevent them developing in the first place. The aim should be to fumigate less often but more effectively.”

Strategies that lessen the chance of breeding these insects include:

- Only fumigate when necessary
- Avoid under-dosing:
  - Fumigate only in sealed silos
  - Use the label rate (higher label dose rate in a well sealed storage for the appropriate time)
- Store grain for shorter periods
- Keep insect numbers low
  - Clean out and disinfest silos and surrounding areas and associated grain handling equipment
  - Use aeration cooling to slow insect development and reduce population build up and the need for frequent fumigation.

“Practices such as loading new grain on the top of old grain and fumigating in unsealed or poorly sealed silos should be avoided,” said Dr Collins.

*Further information:*

**Dr Pat Collins 07 3896 9433** [Pat.Collins@dpi.qld.gov.au](mailto:Pat.Collins@dpi.qld.gov.au)

*GRDC Project code: CRC50098*

## Wheat classification moves to GRDC

Rigorous wheat varietal classifications and receival standards provide a platform that enables sellers of Australian grain to offer for sale a product of defined quality and character.

With recent changes in wheat marketing arrangements in Australia, the GRDC has taken over the role of managing varietal classification.

To facilitate a secure transition process, the GRDC has in place a short-term transitional arrangement in partnership with AWB(I). This will maintain the current varietal classification processes until December 31, 2008.

*Further information:*

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**Breeding GRDC 02 6166 4500** [l.angus@grdc.com.au](mailto:l.angus@grdc.com.au)

<http://www.grdc.com.au/wheatvarietyclassification>

**Wheat Industry Expert Group (IEG)**

[http://www.daff.gov.au/agriculture-food/wheat-sugar-crops/wheat-marketing/wheat\\_industry\\_expert\\_group](http://www.daff.gov.au/agriculture-food/wheat-sugar-crops/wheat-marketing/wheat_industry_expert_group)

**This page contains terms of reference, committee members, discussion papers, submissions, final reports and contacts for the IEG.**

**National Agricultural Commodities Marketing Association (NACMA) Commodity Standards**  
[http://www.nacma.com.au/grain\\_specifications](http://www.nacma.com.au/grain_specifications)

# An environmental plan for grains

In consultation with industry, the GRDC has developed a comprehensive environmental plan for the grains industry. Implementation of the plan will help secure a profitable and sustainable grains industry by equipping Australian grain growers to manage a range of environmental challenges – including climate change.

In a linked program, a database of Australian farming practices is documenting and measuring the uptake of sustainable farming practices in Australia. Growers can use a simple on-line questionnaire to input their farming practices. Participating growers are rewarded with a useful report that benchmarks their management practices against other growers in their region or nationally.

*Further information:*

**GRDC Environmental Plan:** [http://www.grdc.com.au/uploads/documents/GRDC\\_Environmental\\_Plan.pdf](http://www.grdc.com.au/uploads/documents/GRDC_Environmental_Plan.pdf)

**Farming Practices Database:** <http://www.grdc.com.au/director/events/grdcpublications/farmingpractices>

## New irrigated grains manual

With limited water supply and buoyant grain prices, there is strong interest from irrigators in grain production. To assist the growing of profitable high yield irrigated crops, information specific to grain crops has been added to the WATERpak manual for irrigators.

WATERpak is a resource that assists irrigators to improve irrigation practices, minimise environmental impacts and increase farm profits from irrigated crops. Several chapters have had information specific to grain production added, with new chapters added on how canola, barley, soybeans and pulses fit into rotations in irrigated farming systems; and managing diseases in irrigated wheat.

The grain updates are being mailed to cotton growers who already have a copy of WATERpak. Further information on the manual can be found on the Cotton and Grains Irrigation Knowledge Management project at [www.cottonandgrains.irrigationfutures.org.au](http://www.cottonandgrains.irrigationfutures.org.au)

## Interested in soil carbon?

A recent workshop convened by the GRDC, asked the question; “If soil carbon is included in emissions trading, how will it work?”

The workshop explored issues like:

- How emissions trading might work with some examples of existing voluntary schemes,
- The capacity of cropping soils to sequester more carbon,
- How to measure soil carbon and what soil carbon fractions are the most important,
- How to take advantage of all the benefits of soil carbon.

*Further information:*

**visit <http://www.grdc.com.au/director/events/grdcpublications/soilcarbonworkshops>**

The workshop summary and powerpoint presentations are available for download.

## Diary Dates

February 2009	
24-25	<b>Dubbo Grains Research Adviser Update</b> , Dubbo RSL, NSW John Cameron or Erica McKay 02 9482 4930 <a href="http://www.icanrural.com.au">http://www.icanrural.com.au</a>
March 2009	
3-4	<b>Goondiwindi Grains Research Adviser Update</b> , Goondiwindi Community Centre, QLD John Cameron or Erica McKay 02 9482 4930 <a href="http://www.icanrural.com.au">http://www.icanrural.com.au</a>

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[www.grdc.com.au](http://www.grdc.com.au)**

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