

WHEAT & BARLEY IRRIGATED AND DRYLAND VARIETY TRIALS

Rankins Springs & Hillston, 2016

KEY MESSAGES

- Growing conditions in 2016 were very wet and mild, with rainfall from May to September one of the wettest on record. Growing season rainfall was well above average with 525mm recorded for Rankins Springs and 532mm for Hillston. There was some waterlogging at the Rankins Springs site due to flooding, which impacted on yield.
- Durum wheat varieties did not perform as well in 2016 at both Rankins Springs and Hillston.
- Lodging was observed at the dryland site at Rankins Springs, with barley varieties the worst for lodging. Compared to 2015, lodging at the irrigated site at Hillston was not as widespread with only a few varieties having lodging scores greater than 5.
- Given the 2016 season, which strongly favoured the performance of longer season varieties, it is important to look at variety performance of this trial, alongside long term NVT results.

Background

In conjunction with Hart Bros Seeds, this is the third season we have been trialling commercially grown wheat and barley varieties alongside new varieties under irrigated and dryland conditions.

These trials compliment the NVT trials, as they give us an opportunity to see how new varieties perform under local conditions. In particular they allow growers to see how they perform in terms of yield and quality as well as acid soil tolerance on dryland, and lodging tolerance on irrigation.

2016 was a wet and mild season, with conditions from May to September one of the wettest on record in the area. Daytime temperatures in September were also below average, whilst night time temperatures were above average.

Trial details

Two trials were established in the area in May 2016. The dryland trial was established at Michael Pfitzner's on the 4th May and the irrigated trial was established at Graeme Horneman's on the 17th May. Both trials aimed to compare the performance of potential wheat and barley varieties with existing varieties commonly grown in SNSW under local conditions.

There were 48 entries in the dryland trial and 45 entries in the irrigated trial, table 1. These varieties are a combination of numbered lines, newly released varieties and current varieties, all of which are of interest or suited to the region.

Both trials were replicated 3 times, with plot sizes 11m by 1.75m.

Rankins Springs Trial:

The Rankins Springs trial was sown following vetch. It was sown on the 4th May at 30 kg/ha with 60 kg/ha MAP and also had 60 kg/ha of urea IBS. It received a fungicide spray at the end of July. Appropriate weed control was undertaken preemergence and again in crop. The growing season rainfall was 524.5mm. It was harvested on 30th November.

Hillston Trial Site:

The Hillston trial was sown following maize in 2015/2016. It was sown on the 17th May at

100 kg/ha with 150 kg/ha MAP and had 200 kg/ha urea predrilled. It was topdressed late August with 350 kg/ha urea and received two timely fungicide sprays at the end of July and early October (by air). Appropriate weed control was undertaken preemergence and again in crop. The growing season rainfall was 532mm. A spring irrigation was applied on 4th November and it was harvested on 13th December. Establishment scores, lodging, grain yield and quality, were measured on both trials and are shown in the results section.

FIGURE 1 HBS variety trials - Rankins Springs (top) taken late September and Hillston (bottom) taken early October.



Results and discussion

Statistical analysis was carried out on these trials for grain yield. Grain quality analysis was also carried out on these trials but was not statistically analysed.

Rankins Springs

Establishment:

Establishment was scored from 0 to 9, with 0 being very poorly established and uneven and 9 being very evenly established.

Establishment scores were taken on 25th May when the crop was around the 2-3 leaf stage. The trial established well

and was very even, with scores mostly 8 or 9, figure 2.

Lodging Scores:

Lodging scores were taken before harvest. Lodging was scored on a scale of 0 to 9, with 0 indicating no lodging and 9 flat on the ground.

Given the season lodging was observed at Rankins Springs in 2016, figure 3. Lodging scores ranged from 0 to 8. Barley varieties were generally worst for lodging with Compass, Latrobe and Hindmarsh having the highest degree of lodging in this trial, figure 4.

FIGURE 2 Establishment at Rankins Springs (top) and Hillston (bottom).



Grain Yield:

The average grain yield of this trial was 5.01 t/ha. Yields in the trial ranged from 3.74 t/ha, for the wheat variety Caparoi, to 6.60 t/ha for the wheat variety V09150-01, figure 5.

The only other variety in the trial to yield over 6 t/ha was Pascal yielding 5.93 t/ha, Wedgetail yielding 5.88 t/ha and RAC2341 and Chara yielding 5.82 t/ha. Besides Caparoi the only other varieties to yield below 4 t/ha were the durum wheat varieties Lillaroi, 280913 and 190873 and the barley variety Compass.

Grain Quality:

Grain protein ranged from 8.8%, for the barley variety LaTrobe, up to 13.2% for the durum wheat variety Caparoi, table 2. The average grain protein for this site was 10.41%.

Hillston

Establishment:

The same scale used at Rankins Springs was used to assess establishment at Hillston. Establishment scores were taken 14th June, when the crop was around the 2-3 leaf stage. The trial also established very well with establishment scores mostly 9, figure 2.

Lodging Scores:

Lodging scores were taken before harvest, using the same scale as Rankins Springs.

Lodging scores ranged from 0 to just under 7 for the wheat variety Reliant, figure 6. Despite the wet winter, lodging was not as great as last year in this trial.

The only other varieties to have a lodging score over 5 were the wheat varieties Flanker and AGTD043 and the barley variety Compass. All other varieties had a lodging score of less than 5.

TABLE 1 Variety List for the dryland and irrigated variety trials.

Variety	Rankins Springs	Hillston
190873	✓	✓
280913	✓	✓
Accroc	✗	✓
AGTD043	✓	✓
Aurora	✓	✓
Beckom	✓	✓
Bellaroi	✓	✓
Caparoi	✓	✓
Chara	✓	✓
Cobra	✓	✓
Compass	✓	✓
Condo	✓	✓
Corack	✓	✓
Darwin	✓	✓
Emu Rock	✓	✓
Fathom	✓	✓
Flanker	✓	✓
Gregory	✓	✓
H45	✓	✓
Hindmarsh	✓	✓
Impala	✓	✓
Kiora	✓	✓
Lancer	✓	✓
Latrobe	✓	✓
Lillaroi	✓	✓
Livingston	✓	✓
Reliant	✓	✓
Kittyhawk	✓	✓
LPB11-1782	✓	✓
Pascal	✓	✓
RAC2341	✓	✓
Rosalind	✓	✓
Scepter	✓	✓
RGT Planet Barley	✗	✓
Sparatacus	✓	✓
Spitfire	✓	✓
Sunmate	✓	✓
Suntop	✓	✓
Sunvale	✓	✓
Trojan	✓	✓
V07008-07	✓	✓
Coolah	✓	✓
V09150-01	✓	✓
Wedgetail	✓	✓

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TABLE 2 Grain Protein (%) for Rankins Springs and Hillston.

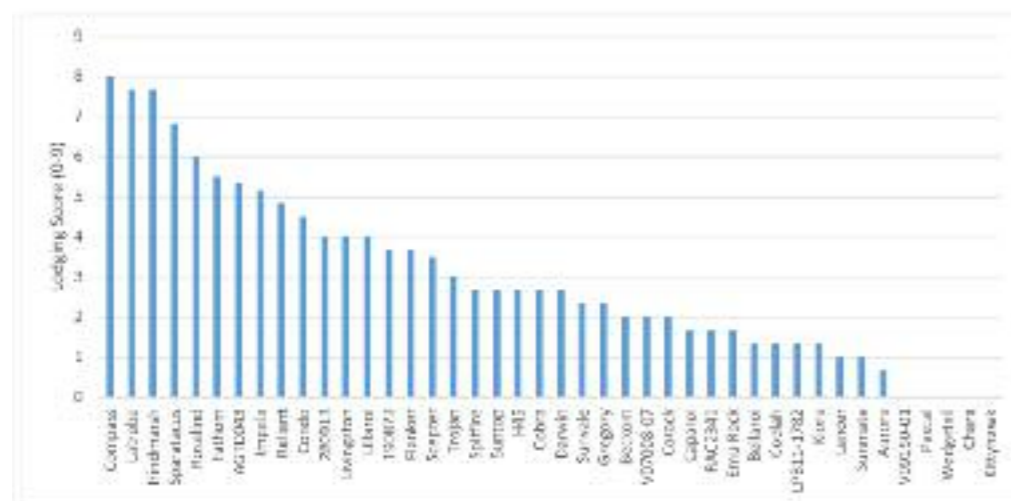
Note - not statistically analysed

Variety	Rankins Springs	Hillston
190873	11.7	14.4
280913	11.7	14.4
Accroc	-	11.6
AGTD043	9.8	12.4
Aurora	10.0	13.1
Beckom	9.2	11.2
Bellaroi	10.0	13.5
Caparoi	13.2	-
Chara	10.0	11.9
Cobra	10.4	12.7
Compass	10.3	13.1
Condo	11.4	12.6
Corack	10.4	13.1
Darwin	9.9	13.0
Emu rock	11.2	13.0
Fathom	9.8	14.9
Flanker	9.3	11.9
Gregory	10.3	12.2
H45	9.7	12.8
Hindmarsh	10.7	14.2
Impala	10.7	11.6
Kiora	9.5	11.7
Lancer	11.2	12.5
latrobe	8.8	13.1
Lillaroi	11.1	15.1
Livingston	11.2	13.1
Reliant	10.7	12.3
Kittyhawk	13.0	11.8
LPB11-1782	11.3	12.6
Pascal	9.5	11.7
RAC2341	10.0	12.1
RGT Planet Barley	-	12.3
Rosabind	9.7	13.2
Scepter	10.0	11.9
Sparatacus	10.3	14.1
Spitfire	11.7	14.1
Sunmate	12.2	14.1
Suntop	9.9	12.4
Sunvale	9.7	12.0
Trojan	9.4	11.6
V07008-07	9.0	11.2
Coolah	10.4	11.5
V09150-01	8.9	11.9
Wedgetail	9.9	13.0

FIGURE 3 Lodging at Rankins Springs (top) and Hillston (bottom), taken November 2016.



FIGURE 4 Rankins Springs lodging scores, (0 = no lodging, 9 = totally lodged), November 2016.



Grain Yield:

The average grain yield for Hillston was 7.37 t/ha. Yields in this trial ranged from 4.96 t/ha, for the barley variety Compass to 9.27 t/ha for the wheat variety Accroc as shown in figure 7.

The only other variety to yield more than 9 t/ha was Cobra yielding 9.2 t/ha.

Other varieties to perform well in this trial, yielding over 8 t/ha, were V09150-9, Chara, RAC2341, Darwin, Pascal, Trojan, Coolah, Sunmate, Scepter, RGT Planet Barley, V07008-07, Kiora, Lancer, Suntop and Beckom.

The durum wheat variety Caparoi was the second lowest yielding variety in the trial, yielding just over 5/ha.

Grain Quality:

Grain protein ranged from 11.2%, for the wheat varieties Beckom and V07008-07 to 15.1% for the durum wheat variety Lillaroi, table 2. The average grain protein for this site was 12.7%

FIGURE 5 Rankins Springs dryland Yield Data 2016 (LSD 629 kg/ha)

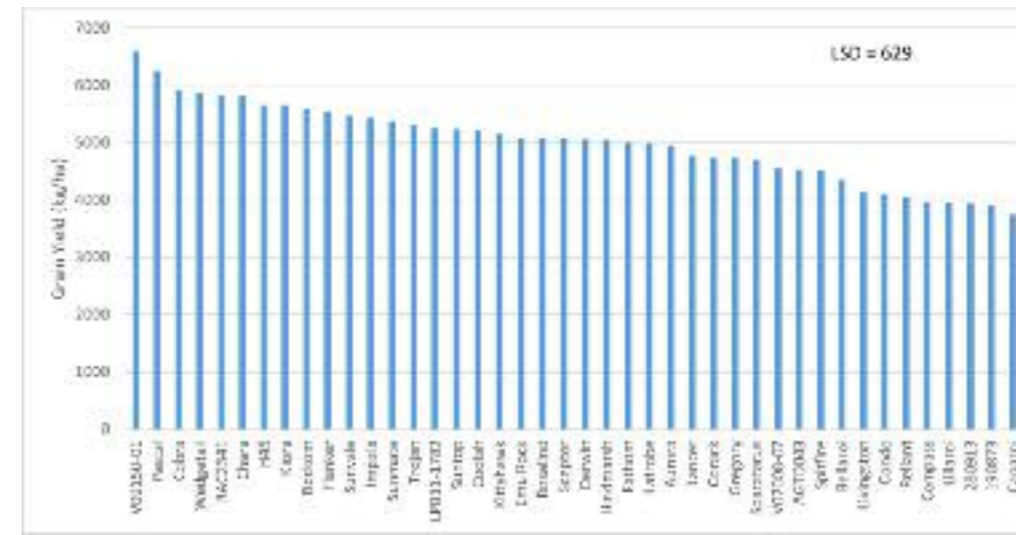


FIGURE 6 Hillston lodging scores, (0 = no lodging, 9 = totally lodged), November 2016.

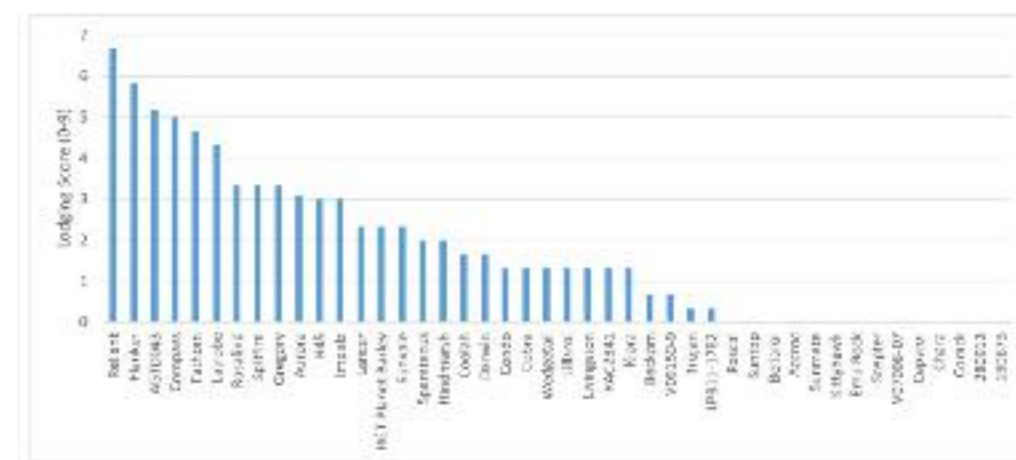
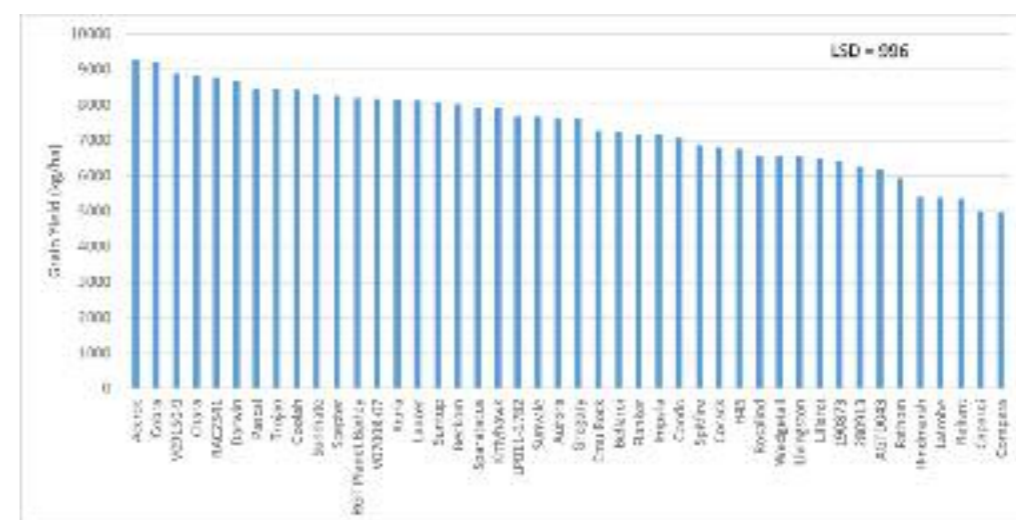


FIGURE 7 Hillston Irrigated Yield Data 2016 (LSD 996 kg/ha)



Acknowledgements

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Further contacts

Barry Haskins
Ag Grow Agronomist
barry@aggrowagronomy.com.au

Rachael Whitworth
Ag Grow Research Manager
rachael@aggrowagronomy.com.au

Robert Hart
Hart Bros Seeds, Junee
robert@hbseeds.com.au