

# Variety Choice for NSW Durum Growers

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## Why aren't NSW durum growers cashing in on new genetics?

The most popular durum variety in NSW, according to GrainCorp receival data, is Jandaroi<sup>®</sup> which accounted for 51% of durum receivals in the 2012/13 harvest. In contrast, there are only eight registered growers of Hyperno<sup>®</sup> in NSW.

Analysis (taking into account yield, protein, screenings, and test weight) of 51 individual National Variety Trials (NVT) over 7 years showed that NSW growers would have been, on average, \$56/ha better off if they grew Hyperno<sup>®</sup> instead of Jandaroi<sup>®</sup>; \$33/ha more profitable if they used Hyperno<sup>®</sup> in place of Caparoi<sup>®</sup>; and a massive \$102/ha in front if they grew Hyperno<sup>®</sup> rather than Bellaroi<sup>®</sup>.

This is a stunning result that has led Australian Grain Technologies (AGT) to ask the question: Why aren't NSW durum growers cashing in on new genetics?



## Hyperno<sup>®</sup> versus the rest

A number of NSW growers and agronomists were surveyed on the reasons why Hyperno<sup>®</sup> was not getting grown. The most consistent answer was that Hyperno<sup>®</sup> was susceptible to producing high screenings losses, while some also believed it to be a low protein achiever.

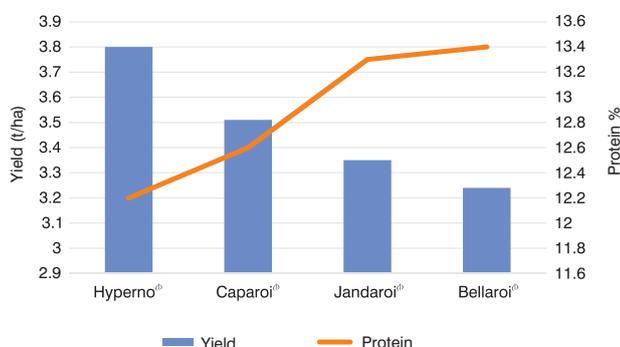
Table 1 presents the average grain yield, protein, screenings losses and test weight across all 51 NSW NVTs where Hyperno<sup>®</sup> was included.

Table 1. Grain quality data for durum varieties, average of 51 NVTs in NSW 2007-2013.

Variety	Yield (t/ha)	Protein (%)	Screenings (%)	Test Weight (kg/hl)
Hyperno <sup>®</sup>	3.80	12.2	6.42	79.7
Caparoi <sup>®</sup>	3.51	12.6	3.89	80.7
Jandaroi <sup>®</sup>	3.35	13.3	3.16	79.4
Bellaroi <sup>®</sup>	3.24	13.4	4.16	79.0

While it is well accepted that there is only very minor differences between varieties in their ability to accumulate protein, the significant differences between the varieties in Table 1 can be simply explained by the 'yield dilution effect'. Nitrogen is the major component of protein and therefore any factor that affects plant nitrogen availability, uptake, and mobilisation will also affect grain protein. A higher yielding variety produces more grain and/or larger grain. However, varieties grown under the same conditions have access to the same amount of nitrogen. Therefore, with higher yielding varieties the fixed nitrogen supply is distributed amongst more and/or larger grain. Consequently, the proportion of nitrogen to starch will be smaller in higher yielding varieties. The available nitrogen and therefore protein has effectively been diluted in the higher yield. This is clearly illustrated by graphing protein and yield across these varieties (Figure 1).

Figure 1. Yield v's Protein of durum varieties from NSW NVTs 2007-2013.



While the protein differences between varieties can be largely explained by the relationship between yield and protein, the varieties do differ for average screenings losses (Table 2).

Table 2. Average screenings loss (%) of durum varieties in NSW NVTs 2007-2013.

Year	Hyperno <sup>®</sup>	Caparoi <sup>®</sup>	Jandaroi <sup>®</sup>	Bellaroi <sup>®</sup>	# Sites
2007	14.4	7.0	5.0	6.0	4
2008	5.0	2.9	2.2	3.0	5
2009	5.6	3.1	3.2	4.5	4
2010	4.4	2.4	1.9	3.1	9
2011	4.4	2.8	2.0	3.0	10
2012	5.0	3.8	3.2	4.7	10
2013	8.8	4.7	3.6	4.9	9
Mean	6.4	3.9	3.2	4.2	51

Hyperno<sup>®</sup> clearly has a greater propensity to produce high screenings losses than the other varieties.

The gross return for every one of the 51 NSW durum NVTs was calculated using the criteria in Table 3.

Table 3. Durum receival standards and average quality grade price in NSW.

Quality Grade	Protein Min (%)	Screenings Max (%)	Test Weight Min (kg/hl)	Price (\$/t)
DR1	13.0	5	76	315
DR2	11.5	5	76	295
DR3	10.0	10	71	285
Feed	-	-	70	230

Table 4. Average gross return from durum varieties, NSW NVTs 2007-2013.

Year	Hyperno <sup>®</sup>	Caparoi <sup>®</sup>	Jandaroi <sup>®</sup>	Bellaroi <sup>®</sup>	Most Profitable
2007	497	505	588	482	Jandaroi <sup>®</sup>
2008	1481	1432	1468	1369	Hyperno <sup>®</sup>
2009	1129	1089	1032	1016	Hyperno <sup>®</sup>
2010	1262	1253	1177	1243	Hyperno <sup>®</sup>
2011	1022	1018	957	971	Hyperno <sup>®</sup>
2012	903	795	820	693	Hyperno <sup>®</sup>
2013	877	919	850	816	Caparoi <sup>®</sup>
Mean	1044	1011	988	942	Hyperno <sup>®</sup>

Table 4 shows that the worst years for gross return for Hyperno<sup>®</sup> were 2007 and 2013 where screenings losses were high, however over all years Hyperno<sup>®</sup> has delivered the greatest return and most regularly achieved the greatest return despite only achieving DR1 in two of the 51 trials.

## Summary

- NSW durum growers are missing out on achieving greater financial returns by compromising yield potential to maximise the chance of achieving the highest possible quality grade
- On average across 51 NSW durum NVTs over 7 years, Hyperno<sup>®</sup> produced \$56/ha greater gross returns than the most popular variety Jandaroi<sup>®</sup>
- Hyperno<sup>®</sup> is consistently the highest yielding durum variety in NSW, averaging 13% higher yields than the most popular variety Jandaroi<sup>®</sup>
- Hyperno<sup>®</sup> has a genetic propensity to produce higher screenings losses than other important varieties
- Due to its high yield, Hyperno<sup>®</sup> also tends to produce lower protein. Protein levels can be managed by growers through appropriate crop nutrition

### contacts

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Disclaimer: The information contained in this brochure is based on the knowledge and understanding at the time of writing. Growers should be aware of the need to regularly consult with the advisors on local conditions and currency of information.