Irrigated wheat for the Murrumbidgee Valley in 2007

Rachael Whitworth[1] & Andrew Schipp[2]
[1]NSW DPI Agronomist, Griffith; [2]NSW DPI Agronomist Hay

in a nutshell

- Many decisions need to be made in deciding what wheat variety to grow, and in this season a dry start and uncertain irrigation allocations add to the complexity of the decision
- Results from the Benerembah site of the National Variety Trials provide some good information on the performance of a wide range of varieties in this region
- The NVT information should complement decisions about the likely challenges that are going to arise this season, as well as the results of 'sums' on likely costs and returns

The decision of what wheat variety to grow is a big one! There are many options to start with, and more new varieties appear on the market each year. How do you start deciding which one is for your situation?

Yield potential is a major factor when choosing a wheat variety but a range of other characteristics must also be considered; such as:

- planned sowing time
- resistance to disease
- grain quality potential
- tolerance to soil acidity
- tolerance to shattering
- herbicide tolerance.

On irrigation, there are additional considerations including spring watering requirements and straw strength (lodging potential). These are really only known when the variety is tested on irrigation.

The 2007 wheat growing season will throw in a few more curve balls into the planning process.

Most obvious is the impact of current low water availability and restrictions on supply in irrigation areas. Large quantities of water that would normally have been used to pre-irrigate winter crop country have been transferred to permanent plantings or Murray Valley dairy farms. Most wheat growers will be reliant on an early and substantial autumn break to get any winter crop in (and on time) and this still means gambling on some allocation next season for spring watering.

This set of circumstances will influence variety choice for this autumn. For example hard wheat varieties may need one less spring irrigation than biscuit wheats. If the break arrives late then shorter season varieties will be required to ensure flowering occurs in the optimal late-September/ early-October period.

Figure 1: Results of wheat variety trials provide good information on how a variety may perform in the local area, however the impact of seasonal conditions, soil conditions and water availability on that variety must also be considered. Pictured here is the variety Ventura in the NVT trial in 2006.

The recent discovery of a new stripe rust pathotype at Coleambally and Horsham has put a question mark over the resistance rating of varieties carrying the Yr17 gene, eg QAL 2000. These varieties have performed well in the irrigation areas and advice at this stage is that farmers should not be discouraged from growing Yr17 varieties; however a fungicide may be required.

And in case, all these aren't challenge enough, variety choice will be limited by availability of seed, especially if there is a widespread break and a large dryland crop is planted.

National variety trial results

The National Variety Trials (NVT) funded by the Grains Research and Development Corporation (GRDC) look at the performance of many wheat varieties over many suitable or potential locations throughout the grain-growing regions of Australia. The results for the past two years at the Benerembah site (near Griffith) are presented in Tables 1 and 2.

Although these trials are well designed and managed, growers should not wholly base their decision to change variety on one or two experiments in one location. When looking at NVT data be sure also to check the LSD (least significant difference) figure. For example, in Table 1 in the 2006 data, the LSD was 0.74 t/ha. That means that if the difference in yield results of one variety compared with another is less than 0.74 t/ha, that difference is not statistically significant, and not a lot may be gained, yield-wise, in switching varieties.

The Benerembah site is on a well-drained, border check layout. In 2005, yields were lower than district averages due to stripe rust and some moisture stress in spring. The 2006 season was a low stripe rust year with a little waterlogging early on, but better irrigation scheduling in spring resulted in more typical yields for the mid to late maturing varieties. Early maturing varieties suffered some significant yield loss because they experienced a frost at flowering (eg Ventura).

Early sown variety choices

Sowing winter wheats will reduce the risk of damage from frost if a March/early April planting opportunity arises. The earlier sowing time of many of these varieties also makes them well suited to sod seeding into rice stubbles in mid April, as early sowing minimises the risk of waterlogging. Whistler has consistently performed well in these situations.

As far as nitrogen management goes the '8 Tonne Club' recommendation of only moderate rates of nitrogen up front is important for early sowings to reduce lodging risk.

In the Benerembah trials, for a late April sowing, Giles yielded well in 2005 and 2006 and Bolac in 2006 – Bolac is a new hard wheat variety bred at Horsham. The newly released biscuit wheat variety Yenda also appears to have good yield potential, and although not a true winter wheat, could be a potential replacement for Thornbill.

Main season sown variety choices

Varieties that performed well in the 2006 main season trial included Yenda, Chara, Pugsley and Giles. Yields in 2005

Table 1: Yield results from the Benerembah site of the National Variety Trials, 2005 and 2006, for the early sown trials (varieties ideally sown before 15 May)

Variety	2006		2005	
	t/ha	% of site mean	t/ha	% of site mean
Bolac	7.19	114	-	-
Chara	6.41	102	3.52	98
Cunningham	5.40	86	2.90	80
Currawong	6.08	97	3.77	105
EGA Gregory	5.57	88	3.71	103
EGA Wedgetail	6.65	106	3.91	109
Giles	7.10	113	4.13	115
Rosella	6.35	101	3.90	108
Sentinel	6.98	111	-	-
Strzelecki	5.63	89	3.58	99
Sunbri	5.71	91	3.28	91
Sunsoft 98	7.08	112	3.49	97
Sunzell	4.93	78	3.95	110
Whistler	7.26	115	3.56	99
Wylah	6.62	105	2.81	78
Yenda	7.60	121	-	-
Site mean (t/ha)	6.3		3.6	
CV (%)	7.13		12.7	
LSD (t/ha)	0.74	12	0.75	21

included Yenda, Chara, Pugsley and Giles. Yields in 2005 favoured varieties that had better stripe rust resistance or earlier maturity. Carinya, Ellison, Ventura and H46 were the higher yielding varieties in 2005.

Agronomy for 2007

As can be seen from the NVT results, there are many varieties capable of achieving high yields. However the comparison between 2005 and 2006 highlights that agronomy and management of seasonal factors has a far greater impact on yield than variety choice alone. Below are some of the agronomic issues to consider in 2007.

Disease

It is important to assess the disease risk of each paddock and not to forget sensible crop rotation. As drought can reduce the breakdown of plant residues, inoculum of some diseases will not decrease as expected and will carryover for more than one growing season.

Crown rot is a concern if considering growing wheat on wheat and the risk is even higher for durums. Periods of moisture stress between irrigations in crops late in 2006 could have promoted build up of crown rot. This will have carried over to 2007 due to the dry summer, potentially reducing this season's cereal yields. If in doubt about root diseases soil can be tested for disease pathogens.

Table 2: Yield results from the Benerembah site of the National Variety Trials, 2005 and 2006 for the main-season sown trials (varieties ideally sown after 15 May)

Variety	2006		2005	
	t/ha	% of site mean	t/ha	% of site mean
Annuello	6.55	112	3.81	97
Bolac	6.17	106	-	-
Carinya	5.93	102	4.89	124
Catalina	5.15	88	-	-
Chara	7.30	125	4.00	102
Clearfield Jnz	6.23	107	3.45	80
Correll	6.01	103	3.16	80
Derrimut	6.71	115	3.94	100
Diamondbird	5.67	97	2.86	73
Drysdale	6.06	104	3.23	82
EGA Gregory	5.30	91	-	-
Ellison	5.33	91	4.72	120
GBA Hunter	6.27	107	-	-
GBA Ruby	4.89	84	-	-
GBA Sapphire	6.53	112	3.45	88
Giles	6.91	118	4.21	107
Guardian	6.54	112	-	-
H46	4.62	79	4.55	116
Janz	6.47	111	3.64	93
Kennedy	5.80	99	-	-
Lang	5.79	99	3.33	85
Pugsley	6.87	117	4.10	104
Strzelecki	5.36	92	-	-
Sunstate	4.55	78	-	-
SW Odiel	5.34	91	4.27	109
Ventura	5.93	101	4.65	118
Wyalkatchem	6.61	113	2.00	51
Yenda	7.50	128	-	-
Young	5.85	100	3.84	98
Site mean (t/ha)	5.85		3.93	
CV (%)	7.64		10.14	
LSD (t/ha)	0.77	13	0.65	17

Nitrogen

Where crops and pastures were irrigated in 2006 and reasonable yields obtained, normal nitrogen inputs may need to be used in 2007. An option to consider is to minimise nitrogen inputs at sowing and topdress later once a better idea of the expected season is available.

Phosphorous

It is important to remember that there is only one useful opportunity to supply phosphorus to the crop and that is upfront. Reducing phosphorus inputs to save some costs in 2007 is a strategy that can backfire if left to guesswork. Soil tests should be carried out where there is no recent history of soil testing.

Herbicide residues

With no significant summer rain, and depending on how much irrigation water was applied last year, there may be some carryover of herbicide residue from the 2006 winter season into 2007 – from certain herbicides. This is most significant if barley or broadleaf crops are being considered for 2007.

It will be important to check the herbicide label for details of rainfall requirements, soil pH levels and crop sensitivity for herbicide breakdown and plantback periods. (See article on herbicide residues after drought in this edition, pages 38-42).

Irrigation management

Increasingly farmers are following the '8 Tonne Club' type of recommendations for nitrogen management (as mentioned) and applying the same attention to detail to irrigation scheduling as specialist row croppers. Not only are target yields being met more consistently but top yields for wheat are being pushed beyond 10 t/ha.

In summary

2007 will not be a year in which many irrigators will be able to afford to take risks with their cropping program. It is probably a year to stick with crops and varieties you know you can do well. Try and avoid cutting corners with agronomy and maintain attention to the basics of good plant establishment: sowing time, seedbed preparation, sowing depth. Stick with sound rotations and don't reduce fertiliser inputs without any solid data on which to base your decisions.

Before deciding on which wheat variety to grow and what management is required for 2007, do your sums. It is important to have a look at your farming system and rotation, and set realistic targets for yield and protein, as well as price.

Further information

Rachael Whitworth
T: 02 6960 1318
E: rachael.whitworth@dpi.nsw.gov.au

Andrew Schipp
T: 02 6993 1608
M: 0427 007362
E: andrew.schipp@dpi.nsw.gov.au

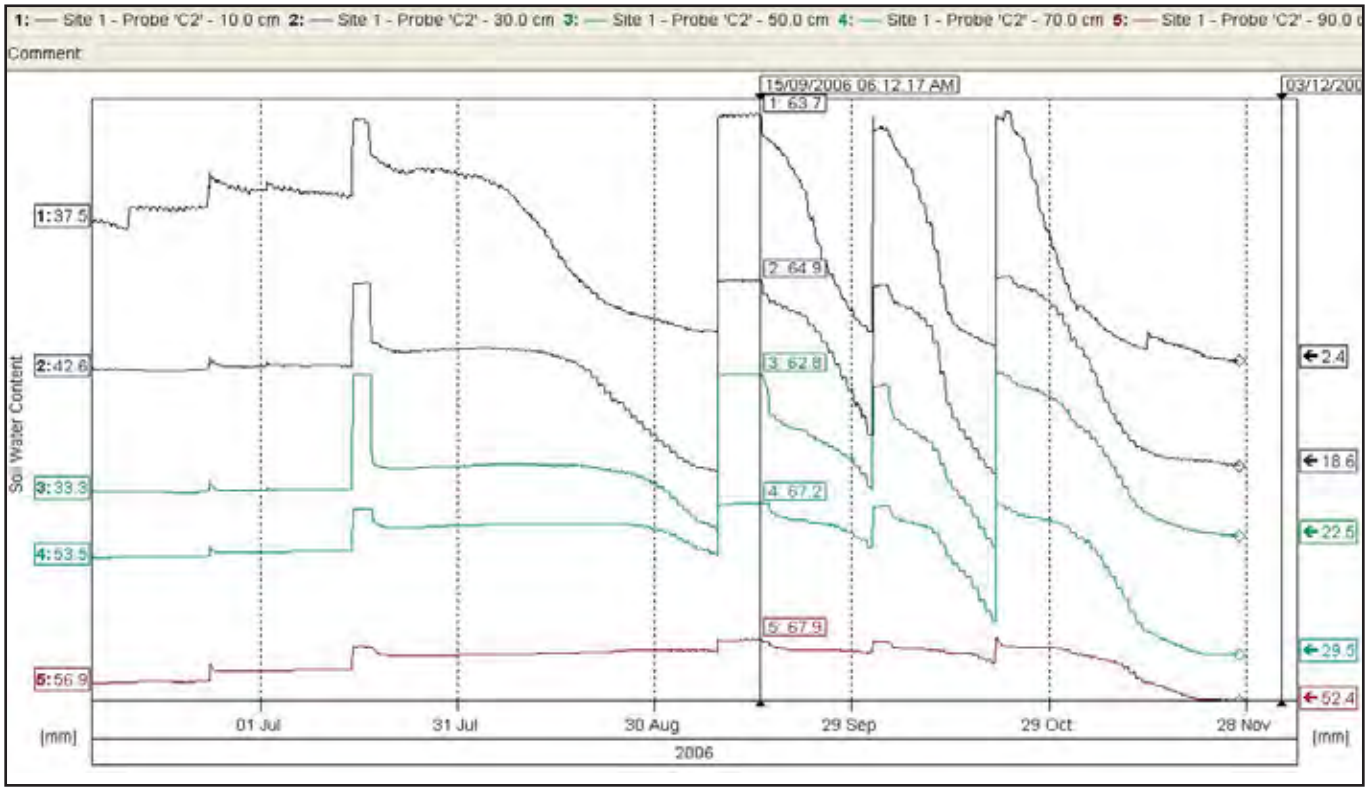

Figure 2: Robert Hoogers (Irrigation Officer, NSW DPI) monitored soil moisture at the Benerembah NVT site in 2006. Of interest with crops that year was the depth that roots penetrated the soil. The chart shows that moisture was being accessed to 90 cm depth by late October, providing a good buffer for periods of high moisture demand. Other crops that were sown late did not develop the root depth that irrigators expected before spring. This meant that some crops were being watered less frequently than ideal (possibly compounded by allocation shortage concerns) resulting in periods of moisture stress at the critical reproductive stage.