

Third crop work gives results

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Key messages:

- The application of N increased yields of all cereals grown on a wheat stubble.
- The application of fungicides controlled leaf diseases in wheat and barley, and increased the grain yield of wheat.

Introduction:

Farmers in southern NSW and NE Victoria have reported that yields achieved from the alternate cereal crops, barley and triticale are almost always lower than those obtained from wheat. The lower yield from barley and triticale is also recorded in a number of regional databases that collect on-farm yields. Lower yields for barley are demonstrated in local variety experiments but the available yield comparison experiments show that triticale should yield better than wheat.

At the same time, they have reported growing a second wheat crop after canola without loss of yield. There has been little experimentation to support the development of yield packages for wheat following wheat after canola.

In 2004, Riverine Plains Inc started a pilot experiment program to examine the options for crops after growing wheat in the commonly used canola and wheat rotation. The program was given the name of the 'Third Crop Program'.

Aims:

- To examine the cereal crop options that could be used after wheat including another wheat crop or growing barley or triticale.
- To start to examine packages for maximising yield from these crops.

Methodology:

The experiment was established on Graeme and Rhonda Hick's farm, "Buccleah Villa" Burrinja on the 2nd June 2004 using equipment supplied by Serve-Ag Research and operated by its local representative and agronomic researcher John Seidel, from Walla Walla. The soil was a Red Chromosol (red loam) with a pH of 5.1 (CaCl₂). Fertilizer included 42 mg/kg of phosphate and 57 kg/ha of Deep Soil Nitrogen prior to sowing.

The varieties used were:

Wheat:	Diamondbird
Barley:	Gairdner
Triticale:	Koscuisko
	Tahara

The treatments imposed on the above are shown in Table 5.

Table 5: Treatments applied to each of the cereals

Number	Treatment Name	Nitrogen Applied (Fungicide Applications)
1	Farm	N 25
2	Farm + Higher N	N 40, (1x Tilt @ Z40)
3	High N	N 60
4	High N plus fungicide	N 60, (2xTilt @ Z30 & Z40)

Results:

Table 6 shows the results of the 2004 experiment. The barley results have not been included because of the amount of weather damage that many of the barley plots experienced between ripening and harvest made yields unreliable. Water use efficiencies (WUE) were generally medium to high.

Table 6: Results of the 2004 Third Crop Experiment

Species	Treatment	Yield (t/ha*)	Protein (%)	Screenings (%)
Wheat (Diamondbird)	1	1.63	9.0	4
	2	2.16	8.7	2
	3	2.62	12.8	5
	4	3.32	13.4	12
Triticale (Koscuisko)	1	2.39	9.3	
	2	2.89	9.1	
	3	3.02	12.0	
	4	3.70	13.5	
Triticale (Tahara)	1	2.17	9.7	
	2	2.63	9.0	
	3	3.01	12.2	
	4	3.05	12.7	

LSD - Yield (0.05) 0.45 t/ha, Protein (0.05) – 3.4%, Screenings (0.05) – 5%

***Notes** – 23 kg/ha of P applied to all plots at sowing as 110 kg/ha of MAP. N applied as MAP at sowing and Urea at Z30. Treatment 2 had Tilt applied at Z40 (heading) to control any stripe rust in the wheat. Seed Dressings - All seeds were dressed. The wheat was treated with Jockey® and the barley and triticale was treated with Baytan®.

The results show:

- Wheat yield rose with applications of nitrogen and fungicide applications.
- Wheat protein rose with extra nitrogen applications.
- Extra nitrogen and the application of two fungicides raised the screenings in wheat.
- Koscuisko triticale yielded better than wheat or Tahara triticale.
- Applications of nitrogen increased the yield of all the cereals.
- Application of two fungicide sprays raised the yield of the wheat and the Koscuisko triticale. It did not raise the yield of the Tahara triticale.
- Due to the low rainfall in 2004, yields were generally low.

Observations taken during the growing season showed that two applications of Tilt® controlled all the leaf diseases of the barley and wheat.

2005 Work

Subject to finances becoming available, the experimental program will be upgraded in 2005 to include:

- Other crops, like canola, lupins and faba beans.
- Additional experimental work to develop the optimal yield for wheat following wheat.
- Additional experimental work to develop the optimal yield packages for the alternate cereal crops.

Sponsors: Riverine Plains Inc.