Seed treatments

Alistair Crawford *(Bayer CropScience) and* ***Kate Ferrier*** *(BCG)*

Take home messages

- *No significant yield or plant establishment differences occurred between seed treatments in this trial at Culgoa in 2010.*
- *Gaucho 350 is now registered in cereals and legumes.*

Background

Controlling diseases and pests each season is important, but in wetter seasons it is vital due to higher incidence of disease. Available seed treatments provide cost effective protection to crops from seed and soil borne diseases such as smuts and bunts. They can give some protection to stripe rust and rhizoctonia. Advances in seed dressing technology have resulted in new active ingredients and formulations which may offer different levels of protection against a greater range of diseases.

This trial compares five different seed treatments. It is designed to test the reasoning behind the new formulations and to identify which product provides better protection against disease and value for money.

Aim

To compare different seed treatments in wheat for protection against disease and cost effectiveness.

Method

This was a replicated trial, conducted at the Main Research Site at Culgoa. Five different seed treatments were selected for this trial plus one control. The seed dressings were applied at label rates prior to sowing (Table 1).

Emergence counts were measured at 3 leaf stage (GS13). Phytotoxicity assessments were conducted throughout the season to assess damage to the plants caused by the seed dressings and/or diseases. Normalised Difference Vegetation Index (NDVI) was measured using a hand held GreenSeeker® (NTech Industries Inc., Ukiah, California) to determine the level of greenness in each treatment after flowering at GS71.

Location:	Culgoa
Replicates:	4
Sowing date:	20 May 2010
Crop type:	Axe wheat
Plant density	140 plants/m^2 (65kg/ha)
Seeding equipment:	knife point, press wheels, 30 cm row spacing.
Fertiliser:	50kg/ha MAP
Rhizoctonia level:	Medium

Table 1. Treatment details and for the seed treatment experiment conducted at Culgoa 2010.

Treatment	Active ingredient	Application Rate (per 100kg seed)	Approximate Cost per 100kg Seed
1. Untreated	-	-	
2. Raxil® T	25g/kgtebuconazole 4g/kg triflumuron	100mL	$2.50
3. Raxil® Pro	250g/L prothioconazole 150g/L tebuconazole	15mL	N/A
4. Hombre®	180g/L imidacloprid 6.25g/L tebuconazole	400mL	$9.50
5.Raxil® Pro + Gaucho® 350	250g/L prothioconazole 150g/L tebuconazole 350g/L imidacloprid	15mL 200mL	N/A $12.00
6. Dividend®	92g/L difenoconazole 23g/L metalaxyl-M	260mL	$11.50

N/A - Not available

Results

A range of measurements was conducted to compare treatments: plant establishment counts, visual estimation of phytotoxicity, NDVI with GreenSeeker and yield. No phytotoxicity differences were observed (assessed 22 June, 28 June and 26 July 2010) between any treatments. Table 2 summarises the assessments taken during the year.

Table 2. Assessment results taken throughout the season (establishment counts, NDVI and yield).

Treatment	Plant counts (/m^2)	NDVI GS71	Yield (t/ha)	Harvest Yield % Rel.
Untreated	123	0.26	3.3	100.0
Raxil T	123	0.30	3.4	102.4
Raxil Pro	129	0.29	3.4	104.3
Hombre	128	0.29	3.4	101.9
Raxil Pro + Gaucho 350	119	0.31	3.5	104.9
Dividend	127	0.30	3.5	107.1
Sig. diff **LSD (P=0.05)** **CV %**	**0.44** **NS** **6%**	**0.106** **NS** **8.07%**	**0.167** **NS** **3.6%**	

Crop establishment counts measured (Figure 1) illustrate the different establishment achieved from the different seed dressings. There were no significant differences in crop establishment between seed treatments.

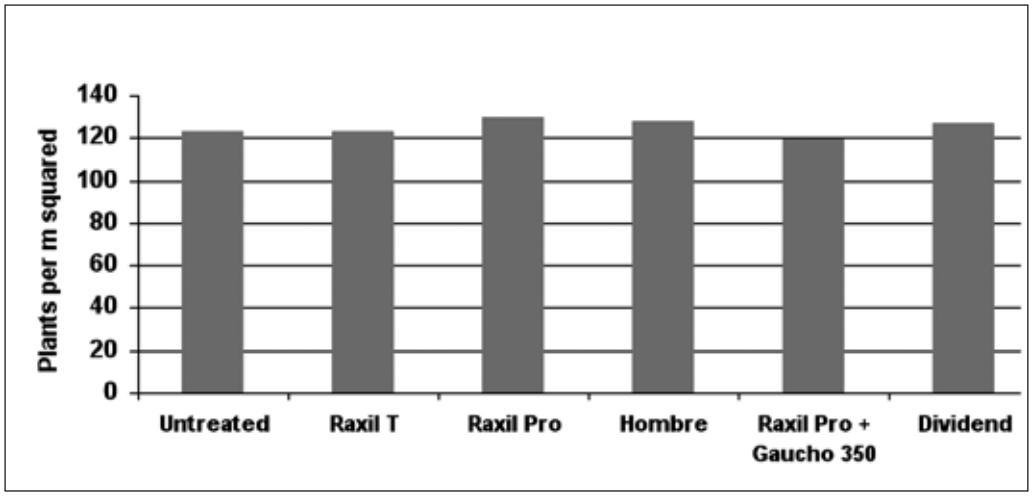

Figure 1. Effect of seed treatment on crop establishment (plants /m^2).

Mean wheat yields shown in Figure 2 showed no significant differences between treatments. Though not reflected in the results, the Dividend plots appeared healthier (darker green) in visual assessments conducted throughout the season. However, there was no significant difference in NDVI between the treatments.

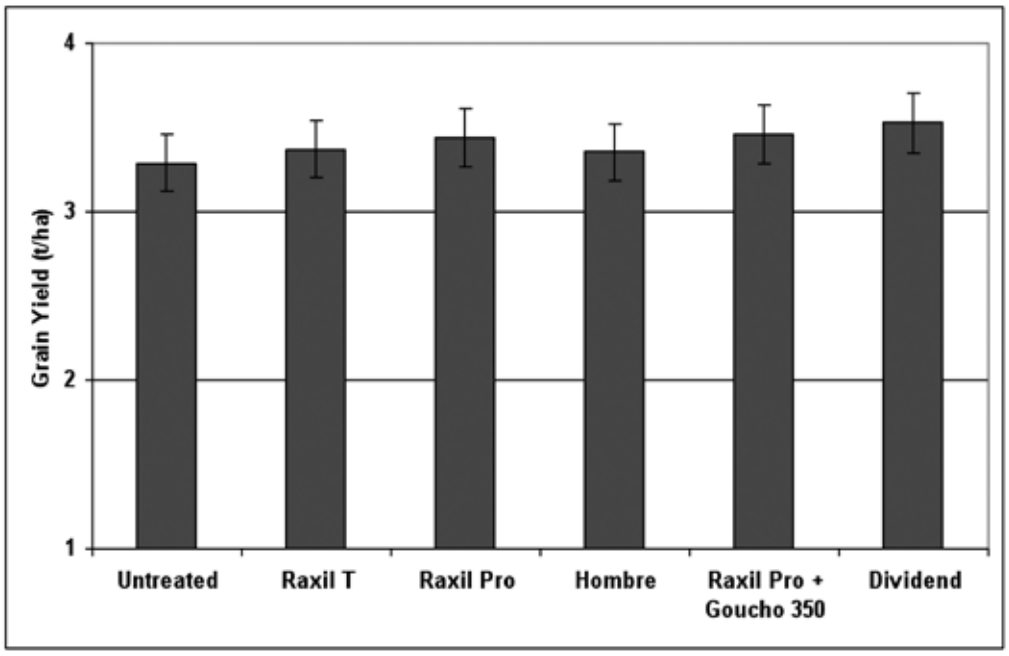

Figure 2. Effect of seed treatment on average wheat yield (t/ha).

Interpretation

There were no significant differences in crop establishment or yield measured between the seed treatments and the control.

The seed treatments used in this trial each have different formulations. Raxil T and Raxil Pro are formulated to control smuts and bunts and can be used in combination with Impact, Jockey or Stayer for stripe rust suppression. Raxil Pro is a new product due to be registered for the 2012 season. Hombre and Gaucho 350 are formulated to control aphids and reduce the spread of barley yellow dwarf virus. Gaucho 350 is a formulation of imidacloprid, designed specifically for on-farm and seed grader use and is registered for both cereals and legumes. Low

aphid pressure and lower stress in this season meant no yield differences could be identified. Dividend is formulated to control pythium root rot and suppresses rhizoctonia at this rate.

With a moderate amount of rhizoctonia at this site, Dividend may have delivered some benefit to the crop early in season by suppressing the disease. However, with no significant difference observed between treatments, this did not translate into yield. It should be noted that at sowing time a high rate of MAP was applied at 50kg/ha (to a site that had good phosphorous reserves). This may have assisted the roots to establish a dense root zone and hence out grow the rhizoctonia.

In this trial there was no benefit from the seed dressing over the control, most likely because the target diseases were not present at the site during the year. Considerations must be given for subsequent years following use of untreated seed where disease build up may occur.

Product choice depends on paddock history (PreDicta B test can help with this), farmer programs, variety and disease threats. Barley leaf scald and stripe rust must also be considered in these decisions. It is suggested that, at a minimum, all growers use a smut and bunt product on their seed.

Acknowledgments

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An application for registration of Raxil Pro has been made. At the time of publication this product was not registered.