



# AgGrow

AGRONOMY + RESEARCH



## SEED DRESSING TRIAL

Rankins Springs, 2017

INDEPENDENT AGRONOMY ADVICE + CUTTING EDGE RESEARCH

# Importance of seed dressings in wheat

## KEY POINTS

- Growing conditions in 2017 were characterised by severe frosts and below average growing season rainfall.
- Despite the moisture stress experienced during grain fill in 2017, the incidence of disease, such as crown rot, was very low.
- The benefits of using softer seed dressings, such as Rancona® Dimension, were evident on wheat seedling establishment, health and vigour.
- The seed treatment Baytan significantly affected establishment and crop vigour, with the lowest establishment score, greatest reduction in crop vigour, lowest NDVI at flowering and lowest grain yield.

## BACKGROUND

Seed dressings for the control of smuts and bunts are recommended to be applied to all wheat crops prior to sowing. There are a range of seed dressings now available, some of which also suppress a variety of wind or stubble borne diseases.

Rancona Dimension has been trialled the last few seasons and has shown to be an effective tool in helping manage disease including crown rot. Given its performance it is now widely recommended and used by Ag Grow Agronomy and Research clients.

With new options available it is important to be able to compare and enhance the performance of our seed dressings.

## TRIAL DETAILS

A trial was established in southern New South Wales at Michael Pfitzner's, Rankins Springs in May, 2017 in conjunction with Arysta LifeScience.

The aim of the trial was to evaluate and compare the performance of new and existing seed treatments and combinations, including Rancona® Dimension in wheat.

The trial was sown on 9<sup>th</sup> May, using Cobra wheat at 30 kg/ha with 60 kg/ha MAP and 90 kg/ha urea IBS. It was sown after a long fallow.

It consisted of 12 treatments, including an untreated control (Table 1). It was set out in a randomised block design, with treatments replicated three times. Plot sizes were 11m by 1.75m (19.25m<sup>2</sup>).

The trial was harvested on 24<sup>th</sup> November, 2017.

### 2017 Conditions:

The 2017 season was a relatively dry one, with 345mm of rain falling, compared to the long term average rainfall of 402mm. Growing season rainfall was well below average with only 92mm falling from 1<sup>st</sup> April to 30<sup>th</sup> September, compared to a long term average of 201mm.

Frosts throughout August were prolific with temperatures getting as low as -4.7°C on the 20<sup>th</sup> and -5.2°C on the 28<sup>th</sup> August in the paddock (data taken from temperature loggers at wheat head height in a semi enclosed plastic drum at Rankins Springs). These frost events were 11 hours and 12 hours in duration, respectively.

Table 1: Treatment and product list for the seed dressing trial.

Treatment No.	Treatment
Trt 1	Nil
Trt 2	Rancona® Dimension at 80 ml/100kg seed
Trt 3	Rancona® Dimension at 200 ml/100kg seed
Trt 4	Rancona® Dimension at 320 ml/100kg seed
Trt 5	Rancona® Dimension at 200 ml/100kg seed + Gaucho® 600 at 200 ml/100kg seed
Trt 6	Rancona® Dimension at 80 ml/100kg seed + Gaucho® 600 at 200 ml/100kg seed
Trt 7	Baytan at 150 ml/100kg seed
Trt 8	Systiva® at 150 ml/100kg seed
Trt 9	Evergol® Energy at 260 ml/100kg seed
Trt 10	Rancona® Dimension at 200 ml/100kg seed + Zn (Zincflo plus at 3 L/t seed)
Trt 11	Rancona® Dimension at 200 ml/100kg seed + Uniform® at 400 ml/ha (liquid inject)
Trt 12	Arysta experimental treatment

**Products:**

- Rancona® Dimension (*ipconazole 25 g/L + metalaxyl 20 g/L*)
- Baytan (*triadmenol 150 g/L + triflumuron 4 g/L*)
- Gaucho® 600 (*imidacloprid 600 g/L*)
- Systiva® (*fluxapyroxad 333 g/L*)
- Evergol® Energy (*penflufen 38.4 g/L + prothioconazole 76.8 g/L + metalaxyl 61.4 g/L*)
- Uniform® (*azoxystrobin 322 g/L + metalaxyl-m 124 g/L*)

## RESULTS AND DISCUSSION

Establishment, vigour reduction, NDVI at flowering, plant health at grain fill and grain yield and quality were all assessed and statistically analysed .

### 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 5<sup>th</sup> June, when the crop was around the 2 to 3 leaf stage, figure 1.

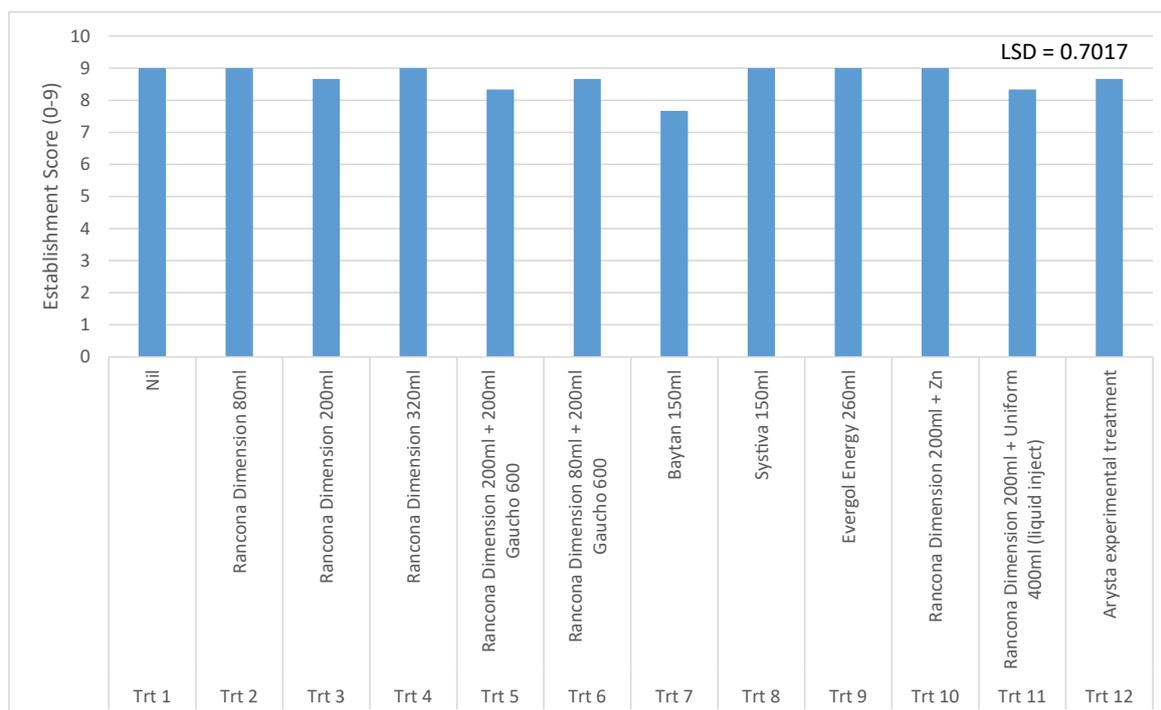
The average establishment score was 8.69, with scores ranging from 7.6 to 9.0. Treatment 7, Baytan at 150ml, had the lowest establishment score, which was significantly lower than all other treatments (figure 2).

The results show the benefits in establishment and seedling growth of using a softer seed dressing, such as Rancona Dimension.

Figure1: Establishment of the trial, June 2017



Figure 2: Establishment Score, taken 5<sup>th</sup> June 2017 at 2-3 leaf stage - LSD(p=0.05) = 0.7017



### Vigour Reduction:

A crop vigour score and percent vigour reduction were also assessed at establishment. This included any visual crop effects such as colour and overall plant health.

Vigour scores at establishment ranged from 7.33 to 9, with an average vigour score of 8.58. Again the benefits of using a softer seed dressing were

observed. Treatment 7 (Baytan at 150ml) had the greatest effect on crop vigour early, with vigour significantly lower than all other treatments, with the exception of treatment 5, Rancona Dimension 200ml + 200ml Gaucho 600 (table 2).

Vigour reduction followed the same pattern with treatment 7 (Baytan at 150ml) having the greatest vigour reduction with 8.33%, significantly greater than all other treatments.

Table 2: Vigour Assessments, taken 5<sup>th</sup> June 2017

Treat No	Treatment	Vigour Score	Vigour Reduction (%)
Trt 1	Nil	8.667	0
Trt 2	Rancona Dimension 80ml	8.667	0.67
Trt 3	Rancona Dimension 200ml	9	0
Trt 4	Rancona Dimension 320ml	9	0
Trt 5	Rancona Dimension 200ml + 200ml Gaucho 600	8	4
Trt 6	Rancona Dimension 80ml + 200ml Gaucho 600	8.667	0.67
Trt 7	Baytan 150ml	7.333	8.33
Trt 8	Systiva 150ml	9	0
Trt 9	Evergol Energy 260ml	8.667	0.67
Trt 10	Rancona Dimension 200ml + Zn	9	0
Trt 11	Rancona Dimension 200ml + Uniform 400ml (liquid inject)	8.333	2.33
Trt 12	Arysta experimental treatment	8.667	0.67
	<i>Mean</i>	8.583	1.44
	<i>l.s.d. (p=0.05)</i>	0.7658	2.347

### NDVI at Flowering:

Crop biomass was measured around flowering using a hand held NDVI. At this stage no disease was observed, although the effects of the frosts were evident on plant growth, impacting on the results.

Measurements were taken on 26<sup>th</sup> September 2017 at flowering, figure 3. There was no statistical difference for NDVI values.

The average NDVI value was 0.4543, ranging from 0.413 for treatment 7 (Baytan 150ml) to 0.4967 for treatment 8 (Systiva 150ml).

Figure 3: NDVI taken late September, 2017



Figure 4: Visual disease symptoms observed in the trial during grain fill.

### Plant Health/Disease Assessment:

A visual assessment of disease, including whiteheads, crown discolouration, grain size and grain fill was under taken on the trial on 25<sup>th</sup> October, 2017 during grain fill.

As 2017 was a challenging year with severe frost and dry conditions, whiteheads attributed to the season were not included in this assessment.

The expression of crown rot is favoured by moisture/temperature stress during grain-fill. Crown rot was prevalent throughout the district in 2017, particularly in more susceptible durum wheat.

Whilst some crown rot was observed in the trial with whiteheads and basal browning observed on tillers and a few plants, figure 4, the expression of disease was very low in the trial.

With the incidence of disease in the trial very low, there were no significant difference between treatments for disease.

The average disease score was 0.31, with all treatments having a disease score of less than 1. Half of the treatments only had a few tillers or plants showing signs of disease.



## Grain Yield & Quality:

Figure 5 shows the trial ready for harvest.

### Grain yield

There were no significant differences between treatments for grain yield.

The average grain yield of this trial was 2.53 t/ha. Yields in the trial ranged from 2.18 t/ha, for treatment 7 (Baytan 150ml) to 3.03 t/ha for treatment 3 (Rancona Dimension 200ml).

### Grain quality

Grain protein was not statistically analysed.

The average grain protein for this site was 13.36%. Grain protein ranged from 12.6%, for treatment 10 (Rancona Dimension 200ml + Zn), up to 14.07% for treatment 1 (Nil).

Grain yield and quality is shown in table 3.

Table 3: Grain yield and quality of the trial

TreatNo	Treatment	Grain Yield (kg/ha)	Grain Protein (%)
Trt 1	Nil	2249	14.06
Trt 2	Rancona Dimension 80ml	2559	13.93
Trt 3	Rancona Dimension 200ml	3026	13.2
Trt 4	Rancona Dimension 320ml	2708	13.63
Trt 5	Rancona Dimension 200ml + 200ml Gaucho 600	2500	13.4
Trt 6	Rancona Dimension 80ml + 200ml Gaucho 600	2571	14.03
Trt 7	Baytan 150ml	2175	13.47
Trt 8	Systiva 150ml	2740	13.07
Trt 9	Evergol Energy 260ml	2798	12.87
Trt 10	Rancona Dimension 200ml + Zn	2400	12.6
Trt 11	Rancona Dimension 200ml + Uniform 400ml (liquid inject)	2334	13.17
Trt 12	Arysta experimental treatment	2271	12.9
	Mean	2527	13.36
		ns	not analysed

Figure 5: Seed dressing trial before harvest, November 2017





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