



RRAPL Technical Report BioAg Rice Trial 2014/2015

Jerilderie	2014/2015
Location	Year
Rice Research Australia	Rice
Conducted by	Crop
Replicated	
Trial Type	

Aim

To see if BioAg can increase yield and gross margins of rice compared to the standard farmer practice of commercially grown rice in Southern NSW.

Materials and method

The trial was undertaken at Rice Research Australia Pty Ltd research farm at Jerilderie NSW in Entire 3, Bay 1.

Soil tests were taken prior to establishment of the trial at a 0-10cm depth. Table 1 indicates the results of the soil samples taken prior to the trial being undertaken.

The treatment and one SFP or control as in described in Table 2 were applied and replicated 4 times in plots that measure twelve meters by three meters.

250kg/ha Urea, 125kg/ha MAP + Zn 1% were applied prior to sowing. Sherpa, a bold medium grain variety was direct drill sown at a rate of 150kg/ha on 10th of October 2014.

BioAg *Soil & Seed* was applied at sowing as per rates in Table 2.

Plant analysis samples were taken at Panicle initiation (PI) for NIR tissue test to determine amount of nitrogen required to be applied at PI. NIR tissue test results in Table 3 show the amount of N that was applied for optimal crop production.



The trial was harvested once fully mature using a plot harvester. Each plot was individually harvested using a 1.56 meter header front and harvesting the center of the plot. The samples were then individually weighed and had moisture readings taken with a grain spec analysis machine. The raw data was analysed using ANOVA.

Table 1 – Soil test results for Entire 3 pre sowing BioAg Trial

Paddock Name	Entire 3
Sample Depth (cm)	0-10
Soil texture	Clay Loam
Soil colour	Brown Grey
pH (1:5 CaCl ₂)	5.5 - Satisfactory
pH (1:5 H ₂ O)	6.5 - Satisfactory
EC (1:5 H ₂ O) dS/m	0.07 - Satisfactory
EC (se) (dS/m)	0.5 - Satisfactory
EC (se) (dS/m) (Cladj)	0.4 - Satisfactory
Chloride (1:5 H ₂ O) mg/kg	26 - Satisfactory
Electrochemical Stability Index	0.013 - Too Low
Organic carbon (Walkley Black) %	0.93 - Low
Nitrate nitrogen (KCl) mg/kg	4 - Low
Ammonium nitrogen (KCl) mg/kg	4 - Sufficient
Phosphorus (Colwell) mg/kg	30 - Marginal
Phosphorus Buffer Index (PBI)	155 - Satisfactory
Potassium (Colwell) mg/kg	236
Potassium (BaCl ₂ /NH ₄ Cl) cmol+/kg	0.61 - Sufficient
Sulfur (KCl-40) (mg/kg)	11.3 - Sufficient
Calcium (BaCl ₂ /NH ₄ Cl) cmol+/kg	6.55 - Sufficient
Calcium Carbonate %	0.3 - Sufficient
Magnesium (BaCl ₂ /NH ₄ Cl) cmol+/kg	9.47 - Sufficient
Magnesium % of CEC Group	53.9
Sodium (BaCl ₂ /NH ₄ Cl) cmol+/kg	0.94 - Sufficient
Aluminium (KCl) cmol+/kg	0.04 - Sufficient
eCEC cmol+/kg	17.6 - Satisfactory
Exch Hydrogen (KCL) cmol(+)/kg	0.03
Sodium % cations	5.4 - Satisfactory
Dispersion Index (Loveday/Pyle)	0 - Satisfactory
Copper (DTPA) mg/kg	3.30 - Sufficient
Zinc (DTPA) mg/kg	0.53 - Sufficient

Table 1 – Soil test results for Entire 3 pre sowing BioAg Trial *continued*

Paddock Name	Entire 3
Manganese (DTPA) mg/kg	30.5 - Sufficient
Iron (DTPA) mg/kg	156.1
Boron (hot CaCl ₂) (mg/kg)	1.5 - Sufficient
Phosphorus Environmental Risk Index	0.20 - Satisfactory
Sodium: Potassium Ratio	1.55 - Satisfactory

Reference: CSBP Soil & Plant Laboratory, backpaddock.com.au 2014

Table 2 – Treatments for BioAg trial at RRAPL

Treatment	Application	Timing
Control Treatment 1	Standard farmer practice	As per industry standard
	Standard farmer practice + 10L/ha BioAg Soil & Seed [®]	Treatment at planting

Table 3 – PI top dressing rates as per PI results for SFP and Treatments 1 & 2

Treatment	SFP	1
Nitrogen %	1.89	1.82
Potassium %	2.7	2.8
Phosphorus %	0.339	0.337
Sulphur %	0.151	0.151
NITROGEN UPTAKE @ PI (kgN/ha) DEEP WATER	93	145
N Rate (kg N/ha)	90	0
Urea Rate (kg/ha) SHALLOW WATER	196	0
N Rate (kg N/ha)	60	0
Urea Rate (kg/ha)	130	0

Table 3 indicates that amount of N rate and Urea rate applied according to the PI results and the recommendations. According to Rice check 2012 (DPI NSW 2012) if the N uptake in Sherpa in deep water at microspore is greater than 140 no top dressing is required at PI.

Results

There was no significant effect of the treatments on yield or height (Table 4).

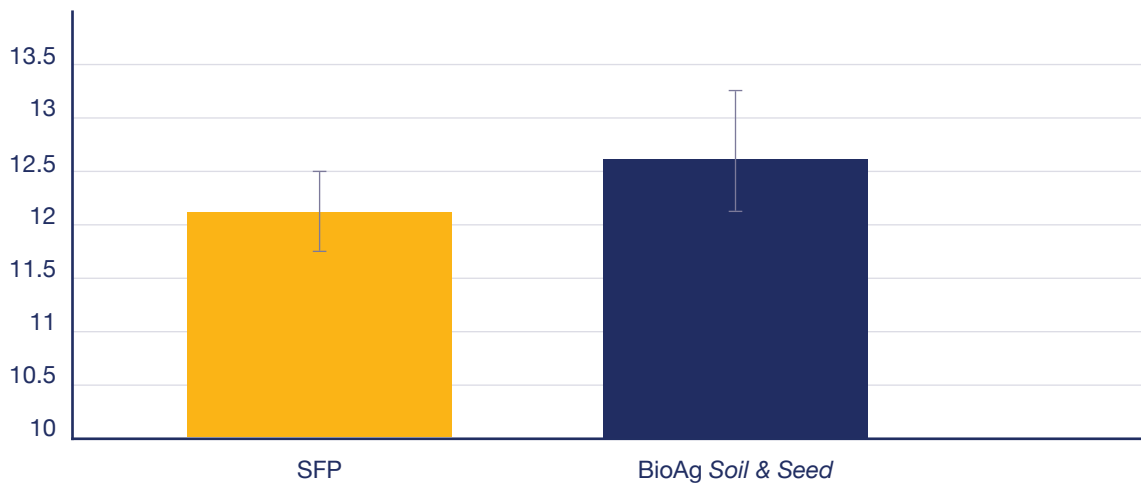
Table 4

Treatment	Yield (t/ha)	Height (cm)
Control Standard Farmer Practice	12.13	78
BioAg Soil & Seed	12.68	79
F-Statistic	1.24	0.30
p-value	0.35	0.75
LSD	ns	ns

Table 4 – Height versus Yield

Table 4 indicates that there was no significant effects of treatments on yield or height.

*Graph 1 – Yield versus Treatment
Treatment vs. Mean Dry Yield T/Ha*



Treatment Co-efficient of variation = 3.95

Graph 1 indicates the differences between yield and treatments.



Gross Margin Analysis

Table 5 indicates there was a \$197/ha increase in gross margin by incorporating BioAg Soil & Seed into the cropping system. BioAg Soil & Seed also increased the return per mega litre by \$15/ML.

Table 5 – Gross Margin Analysis

Irrigated Crop Gross Margin Budget				
Enterprise Name	RRAPL BioAg Trial	Location	Jerilderie	
Enterprise Unit	1 Hectare	Date	2015	
			SFP	Soil & Seed
Yield mt/ha			12.13	12.68
Price/mt			\$350.00	\$350.00
Income			\$4246.00	\$4438.00
		Total Income (A)	\$4246.00	\$4438.00
Variable Costs				
Cultivation	Rate	Price/unit		
Disc		\$15.00/ha	\$15.00	\$15.00
Wide Board		\$7.50/ha	\$7.50	\$7.50
Knock Down Herbicide				
Glyphosate	1.50L/ha @	\$7.00/L	\$10.50	\$10.50
Ester	1.00L/ha @	\$12.00/L	\$12.00	\$12.00
Spray boom		\$15.00/ha	\$15.00	\$15.00
Seed				
Sherpa	150kg/ha @	\$0.45/kg	\$67.50	\$67.50
MAP = 1% Zn	125kg/ha @	\$650.00/T	\$81.25	\$81.25
Sowing		\$55.00/ha	\$55.00	\$55.00
Urea	250kg/ha @	\$450.00/T	\$112.50	\$112.50
Urea Top Dress	130kg/ha @	\$450.00/T	\$58.50	
Spread fertiliser ground rig		\$15.00/ha	\$15.00	\$15.00
Spread fertiliser plane		\$20.00/ha	\$20.00	
BioAg Soil & Seed	10L/ha @	\$6.00/L		\$60.00

Table 5 – Gross Margin Analysis *continued*

Variable Costs				
Herbicide	Rate	Price/unit		
Gromoxone	0.80L/ha @	\$7.00/L	\$5.60	\$5.60
Magister	0.40L/ha @	\$102.00/L	\$40.80	\$40.80
Stomp	3.20L/ha @	\$10.50/L	\$33.60	\$33.60
Spray boom		\$15.00/ha	\$15.00	\$15.00
Herbicide				
Barnstorm	1.00L/ha @	\$90.00/L	\$90.00	\$90.00
Uptake	0.80L/ha @	\$7.50/L	\$6.00	\$6.00
Spray boom		\$15.00/hr	\$15.00	\$15.00
Irrigation	12.50ML/ha @	\$125.00/ML	\$1562.50	\$1562.50
Harvesting				
Header		\$50.00/ha	\$50.00	\$50.00
Chaser bin		\$10.00/ha	\$10.00	\$10.00
Charges related to yield				
Cartage		\$23.00/mt	\$278.99	\$291.64
Levies		\$3.00/mt	\$36.39	\$38.04
		Sub Total	\$2613.63	\$2609.43
		Total Variable Costs (B)	\$2614.00	\$2609.00
		Approx. breakeven yield	7.47	7.46
		Gross Margin/ha (A-B)	\$1632.00	\$1829.00
		Gross Margin/ML	\$131.00	\$146.00



Conclusion and Recommendations

The trial achieved its aim of assessing the benefits of the trialed products BioAg *Soil & Seed*. The ANOVA statistical results identified no significant effect of the treatments on height or yield in rice. However the economic analysis indicated there was an increase in both return per hectare and mega litre by using BioAg *Soil & Seed* over standard farmer practice. As this is the first year of trials it is advisable to undertake further trials and economic analysis to take into account seasonal differences which will enable an average to be obtained.

More Information

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Reference

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