Evaluate the effects of Amino Boost Transit Max performance in improving crops in non-wetting soils.

1. Introduction

Non-wetting soil, also known as hydrophobic soil, is a condition where the soil repels or resists water infiltration. In non-wetting soils, water tends to bead up or run off the surface instead of being absorbed into the soil profile. This occurs due to the presence of waxy substances, such as hydrophobic organic compounds or coating on soil particles, which inhibit the penetration and spread of water. ABTM is a premium quality plant bio-stimulant that assists in increasing root uptake, root growth, and translocation of nutrients and promotes the availability of sufficient nutrients throughout the complete growing season. ABTM not only improves the nutrient status in plants but also increases plant tolerance to abiotic stresses such as heat and water stress whilst also strengthening plant growth and yield development. In this study, treatments were applied as a liquid injection during seeding at different rates of Amino Boost Transit Max (ABTM). The aim of this trial was to assess the performance of ABTM in non-wetting, moisture-repellent soils.

2. Project aim

To evaluate the effects of liquid injection of Amino Boost Transit Max on improving Barley crop performance in non-wetting soils.

2.1. Project objectives

To assess the yield quality parameters of treated and control plants:

a) Evaluation of barley yield and yield quality
b) Visually compare the crop growth at different growth stages

3. Material and Methods

Site Selection and Trial Design

The trial was conducted in Parilla, South Australia. Treatment application was made once during the seeding as a liquid injection. There were four treatments in this trial.

Treatment	Application Rate (L/ha)
Control	N/A
T1	2L/ha ABTM
T2	4L/ha ABTM
T3	6L/ha ABTM

Table 1: Treatments and application rates of Amino Boost Transit Max

4. Observations

Visual Comparison of Plant Growth

Plants were randomly uprooted from each treatment at different growth stages. An equal number of plants from each treatment were then placed, and photographs were taken to observe any visual noticeable variations in their growth pattern.

Yield

To evaluate the effects of each treatment on enhancing Barley yield, the yield of each plot was recorded during the commercial harvesting period. This was done to measure the impact of the treatments on the overall productivity of Barley.

ROI

ROI calculation was done by using the barley yield in each treatment and the total cost including application cost and chemical cost.

5. Results

Figure 1: Visual comparison of plant growth in each treatment at different growth stages

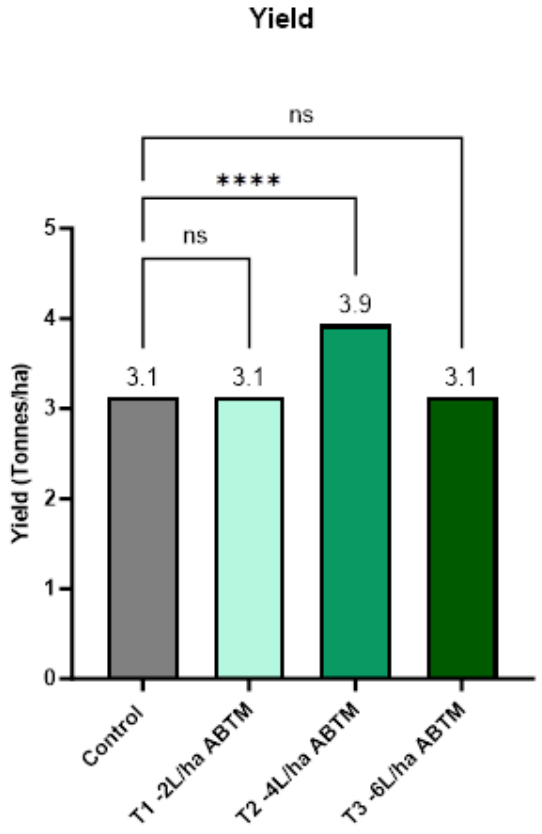

Figure 2: Effectiveness of different rates of Amino Boost Transit Max on improving yield in Barley.

Table 1: Barley yield and Return on Investment (ROI) of each treatment.

Treatment	Yield (Tonne/ha)	Yield value	Treatment Cost ($/ha)	Net Return	Net Improvement	ROI
Control	3.125	821.47	0	821.47	N/A	N/A
T1 - 2L/ha	3.125	821.47	8	813.47	-8.00	-1.00
T2 - 4L/ha	3.937	1034.92	16	1018.92	197.45	12.34
T3 - 6L/ha	3.125	806.25	24	782.25	-39.22	-1.63

* Barley price: $262.87/tonne (grade: bar 2), $258/tonne (Grade: Bar 3)

6. Conclusion

Using Amino Boost Transit Max at rates of 2L/ha and 6L/ha resulted in enhanced crop growth during the early stages. However, during the later stages, it was observed that applying Amino Boost Transit Max at a rate of 6L/ha led to superior visual crop growth compared to all other treatments. Additionally, the 6L/ha application rate of Amino Boost Transit Max significantly increased barley yield in comparison to other treatments. Moreover, it generated the highest Return on Investment (ROI) of 12.34. Hence, it can be concluded that applying Amino Boost Transit Max at a rate of 6L/ha is advantageous for improving barley yield and maximizing ROI in non-wetting soil.

7. Appendix

	Compass Barley 9 tynes wide by 400m strips				
Assessments	Contol	T1 - 2L	T2 - 4L	T3 - 6L	Comments
yield / strip	250kg	250kg	280kg	250kg	T2 - yield taken from 8 tynes only.
Est Yield / Ha	3125kg	3125kg	3937.50kg	3125kg	
Grade	Bar 2	Bar 2	Bar 2	Bar 3	
Test Weight	306.63	308.99	305.59	304.34	
Protein	9.2	9.1	10.1	10	
Moisture	9.9	10.1	9.9	9.9	
Colour	57.1	57.3	55.8	56.8	
Renention	297.11	299.44	292.64	282.34	
Screenings	2.51	2.33	3.13	6.26	
Snails	2	2	2	5	T3 - Bar 3 due to excess snails
Foreign grains	0	0	0	0	
Skinnings	3 large catapillars	0	0	0	
Type 8	232BR 2ROS	21BR	39BR 7ROS	47BR, 8ROS	
Additional	SS 4RG (0.25%)	SS 0.25 RG	SS 0.25 RG	SS 0.25 RG	
Price / tonne ex Lameroo	$ 262.87	$ 262.87	$ 262.87	$ 258.00	
Gross / Ha	$ 821.46	$ 821.46	$ 1,035.05	$ 806.25	
Treatment Cost	$ -	$ 8.00	$ 16.00	$ 24.00	
Nett Return / Ha	$ 821.46	$ 813.46	$ 1,019.05	$ 782.25	
ROI			63.69 to 1		