



## TRUESOLUM® IN CONCERT WITH BACTERIAL INOCULANT

### OBJECTIVE

The objective of this study was to assess the compatibility and synergistic effects of TrueSolum® (TS) with the inoculant *Bradyrhizobium japonicum* (Brady), compared to a competitor's product (hereinafter referred to as "AT"), also with the inoculant.

### TREATMENTS

- 1 (Control): Only soil without seed treatment
- 2 (Brady 1 mL): Brady at 1 mL/1 kg seed
- 3 (Brady 2 mL): Brady at 2 mL/1 kg seed
- 4 (Brady+TS-1 mL): Brady at 1 mL/1 kg seed + TS at 1 mL/1 kg seed
- 5 (Brady+TS-2 mL): Brady at 2 mL/1 kg seed + TS at 2 mL/1 kg seed
- 6 (Brady+AT-1 mL): Brady at 1 mL/1 kg seed + AT at 1 mL/1 kg seed
- 7 (Brady+AT-2 mL): Brady at 2 mL/1 kg seed + AT at 2 mL /1 kg seed

### OVERVIEW

The study aimed to evaluate the impact of soil conditioners on nitrogen-fixing bacteria efficiency in enhancing soybean growth. Two products and an inoculant were tested at different dosages. The trial was conducted in Paraná, Brazil, using a randomized design with five replications and seven treatments in pots. Seeding and inoculation were done on July 18, 2023, with data collection on August 30, 2023. Manual irrigation was provided daily in a greenhouse environment.

### RESULTS

The findings underscored the significant enhancement in plant biomass and root development achieved through the synergistic interaction of TrueSolum® and Brady, highlighting its efficacy in promoting **optimal plant growth and nutrient absorption**.

**Increased Plant Biomass:** When Brady was applied at concentrations of 1 mL and 2 mL, it led to notable increases in both fresh shoot mass (FSM) and dry shoot mass (DSM). However, when combined with TrueSolum® at 2 mL dosage, this effect was significantly amplified, resulting in an impressive 23% increase in FSM and a substantial 14% increase in DSM compared to the control group.

**Table 1** - Attributes of soybean plant aerial parts (36 DAE) under different concentrations (1 mL and 2 mL) of inoculant Brady and with different doses (1 mL and 2 mL) of soil conditioners.

Treatments	Plant Height (cm)	Fresh shoot mass (g)	Dry shoot mass (g)
1 Control	25,6 a	3,28 ab	0,84 ab
2 Brady 1 mL	27,0 a	3,13 b	0,77 b
3 Brady 2 mL	26,0 a	3,51 ab	0,80 ab
4 Brady+TS1mL	27,8 a	3,80 ab	0,90 ab
5 Brady+TS2mL	27,8 a	4,05 a	0,96 a
6 Brady+AT1mL	27,2 a	3,78 ab	0,91 ab
7 Brady+AT2mL	25,4 a	3,26 ab	0,88 ab
Coefficient of Variation (CV)%	6,12	7,36	13,98



Manufactured by GreenTech Ventures, Inc.

[contact@truealgae.com](mailto:contact@truealgae.com)

[www.truealgae.com](http://www.truealgae.com) | [www.truesolum.com](http://www.truesolum.com)



REVISION DATE: 03/28/2024

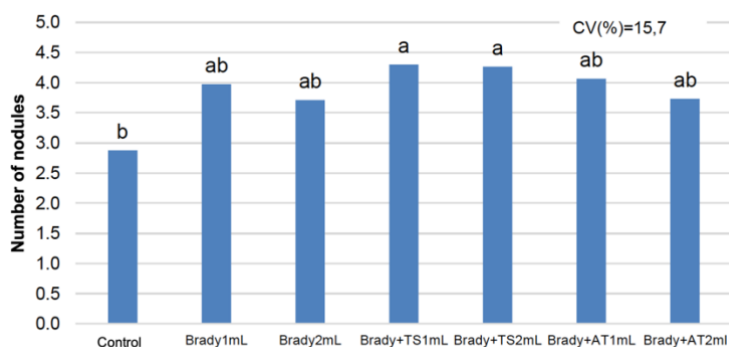
**Root Volume:** Treatments combining the inoculant with soil conditioners (Brady+TS 1 mL, Brady+TS 2 mL, Brady+AT 1 mL, Brady+AT 2 mL) showed a significant increase in RV, with the Brady+TS 2 mL treatment reaching the highest volume (7.4 mL). This suggests a synergy between the inoculant and soil conditioners, enhancing root growth.

**Table 2** - Attributes of the root system of soybean plants (36 DAE) under different concentrations (1 mL and 2 mL) of inoculant Brady and with different doses (1 mL and 2 mL) of soil conditioners.

Treatments	Root volume (mL)	Root length (cm)	Fresh root mass (g)	Dry root mass (g)
1 Control	5,4 bc	40,2 a	2,15 bc	0,476 a
2 Brady 1 mL	3,8 c	39,8 a	1,36 c	0,377 a
3 Brady 2 mL	5,6 ab	43,2 a	3,32 a	0,48 a
4 Brady+TS 1 mL	5,8 ab	44,2 a	2,74ab	0,437 a
5 Brady+TS 2 mL	7,4 a	42,6 a	3,67 a	0,523 a
6 Brady+AT 1 mL	6,8 ab	43,0 a	3,45 a	0,397 a
7 Brady+AT 2 mL	6 ab	40,0 a	1,95 bc	0,537 a
Coefficient of Variation (CV)%	22.4	26.7	26.6	24.4

**Nodulation:** The study also examined the nodulation results, which play a vital role in nitrogen fixation. The treatments involving TrueSolum®, with and without Brady, demonstrated significant improvements in nodule numbers (NN) compared to the control group. Particularly, the combination of Brady with TrueSolum® at both 1 mL and 2 mL dosages resulted in higher NN. The treatment of TrueSolum at 2 mL dosage exhibited an impressive 48% increase in nodules compared to the control group.

**Figure 1** - Number of nodules on the root crown (8 cm) of soybean plants (36 DAE) under different concentrations (1 mL and 2 mL) of inoculant Brady and different doses (1 mL and 2 mL) of soil conditioners.



## CONCLUSIONS

These findings emphasize the synergistic relationship between our product, TrueSolum®, and *Bradyrhizobium japonicum*, illustrating their combined potential to enhance nitrogen-fixing efficiency and promote robust plant growth. This study contributes valuable insights into optimizing agricultural practices for improved nutrient uptake and yield.