

Potential of *Brivibacillus* Strain as Plant Growth Promoting Bacteria in Rice (*Oryza sativa* L.) Crop.

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Introduction

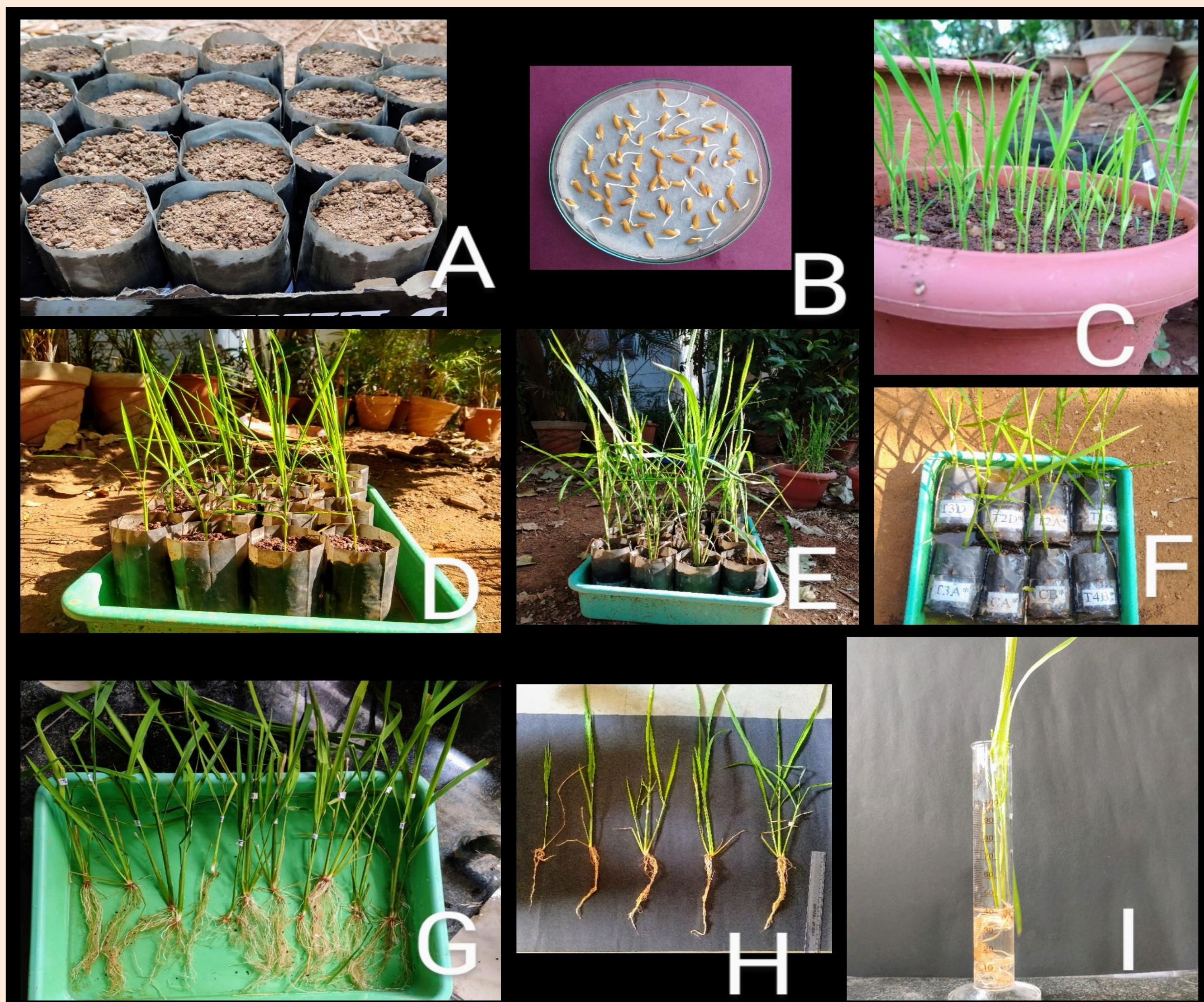
Rice crop yield is affected by ecological and heritable factors. Chemical fertilizers and pesticides are used to enhance crop yield but it leads to soil erosion and this in turn leads to ecological imbalance. The use of chemical fertilizer can be replaced by the use of bio-fertilizer which is eco-friendly and also makes the soil more fertile for good yield of the crops. Bio-fertilizer is cost effective and can yield disease resistant plants. The bio-fertilizer is the use of live microorganisms which help in proper growth of the plants. The bacteria used are called Plant Growth Promoting Bacteria. The bio-fertilizers i.e. the bacteria can be cultivated in suitable media and can later be mass cultured.

Objectives

1. Production of *Brivi bacillus* strain JBT19 as Bio-fertilizer.
2. Evaluation of Bio-fertilizer as Plant Growth Promoting Bacteria in Rice (*Oryza sativa* L.) Crop

Materials and Methods

- The *Brevibacillus* JBT19B strain was cultured in LB broth at 37°C for 18hours.
- When the cell count reached 10⁸-10⁹ cells/ml, then it was used as inoculants.
- The suitable carrier material was chosen i.e. coco peat and sterilized.
- The inoculants was mixed with the carrier material and kept curing for 3 days.
- The growth and development of rice plants were observed and efficiency of bio-fertilizer was evaluated.
- The collected data was statistically analyzed and Interpreted



Sequential photographic representation of work

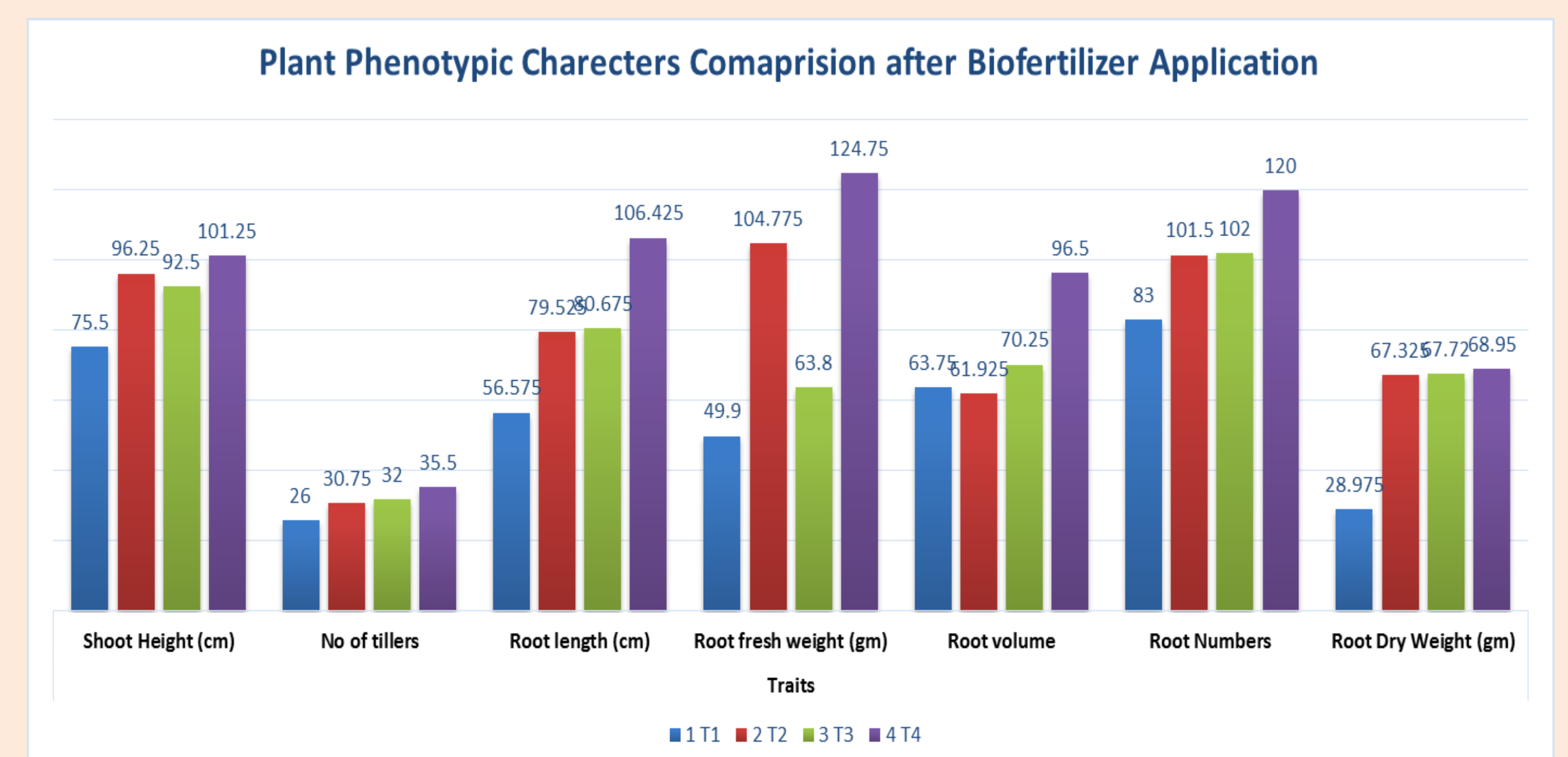
Results



Rice plants ready for sampling and plants after sampling

Table:-Mean data of Phenotypic Observations

Sl No	Teatment	Shoot Height (cm)	No of tillers	Root length (cm)	Root fresh weight (gm)	Root volume	Root Numbe rs	Root Dry Weight (gm)
1	T1	75.50	26.00	56.58	49.90	63.75	83.00	28.98
2	T2	96.25	30.75	79.53	104.78	61.93	101.50	67.33
3	T3	92.50	32.00	80.68	63.80	70.25	102.00	67.72
4	T4	101.25	35.50	106.43	124.75	96.50	120.00	68.95



Discussion

The earlier studies on bacillus species as Bio-fertilizer revealed that *Bacillus subtilis* produces plant hormones and solublises insoluble phosphates reported by [Arshad javaid]. However our study also reveals that the *Brivibacillus* proved to produce plant hormones that enhanced plant growth vigor.

Conclusion

The rice plants were inoculated with bacterial bio-fertilizer *Brivibacillus* JBT19 strain. The phenotypic reading showed. Further, this strain can be mass produced as fertilizer and enhance the soil fertilizer.

References

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