

TECHNICAL BULLETIN ADVANCES IN LIQUID BIOFERTILIZERS FOR RICE

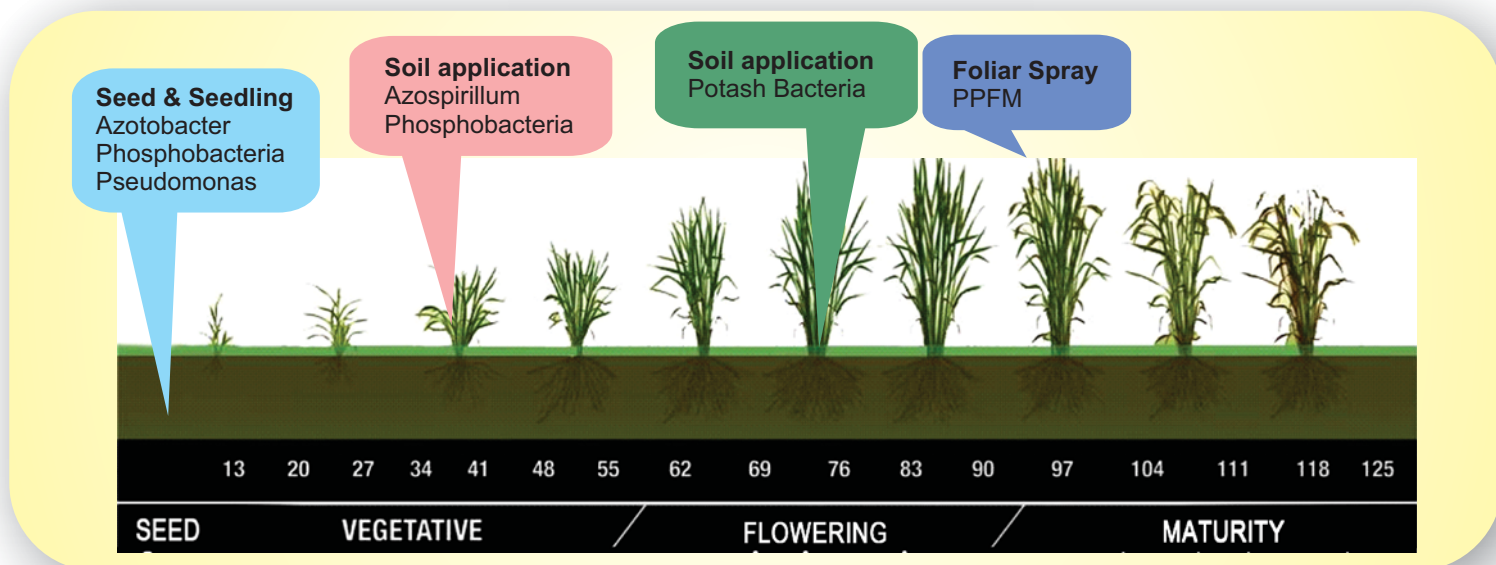


LIQUID BIOFERTILIZERS FOR RICE



- **Nitrogen** - *Azospirillum lipoferum* (Az204)
- **Phosphorus** - *Bacillus megaterium* (Pb1)
- **Potassium** - *Bacillus mucilaginosus* (KRB9)
- **Zinc** - *Pseudomonas chlororaphis* (ZSB15)
- **Drought mitigation** - *Methylobacterium aminovorans* (Tm13)

STAGE-SPECIFIC INOCULANTS FOR RICE



The Team: **M GNANACHITRA** | **M SENTHILKUMAR** | **D BALACHANDAR** | **SANTOSH RAJAN MOHANTY**

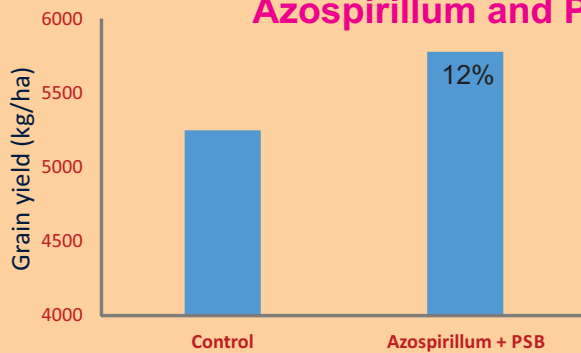


Department of Agricultural Microbiology
Directorate of Natural Resource Management
Tamil Nadu Agricultural University
Coimbatore 641003

ICAR - All India Network Project on
Soil Biodiversity - Biofertilizers
Indian Institute of Soil Science
Bhopal 462038



Azospirillum and Phosphobacteria



- 25% saving in fertilizer N and P
- Yield increase (10-15% higher than control)
- Net benefit: Rs. 6000 per ha (Saving fertilizer and enhanced grain yield)
- B:C ratio is 1.95



Technology Transfer

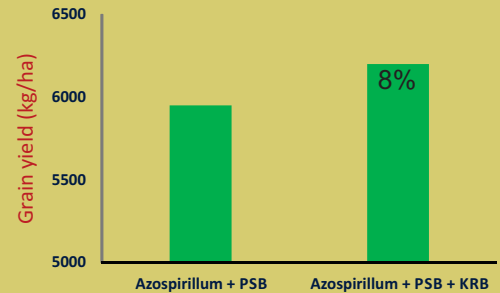
Annually 5000 lit of each biofertilizer produced and supplied to the farmers

20 State Agriculture Department biofertilizer production units used this technology and strains and produce 900 KL annually

Mother cultures supply to Kerala, Karnataka, Andra Pradesh, Telungana and Maharashtra

Potassium releasing bacteria (KRB9)

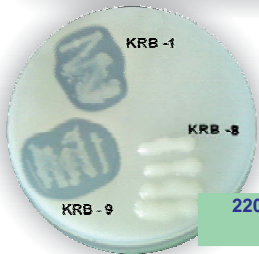
- Compatible with Azospirillum and Phosphobacteria
- Additional yield increase (5-10% higher than control)
- Net benefit: Rs. 2100/ha (Fertilizer saving and yield increase)



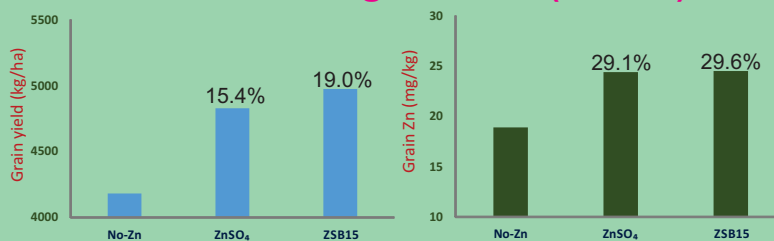
Technology Transfer

2200 litres of Potash bacteria produced and distributed for the past three years

Tamil Nadu (20 Govt units), and Southern States of India used this strain for commercial production



Zinc solubilizing bacteria (ZSB15)



- Ensures soil zinc availability (2-10 mg/kg) throughout the crop
- Yield increase (19% more than no-Zn)
- Grain Zn fortification (24.5 mg/kg of seed)



Pink Pigmented Facultative Methylophil

Foliar spray - 500 ml/ha (twice at 15-days interval during drought)

- Plant growth promoting phyllosphere bacteria
- Crop withstand drought for 25-30 days
- Crop recovery after rain / irrigation

Technology Transfer

1,25,000 ha of rice crop of Tamil Nadu recovered from drought and ensured yield (2012-13) due to PPFM spray

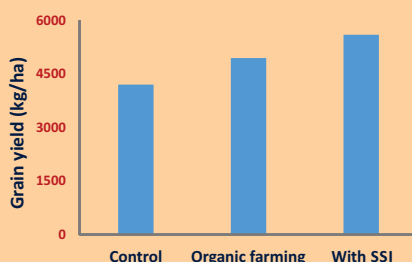
4050 litres of PPFM produced and distributed for the past three years



Stage-specific inoculants

Seed treatment - 125 ml/ha
Seedling dip - 125 ml/ha
Soil application - 500 ml/ha
Foliar spray - 500 ml/ha

- Ensures proper biofertilizer at proper stage of rice crop
- Suitable for INM and organic rice cultivation
- Grain yield increase (12-15% higher than farmers' practice)



Technology Transfer

- 120 Front-line demonstration trials
- 124 field days (2259 beneficiaries)
- 66 farmers' training (1964 beneficiaries)
- 24 training to Extension officials (497 participants)

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CONTACT US

Professor & Head
Department of Agricultural Microbiology
Tamil Nadu Agricultural University
Coimbatore 641003
Email: microbiology@tnau.ac.in
Phone: 0422-6611294