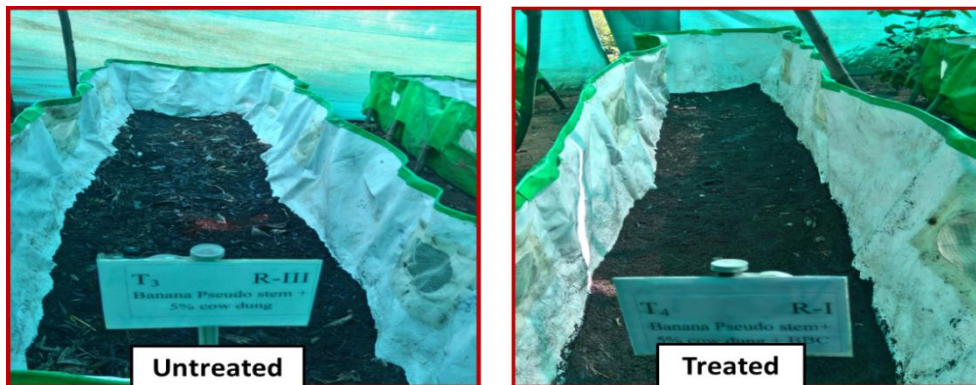


New Frontiers

- **Biodecomposition of Agrowaste using Anubhav Biodecomposer Bacterial Consortium (ABBC):**

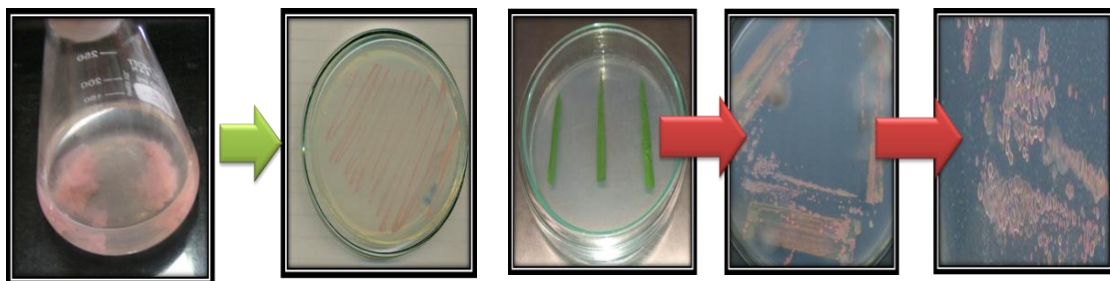
Consortium of lignolytic and cellulolytic bacteria was prepared for effective decomposition of agro-waste bringing nutritionally rich compost

- Production of high quality vermicompost from Banana pseudo stem or maize fodder using *Anubhav* Biodegradable Bacterial Consortium (ABBC) along with 5 % cow dung within short time (15 days earlier than normal vermicomposting method).
- For making good quality compost from crops residues viz., banana pseudostem, pigeon pea stalk, cotton stalk and castor stalk, mix Anubhav Bacterial Biodecomposer Consortium (ABBC 1.0 L/t) and cow dung slurry at 200 kg/t with shredded crop residues to get finished compost within 40-45 days for banana pseudostem, 55-60 days for pigeon pea stalk, 70 days for cotton stalk and 80-85 days for castor stalk, which is 5-10 days earlier.

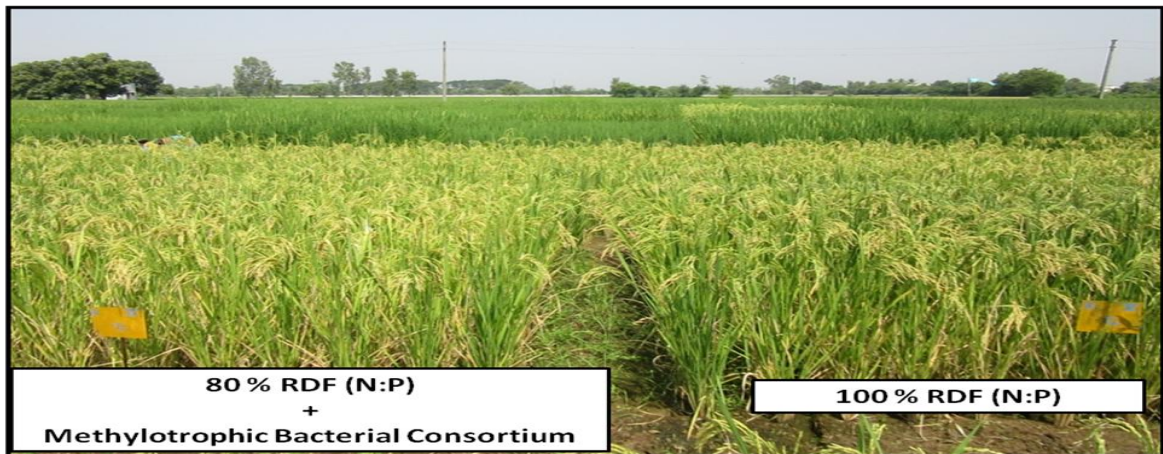


- **Methylotrophic Bacterial Consortium Developed for Transplanted Paddy**

- A Methylotrophic Bacterial Consortium comprising of three rhizospheric (*Bacillus aerius*, *Paenibacillus illinoisensis*, *B. megaterium*) and three phyllospheric (*Staphylococcus saprophyticus*, *B. subtilis* sp. spizizenii, *B. methylotrophicus*) methylotrophic bacterial isolates is developed for methane management of transplanted paddy fields.
- Application of methylotrophic bacterial consortium in paddy field can save 20 % N and P chemical fertilizers along with 8-10 % reduction in methane emission.



Pink Pigmented Methylotrophic Bacteria from Rhizosphere and Phyllosphere of Paddy



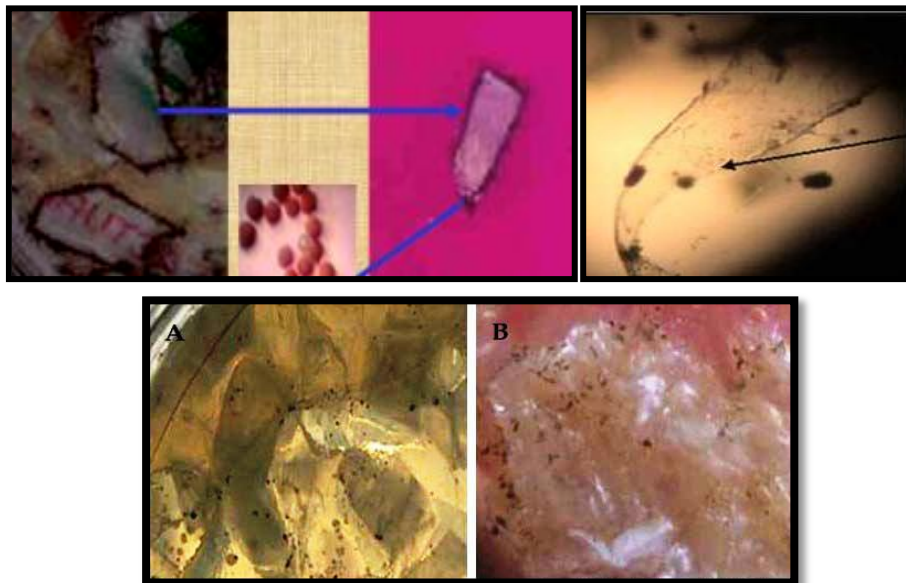
Saving of 20 % N and P fertilizers in Rice cv. Gurjari by Application of Methylo trophic Bacterial Consortium



Methane Gas collection from Field

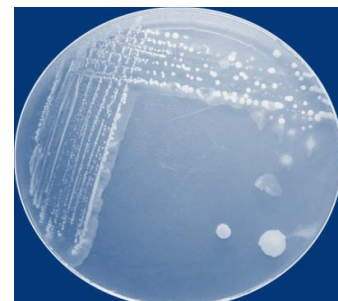
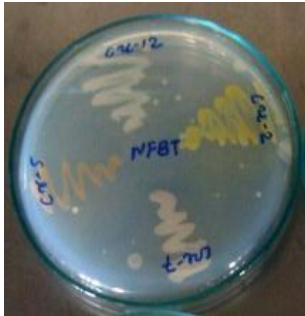
- **Biodegradation of plastic:**

Emericellanidulans, *Aspergilluswentii*, *Pseudomonas* etc. having thermoplastic and biodegradable plastic adoring capacity showed possibility to degrade plastic fast.



Development of fungal biofilm on plastic

- Heavy metal bioremediation of contaminated soil by microorganisms**
 Isolates predominantly gram +ve *Bacillus* spp., *Micrococcus* sp. and gram – ve *Pseudomonas* sp. were detected in polluted soil samples and studied tolerating heavy metals (Pb, Ni, Cd, Cr, Co, Fe, Zn and Cu) under laboratory conditions, selected cultures are further under investigation for their possible bio-remediation potential.



- Agriculturally Beneficial Fungi proved as myco-phosphate solubilizer and myco-potash mobilizer**

Mycopesticides, *Paecilomyces lilacinus*-A, *Trichoderma viride*-A, *Trichoderma harzianum*-M found to give good P solubilization zones on PKVK agar medium. In broth, ThM showed highest P solubilizing ability (309.33 µg/ ml). HPLC analysis showed production of pyruvic acid, formic acid, orotic acid, citric acid and butyric acid by mycopesticides. Quantitative analysis for IAA production found highest in ThM (12.60 µg/ ml). Mycopesticide, *Trichoderma viride* and biodegrader fungus, *Aspergillus wentii* are found K solubilizer on mica agar plates and confirmed as myco-potash cultures.

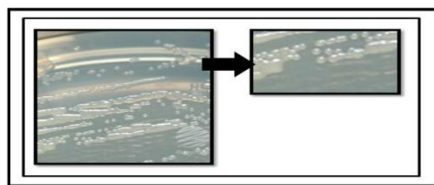
- Microbiology of Ancient products**

Cow based products

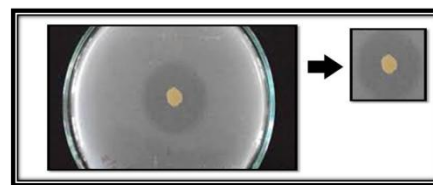
Panchgavya,

Bijamrut, Jivamrut

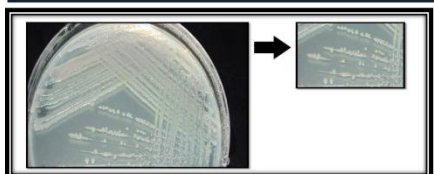
Key isolates from products: *Pseudomonas* spp., *Bacillus* spp., *Acinetobacter* spp., *Rhodococcus* spp. etc.



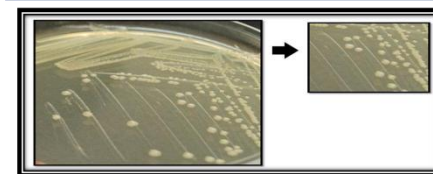
Colony characteristics of isolated bacteria V1PG on King's B medium



Colony characteristics of isolated bacteria V3PG on Sperber medium



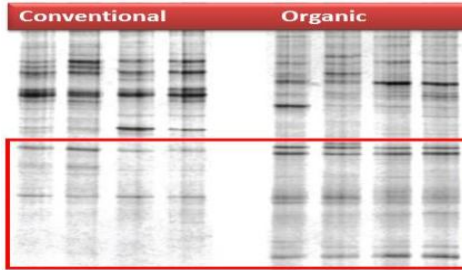
Colony characteristics of isolated bacteria V9MPG on TSA medium



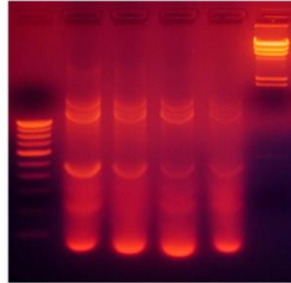
Colony characteristics of isolated bacteria V10MPG on TSA medium

- **Molecular characterization of native agriculturally beneficial microorganisms**

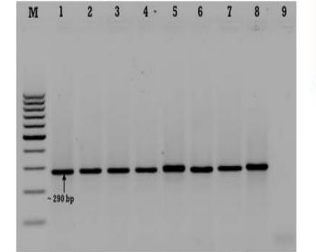
Molecular studies of agriculturally beneficial microorganisms through detection of *nif* H gene, cry gene etc. and community dynamics studies of soil micro flora through RAPD/RFLP/DGGE analysis



Microbial community dynamics study of organic and conventional farm soil



16S rDNA characterization of native *Xenorhabdus* isolates



Cry gene detection from *Bacillus thuringiensis*