

Detailed Technical Programme

TITLE : AMRUT Anaerobic/aerobic Microbial Reproduction Unit for Farmers: A manual, off-grid bioreactor for on-farm production of Natural Farming inputs.

DURATION : 2 Years

OBJECTIVES :

1. To design and develop a manual, off-grid anaerobic/ aerobic bioreactor (AMRUT unit) suitable for decentralized, on-farm production of natural farming microbial inputs.
2. To standardize anaerobic/ aerobic fermentation protocols (substrate composition, retention time, moisture, and operating conditions) for efficient microbial multiplication of formulations such as Jeevamrutha and related bio-inputs.
3. To evaluate the microbial, biochemical, and nutrient quality of inputs produced through the AMRUT unit under controlled conditions.
4. To assess field performance of AMRUT-produced inputs on soil health, crop growth, and yield under natural farming systems.

PARTICIPATING INSTITUTES:

Lead / Sole Institution

1. School of Agriculture, Kaveri University, Gowraram (V), Wargal (M), Siddipet, Telangana – 502279.

Origin of the Project Proposal

The large-scale transition toward natural farming in India has intensified the demand for reliable, high-quality microbial bio-inputs essential for sustaining soil fertility, crop productivity, and ecological balance. However, the preparation of traditional inputs such as Jeevamrit, Beejamrit, and Panchagavya is often constrained by inconsistent fermentation, labor intensiveness, seasonal variability, and lack of standardization. Conventional preparation methods also limit bulk production and quality control, thereby affecting field efficacy and farmer confidence.

Natural farming systems, rapidly expanding across diverse agro-ecological regions, require decentralized, cost-effective, and energy-independent technologies for on-farm microbial input production. Existing fermentation practices largely rely on open or semi-anaerobic containers that are prone to contamination, nutrient loss, and sub-optimal microbial multiplication. This necessitates an engineering-driven intervention integrating anaerobic/ aerobic bioprocessing, microbial reproduction technologies, and farmer-friendly fabrication models.

The proposed work focuses on the design, development, and field validation of the AMRUT – anaerobic/ aerobic Microbial Reproduction Unit, an off-grid bioreactor tailored for on-farm production of natural farming inputs. The system aims to standardize anaerobic/ aerobic

Competitive Research Grants under National Mission on Natural Farming

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Name of Participating Institute / Organizations

Sole/Lead	School of Agriculture, Kaveri University
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Details of Scientists/Researchers/Others involved

Principal Investigator (PI)	Dr. Yalaka Nandini	School of Agriculture, Kaveri University
Co-PI: Co-Principal Investigator	Dr. K. Mahendra	School of Agriculture, Kaveri University
Co-PI: Co-Principal Investigator	Dr. D. Gopal	School of Agriculture, Kaveri University
Co-PI: Co-Principal Investigator	Dr. B. Srinivasulu	Kaveri University
Co-PI: Co-Principal Investigator	Dr. A. Pratap Kumar Reddy	School of Agriculture, Kaveri University

Budget : Rs. 42,29,610/-

Duration : 2 Years