Name of Solution:

Microbial consortium-mediated aerobic composting technology

Submitter: (ICRISAT)

Solution Overview

What is it, and what problem does it solve?

Aerobic composting is a microbial mediated decomposition process used for recycling organic farm waste. In order to swiftly get ready for the following crop cycle, farmers in many parts of the world, burn remaining plant material in fields after harvest. This practice is known as crop residue burning. This approach has serious adverse environmental effects like GHG emission and loss of soil organic carbon (SOC), which is essential for soil fertility, health, and long-term agricultural output. Aerobic composting provides a simple and robust on-farm solution for converting the crop residues into nutrient rich compost

Key Features & Benefits:

- Aerobic composting is simple and does not require any infrastructure like compost tanks/ platforms
- The size reduction of the organic waste material and use of effective cellulose and hemicellulose degrading microbial consortium (a group of microorganisms) makes the process rapid
- Aerobic composting process involves mesophilic and thermophilic phases of decomposition process having advantage of killing weed seeds and pathogens
- Aerobic composting is the biological decomposition of organic materials in the presence of oxygen and frequent turning of compost heaps improves aeration and therefore, increased microbial activity enhances decomposition rate.

Where It Works and Where It Can Work:

Aerobic composting is a versatile and adaptable waste management practice that can be successfully implemented across various agroecological zones, provided certain local conditions and resource availabilities are taken into account. For instance, semi-arid and humid regions, supporting the microbial activity are suitable, however, the heaps should be protected from moisture losses through covering or roofing.

Evidence & Impact What results has it shown?

The technology was scaled in states like Karnataka, Odisha, Bihar, Uttar Pradesh states. Across six districts in Odisha, the technology has been scaled out by supporting about 7,800 HHs from 2021 to 2024. The initiative generated about 4000 MT of compost. Four SHG managed community level aerobic compost units with annual production capacity of 100 tons were established one each in Koraput, Nabarangpur, Rayagada Gajapati of Odisha state.

Scalability & Adoption Support

Numerous public welfare programs across Asia and Africa are actively seeking scalable solutions for nature positive farming.

The availability of microbial consortium for aerobic compost and capacity building of farmers plays a crucial role in adoption and scaling of the technology. ICRISAT can play a pivotal role in the capacity building of diverse stakeholders by providing technical support (handholding) through its bilateral projects.

Partners & Contact Info

Who's involved and how to connect? List of key contact and partners + email / phone.

Rajesh Pasumarthi: rajesh.pasumarthi@icrisat.org

Gajanan Sawargaonkar: gajanan.sawargaonkar@icrisat.org

Ramesh Singh: ramesh.singh@icrisat.org