0037 - Soil restoration for achieving sustainable livelihoods, climate change adaptation and mitigation

Exhibitor

BAIF Development Research Foundation

https://baif.org.in/

Team

Girish G. Sohani

Rajashree Joshi

Sagar Kadao

Joshua Daniel

Sagar Jadhav

Raosaheb Kote

Sadashiv Nimbalkar

Yogesh Sawant

Ganesh Bedare

Location

Maharashtra, India

Summary

Soil is a very important resource that provides several ecosystem services. The major challenges impacting sustainable development are high climate risks, increase in GHG emissions, ecological degradation, lack of knowledge about soil health management and food insecurity. The resultant effects are poverty, massive unemployment, labour migration, regional and inter-regional disparities, degradation of natural resources and ecosystems. Soil organic carbon plays a vital role in climate change mitigation. BAIF Development Research Foundation, a non-government organization in India, has been addressing these issues through a holistic approach along with farmer sensitization successfully in many states of India. Recognising the importance of meeting the basic needs of economically disadvantaged farming communities, BAIF's approach combines livelihood activities with addressing climate change issues. The outcome of this programme is the progressive improvement of farmer wellbeing as well as soil health.

Presentation

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Objective of the practice:

The objective is soil restoration through integrated approach to achieve climate change adaptation and mitigation and to rejuvenate landscape ecosystem for sustainable livelihood.

Scientific and innovative solutions are applied in addressing local needs to improve soil health and thus productivity, minimize risks of climate change, sequester carbon, reduce GHG emissions, conserve biodiversity and undertake integrated actions to neutralize land degradation through involvement of community.

Specific Objectives:

1. Increase Soil Organic Carbon (SOC) stocks through convergent actions to enhance soil health and thus productivity on sustainable basis
2. Minimize emissions (CO_2, N_2O etc.) from soil through measures of climate change mitigation and build resilience to adapt climate change.
3. Rejuvenate landscape ecosystem through participatory approach and standardize practices of soil restoration for its replication in analogous regions

Implementation of activities:

The approach of integrated soil fertility improvement consists of following practices.

A. Integrated Soil Restoration Measures (ISRM): The restoration measures promoted are

1. Soil Nutrient Management- Composting, green manuring, biomass recycling, use of biological inputs, application of farm yard manure
2. Integrated Renewable Energy for Sustainable Agriculture (IRESA) and BIO PROM
3. Bio char production from crop residue and its application
4. Community Sensitisation- Sensitization through advisories
5. Carbon Sequestration Actions to Adapt and Mitigate Climate Change: Carbon sequestration was achieved by introduction of Agri-horti-forestry (Wadi: Tree based farming system) plantations on low productive lands. Wadi is one-acre plantation of 2-3 fruit species and forestry along the border combined with annual crops

B. Land Degradation Neutrality (LDN) Measures: Watershed development work carried out to undertake repair and maintenance of erosion control measures through participatory approach, promote field runoff control measures (masonry field outlets) and water harvesting measures to catch the rain water for future use.

C. Climate Smart Actions (CSA): The smart practices include use of climate smart varieties and microbial consortia, integrated nutrient and pest-disease management, solar powered pumps, improved methods for crop cultivation, cropping pattern in different land use system, mulching and micro irrigation techniques and agronomic measures for conserving soil and water. These practices will help to reduce GHG emissions from crop production.

D. Biodiversity actions: The interventions were minimization of ecosystem degradation and conservation of local species suitable to existing agro climatic conditions, integrating crop and livestock farming, agro ecological interventions focusing crop and soil microbial diversity. The agro ecological interventions are aligned with crop diversity, flora and fauna diversity and improving the productivity.

Results/outputs/impact:

Following are the outcomes:

- The improvement of soil organic carbon and carbon sequestration leads to the mitigation of climate change impacts. The agri-horti-forestry system (wadi) is a carbon sink of plant biomass and soil. The total above and below-ground biomass in a 10-year old wadi (Indian gooseberry or Mango) had 23 t ha-1of carbon equivalent of 84.67 t CO_2 ha-1.
- The rejuvenation of degraded land improves the productivity.
- Improvement of biodiversity and rehabilitation of soil leads to improvement in ecosystem services.
- Environmental impact: The conservation of natural resources is achieved mainly through increase in vegetation cover, water availability and reduction in soil degradation. This has positive impact on sustainable livelihood. The climate smart actions help to reduce GHG emissions from crop production.
- Social impact: Ensured food and nutritional security for the participants. Knowledge and skills of participants improved.
- Economic impact: Crop yields and income increased (up to 30%)

Sustainability and replicability:

The practice has high potential of replicability as it deals with climate change adaptation and mitigation through soil restoration approach. It will also ensure sustainable livelihood and conservation of natural resources. It has potential of replication in areas where low productive lands and waste lands results in the vulnerability of rural community to climate change impacts and also degradation of lands. The wadi system with additional components such as water resources development and community mobilization has been replicated by BAIF over the past three decades. Subsequently, it is being replicated nationally by the National Bank for Agriculture and Rural Development. The sustainability is being achieved by ensuring the participation of local institutes like farmer producer organisation, village development committees and women groups.

Meet the team

During the indicated periods, one of the team members is available for a video chat.

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