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SAGUNA REGENERATIVE TECHNIQUE (SRT)

Description

The Saguna Regenerative Technique (SRT) follows the principles of conservation agriculture (CA), and is defined as a no-till, regenerative method of farming that does not involve the disruption of soil structure through tillage. Developed in the context of Indian agriculture, SRT is a form of zero-tillage farming that emphasizes the importance of maintaining a natural soil structure and microbial ecosystem. The method involves the use of a unique soil aeration technique that promotes the regeneration of soil health without disturbing its layers. The SRT effectively reduces soil erosion, promotes the natural proliferation of earthworms, enhances the organic carbon content of the soil, and significantly boosts land productivity. An additional benefit of this method is the increased happiness and confidence of the farmer, a testament to the transformative power of sustainable farming practices.

The SRT incorporates several salient features that collectively enhance soil health. These features are designed to improve the physical, chemical, and biological properties of the soil, leading to a more resilient and productive agricultural system. Key principles of SRT include:

1. **No-till farming:** This technique emphasizes no plowing, no rotavator, no puddling, no harrowing, no removing of weeds and such other tillage operations which are responsible for soil degradation.

2. **Permanent raised beds:** Crops are grown on permanent raised beds, which help maintain optimum moisture and oxygen conditions in the root zone area promoting good microbial count resulting in resilient crops.

3. **Crop residue:** The root mass of the previous crops and the weeds are to be kept undisturbed in the bed. The weed growth is to be managed/suppressed with an optimum protocol of precision weedicides. The slow decomposition of the root mass becomes food for microflora and earthworms improving the soil aggregation & thus the soil health.

4. **Crop rotation:** SRT insists on rotation of crops; two different crops from the same family such as wheat after rice or chickpea after soybean is recommended but must be avoided rice after rice or maize after maize.

- **Case Study 1: SRT implemented in Medha and Kudal Agriculture Cicle of Jaoli Taluka**

Context: The study was conducted in Medha and Kudal Agriculture Cicle of Jaoli Taluka, a primarily rural agricultural region known for its predominant rice cultivation. The area is characterized by a tropical climate with a distinct monsoon season, which significantly influences cropping patterns. The soil type in this region is primarily laterite, sandy loam, semi black cotton soil etc., that are primarily conducive to rice cultivation but prone to nutrient depletion due to intensive tillage practices.

The primary aim of the study was to evaluate the effectiveness of the SRT in enhancing soil health and crop yield in a rice-based cropping system, with a particular focus on sustainable soil management practices.

What was done: The study involved the implementation of SRT practices with three main principles including zero tillage, use of weedicides to manage the weeds & keeping the roots of previous crops in-situ to die and decay. Traditional rice cultivation areas served as control plots for comparison.

Results: The application of SRT practices in the rice-based cropping system led to significant improvements in soil structure, nutrient content, and water retention capacity. Crop yields were higher in SRT plots compared to traditional cultivation methods, demonstrating the potential of SRT to enhance the sustainability and productivity of rice cultivation. The cost of production and drudgery of labor was reduced significantly making the farmer happy and confident.

Sustainable Soil Management Species

Rice, Finger Millet, Cotton , Soybean , Wheat, Proso millet, Lablab bean , Cow pea & pulses, Groundnut , Onion, Sorghum, Pearl Millet, Maize , Leafy Vegetables, Okra, Mung Bean , Melons, gourds & cucurbits,

Economic Benefits

Benefits of SRT:

- Reduces Cost of Production: For not having to do plowing, puddling, transplanting and hand hoeing, it saves 30-40% cost of production as compared to conventional method of rice cultivation. Also, it saves 50% of treacherous labor, especially for farm women.
- Soil Health: SRT's zero-till and cover crop practices enhance soil structure, fertility, and organic matter content, leading to healthier soil ecosystems. Loss of valuable silt (about 20% of puddle water going out of field) during puddling can be prevented. Also keeping the roots of previous crops at the same spot to decay slowly, quickly enhances the percent organic carbon in the soil. Thus, more fertile land can be handed over to the next generation.
- Water Efficiency: The technique's water-conserving methods help tackle water scarcity, making it ideal for Maharashtra's climate.
- Climate Resilience: SRT's carbon sequestration capabilities contribute to climate change mitigation and adaptation, which is crucial in the face of changing weather patterns. Avoiding puddling on vast paddy cultivation will drastically reduce diesel consumption and thus reduce emission of CO2. SRT being an aerobic method, it will prevent methane generation. Thus, drastically making it a “Climate Resilient Agriculture” bringing down greenhouse gas emission from paddy cultivation.
- Increased Yield: By improving soil health and crop rotation, SRT has the potential to increase crop yields sustainably.

Global Policy Draft Recommendations

Recommended policy interventions that governments can implement to support farmers in executing sustainable soil management practices.

HELP ENRICH THE POLICY RECOMMENDATIONS AND SOLUTIONS:

These policy recommendations encapsulate the current state of soil science to the best of our knowledge. But soil science is a complex and evolving field, and we invite scientists and experts to send us constructive updates and inputs to improve these recommendations. Write to us at policy.support@consciousplanet.org.