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Saguna Regenerative Technique (SRT): A Paradigm Shift in Sustainable Cotton Cultivation

Chandrashekhar Bhadsavle (Shekhar) is a visionary agricultural innovator and environmentalist from Maharashtra, India, renowned for his groundbreaking work in sustainable farming techniques. As the Founder Director of Saguna Rural Foundation and Saguna Sustainability Solutions Pvt. Ltd., he has dedicated his life to creating and promoting agricultural methods that regenerate soil health, conserve water, and enhance farmer livelihoods. One of his most notable contributions is the development of the Saguna Regenerative Technique (SRT), a pioneering no-till farming method that eliminates traditional ploughing and significantly reduces greenhouse gas emissions, especially in rice cultivation. Bhadsavle's (Shekhar) work extends beyond farming innovations; he has also introduced the Saguna Vansanvardhan Technique (SVT) for reforestation and mitigating landslides, and the Saguna Jalsanvardhan Technique (SJT) for cleansing water bodies. With a commitment to rural empowerment, sustainable agriculture, and environmental preservation, Bhadsavle (Shekhar) continues to inspire farmers, scientists, and policymakers worldwide.

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**Krushiratna Krushibhushan
Chandrashekhar Bhadsavle**
Founder - Saguna
Regenerative Technique



EXPERT'S COLUMN

Anil Dattaram Nivalkar is an Assistant Researcher at Saguna Rural Foundation with a B.Sc. in Forestry. For the past 10 years, he has been involved in agricultural research. He played a key role in developing and promoting the Saguna Rice Technique (SRT), a no-tillage rice farming method, which has won international awards. Mr. Nivalkar has also developed forest conservation techniques to prevent fires and regenerate forests and methods to rejuvenate polluted water bodies. He has trained over 25,000 farmers and 500 agricultural officers. His work has received multiple awards, including from Thailand and Indian scientists, and recognition from the Maharashtra government.

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Mr. Anil Nivalkar
Research Associate,
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Madhya Pradesh. Despite its economic importance, cotton cultivation has long been associated with numerous challenges—soil degradation, heavy pesticide use, high water demand, and farmer distress. Against this backdrop, the Saguna Regenerative Technique (SRT) emerges as a game-changing agricultural innovation. Among the many crops that have seen a resurgence due to SRT, cotton stands out as a glowing beacon of success.

Introduction

Cotton, often termed as “white gold,” is a vital cash crop for millions of Indian farmers, especially in states like Maharashtra, Telangana, Gujarat, and

1. What is SRT?

It is a conservation agriculture (CA), No-till method of farming which does not cause atrocity of tillage, completely stops soil erosion, promotes

natural production of earthworms, increases organic carbon of the soil, considerably increases productivity of the land and added effect of amazing happiness & confidence of the farmer.

This technique regenerates soil health, promotes microbial life, reduces water runoff, and increases water retention capacity. It builds climate resilience and enhances productivity, all while reducing input costs. The method is environmentally friendly, economically viable, and socially beneficial.

The Saguna Regenerative Technique (SRT) was initially developed in 2011 with the objective of implementing no-tillage practices in rice cultivation. At that time, the method was specifically designed and promoted for rice, hence the name "Saguna Rice Technique." However, as the technique gained acceptance, farmers began successfully applying it to a variety of other crops beyond rice. In response to this broader applicability and its alignment with principles of sustainable agriculture, the name was revised to "Saguna Regenerative Technique." This change reflects the technique's wider relevance and its regenerative approach to soil and crop management.

2. Key Principles of SRT:

1. No-till farming: This technique emphasizes no plowing, 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 crop and the weeds are kept undisturbed in the bed which helps conserve moisture, improve soil health, and suppress weeds with the help of weedicides (tool).
4. Crop rotation: SRT insists for 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.

3. How SRT Works to Increase Productivity and Soil Health

SRT's success lies in its holistic approach to farming, which focuses on enhancing both crop yields and soil health. Here's how the technique works:

- Permanent Raised Beds and Furrows: SRT uses a system of raised beds (where crops are grown) and furrows (which act as channels for water drainage). The permanent raised beds prevent



soil compaction and improve the root zone's aeration, leading to better crop growth. The furrows ensure that excess water drains away during heavy rains, preventing waterlogging and soil erosion. This system also promotes deeper root growth, which improves the crop's ability to access nutrients and water.

- No-Tillage Farming: Traditional farming methods often involve plowing and tilling the soil, which disturbs its structure, reduces organic matter, and makes it more prone to erosion. SRT, on the other hand, eliminates tilling, preserving the natural soil structure and encouraging the growth of beneficial microorganisms. Over time, this results in healthier, more fertile soil that requires fewer chemical inputs.
- Water Conservation: One of the key advantages of SRT is its ability to conserve water. The raised bed and furrow system improves water infiltration into the soil and minimizes evaporation, ensuring that crops receive a steady supply of moisture. This is particularly important in regions prone to drought, as it helps farmers maintain crop yields even during periods of water scarcity.
- Reduction in Chemical Inputs: SRT promotes natural soil regeneration, reducing the need for synthetic fertilizers and pesticides. This not only lowers production costs but also improves the long-term sustainability of farming by preventing the depletion of soil nutrients. Healthier soil leads to healthier crops, which in turn benefits the overall ecosystem.

4. Philosophy of SRT:

We believe that the holistic plan of mother nature towards human beings, animal world & vegetation is, "the grain and the fruit is for human beings, the leaves and branches are for the animals and the roots are for the motherly land."

5. Impacts of SRT

Preliminary analysis of the soil is showing replenishment of 0.5% organic carbon per year when practiced SRT. Average agricultural land of India is having 0.4 to 0.5 %OC ideal being anything beyond 0.75%OC. SRT enables quick recovery of the degraded land to 1% and more OC level of the soil.

1. Vigorous uniformity : the aerobic condition at the rhizosphere triggers positive chain reaction for healthy root and plant growth. This reduces risk and drudgery to the farmer.
2. Impact on soil structure and water infiltration : With increase in organic carbon, in-situ decomposing of organic matter, capillary formation by drying roots and earthworms, enhanced aerobic condition in the deeper layer of soil, quickly builds a healthy soil. Improved water drainage makes the crop climate smart and climate resilient.
3. Presence of earthworms in the field in many types of soils : With the traditional method where plowing and puddling is performed the survival and performance of earthworms was impossible. But with the No Till SRT method all the 10000 farmers in all agroclimatic zones are dancing with happiness after noticing the natural presence of earthworms.
4. Improved soil structure and well drained condition leads to climate resilient farming : Increased organic carbon enhanced earthworm activity and higher microflora. This improves soil aggregation and water drainage. All the SRT farmers observed the same resilience in crops even during floods in the past two years. The same resilience was also noticed in drought conditions.
5. Problem of residue burning on farm lands : Organic residue burning on farms is practiced to get rid of the bulk of residue. This makes it convenient for next crop sowing or to sterilize the land for seed sowing. Both problems are taken care of in SRT method by avoiding burning of crop residue.

6. Benefits of SRT

1. 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.
2. 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.
3. Water Efficiency: The technique's water-conserving methods help tackle water scarcity, making it ideal for Maharashtra's climate.
4. 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.

5. Increased Yield: By improving soil health and crop rotation, SRT has the potential to increase crop yields sustainably.

Farmer Testimony:

1. Pandurang Raghunath Patil, Buldhana, MH, +91 98232 58207

In the village of Buldhana, Maharashtra a daring 55-year-old farmer is earning the moniker "crazy farmer" for adopting SRT technology in cotton cultivation, reshaping traditional farming practices. To his surprise this adaptation brings unprecedented water abundance to the farm well, challenging a history of water scarcity. He says, 'In my whole life of 55 years it is for the first time I have seen the well in our family farm overflowing with water, that too in the year of drought.' Precise following of SRT protocol and scientific weed management has saved labor-intensive weeding. Initially started SRT on 7 acres; undeterred by skepticism, the farmer plans to expand SRT across his 20-acre farm. Like-minded nearby farmer members also have inspired those who are also going to adopt SRT in their farms. Guided by agricultural visionaries Shri Chiplunkar Kaka and Chandrashekhar Dada's team, this success hints at a broader shift towards sustainable practices, offering hope in a world grappling with climate change and resource scarcity.

2. Mr. Ganesh Gavhane, Sillod, Dist. Chatrapati Sambhaji Nagar, MH (+91 8329105851)

"I am a farmer from Marathwada, and since 2019 for the past four years, I have been practicing zero tillage farming under the SRT method, as part of the PoCRA scheme. This year in 2023, despite facing challenges like low rainfall and unseasonal rains, I have witnessed a remarkable increase in the water level of my well along with bumper crops of Cotton (about 12 quintal per acre) & Maize (about 42 quintal per acre). This positive change can be attributed solely to the SRT farming techniques I've adopted. The method has not only helped in conserving water but also in ensuring the sustainability of my farming practices even in adverse weather conditions."



Conclusion:

As India navigates the future of its agriculture amidst ecological stress, farmer distress, and climate uncertainties, the Saguna Regenerative Technique stands as a shining example of hope and resilience. For cotton growers, it represents a rare and powerful convergence of economic viability, ecological sustainability, and emotional empowerment.

The rise of SRT is a testament to the spirit of innovation that thrives among Indian farmers when given the right tools, knowledge, and inspiration. It is also a call to policymakers, researchers, and agricultural institutions to support such grassroots movements that blend traditional wisdom with modern regenerative science.

SRT is not just a technique; it's a transformation – one that has the power to redefine cotton farming in India. With continued support and widespread adoption, it can turn India's cotton belt into a green, thriving, and hopeful landscape once again.

SRT technology received global recognition on April 8, 2021. The Food and Agriculture Organization (FAO) of the United Nations praised this technology and made it available on their website for farmers worldwide (<https://teca.apps.fao.org/teca/en/technologies/10108>).

(The views expressed in this column are of the authors and not that of Cotton Association of India)

USDINR Monthly Report: June 2025

Shri. Anil Kumar Bhansali, Head of Treasury, Finrex Treasury Advisors LLP, has a rich experience of Banking and Foreign Exchange for the past 36 years. He was a Chief Dealer with an associate bank of SBI.

USDINR is expected to trade within the broad range of 83.50-86.50 with downward pressure driven by multiple factors like weakness in the dollar index amid the US fiscal debt concern and recent uncertainty over the federal court decision on Trump trade tariffs, falling oil prices, confidence of foreign investors in the Indian equities/debt. There were some outflows after MSCI reduce weightage in certain stocks taking rupee a bit lower as also RBI's buying of \$ at lower levels to increase its reserves has limited the pair in the given range which currently is 85-85.75.

Key support lies at 84.80; below which, the pair may drop to 84.50-84.00. While immediate resistance is at 85.70, a break above this level could lead to an upside move towards 86.00- 86.50 levels. But for the present the pair is a sell on the upsides.

Key Triggers

Dollar index- Dollar index is expected to remain highly volatile surrounded by a lot of uncertainties, with the first ticking bomb being the US rising debt burden on the economy and the recent US federal court decision to state that the Trump Tariffs are illegal, stating that he had exceeded his authority. Though the appellate court has reinstated the tariffs

EXPERT'S COLUMN



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temporarily, the matter will go to the Supreme Court keeping the uncertainty for a longer time.

Bonds Yields- US and Japanese bond yields have surged due to selling pressure, forcing the US government to pay higher interest on borrowings, amid the rising debt concern and downgrade in rating from the elite class by Moody's. Japan's debt-to-GDP ratio has climbed to 234%, adding to global concerns with investors staying away from its long term debt.

FX Reserves- With the swing in the rupee's movement RBI is actively present on both the sides to manage the movement and ensuring stability by buying dollar to replenish its kitty and selling at higher levels to limit any sharp depreciation.

FPI inflows- FPI's continue buying Indian equities, despite global headwinds and geopolitical risks. Strong Q4 earnings report along with the positive macroeconomic data and stronger than expected India's GDP growth compared to developed economies have boosted sentiment. With uncertainty over Trump's tariffs the larger investors may shift from US assets to the emerging market like India and we could see in-flow in debt and equity, though the current valuation could be a matter of concern for FPIs who have been buyers of equities in the month of May-25.

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