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**“Agricultural Intensification for Sustenance  
under Natural Disaster”**



**STATE AGRICULTURAL TECHNOLOGISTS' SERVICE ASSOCIATION  
WEST BENGAL**

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## **SATSA MUKHAPATRA-ANNUAL TECHNICAL ISSUE 28 : 2024**

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## TRIBUTE



Dr. Mankombu Sambasivan  
Swaminathan

**(07.08.1925 - 28.09.2023)**

Dr. Swaminathan's work with the farmers ushered India's golden age in farming technology—transforming the nation from a 'begging bowl' to the 'bread basket of the world'. Dr. Swaminathan's contributions extended beyond the scientific sphere; he fought for the empowerment of farmers, retreating rural women and the rural community as a whole. Dr. Swaminathan's influence reached global dimensions. As an architect of sustainable agriculture, he emphasized the importance of conserving biodiversity and promoting eco-friendly farming. His voice reverberated even in international forums for the cause of congruous coexistence between humanity and the environment.

The State Agricultural Technologists' Service Association (SATSA), West Bengal always had motivating patronage from Dr. Swaminathan and we were grateful to receive preface from him for our NAAS-rated scientific journal "*SATSA MUKHAPATRA - Annual Technical Issue*" (ISSN 0971-975X)", published annually.

SATSA, West Bengal conveys a reverent tribute to the man who dared to dream of a hunger-free world.



डॉ. हिमांशु पाठक

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### Message

I am happy to know that State Agricultural Technologists' Service Association (SATSA), West Bengal is going to bring out its annual publication "**SATSA Mukhapatra-Annual Technical Issue Vol. 28 (2024)**" on **3<sup>rd</sup> February, 2024 at Kolkata**. This year technical issue covers an important topic on "**Agricultural Intensification for Sustenance under Natural Disaster**". I feel pleasure to learn that a seminar will be organised by SATSA, WB to pay tribute to Late Prof. M.S. Swaminathan during inaugural session of the journal.

I wish all the success of SATSA's endeavour in bringing out the technical issue.

(Himanshu Pathak)

**8<sup>th</sup> January, 2023**  
**New Delhi**

## *From the Desk of the General Secretary*

***“If agriculture goes wrong, nothing else will have a chance to go right”***

***- M. S. Swaminathan***

Today the global agricultural scenario is at a critical juncture, facing the formidable challenge of feeding a burgeoning population, which is projected to reach 9.7 billion by 2050, while grappling with the environmental consequences of conventional farming practices. In addition in the present era, escalating climate change impacts, confluence of extreme weather events, repercussions of natural calamities, from floods and droughts to heat waves and storms, have become more pronounced, disrupting agricultural landscapes and threatening global food supplies and the food security as a whole. Natural calamities frequently disrupt traditional agricultural systems; necessitating innovative and adaptive strategies those can fortify the resilience to our food systems. The main strategy to navigate and thrive amidst these challenges is Climate Smart Agricultural Intensification (CSAI), by integrating climate-resilient practices and technologies while progressively adopting agricultural intensification through increase in per unit area production rather than expanding area under cultivation. It is an approach that seeks to reconcile the seemingly opposing goals of heightened productivity and environmental stewardship, transcending the narrow precincts of traditional intensification methods, emphasizing a holistic framework that not only bolsters crop yields but also safeguards biodiversity, mitigates climate impacts and ensures social equity within agricultural systems.

Principles and practices associated with climate smart agricultural intensification in a sustainable manner starts with optimizing the use of natural resources such as water, land and nutrients to maximize productivity and minimize waste. This involves the adoption of precision agriculture techniques, improved irrigation practices, and balanced nutrient management. With water becoming an increasingly scarce resource, implementing water-efficient practices such as precision irrigation, rainwater harvesting and soil moisture conservation become an essential part of the practice. Promotion of biodiversity conservation within and around agricultural systems to enhance ecosystem services, agro-ecological approaches, such as agro-forestry and integrated pest management, are to be employed to maintain or enhance biodiversity reserves. It also encompasses focusing on sustainable soil management practices to improve soil health and fertility, which includes practices that prevent soil erosion, enhance water retention, and reduce the need for synthetic inputs. Adaption of practices related to climate-smart/climate-resilient agriculture also finds pivotal importance in this context. This may involve the use of drought-resistant crops, improved water management practices, crop diversification to mitigate the risk and the adoption of agronomic practices those give the adaptability and resilience to extreme weather events. Embracing new and innovative technologies, such as satellite communication

and remote sensing, artificial intelligence, agro-informatics, nanotechnology and biotechnology and use of state of the art farm machineries to enhance productivity and sustainability are other postulations. Fostering community resilience is of paramount significance. Collaboration among farmers, local communities, and stakeholders deemed essential for shared learning and support. Initiatives such as community-based knowledge-sharing platforms can empower farmers with the knowledge and skills needed to adapt agricultural intensification in the midst of changing climatic conditions.

This edition (Volume: 28) of SATSA Mukhapatra-Annual Technical Issue aims to explore the principles and practices for “Agricultural Intensification for Sustenance under Natural Disaster”, through spotlighting on its potential to revolutionize global food systems and foster resilience in the face of evolving environmental and social challenges.

In the ensuing sections, we will delve into the multifaceted dimensions, elucidating the principles that buttress the approach of sustenance with continued intensification for strengthening food security, particularly in regions vulnerable to the wrath of natural calamities, and investigating its practical applications across diverse agricultural contexts. Through a synthesis of existing innovative methodologies, literature, case studies, and empirical data, we seek to provide a nuanced understanding of the potential benefits and challenges associated with the smart practices triggered towards agricultural intensification for sustenance under erratic natural disasters. Ultimately, research papers and articles, published in this edition, aspire to inform policy-makers, practitioners, and stakeholders alike, offering a foundation for informed decision-making in the pursuit of a more sustainable and resilient global food system.

**(Suman Sen)**  
**General Secretary,**  
**SATSA, West Bengal**

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