

International Training Workshop on Modern approaches in systems analysis for designing actionable systemic strategies towards Sustainable Mixed Farming Systems



Organized under the aegis of CGIAR Initiative on
Sustainable Intensification of Mixed Farming Systems (SI-MFS)
By
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
in collaboration with
ICAR-Indian Institute of Farming Systems Research (IIFSR) and
International Maize and Wheat Improvement Centre (CIMMYT)

25 to 29 November 2024
ICRISAT, Patancheru, Telangana, India

Background

The CGIAR initiative on *Sustainable Intensification of Mixed Farming Systems (SIMFS)* seeks to deliver equitable and transformational pathways that enhance the livelihoods of stakeholders within mixed farming systems. By promoting sustainable intensification practices, SIMFS addresses the unique agroecological and socioeconomic contexts of these systems, thereby fostering improved living conditions and economic prosperity for communities engaged in mixed farming. Traditionally, each farm household has cultivated a unique farming system. To enhance these systems, the Sustainable Intensification of Mixed Farming Systems (SI-MFS) approach combines various components and enterprises within a single farm unit or household, with the aim of supporting food security and livelihoods. However, the complexities of these farming systems involve multifaceted interactions influenced by both biophysical and socio-economic factors. These factors collectively determine the efficacy of farming systems in delivering food and nutrition security, while simultaneously shaping the complex web of socio-economic and environmental

performance indicators. The overarching goal is to minimize climate and market risks, enhance the resilience of small-scale farmers, and craft farming systems that are not only climate-resilient and profitable but also sustainable and low-emission. Multiple improved technologies/practices are being suggested to enhance the performance of these complex multi-objective smallholder systems. The smallholder farming systems are highly heterogeneous and need differentiated interventions and strategies. To achieve transformation towards resilient, profitable, inclusive and environmentally sustainable farm and food systems, there is need to account for economic, social, environmental sustainability and human wellbeing dimensions of the smallholder farming systems. Further, the inability of the farmers, extension actors and policymakers to visualize the potential impact of different agricultural development strategies on heterogeneous farming systems hinders decisions on investments on improved options for achieving increased adaptation, food production, farm profitability and other related objectives both over short and long-time horizon.

To address this challenge and strengthen collaborative capacity as part of CGIAR initiative on SI-MFS, ICRISAT with ICAR-IIFSR and CIMMYT plan to organize an International Training Workshop on *Modern approaches in systems analysis for designing actionable systemic strategies towards Sustainable Mixed Farming Systems*.

The application of farming system's multi-dimensional Sustainability Assessment tools, bioeconomic models such CLEM model and Farm Design tool can play a pivotal role in the quest to design and evaluate sustainable mixed farming systems. Hence these collaborative efforts between ICRISAT, Indian Council of Agricultural Research (ICAR)-Indian Institute of Farming Systems Research (IIFSR) and CIMMYT aims to build capacity of farming system experts working in different agro-ecoregions in South Asia and Sub Saharan Africa on application of whole farm bio-economic modeling and multi-dimensional Sustainability assessment tools to support in designing resilient farming systems. The workshop specifically focuses on hands-on capacity strengthening on the following topics:

- Why systems approach and modelling- examples of its application in the real world
- Foster hands-on experience on integrating multi-dimensionality in designing sustainable intensification of mixed farming systems

- Empower participants in the application of multidimensional sustainability assessment tools to evaluate the sustainability of farming systems considering environmental, social, and economic, productivity and human wellbeing dimensions.
- Improve proficiency with advanced skills in bioeconomic modeling and to gain a deep understanding of the tools and techniques required to model and analyze the economic and ecological aspects of farming systems comprehensively.
- Enhanced Modeling and Assessment Skills on application of farming systems models- Crop-livestock enterprise modelling (CLEM) and FarmDesign to design and evaluate sustainable farming systems interventions.
- Modelling adaptation strategies for crop-livestock systems in Africa and Asia and analyze tradeoffs and implications for sustainable intensification in dryland agriculture
- Dissemination of best practices in sustainable farming system design and assessment. Participants will acquire valuable insights and knowledge during the workshop, which they can then share with their respective research institutions and communities.
- Encouraging collaboration and partnerships among the workshop participants to tackle complex challenges in sustainable farming system design and assessment.

Participants: About 25-30 scientists/researchers from Asia & Sub-Saharan Africa

Contact

Dr Shalander Kumar

Deputy Global Research Program Director: Enabling Systems Transformation
Cluster Leader: Markets, Institutions and Policies
International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, Telangana, India
Email: Shalander.Kumar@icrisat.org

Dr ML Jat

Global Research Program Director - Resilient Farm & Food Systems,
International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India
Email: mangilal.jat@icrisat.org