



REPORT

State Level Conference

Empowering Women Farmers for
Climate Adaptation Measures

05th June 2026

Organized by- Krishi Navachar-FARMER Project

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PPG Advisory LLP
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EXECUTIVE SUMMARY

A state level conference on “Empowering Women Farmers for Climate Adaptation Measures” was convened as part of the “Farmer’s Adaptation Related Measures for Environmental Regeneration” (FARMER) project at Hotel Clarks Awadh, Lucknow on 05th June 2026 from 10:00 am to 04:30 pm. The focus of the conference was to deliberate on the gendered impacts of climate change, role of women in adaptation and resilience measures, policy initiatives and institutional responses, role of livestock, digital initiatives and Artificial Intelligence in empowering women farmers and next level of policy imperatives to strengthen women empowerment. The conference brought together a diverse group of more than 120 stakeholders including policy makers, academics, representatives from civil society, agri-startups, NGOs, sector specialists, students and women farmers from Uttar Pradesh.

The session commenced with the formal welcome address by **Shri Amit Mohan Prasad**, Retd IAS, Principal Consultant, FARMER Project and lighting of the ceremonial lamp by the Chief Guest, Guest of Honour, **Shri Surya Pratap Shahi**, Hon’ble Minister of Agriculture, Agri Education, and Agri Research. The inaugural session was marked by the addresses from Shri Pankaj Kumar, CGM NABARD, Lucknow, Shri Ravinder (IAS), Principal Secretary Agriculture, GoUP, key address by Shri Surya Pratap Shahi, Hon’ble Minister of Agriculture, Agri Education, and Agri Research and launching of the Farmers Manual and Web Portal. Five agriculture and allied startups, operational in the state of Uttar Pradesh showcased their gender centric services and technological interventions.

Following the inaugural session, three technical sessions were organized to deliberate upon critical themes related to women’s role in agriculture, climate resilience, technology adoption, and leadership. The sessions provided a platform for experts, practitioners, policymakers, and stakeholders to share experiences, showcase innovative approaches, and discuss strategies for strengthening the participation and leadership of women farmers in transforming the agricultural sector. The three technical sessions were:

- **Technical Session I Women-Led Climate Adaptation Measures**

This session focused on the crucial role of women farmers in developing and adopting climate-resilient agricultural practices. Discussions highlighted locally relevant adaptation strategies, indigenous knowledge systems, sustainable farming approaches, and the need to enhance women farmers’ capacities to manage climate risks. The session emphasized recognizing women not merely as agricultural workers but as key decision-makers and leaders in climate adaptation and natural resource management.

- **Technical Session II Applying a Gender Lens to Technology, Digitalization, and AI in Agriculture and Livestock**

This session explored the opportunities and challenges associated with making emerging technologies more accessible and inclusive for women farmers. Speakers discussed the potential of digital tools, artificial intelligence-based applications, precision agriculture, and livestock technologies in improving access to information, advisory services, markets, and financial resources. The discussions emphasized the importance of designing technologies that address the specific needs, capacities, and realities of rural women farmers to ensure equitable digital transformation in agriculture.

▪ **Technical Session III Women in Agriculture: Empowerment, Social Capital, and Leadership**

This session highlighted the importance of women health, strengthening women's collective action, institutional participation, and leadership roles in agriculture. Deliberations focused on the contribution of Self-Help Groups (SHGs), and community-based institutions in building social capital and enabling women farmers to become entrepreneurs, innovators, and decision-makers. The session underscored the need for creating supportive ecosystems that empower women to take leadership roles in agricultural development and rural transformation.

Major Highlights of the Conference

- Emerging need to enhance women's participation in agriculture by improving their access to resources, technologies, knowledge, and opportunities, while recognizing their invaluable contribution to sustainable agricultural development and climate resilience.
- Greater emphasis on financial inclusion, institutional support, and opportunities for strengthening rural livelihoods through women-centric agricultural interventions.
- Women farmers experiences and participation are central to creating a more inclusive, sustainable, and resilient agricultural future.
- Promotion of technologies to reduce women's drudgery, conserve water, and lower cultivation costs, along with dedicated budgetary provisions for women-centric interventions in selected schemes.
- Women cannot be expected to transform food systems while being denied equal access to and control over finance, markets, technologies, and productive resources.
- Every agricultural intervention should be designed with a focus on improving women's incomes, nutrition outcomes, and wages while reducing climate risks and drudgery.
- Women don't adopt technology; they adopt better outcomes.
- For women farmers to effectively use and benefit from new technologies, they need complementary support through timely access to quality inputs, risk management solutions, extension services, financial services, and market linkages.
- The adoption of AI based technologies by rural women farmers reflects their growing confidence, digital inclusion, and emerging role as informed decision-makers and managers of agricultural resources.
- Emphasis on the need to design, develop, deploy, and deliver gender-sensitive technologies through the institutional and service delivery platforms created by the state and its partners.
- Women are disproportionately affected by health risks due to a combination of biological, social, economic, and cultural factors and women's health can be better integrated into the agriculture sector.
- Democratization of resources is essential to strengthening women's roles as social, economic, and environmental guardians.

BACKGROUND

Ascertaining to the climate change and its induced challenges for small and marginal farmers, a project on Krishi Navachar or “Farmer’s Adaptation Related Measures for Environmental Regeneration” (FARMER) has been conceptualized to demonstrate localized integrated agricultural solutions to the climate challenges. The project builds on the fundamental concept that farmers are responsive when solutions are local, visible, and delivered through trusted systems. It also promotes a farmer-to-farmer extension model, which is most effective when farmers themselves test, validate, adopt, and share technological innovations. In this regard, the project aims to provide technical support for developing and establishing 255 climate-smart demonstration plots at the block level across 23 districts of Uttar Pradesh and disseminate the climate smart technology through farmer-to-farmer participatory learning to more than three lakh farmers.

The FARMER project is implemented by the Government of Uttar Pradesh. PPG Advisory LLP has been commissioned by the Gates Foundation to provide technical support for effective implementation of the project activities for the period of three years. The project design integrates gender as one of its cross-cutting themes in all its activities and intends to ensure at least 20% participation of women in deployment and dissemination of climate smart technologies. Through its strategic interventions, the project aims to promote the adoption of scalable, replicable, and adaptation related measures by small and marginal farmers, leading to more stable crop production and farm income despite climate variability.

To accelerate cross learning and exchange of information and knowledge, FARMER project has initiated hosting series of roundtables and conferences to discuss emerging trends, cutting-edge practices, and actionable solutions related to climate change amongst the policy makers, sector experts, development practitioners and farmers. The first-round table conference on “climate adaptation measure for small and marginal farmers of Uttar Pradesh” was organized on 28th March 2026 in Lucknow. Building upon the experience of the first roundtable conference, the project planned to conduct a second conference on “**Empowering Women Farmers for Climate Adaptation Measures**” on 5th June 2026.

The United Nations has designated 2026 as the **International Year of the Woman Farmer (IYWF 2026)** to recognize the vital role women play in agrifood systems. Coordinated by the FAO, the year highlights their contribution to global food security and calls for closing gender gaps in land ownership, finance, and technology. With its strong focus on climate adaptation and gender, the FARMER Project uses this conference to spearhead the discussion intersecting women, agriculture, and climate change in Uttar Pradesh.

5th June 2026, observed annually as the **World Environment Day**, encourages world to increase awareness and action for the environment and to confront urgent global challenges like climate change and biodiversity loss. Embracing the importance of the World Environment Day and resonating the importance of the **International Year of the Woman Farmer**, the scheduling of the conference on “**Empowering Women Farmers for Climate Adaptation Measures**” rightly sets the platform discourse on climate change, women and agriculture.

A state level conference on “Empowering Women Farmers for Climate Adaptation Measures” was convened as part of the FARMER project at Hotel Clarks Awadh, Lucknow on 05th June 2026 from 10:00 am to 04:30 pm. The focus of the conference was to deliberate on the gendered impacts of climate change, role of women in adaptation and resilience measures, policy initiatives and institutional responses, role of livestock, digital initiatives and Artificial Intelligence in empowering women farmers and next level of policy imperatives to strengthen women empowerment. The conference brought together a diverse group of more than 120 stakeholders including policy makers, academics, representatives from civil society, agri-startups, NGOs, sector specialists, students and women farmers from Uttar Pradesh.

CONFERENCE SESSIONS OVERVIEW

The conference was structured into three distinct sessions, in addition to the inaugural session held at the outset. Each session addressed a critical aspect of women empowerment and climate adaptation for small and marginal farmers in Uttar Pradesh.

Technical Session I: Women Led Climate Adaptation Measures -11:00 am to 12:15 pm

Climate change is increasingly affecting India's agriculture and rural livelihoods through erratic rainfall, rising temperatures, droughts, floods, and other extreme weather events. These challenges pose significant risks to food security, natural resources, and the well-being of farming communities. Women, who constitute a substantial part of India's agricultural workforce and play a central role in managing household resources, are often among the most affected by climate change. At the same time, they are key agents of adaptation and resilience. Across the country, women are leading efforts in climate-smart agriculture, water conservation, crop diversification, sustainable livestock management, and community-based natural resource management.

Through self-help groups, farmer collectives, and local institutions, women are sharing knowledge, adopting innovative practices, and strengthening community resilience to climate risks. Their leadership and local knowledge are critical for developing effective and inclusive climate adaptation strategies. This session provided an opportunity to explore the importance of women-led climate

adaptation measures, share experiences and best practices, and discuss how empowering women can contribute to building climate-resilient and sustainable agricultural systems in India.

Gates Foundation

PPG Advisory
LET'S CREATE
Technical Support Agency

Empowering Women Farmers for Climate Adaptation Measures

Technical Session I: Women Led Climate Adaptation Measures -11:00 to 12:15

Dr. Devesh Chaturvedi IAS (Retd), Former Secretary, Ministry of Agriculture and Farmers Welfare, GoI

Dr. Kanij Fatima, Additional Director Extension, Government of Uttar Pradesh

Dr. Ana Maria Loboguerrero Director, Adaptive & Equitable Food Systems Gates Foundation

Ms Nidhi Nath Srinivas, Senior Officer, Agriculture & Livestock Delivery Enablement, Gates Foundation

Shri Sanjay Singh, Parmarth Samaj Sevi Sansthan, Jhansi

Figure 1 Profile of speakers for technical session I

Technical Session II: Applying gender lens to technology, digitalization and AI in agriculture and Livestock 12:15 pm to 1:30 pm

India's agriculture and livestock sectors are undergoing a rapid digital transformation. Technologies such as mobile-based advisory services, digital marketplaces, remote sensing, artificial intelligence (AI), and precision agriculture are creating new opportunities to improve productivity, profitability, and climate resilience. At the same time, women constitute a significant share of the agricultural workforce and are central to livestock management, yet they often face barriers in accessing technology, digital services, information, credit, and decision-making platforms.

Applying a gender lens to technology, digitalization, and AI means ensuring that innovations are designed, deployed, and scaled in ways that are inclusive, equitable, and responsive to the needs of women farmers and livestock keepers. It requires us to examine who has access to digital tools, who benefit from technological advancements, and whether existing gender gaps are being reduced or reinforced. This session provided an opportunity to discuss how technology and AI can empower women, enhance their livelihoods, strengthen climate resilience, and contribute to more inclusive and sustainable agricultural development in India.



Agriculture Department
Government of Uttar Pradesh

PPG Advisory
LET'S CREATE
Technical Support
Agency

Empowering Women Farmers for Climate Adaptation Measures

Technical Session II: Applying gender lens on technology, digitalization and AI in agriculture and Livestock 12:15 pm to 1:30 pm



Dr. Muthukumarasamy B. IAS, Joint Secretary, Department of Animal Husbandry and Dairying (DAHD), GoI

Ms. Neha Jain, IAS, MD KESCO

Mr. Niraj Subrat, Director, EY

Shri Aniruddha Brahmachari, Director Programs, Digital Green India

Figure 2 Profile of speakers for technical session II

Technical Session III: Women in Agriculture: Empowerment, Social Capital, and Leadership - 2:15 pm to 3:30 pm

Women are the backbone of Indian agriculture, contributing significantly to crop production, livestock management, post-harvest operations, and household food security. Despite their vital role, women often face challenges in accessing land, credit, technology, training, and decision-making opportunities. Empowering women in agriculture is essential for improving productivity, enhancing livelihoods, and achieving sustainable rural development.

Social capital, built through self-help groups, farmer producer organizations, cooperatives, and community networks, enables women to access knowledge, resources, and markets while strengthening their collective voice. These platforms foster collaboration, confidence, and economic opportunities.

Leadership is another critical dimension of women's empowerment. When women participate in decision-making at household, community, and institutional levels, agricultural policies and interventions become more inclusive and effective. Women leaders also serve as role models, inspiring innovation and community action.

This session explored how empowerment, social capital, and leadership can strengthen women's roles in agriculture and contribute to resilient, equitable, and sustainable food systems. It also provided an

opportunity to share experiences, challenges, and successful approaches for advancing gender equality in the agricultural sector.



Empowering Women Farmers for Climate Adaptation Measures

Technical Session III: Women in Agriculture: Empowerment, Social Capital, and Leadership -2:15 pm to 3:30 pm



Ms. Shalini Prasad IAS
(Retd), Chairperson,
PPG Advisory

Ms. Niti Srivastava,
Joint Mission Director
UPSRLM Lucknow

Shri Onkar Pandey, IAIN

Shri Deo Datt, Director
Operation, PANI

Figure 3 Profile of speakers for technical session III



Empowering Women Farmers for Climate Adaptation Measures

Conveners of the Technical Sessions



Dr C P Srivastava
Senior Advisor, FARMER
Project

Dr. Akancha Gupta
Department of
Agriculture, Krishi
Bhawan

Shri Pratyush Ranjan Singh
Senior Manager, FARMER
project

Ms. Piush Antony
UNICEF

Figure 4 Profile of conveners for the technical sessions

SESSION HIGHLIGHTS

Inaugural Session (10:00 am to 11:00 am)

The session commenced with the formal welcome and lighting of the ceremonial lamp by the Chief Guest, Guest of Honour, **Shri Surya Pratap Shahi**, Hon'ble Minister of Agriculture, Agri Education, and Agri Research and other dignitaries. Dr. C P Srivastava, Senior Advisor, FARMER project, conveyed the welcome address and briefed the audience about the objectives and theme of the program.

He underscored the significance of empowering women for climate change adaptation measures.



Figure 5 Lighting of the ceremonial lamp by the Chief Guest

WELCOME AND INTRODUCTION ADDRESS- **SHRI AMIT MOHAN PRASAD, RETD IAS, PRINCIPAL CONSULTANT, FARMER PROJECT**

Shri Prasad highlighted the significance of organizing the conference on “Empowering Women Farmers for Climate Adaptation Measures” on 5th June, coinciding with World Environment Day and the International Year of Women Farmers. He elaborated on the objectives of the FARMER Project, implemented by the Agriculture Department, Government of Uttar Pradesh, with technical support from PPG Advisory LLP through the Gates Foundation. He stated that the project

aims to develop model climate-smart farms and facilitate the adoption of climate adaptation measures among smallholders and marginal farmers.

He emphasized that small and marginal farmers are among the most vulnerable to the adverse impacts of climate change. Therefore, promoting accessible, practical, and sustainable adaptation strategies is essential to enhance their resilience and protect agricultural livelihoods. He further noted that the FARMER Project proposes a comprehensive package of climate adaptation interventions designed to support farmers in managing emerging climate risks and improving farm sustainability.

The FARMER Project intends to adopt a using government system for locally led adaption model (without subsidies driven) so that farmers can sustain the adaptation practices by themselves.

Shri Prasad shared the journey and genesis of the FARMER Project. He stated that in January 2025, under the visionary leadership of the Hon'ble Minister of Agriculture and the guidance of the Principal Secretary, Agriculture, a new holistic approach was conceptualized to support small and marginal farmers in adopting effective climate adaptation measures. He highlighted that the need of the hour was to move beyond fragmented interventions and develop a comprehensive model addressing multiple dimensions of farm resilience. Following the approval and encouragement of the Hon'ble Agriculture Minister and the Principal Secretary, PPG Advisory LLP approached the Gates Foundation to seek support for providing technical assistance to the Government of Uttar Pradesh in implementing this innovative initiative. After a detailed due diligence process, the Gates Foundation agreed to support the initiative in November 2025. Subsequently, the FARMER Project

was formally initiated in December 2025. He emphasized that this pioneering initiative, aimed at strengthening the resilience and livelihoods of small and marginal farmers, has received strong institutional support from the Government of Uttar Pradesh.

The FARMER Project would be operational in 255 blocks of 23 districts in 6 divisions of Uttar Pradesh and in the first phase the project has started its operation in 58 blocks. The demonstration plot is being established in 0.5, 1 and 2.5 acres of land, and is based on the conceptual framework of 3F and 4 pillars which is a globally replicable model that can be adapted and implemented across diverse agro-ecological regions. The project is built around the 3F approach – Farm, Farmer, and Formulation, ensuring a comprehensive pathway for climate adaptation and resilience among small and marginal farmers.

Shri Prasad emphasized the significance of the 3F framework – Farms, Farmers, and Formulation as the foundation of the FARMER Project's globally replicable climate resilience model.

He explained that "Farms" represent the local agro-ecological conditions and serve as demonstration platforms reflecting the realities and diversity of farming systems. "Farmers" are envisioned as progressive, forward-looking change agents who can adopt, demonstrate, and promote climate-smart practices within their communities.

The third component, "Formulation," represents the comprehensive package of interventions designed under the project, comprising four key pillars:

Pillar A: Integrated Farming System (IFS) -promoting diversified and sustainable farming systems to enhance productivity, income security, and resilience.

Pillar B: 15 Low-cost Climate Adaptation Measures - enabling farmers to adopt affordable and practical solutions to manage climate risks.

Pillar C: 20 Add-on Complementary Climate-Smart Measures -introducing additional interventions to further strengthen farm resilience and sustainability.

Pillar D: Integration of Indigenous Technical Knowledge (ITK) -recognizing and incorporating traditional wisdom and locally evolved practices into modern climate adaptation strategies.

He highlighted that the integration of these three dimensions creates a comprehensive global model aimed at strengthening the climate resilience of farming communities, particularly small and marginal farmers. The FARMER Project through its implementation modalities intends to transform demonstration farms into centres of learning and innovation, enabling wider adoption of climate adaptation practices among farming communities.



Figure 6 Address by Shri Amit Mohan Prasad, Retd IAS, Principal Consultant, FARMER Project

ADDRESS BY SHRI PANKAJ KUMAR, CGM NABARD, LUCKNOW

Shri Kumar reaffirmed NABARD's commitment to future deliberations with the Agriculture Department, Government of Uttar Pradesh, and the Gates Foundation on thematic topics related to agriculture, climate change and women. He emphasized the vital role of women in agriculture, noting that they contribute directly or indirectly to 70% of global food production. However, in Uttar Pradesh, only 7% of operational landholdings are

titled in women's names. Over the past three years, women's participation in the agricultural labour force has risen from 15% to 40%, yet women accounted for only 11% of insurance claimants under the PM Fasal Bima Yojana and also largely affected by wage disparities. Although women's engagement in agriculture has increased significantly, their inclusion in institutional frameworks remains inadequate.

It is well established that women serve as custodians of traditional practices now recognized as climate resilient. He later highlighted the role of NABARD as NABARD serves as the National Implementing Entity for major international and national climate funds, such as Adaptation Fund (AF), the Green Climate Fund (GCF), and the National Adaptation Fund for Climate Change (NAFCC). He shared NABARD 2030 climate strategy document that emphasizes green lending and market linkages.

Shri Kumar highlighted NABARD's support for women-led agri and allied enterprises, especially through self-help groups and training programmes. He noted that such training has had greater impact among women than men. NABARD has promoted around 450 FPOs with nearly 60,000 women stakeholders and is prioritizing natural farming projects across 30 districts of Uttar Pradesh. Women have also received INR 85,000 crore in agricultural credit through formal banking channels. He cited the Bundelkhand watershed programme and women-led FPOs as successful initiatives, while emphasizing the need to address women's land ownership and promote green technologies for their enhanced participation and empowerment.



Figure 7 Address by Shri Pankaj Kumar, CGM NABARD, Lucknow

ADDRESS BY SHRI RAVINDER (IAS), PRINCIPAL SECRETARY AGRICULTURE, GOUP

Shri Ravinder highlighted that Uttar Pradesh benefits from favourable agro-climatic conditions and extensive irrigation infrastructure, while also facing increasing challenges due to climate change. He noted that the FARMER project is highly relevant in the current context, as it focuses on identifying and promoting effective measures to address emerging climate-related risks in agriculture. Emphasizing the critical role of demonstration plots in shaping farmers' choices and adoption of new practices, he reiterated the extension principle that "seeing is believing." He further stressed the importance of safeguarding national food security, promoting a gradual transition towards natural farming, enhancing women's participation in agriculture, and creating pathways to strengthen women's ownership and control over land resources.



Figure 8 Shri Ravinder (IAS), Principal Secretary Agriculture, GoUP

**ADDRESS BY SHRI SURYA PRATAP SHAHI,
HON'BLE MINISTER OF AGRICULTURE, AGRI
EDUCATION, AND AGRI RESEARCH**

Shri Surya Pratap Shahi, Hon'ble Minister of Agriculture, Agri Education, and Agri Research, Government of Uttar Pradesh, underscored the pivotal role of Uttar Pradesh in India's agricultural landscape. He highlighted that the state is the country's largest producer of food grains and a leading contributor to pulses, oilseeds, fruits, and vegetables, thereby playing a critical role in ensuring national food and nutritional security. Addressing the emerging challenges posed by climate change and rising temperatures, Shri Shahi emphasized the urgent need for proactive adaptation measures in agriculture. Referring to the projections of the India Meteorological Department, he noted that temperatures in Northern India could rise by around three degrees Celsius by 2047, posing significant challenges for agricultural productivity and rural livelihoods. He highlighted the indispensable role of women in agriculture, recognizing them as key contributors to sustainable farming systems and custodians of Mother Earth, and reiterated the significance of the philosophy "माता भूमि: पुत्रो अहं पृथिव्याः" (Earth is my mother, and I am her son).

Shri Shahi expressed concern over the adverse impacts of climate change and the indiscriminate use of chemical fertilizers and pesticides on agricultural ecosystems. He emphasized the importance of restoring soil health, particularly addressing declining soil organic carbon levels, and promoting sustainable agricultural practices. Appreciating the conference for bringing together the interconnected themes of agriculture, women's empowerment, and climate change, he highlighted the need for resilient and inclusive farming systems. He stressed the significance of Integrated Farming Systems (IFS) in improving farm sustainability, productivity, income generation, and livelihood security.

He informed that the FARMER project is being implemented across 23 districts and 255 blocks of Uttar Pradesh with 25% of women participation and conveyed his best wishes for its successful implementation. He emphasized that demonstration plots serve as an effective mechanism for disseminating climate-smart agricultural technologies, as practical field-level learning encourages farmers to adopt innovative and sustainable practices.

Highlighting the state's focus on technology-driven agriculture, Shri Shahi noted that the Uttar Pradesh Agriculture Growth and Enhancement Project (UP-AGREES) is supporting agricultural transformation across 24 districts with an investment of approximately ₹4,000 crore. He emphasized the importance of strengthening the complete agricultural value chain—from farm production to markets—along with promoting value addition to enhance farmers' income. He stated that farmers are scientists in their own right, possessing rich indigenous knowledge and practical experience, but often require appropriate platforms and institutional support to showcase and scale their innovations.

He highlighted the important role of the Agriculture Department and allied departments in supporting farmers through initiatives such as the “Kheti Bachao Abhiyan.” He further emphasized the adoption of precision agriculture and nutrition-sensitive farming approaches to address emerging challenges. In view of rapid urbanization and shrinking agricultural land in Uttar Pradesh, he stressed the need for sustainable, technology-enabled, and resource-efficient agricultural practices to ensure future food and nutritional security.

Expressing his concern over the rising food import bills, he urged women farmers to come together and collectively adopt innovative and sustainable approaches in pulses and oilseed production for enhancing food and nutritional security of the state and nation. He shared the inspiring experiences of women farmers from Bundelkhand, highlighting their significant contributions to milk production, efficient water management, and community-based governance. He appreciated their leadership in natural resource management and emphasized that empowering women farmers is essential for building resilient and sustainable agricultural systems.

Concluding his address, Shri Shahi highlighted various Central and State Government programmes aimed at strengthening the agricultural sector through women-sensitive and inclusive approaches. He emphasized the need to enhance women’s participation in agriculture by improving their access to resources, technologies, knowledge, and opportunities, while recognizing their invaluable contribution to sustainable agricultural development and climate resilience.



Figure 9 Address by Shri Surya Pratap Shahi, Hon'ble Minister of Agriculture, Agri Education, and Agri Research

LAUNCH OF FARMER BOOKLET AND FARMER PROJECT MANAGEMENT INFORMATION SYSTEM (MIS)

The farmer manual developed under the FARMER project encapsulates a comprehensive set of climate-smart agricultural practices that can be adopted by small and marginal farmers to enhance resilience, productivity, and sustainability. The manual was formally launched during the conference, providing farmers and stakeholders with a practical guide for implementing climate adaptation measures at the farm level.

In addition, the FARMER project has developed a Management Information System (MIS) to enable real-time monitoring and tracking of the progress of demonstration plots established under the project. The MIS will facilitate effective data management, assessment of field-level interventions, and informed decision-making for scaling up successful climate-smart practices. The MIS was also officially launched during the session.



Figure 10 Inauguration of FARMER Booklet and launch of FARMER

VOTE OF THANKS BY DR PANKAJ TRIPATHI, DIRECTOR AGRICULTURE, GOUP

Dr Pankaj Tripathi expressed his privilege and honour to propose the Vote of Thanks for this inaugural session of the State Level Conference on “Empowering Women Farmers for Climate Adaptation Measures.”

At the outset, he expressed his sincere gratitude to the Hon’ble Chief Guest, Shri Surya Pratap Shahi, Hon’ble Minister of Agriculture, Agricultural Education and Agricultural Research, Government of Uttar Pradesh, for gracing this occasion with his valuable presence and for sharing his inspiring vision on strengthening agriculture, promoting women-led farming systems, and advancing climate-resilient agricultural practices such in the state.

He specifically thanked Dr. Devesh Chaturvedi IAS (Retd), Former Secretary, Ministry of Agriculture and Farmers Welfare, GoI for his presence and guidance. He also thanked Dr. Ana Maria Loboguerrero, Director, Adaptive and Equitable Food Systems, Gates Foundation and Ms Nidhi Nath Srinivas, Senior Officer, Agriculture & Livestock Delivery Enablement, Gates Foundation for their technical guidance that she will provide in the upcoming session.

He extended special thanks to Shri Amit Mohan Prasad, Retd. IAS, Principal Consultant, FARMER Project, for providing the welcome address and setting the context for this important conference. His insights and strategies for implementation of the

FARMER project were noteworthy that will improve access to knowledge, technology, and climate-resilient agricultural practices among farmers. He later extended his heartfelt thanks to Shri Ravinder, IAS, Principal Secretary Agriculture, Government of Uttar Pradesh, for his insightful address highlighting the importance of climate-smart agriculture, policy support, significant contribution of women farmers, and seed park towards sustainable agricultural development. Dr Tripathi conveyed his sincere appreciation to Shri Pankaj Kumar, Chief General Manager, NABARD, Lucknow, for sharing valuable perspectives on financial inclusion, institutional support, and opportunities for strengthening rural livelihoods through women-centric agricultural interventions. He extended his gratitude to all government departments, partner organizations, technical experts, field functionaries, media and members of the organizing team whose collective efforts have made this event possible. Finally, he thanked all the participants, especially women farmers, for their active presence and valuable engagement. Women farmers experiences and participation are central to creating a more inclusive, sustainable, and resilient agricultural future.



Figure 11 Vote of Thanks by Dr Pankaj Tripathi, Director Agriculture, GoUP

Highlights of the Technical Sessions

Technical Session I: Women Led Climate Adaptation Measures -11:00 am to 12:15 pm

This session provided an opportunity to explore the importance of women-led climate adaptation measures, share experiences and best practices, and discuss how empowering women can contribute to building climate-resilient and sustainable agricultural systems in India. The session was convened by Dr. Akancha Gupta, Department of Agriculture, Krishi Bhawan, Uttar Pradesh and had five sub sessions.

SESSION 1 ARE GOVERNMENT PROGRAMS CENTERED AROUND CSA GENDER INCLUSIVE? DR. DEVESH CHATURVEDI IAS (RETD), FORMER SECRETARY, MINISTRY OF AGRICULTURE AND FARMERS WELFARE, GOI

Dr. Devesh Chaturvedi shared that Uttar Pradesh, with nearly 87% of its agriculture land under agriculture, plays a crucial role in India's food security. However, across India, nearly 50% of agricultural land remains unirrigated, making farming systems highly vulnerable to climate variability and increasing climate change risks. Under the National Innovations in Climate Resilient Agriculture (NICRA) programme of the Indian Council of Agricultural Research (ICAR), 109 districts have been identified as very high-risk and 201 districts as high-risk in terms of climate change vulnerability. Over the years, several climate-smart agricultural technologies and adaptation practices have been developed to address these challenges. However, their adoption at the farm level has often remained fragmented and implemented through a piecemeal

approach, rather than through a comprehensive, integrated, and location-specific strategy. This has limited their overall impact on building resilience among farming communities.

According to the National Rainfed Area Authority (NRAA), soil organic carbon levels in many agricultural lands have declined from around 1% to 0.3% over the last five to seven decades, affecting soil fertility, water-holding capacity, and ecosystem resilience. Restoring soil health, enhancing water security, promoting integrated farming systems, and scaling climate-smart practices are therefore essential for developing sustainable and climate-resilient agricultural landscapes.

Dr. Chaturvedi highlighted the factors of increased agriculture vulnerability due to frequent extreme weather, erratic rainfall, dry spell, floods, intense and frequent heat waves, drought, temperature increase due to global warming, rise in sea level/salinization of coastal areas, depleting ground water resources, soil erosion leading to nutrient/SOC loss and biodiversity loss due to mono-cropping.

He highlighted his concern over the common unsustainable agricultural practices such as - improper land management practices including tillage along the slope, poor leveling, Monocropping/unscientific cropping systems Eg;- Rice-wheat or Rice-rice, Unbalanced nutrient management with overdose of chemical fertilizers, Lack of crop residue management or recycling of crop residues, Unscientific irrigation/flooding, Non adoption of farming systems approach involving crop-tree-livestock combination.

He emphasized on हर खेत पर मेढ़- हर मेढ़ पर पेढ़, crop residue management, integrated nutrient management. India Fourth Biennial Updated Report to UNFCCC (by MoEFCC) that highlights that agriculture contributes around 14% of greenhouse gas emission and primary contributor in agriculture is enteric fermentation. Later he also highlighted that in the absence of Adaptation/Mitigation measures, climate change impact projections estimate reduction on rainfed rice, irrigated rice, wheat, Kharif Maize and Kharif ground nut. Dr. Chaturvedi highlighted the key aspect of National Mission on Sustainable Agriculture (NMSA) as one of the eight missions under National Action Plan on Climate Change (NAPCC) 2008. The strategies and Programme of Actions (PoA) of the NMSA Document was accorded 'in principle' approval by Prime Minister's Council on Climate Change (PMCCC) that aims to transform Indian agriculture into sustainable production system. He shared that India follows the principles of voluntary mitigation and proactive adaptation in agriculture as core strategy. He highlighted the key adaptation measures and under the various schemes of the Indian government as tabulated below

SI No	Adaptation Measure	Scheme
1	Climate Resilience Crops	ICAR developed 2900 Climate resilient varieties in 10 years
2	Water Use Efficiency	Per Drop More Crop - Micro irrigation/ Farm Ponds
3	Pest Surveillance and Forewarning	National Pest Surveillance System
4	Insurance and risk Management	Pradhan Mantri Fasal Beema Yojana
5	Integrated Farming System	Rainfed Area Development
6	Strengthening Value Chain	Agriculture Infrastructure Fund/ Mission for Integrated Development of Horticulture /NRLM
7	Farm Mechanization (DSR/In-situ/Ex-situ)	Sub Mission on Agriculture Mechanization/ Crop residue Management
8	Soil health and Nutrient Management	Soil Health and Fertility Scheme
9	Organic Farming	Paramparagat Krishi Vikas Yojana

10	Natural Farming	National Mission on Natural Farming
11	Agri Waste Management	Crop Residue Management
12	Horticulture Development	Mission on Integrated Development of Horticulture
13	Agro Forestry	Agro Forestry- National Bamboo Mission
14	Energy Management	PMKUSUM- solar pumps

Later Dr. Chaturvedi shared the rising share of women landowners from 10.83% in 2000 -2001 to 13.96% in 2015-2016 and in 2019-2020 its around 19%. In Pradhan Mantri Kisan Samman Nidhi - the coverage of women beneficiaries is around 23%. Under Credit- Kisan Credit Card, accounts availing interest subsidy by women farmers is 22%. KCC exclusively for Animal Husbandry and Fisheries are high at 38.97% and 40.25% respectively. 18 % of total enrolment under crop insurance in 2018-2025 was done by women. He later highlighted the encouraging role of women in agriculture and empowerment as 10 crore women part of Self Help Groups formed under NRLM. More than 70,000 Krishi Sakhi have been trained and 33,000 being utilised under NMNF as Community Resource Persons. Also, women role in extension system has increased as 1.78 lakh Pashu Sakhis, more than 1000 trained Drone Didis and 1.54 lakh Banking correspondence are delivering last mile services. He also highlighted the increasing role of women in agri value chains as 3.07 crores women are now Lakhpati didis and 1109 FPOs have all women shareholders FPOs out of 10,000 FPOs that have been formed.

Finally, Dr. Chaturvedi emphasized the need to strengthen women's participation in climate-resilient agriculture by involving more Women Didis and SHGs in value addition, providing targeted training in agriculture and allied activities, and enhancing access to credit through women-focused KCC provisions for animal husbandry and fisheries. He recommended prioritizing VB-G-RAM-G funds for

climate resilience projects with greater involvement of women in water management decisions, replicating successful models such as the ICRISAT Jhansi initiative. He also highlighted the promotion of Direct Seeded Rice (DSR) to reduce women's drudgery, conserve water, and lower cultivation costs, along with dedicated budgetary provisions for women-centric interventions in selected schemes.



Figure 12 Address by Dr. Devesh Chaturvedi IAS (Retd), Former Secretary, Ministry of Agriculture and Farmers Welfare, GoI

SESSION 2 INCREASING ROLE OF WOMEN IN AGRICULTURE AND ALLIED SECTORS: IMPORTANCE AND IMPLICATIONS- **DR. KANIJ FATIMA, ADDITIONAL DIRECTOR EXTENSION, GOVERNMENT OF UTTAR PRADESH**

Dr. Fatima shared that in rural India, women's work often begins with water, fuel, fodder, seed selection, livestock care and household nutrition connecting the environment directly to livelihoods. Women's role as conserver, adaptations and sustainability has historical evident and 2026 has been declared the International Year of the Woman Farmer to recognize, empower, and support women in agriculture worldwide. She quoted Dr. M S Swaminathan statement as "Some historians believe that it was woman who first domesticated crop plants and thereby initiated the art and science of

farming. While men went out hunting in search of food, women started gathering seeds from the native flora and began cultivating those of interest from the point of view of food, feed, fodder, fibre and fuel" signifying the role of women in agriculture since ancient times.

She presented the state of women in agriculture as Uttar Pradesh had 18.24 lakh female operational holders against 2.19 crore male operational holders (Agriculture Census 2015-16), forming only about 7.7% of individual operational holders. However, 91.3% of women in rural areas and 31.4% in urban areas are engaged in agricultural work in Uttar Pradesh. Women constituted only 19.5% of PM KISAN beneficiaries and 8.4% of PMFBY enrolments reported for 2020-21 and in rural areas, 82.3% of women workers are classified under skilled agricultural and fishery work in Uttar Pradesh. She shared the contribution of women in various agricultural sectors of the state as

- Crop production -Sowing (18%), Transplanting (19%), Weeding (22%), Harvesting (24%)
- Horticulture 25% in nursery management, seed cleaning, and vegetable cultivation; 50% in storage
- Livestock / Dairy 72% in fodder, milk production, and management

She highlighted the district-wise female farmer registered on DARSHAN portal in Uttar Pradesh as 22.47%. She shared that the Ministry of Agriculture has undertaken pro-women initiative by earmarking at least 30% of the benefits and resources for women in the beneficiary-oriented schemes and providing some special provisions under different schemes/programmes/mission. Under the FPO program. Dr. Fatima highlighted that the current FPO scheme provides for women's representation; however, it lacks specific targets for promoting women-led FPOs. Mixed FPOs do not have defined

minimum requirements for women shareholders, and the provision of one-woman Board member alone is insufficient to ensure meaningful participation in decision-making. There is also a need for improved data systems to capture women's roles in shareholding, governance, management, and business operations. Addressing practical barriers faced by women farmers, including limited access to mobility, information, finance, training, and markets, is essential for strengthening their leadership and participation in FPOs.

She highlighted the success stories of Dharampur FPO, Jaunpur, and Udhyami Mahila Producer Company Ltd. (UMPCL), Bahraich. As way forward, Dr. Fatima suggested to strengthen women's role in climate-resilient agriculture, women farmers in Uttar Pradesh should be trained in multi-layered farming, intercropping systems, and climate adaptation practices so they can emerge as managers of climate change. Women engaged in agriculture should be recognized as farmers in their own right rather than merely as labourers. Greater emphasis should be placed on forming community-based groups for climate change management under the National Rural Livelihood Mission (NRLM).

Additionally, an innovative agriculture support scheme should be developed to promote the availability of lightweight, efficient, and women-friendly farm tools to reduce drudgery and enhance productivity.



Figure 13 Address by Dr. Kanij Fatima, Additional Director Extension, Government of Uttar Pradesh

SESSION 3 INTERNATIONAL PERSPECTIVE ON WOMEN AND CLIMATE SMART AGRICULTURE- **DR. ANA MARIA LOBOGUERRERO, DIRECTOR, ADAPTIVE AND EQUITABLE FOOD SYSTEMS, GATES FOUNDATION**

Dr. Loboguerrero expressed her enthusiasm about the conference, noting its special significance as it was held on World Environment Day and aligned with the International Year of the Women Farmers. She highlighted the importance of recognizing and strengthening the role of women farmers in advancing sustainable and climate-resilient agriculture.

Dr. Loboguerrero emphasized that climate change is not an abstract phenomenon; it is already unfolding on farms, with farmers witnessing declining productivity and increasing vulnerabilities. She highlighted that women are emerging as leaders of climate action in many parts of the world and expressed her appreciation for the FARMER project's efforts to translate years of accumulated knowledge into practical solutions for farming communities.

She noted that the FARMER project addresses a critical question: How can we support small and marginal farmers in strengthening their resilience and sustaining their incomes in the face of climate

vulnerabilities? The urgency to act, she stressed, is increasingly evident.

From an international perspective, Dr. Loboguerrero highlighted that women's livelihoods are deeply connected to agriculture and food systems, particularly in some of the world's most challenging regions. Women constitute a significant share of agricultural employment, accounting for around 66% of women's employment in Sub-Saharan Africa and 71% in South Asia. However, persistent inequalities remain in access to land rights, ownership, irrigation, credit, extension services, mechanization, digital technologies, and markets. Citing global evidence, she noted that the FAO estimates a productivity gap of approximately 24% between women and men farmers operating farms of equal size, along with continued wage disparities faced by women farmers. She emphasized that these differences are not due to capability gaps but are rooted in structural barriers that limit women's access to resources and opportunities.

Dr. Loboguerrero further underlined that when women farmers have equal access to resources and services, they adopt improved technologies more effectively and invest significantly in building resilience for their farms, families, and communities. Empowering women farmers, therefore, is essential for advancing climate-resilient, inclusive, and sustainable agricultural systems.

Dr. Loboguerrero highlighted that the impacts of climate change are experienced differently by women farmers, with the consequences often being more severe for those who have limited access to essential resources such as land, water, finance, information, mobility, and time. Drawing from her international experience, she outlined three key pathways to empower women farmers in the context of climate change.

First, women farmers must be placed at the forefront of decision-making processes. She emphasized that when women have stronger control over resources and decisions, the benefits extend across households and communities, enhancing their ability to withstand climate shocks. Such empowerment also contributes to the development of production systems that are both gender-responsive and nutrition-sensitive. Second, every agricultural intervention should be designed with a focus on improving women's incomes, nutrition outcomes, and wages while reducing climate risks and drudgery. She stressed the need to enhance women's access to climate-smart technologies, extension services, finance, insurance, and market opportunities, enabling them to make informed decisions and strengthen their livelihoods.

Third, interventions must adopt a systems approach rather than remain limited to pilot initiatives. Climate adaptation solutions need to be integrated into extension systems, made accessible to women farmers, connected with local institutions, and continuously monitored to ensure that benefits reach the intended communities. The key question, she noted, is not only how many interventions are implemented, but how many women farmers are able to change their decisions, increase incomes, improve nutrition, reduce losses, and gain leadership roles within community institutions.

Concluding her remarks, Dr. Loboguerrero emphasized that women should not be viewed merely as a vulnerable group; rather, they are a critical part of the resilience strategy. She stated that women cannot be expected to transform food systems while being denied equal access to and control over finance, markets, technologies, and productive resources.

She highlighted that Uttar Pradesh has a significant opportunity through the FARMER project to

demonstrate how public programmes, self-help groups, and extension systems can collectively advance women-led climate adaptation. Such efforts can serve as a global example of smart investments that strengthen food and nutritional security, enhance incomes, and build climate resilience among farming communities.



Figure 14 Address by Dr. Ana Maria Loboguerrero, Director, Adaptive and Equitable Food Systems, Gates Foundation

SESSION 4 CHALLENGES BEFORE WOMEN FARMERS IN ADOPTING CLIMATE ADAPTATION MEASURES- **MS NIDHI NATH SRINIVAS, SENIOR OFFICER, AGRICULTURE & LIVESTOCK DELIVERY ENABLEMENT, GATES FOUNDATION**

Ms. Srinivas acknowledged the collaborative efforts supported by the Gates Foundation over the past 7–8 years in partnership with the Government of Uttar Pradesh, development sector organizations, private sector partners, community institutions, and academic institutions. She appreciated the collective commitment of all stakeholders in advancing initiatives that strengthen agricultural development, improve livelihoods, and promote inclusive and sustainable solutions for farming communities.

Ms. Srinivas highlighted that over the past 5–6 years, the Foundation's initiatives have reached approximately 16 lakh farmers, with nearly 13 lakh farmers being connected through digital platforms.

She noted that evidence from these engagements indicates that when farmers are linked with new innovations, knowledge, and digital solutions, their incomes tend to increase by 15–25%.

She further shared that farmers adopt and invest in technologies, inputs, and services when they find them relevant and beneficial. This has been demonstrated through farmer-led procurement of agricultural technologies, inputs, and services worth around INR 350 crore in last 7–8 years, reflecting the growing confidence of farmers in solutions that enhance productivity, profitability, and resilience. In the context of women farmers, Ms. Srinivas emphasized that “women don't adopt technology, they adopt better outcomes.” She explained that women's adoption decisions are driven by the relevance and tangible benefits of an intervention rather than the technology itself.

She shared her experiences and learnings that have emerged through the implementation of various development programmes, highlighting how women farmers engage with innovations, make informed choices, and adopt solutions that contribute to improved livelihoods, resilience, and well-being. Her learning can be summarized as - Women farmers focus on outcomes rather than technology itself:

Ms. Srinivas shared that women farmers do not evaluate a technology merely by its features or novelty. Instead, they begin by identifying their own issues, challenges, and priorities, and then assess how a particular technology or solution can help address those challenges. For women farmers, the value of an innovation lies in its ability to deliver meaningful outcomes such as reducing drudgery, improving productivity, saving time, enhancing income, and strengthening household well-being. Access to information is not the only challenge; relevance of information matters:

Ms. Srinivas highlighted that the issue is not that

women farmers completely lack access to information. In many cases, women have access to some degree of information, but the information available to them is often not relevant, timely, or aligned with their specific needs and challenges. She emphasized the importance of providing need-based, context-specific, and actionable information that enables women farmers to make informed decisions and adopt solutions that directly improve their livelihoods.

Technology adoption requires an enabling ecosystem like quality inputs, risk management solutions, extension services, financial services, and market linkages:

Ms. Srinivas emphasized that technology cannot be adopted in isolation; rather, it must be supported by a broader ecosystem of services and solutions. For women farmers to effectively use and benefit from new technologies, they need complementary support through timely access to quality inputs, risk management solutions, extension services, financial services, and market linkages. A holistic approach that integrates these elements enables women farmers to confidently adopt innovations and translate them into improved productivity, income, and resilience.

Technology adoption depends on access, availability, and affordability, not only on demonstrations:

Ms. Srinivas highlighted that demonstrations alone cannot ensure technology adoption among women farmers. While demonstrations can create awareness and interest, actual adoption depends on whether the technology is accessible, available when needed, and affordable for farmers. She emphasized the importance of creating an enabling environment where women farmers can access appropriate technologies, receive necessary

support services, and use these solutions sustainably.

Women farmers should be recognized as decision-makers, not merely beneficiaries:

Ms. Srinivas emphasized that women farmers should not be viewed only as beneficiaries of agricultural programmes. They possess a strong understanding of their farm economics, including costs, returns, risks, and household priorities. She highlighted that women adopt technologies when they see clear value in terms of improving farm economics, enhancing productivity, reducing costs, saving time, or increasing incomes. Therefore, technology solutions must be designed around women farmers' needs and demonstrate tangible economic benefits to encourage sustained adoption.



Figure 15 Address by Ms Nidhi Nath Srinivas, Senior Officer, Agriculture & Livestock Delivery Enablement, Gates Foundation

SESSION 5 WOMEN-LED CLIMATE-SMART AGRICULTURE FOR SUSTAINABLE LIVELIHOODS- A CASE STUDY FROM UTTAR PRADESH- **SHRI SANJAY SINGH, PARMARTH SAMAJ SEVI SANSTHAN, JHANSI**

Mr Singh shared that Parmarath Samaj Sevi Sansthan is working with the vision of promoting the holistic development of vulnerable and marginalized communities for the last 30 years. The organization works across several states, including Uttar Pradesh, Madhya Pradesh

(Bundelkhand region), Rajasthan, Haryana, and Maharashtra.

Over the years, Parmarth has developed a multi-dimensional approach to address challenges related to water, environment, and livelihoods. The organization works at the grassroots level by mobilizing communities, implementing various development interventions, and building women-led village-level volunteer groups known as “Jal Saheli.” Through the Jal Saheli initiative, women are empowered to take leadership roles in water conservation, natural resource management, social development, and community-led action. This approach has enabled women to become key change agents, contributing significantly to sustainable water management, environmental protection, and inclusive community development. He highlighted the role of Jal Saheli as

- Empowering women-led leadership at the grassroots level to address water challenges in the villages of Bundelkhand. Creating awareness among communities about water rights and water governance, enabling people to actively participate in local water management decisions.
- Mobilizing communities through public campaigns and collective action programmes to promote community ownership and participation in water conservation efforts.
- Supporting communities in the preparation of Village Water Security Plans by facilitating local planning, identifying water challenges, and developing sustainable solutions.
- Connecting communities with government schemes and programmes related to water, sanitation, livelihoods, and other development initiatives to improve access to resources and services.

- Promoting water literacy and behavioural change by encouraging communities to adopt sustainable practices for water conservation, efficient use, and improved water management.

Later he shared the Parmarth’s Women-Centric Model for Sustainable and Climate-Resilient Agriculture which is based on

- Women’s Organizations and Institutional Building: Formation and strengthening of women-led institutions such as Self-Help Groups (SHGs), Jal Saheli networks, Pani Panchayats, Bundelkhand Mahila Samiti Sangathan (BMSS), and women-led Farmer Producer Organizations (FPOs) to promote collective action, leadership, and community participation.
- Capacity Building and Skill Development: Building the capacities of women farmers through training on climate-resilient agriculture, organic farming, irrigation management, leadership, good governance, entrepreneurship, and sustainable livelihood practices.
- Technical Support and Partnerships: Providing technical guidance and support through collaborations with agricultural universities, Krishi Vigyan Kendras (KVKs), government departments, and subject experts for access to quality seeds, demonstration plots, improved technologies, and scientific farming practices.
- Promotion of Sustainable Agricultural Practices: Encouraging adoption of sustainable farming practices such as organic farming, seed treatment, crop diversification, nutrition gardens, water-efficient irrigation methods, soil

conservation, and integrated livestock management.

- **Access to Resources and Markets:** Facilitating women farmers' access to essential resources and market opportunities through seed banks, nurseries, irrigation facilities, government schemes, microfinance services, goat-rearing enterprises, and collective marketing through FPOs.
- **Economic and Social Outcomes:** The model contributes to increased productivity, reduced cultivation costs, improved water conservation, enhanced household incomes, and reduced distress migration.
- **Transformative Impact:** Through this women-centric approach, women are emerging as farmers, entrepreneurs, water managers, elected representatives, and community leaders, enabling them to lead local development and create resilient communities.

In the later part of his presentation, Shri Singh highlighted the impact of the women-centric development approach and shared the ongoing initiatives focused on water conservation, agriculture, innovations in farming practices, horticulture, kitchen gardens, micro-irrigation, and bio-farming.

He emphasized how these interventions have enabled women to actively participate in sustainable resource management, adopt climate-resilient agricultural practices, and contribute to improved livelihoods at the community level. Towards the conclusion of his presentation, Shri Singh presented selected case studies from the Bundelkhand region, showcasing women-led transformative actions and demonstrating how empowered women are driving positive change in

agriculture, water management, and local development.



Figure 16 Address by - Shri Sanjay Singh, Parmarth Samaj Sevi Sansthan, Jhansi

Technical Session II: Applying gender lens to technology, digitalization and AI in agriculture and Livestock 12:15 pm to 1:30 pm

This session provided an opportunity to discuss how technology and AI can empower women, enhance their livelihoods, strengthen climate resilience, and contribute to more inclusive and sustainable agricultural development in India. The session was convened by Shri Pratyush Ranjan Singh, Senior Program Manager, FARMER Project.

SESSION 1 ROLE OF TECHNOLOGY IN TRANSFORMING LIVESTOCK SECTOR- DR. MUTHUKUMARASAMY B. IAS, JOINT SECRETARY, DEPARTMENT OF ANIMAL HUSBANDRY AND DAIRYING (DAHD), GOI

Dr. Muthukumarasamy delivered a detailed session on the role of technology in transforming the livestock sector. He emphasized the critical importance of livestock breed improvement for enhancing productivity and improving farmers' incomes.

He highlighted the significance of breed improvement as the productivity of non-descript livestock breeds remains significantly low, limiting the potential of the livestock sector. Despite 75 years of efforts in artificial insemination programmes, the coverage of artificial insemination remains around 35%, indicating the need for accelerated efforts, improved service delivery, and greater adoption of advanced breeding technologies to achieve meaningful transformation in livestock production. Specifically, in milk production and meat production in India can be increased through artificial insemination.

Dr. Muthukumarasamy further highlighted the importance of strengthening **biosecurity, nutritional security, feed and fodder management** to enhance livestock productivity. He emphasized that improving these critical

components can significantly contribute to increased production and profitability in the livestock sector.

In the context of climate change, he noted that livestock is also associated with greenhouse gas emissions, particularly methane. Therefore, research efforts are being undertaken by state agricultural universities and national institutions to develop solutions that improve livestock productivity while reducing environmental impacts.

He highlighted that **60-70% of livestock production costs are attributed to feed**, making efficient feed and fodder management essential for reducing production costs. He stressed the need to develop strategies for reducing fodder costs, improving fodder availability, and preserving nutritional quality. He shared **silage technology** as an effective approach for fodder conservation and enhancing its nutritive value.

Dr. Muthukumarasamy emphasized that proper preparation, packing, and storage of silage are crucial for achieving desired outcomes. However, limited technical knowledge and inadequate training among farmers remain major constraints. He underscored the importance of continuous capacity-building programmes to strengthen farmers' skills in silage making and other livestock management practices. He also highlighted the persistent challenge of translating scientific innovations from laboratories to farmers' fields and stressed the need for stronger extension systems and effective knowledge dissemination to bridge the gap between research and practical application.

He informed the participants about Urea Molasses Mineral Block (UMMB) as a strategic, solid feed supplement for ruminants (cattle, goats, sheep). UMMP provides a steady, slow-release source of nitrogen (protein), fermentable energy, and essential minerals to boost digestion of low-quality crop residues, subsequently increasing milk yield and weight gain. However, this has to be still disseminated to farmers.

He shared the importance of calcium in animal feed. Calcium deficiency is a persistent issue in India. Calcium is essential for skeletal development, lactation, and egg production. Without it, animals

suffer from poor growth, weakened bones, and reduced productivity.

Dr. Muthukumarasamy also highlighted the emerging role of **Internet of Things (IoT) and Machine Learning (ML)** in transforming livestock healthcare and management. He explained that advanced technologies can support early detection and diagnosis of livestock diseases, enabling timely interventions and reducing economic losses for farmers.

He noted that drone-based imaging and camera technologies have the potential to assist in disease surveillance, monitoring animal health, and improving the efficiency of livestock management systems.

He further emphasized that the insurance sector can also leverage digital technologies and data-driven solutions for better risk assessment, faster claim processing, and improved delivery of livestock insurance services. Integrating technology across healthcare, monitoring, and financial services can significantly strengthen the resilience and sustainability of livestock-based livelihoods.

Dr. Muthukumarasamy stressed the importance of promoting biogas production as a sustainable solution for livestock-based communities. He highlighted its potential contribution to energy security, reduction in dependence on conventional fuels, efficient utilization of livestock waste, and lowering greenhouse gas emissions.

He also emphasized the significant potential of sex-sorted semen technology as it can lead to 90% probability of desired outcome. By enabling a higher probability of producing desired offspring, this technology can support better herd management, enhance dairy productivity, and contribute to more efficient and profitable livestock production systems.

Finally, Dr. Muthukumarasamy suggested that egg production and broiler farming have significant potential for expansion in the Bundelkhand and Vindhya regions of Uttar Pradesh, particularly through the active involvement of women farmers.



Figure 17 Address by Dr. Muthukumarasamy B. IAS, Joint Secretary, Department of Animal Husbandry and Dairying (DAHD), Gol

SESSION 2 ROLE OF AI IN EMPOWERING WOMEN FARMERS- MS. NEHA JAIN, IAS, MD KESCO

Highlight of the Conference Session

Ms Jain started her presentation with inviting women farmers from the participation and enquired if they had used any AI enabled app for accessing information. Four women voluntarily participated and shared their experiences of using ChatGPT and Gemini for accessing information of agriculture as well as for their personal need. The interaction highlighted the growing awareness and adoption of artificial intelligence-based solutions among rural communities. It reflected the increasing potential of AI tools in improving access to knowledge, supporting informed decision-making, and bridging information gaps among women farmers.

It was an inspiring and overwhelming moment for all the participants to learn that rural women farmers have started adopting AI-based applications to access timely, and need-based information for improving their agricultural practices. This marked a significant shift in the way women farmers are engaging with digital technologies, moving beyond traditional sources of knowledge and actively using innovative tools for decision-making. The adoption of such technologies by rural women farmers reflects their growing confidence, digital inclusion, and emerging role as informed decision-makers and managers of agricultural resources.



Figure 18 Interaction of Ms. Neha Jain, IAS, MD KESCO with Woman Farmers

Later, Ms Jain shared the features of the 'Bharat-VISTAAR' Scheme where farmers can dial 155261 to voice their queries and receive instant solutions in their local language. She shared the evolution of technologies from human, mechanical, electrical, electronics, sensor -Internet of Things, and now to Artificial Intelligence. Information and data which were available in internet are now used extensively to generate tailor made reports and outcomes. Ms. Jain highlighted that AI-based chatbots provide responses based on the information and data on which they have been trained or the inputs provided to them. She explained that the accuracy and usefulness of the information generated depend largely on the quality, relevance, and reliability of the data sources and instructions provided. She emphasized that while AI tools can serve as valuable platforms for accessing information and knowledge, users need to critically evaluate the responses and verify important information, especially in areas such as agriculture where decisions directly impact farmers' livelihoods.

Ms. Jain explained the potential of Artificial Intelligence (AI) in strengthening access to market-related information and improving linkages between farmers and consumers. She highlighted that several digital applications are emerging that enable direct interaction between producers and consumers, helping farmers access market information, understand demand trends, and explore better opportunities for selling their produce. Ms. Jain further highlighted that Artificial Intelligence (AI) has the potential to address several barriers faced by women farmers, particularly those

related to mobility, language, and access to information. She explained that AI-enabled tools can be accessed from any location and can provide information in local languages, enabling women to access knowledge and services without the need for physical travel. She also emphasized the role of AI in promoting women's financial inclusion by improving access to digital financial services, information on available schemes, credit opportunities, and financial guidance. By making services more accessible and user-friendly, AI can support women in strengthening their economic participation and decision-making power.

Ms. Jain emphasized that AI-based solutions can be most effective when they provide localized, relevant, and timely information that is tailored to the specific needs and contexts of farmers. She highlighted that AI tools should be complemented with expert guidance and advisory support to ensure that the information provided is accurate, reliable, and actionable.

Finally recommended, several measure for women-centric ai adoption in rural communities

- Hindi-first and voice-first AI solutions: Develop AI tools that work in local languages and through voice interfaces, enabling women to use them without requiring phone literacy or advanced digital skills.
- Community-owned SHG tablets for collective use: Promote shared digital resources through Self-Help Groups (SHGs), where women can collectively access AI-based information and services.
- Women as co-designers of AI tools: Ensure that women farmers are actively involved in the design, testing, and improvement of AI solutions so that these tools address their real needs and experiences.
- Krishi Sakhi-led peer learning: Train village-level women resource persons such as Krishi Sakhis to provide peer-to-peer support, helping other women farmers understand and use digital technologies effectively.

- Offline-enabled AI solutions: Develop AI platforms that can function in areas with limited connectivity, allowing users to access services offline and synchronize information when network connectivity becomes available.
- SHG champions for technology adoption: Encourage women leaders within SHGs to promote and normalize the use of digital tools, building confidence and acceptance of technology among rural women.

At the end, she also cautioned not to share personalized information with AI enabled tools.



Figure 19 Address by Ms. Neha Jain, IAS, MD KESCO

SESSION 3 SCOPE FOR MAINSTREAMING GENDER-SENSITIVE AGRICULTURAL TECHNOLOGIES- MR. NIRAJ SUBRAT, DIRECTOR, EY

Shri Subrat highlighted that women are central to agriculture but remain peripheral in the technology ecosystem. He emphasized that the fundamental question is not whether women farmers are capable of adopting technology, but whether technology platforms, data systems, and service delivery channels recognize women as farmers in the first place. He highlighted that out of all the agri-technologies that had been developed, less than 15% had gender-disaggregated design inputs

embedded in them and only 8% of the tools have considered women as a primary user.

He stressed the need to design inclusive digital and technological systems that acknowledge women's contributions to agriculture, address their specific needs, and ensure their equal access to information, innovations, services, and decision-making opportunities. Recognizing women as farmers is the first step towards enabling meaningful participation in technology-driven agricultural transformation. He later shared the E&Y model -From diagnosing exclusion to measuring adoption outcomes of technologies that are women centric. The model is based on diagnosis, design, deploy and monitor. The model enables the stakeholders to decide what qualifies, what gets promoted, who gets reached and what adoption outcomes are measured. The approach should be **systems integration – not one-off pilots**. He later shared the Technology Benchmarking Tool in the Shakti portal that can be used to evaluate a technology based on common and specific indicators.

Shri Subrat emphasized the need to **design, develop, deploy, and deliver gender-sensitive technologies through the institutional and service delivery platforms created by the state and its partners**.

He highlighted that technology solutions should not be developed in isolation but should be integrated with existing government systems, community institutions, and development partnerships. By leveraging these established "rails," gender-responsive technologies can reach women farmers more effectively, ensuring accessibility, relevance, and sustained adoption. He stressed that the focus should be on creating technology ecosystems that recognize women as farmers, respond to their specific needs, and enable them to benefit from

innovations, information, and services for improved agricultural outcomes.

Finally, Shri Subrat emphasized that the **private sector should be viewed as an important partner in agricultural transformation**. He highlighted that private sector organizations play a critical role as drivers of innovation, scalability, and sustainability. He stressed the importance of creating an enabling ecosystem where private sector partners are supported and encouraged to collaborate with government institutions, community organizations, and development partners. Such partnerships can help scale up effective technologies, strengthen service delivery, and ensure long-term sustainability of solutions benefiting women farmers and rural communities.



Figure 20 Address by Mr. Niraj Subrat, Director, EY

SESSION 4 DIGITAL INITIATIVES- HOW FAR WOMEN INCLUSION IS EMBEDDED IN DIGITALIZATION? - **SHRI ANIRUDDHA BRAHMACHARI, DIRECTOR PROGRAMS, DIGITAL GREEN INDIA**

Shri Brahmachari briefly shared about Digital Green as a global development organization working to create a world where farmers use technology and data to build prosperous communities. Digital Green partners with governments, private agencies and, most importantly, rural communities themselves to co-create digital solutions that are of the community and for the community.

He highlighted the data of UP's women workers that are in agriculture is more than 80% which is among India's highest and more than 85% of female workers in rural UP are engaged in farming & allied activities.

He highlighted that while the digital divide among women is gradually narrowing, the pace of change remains insufficient, particularly for rural women farmers. He noted that internet usage among women has nearly doubled in the past three years, reflecting growing digital adoption and awareness. However, for the rural woman who is also a farmer, significant gaps continue to exist in access, affordability, digital literacy, relevant content, and effective use of digital services. He emphasized that bridging this divide requires more than connectivity alone; it requires gender-sensitive digital solutions that address women farmers' realities, provide locally relevant information, and enable them to access technologies, services, and opportunities that improve their agricultural livelihoods.

Shri Brahmachari highlighted that **climate change is no longer a distant concern; its impacts are already being experienced on farms and within rural communities**. Uttar Pradesh is among the states highly exposed to climate-related risks, including changing rainfall patterns, extreme weather events, water stress, and increasing challenges to agricultural productivity. With 90% of long-period average for India's 2026 monsoon, weakest in 3 years and 25 districts in UP reported wheat & mustard losses from untimely rain and heat are emerging concerns of climate change. He emphasized that women farmers often bear a disproportionate share of these impacts. He cited FAO study that highlights that 34% greater income loss faced by women than men if temperatures rise by just 1°C and yield gap on female-managed vs

male-managed farms of the same size is 24 %, establishing the climate -gender intersection.

He later shared the journey of 18 Years of Digital Green work on digitizing rural social networks from video production to AI based FarmerChat. He shared the unique features of FarmerChat as it can be used in users preferred voice, photo, video format, in local languages and have inbuilt facility for feedback. It uses data from weather forecasts, market information, and agricultural research to provide real-time, context-specific advice. It also helps farmers address challenges like pest outbreaks, soil health, and market prices. The FarmerChat ensures smallholder farmers (especially women) have access to essential information that are Climate-smart, location & season-specific trusted advice. He stressed that FarmerChat provides climate solutions that place women farmers at the centre and strengthen their access to knowledge, innovations, resources, and decision-making. He shared that FarmerChat, offered in 5 languages has reached 900,000+ farmers in India with 45% women users and more than 5 million queries have been raised. In Uttar Pradesh, Digital Green has partnered with UPSRLM, Grameen Foundation, Access Development Services, SM Sehgal Foundation, 4S, and TRIF and working in 11 districts. FarmerChat is accelerating the shift to climate-smart and regenerative practices and women are leading it. Shri Brahmachari emphasized that FarmerChat is 100 times more cost-effective than conventional extension and has the potential to reach millions of farmers.

Finally, Shri Brahmachari summed up his presentation with the following recommendations

1. **Integrate gender-disaggregated data into AgriStack and state digital missions:** Ensure that agricultural digital platforms capture and use gender-specific data to recognize women as farmers, understand

their needs, and design inclusive services and programmes.

2. **Promote women-first design as the default approach for AI-based advisory services:** Invest in AI solutions that are designed around women farmers' realities, including voice-based interfaces, local dialects, and low-bandwidth accessibility to overcome digital barriers.
3. **Strengthen Pashu Sakhi and Krishi Sakhi cadres as trusted last-mile service providers:** Build the capacity and institutional support of women community resource persons who can bridge the gap between digital technologies and rural women farmers through peer-based assistance.
4. **Set a target of 50% women users for all state-funded digital agriculture programmes:** Establish clear inclusion goals to ensure that women farmers are not only reached but actively use and benefit from digital agricultural services.
5. **Invest in shared-device digital interfaces:** Develop community-based access models, such as shared devices through Self-Help Groups and local institutions, recognizing that many rural women still rely on borrowed phones and may not have individual device ownership.



Figure 21 Address by Shri Aniruddha Brahmachari, Director Programs, Digital Green India

Technical Session III: Women in Agriculture: Empowerment, Social Capital, and Leadership -2:15 pm to 3:30 pm

This session explored how empowerment, social capital, and leadership can strengthen women's roles in agriculture and contribute to resilient, equitable, and sustainable food systems. It also provided an opportunity to share experiences, challenges, and successful approaches for advancing gender equality in the agricultural sector. The session was convened by Ms. Piush Antony, from UNICEF.

SESSION 1 INVISIBLE IMPACTS OF CLIMATE CHANGE ON WOMEN FARMER HEALTH- MS. SHALINI PRASAD IAS (RETD), CHAIRPERSON, PPG ADVISORY

Mrs Prasad shared that India remains largely dependent on agriculture and allied sectors accounted for 18.2% of the GVA at current prices and 50% of population is depended on agriculture. Though the ownership of land is limited for women farmers, however agriculture work is predominantly done by women. Agriculture is now women's work as more women work in this sector- and agriculture is the only sector with more women than men. The share of female operational holders remains below 14%, even here the maximum is in the marginal category (72%).

In recent decades, the agriculture sector has become increasingly challenging due to multiple and interconnected factors, including fragmentation of landholdings, declining profitability of farming, increasing migration of men from rural areas, and the growing impacts of climate change on agricultural systems.

She added, as global temperatures continue to rise, significant changes are occurring in weather patterns, resulting in more frequent, intense, and unpredictable extreme weather events. Droughts, floods, storms, and other climate-related disasters are increasingly affecting agricultural productivity and rural livelihoods. Climate change is creating uneven impacts across regions—with deviation from the normal rainfall occurring regularly, while some areas may experience prolonged droughts and water scarcity, others may face increased risks of excessive rainfall and flooding. Dynamics of pests, pathogens, and invasive species, all of which are costly for farmers to manage, are also expected to become harder to predict. These disruptions pose serious challenges to farming systems, food security, and income stability.

She emphasized that impacts on agricultural systems pose a direct threat to global food supply. Food shortages and price hikes affect the poor more, leading to greater food insecurity. Intra household food availability impacts women more than anyone else. She cited India's Global Hunger Index (GHI) in 2025 was ranked 102nd out of 123 countries, indicating a serious level of hunger. Mrs. Prasad further highlighted the interconnected relationship between **climate risks and human health**. She explained that rising global average temperatures are increasing health vulnerabilities, particularly among populations engaged in outdoor work and those living in inadequate housing conditions, who are at greater risk of heat stress and related health impacts.

She noted that a warming climate is also influencing the spread of vector-borne diseases, such as malaria, as disease carriers are able to survive in wider geographical areas and remain active for longer periods.

She further emphasized that the increasing frequency and intensity of floods often lead to water

stagnation, poor sanitation, and unsafe living conditions, creating conditions conducive to the spread of diseases and other health complications. Mrs. Prasad highlighted that thousands of people worldwide experience injuries, illnesses, and loss of life every year due to more frequent and severe extreme weather events.

Mrs. Prasad emphasized that **biological, socio-economic, and cultural factors together influence health outcomes**, and since these factors differ between men and women, their vulnerabilities to health risks also vary. She highlighted that **mobility constraints remain a significant barrier for women in accessing healthcare services**. The high opportunity cost associated with visiting healthcare facilities—including loss of wages, household responsibilities, and the absence of adequate support systems for childcare and caregiving—often prevents women from seeking timely medical care. She further noted that while poverty affects both men and women, existing power dynamics within households and communities, along with the higher incidence of poverty among women-headed households, place women at a greater disadvantage. These structural inequalities limit women's ability to access healthcare, make decisions regarding their health, and respond effectively to climate-related health risks. Mrs. Prasad stressed the importance of gender-responsive health systems and social support mechanisms that recognize these differential vulnerabilities and ensure equitable access to healthcare for women and men.

Mrs. Prasad highlighted that household responsibilities and social factors also significantly influence women's health outcomes. She noted that inhalation of smoke from traditional cooking practices remains a major health risk for women, as

they often spend considerable time near cooking areas and bear the primary responsibility for household food preparation. Prolonged exposure to indoor air pollution can adversely affect women's respiratory health and overall well-being. She also emphasized that violence against women is a critical public health concern with serious consequences for both physical and mental health. Mrs. Prasad emphasized that women are disproportionately affected by health risks due to a combination of biological, social, economic, and cultural factors.

Mrs. Prasad emphasized that the larger question is how women's health can be better integrated into the agriculture sector. She highlighted that agricultural policies and programmes must first recognize women as farmers and ensure their inclusion in critical areas such as land rights, insurance coverage, access to credit, and other productive resources.

She stressed that agriculture should not be viewed only through the lens of production and productivity. Instead, agricultural development approaches should adopt a broader perspective that includes value addition, nutrition, health, and overall well-being.

She emphasized that when women farmers have secure rights, access to resources, and opportunities to participate in value chains, it not only strengthens their livelihoods but also contributes to improved family nutrition, better health outcomes, and more resilient agricultural systems.



Figure 22 Address by Ms. Shalini Prasad IAS (Retd), Chairperson, PPG Advisory LLP

SESSION 2 ROLE OF WOMEN IN DRIVING CLIMATE ADAPTATION FOR RESILIENCE- **MS. NITI SRIVASTAVA, JOINT MISSION DIRECTOR UPSRLM LUCKNOW**

Mrs Niti Srivastava shared the initiatives of UPSRLM related to sustainable agriculture & climate resilience initiatives. UPSRLM strategic focus is on women empowerment, climate resilience and livelihoods empowerment. She shared that SHG members at the forefront of sustainable agriculture transformation across UP and adopting low-cost, eco-friendly practices that shield small farmers from climate variability as well as integrated value chain development linking farmers to markets and premium prices.

Mrs. Srivastava highlighted the significant efforts of the Uttar Pradesh State Rural Livelihood Mission (UPSRLM) in mobilizing and empowering rural women through Self-Help Groups (SHGs). She shared that against the target of 1.18 crore women, UPSRLM has brought approximately 0.97 crore women under the SHG network. Each SHG member represents a household and is being trained in agriculture, allied activities, and other livelihood-based interventions.

She further shared that women engaged in agriculture are being connected with the National Mission on Natural Farming (NMNF) to promote sustainable and climate-resilient farming practices. Under this initiative, 8,175 SHG members have been linked with NMNF. She highlighted the important role of Krishi Sakhis as community-based extension agents, noting that 2,304 Krishi Sakhis have been certified and are supporting fellow women farmers with knowledge, advisory services, and technical guidance.

She also mentioned the collaboration with Jalpaiguri Educational Society, through which 20,400 SHG members have been trained in organic farming practices, and 81,600 certificates have been issued as part of forward market linkages of Paddy, Wheat and Oilseeds.

Under the livelihood diversification initiatives, Mrs. Srivastava highlighted several innovative interventions undertaken to enhance income opportunities for SHG members. She shared that 718 cost-effective biofloc tanks have been established for fish cultivation, enabling SHG members to engage in affordable and sustainable aquaculture activities. She further informed that 300 SHG households have been linked with beekeeping enterprises, creating additional sources of income while promoting pollination and biodiversity. In addition, 100 SHG households have been connected with biogas production, supporting clean energy access, efficient utilization of livestock waste, and reduction in dependence on conventional fuels. She also highlighted that 50 SHG members have been connected with Azolla farming, providing a sustainable source of livestock feed and supporting improved animal nutrition. She emphasized that these livelihood diversification models are helping women move beyond traditional agricultural activities, strengthen

household incomes, promote sustainable practices, and build greater resilience among rural communities.

Mrs. Srivastava highlighted solarization of irrigation pumps as an innovative UPSRLM initiative that promotes clean energy use in agriculture. She shared that it reduces dependence on fossil fuels, lowers irrigation costs, ensures reliable water access, and supports decentralized solar solutions through NRLM, in alignment with the PM-KUSUM Scheme. She also shared the case studies of milk value chains and iron-rich biofortified bajra. She emphasized that these women-led networks are strengthening grassroots extension systems, promoting sustainable agriculture, and enabling women farmers to become active contributors to rural development and climate-resilient agricultural transformation.



Figure 23 Address by Ms. Niti Srivastava, Joint Mission Director UPSRLM Lucknow

SESSION 3 WOMEN AS GUARDIANS OF SOCIAL, ECONOMIC AND ENVIRONMENTAL SYSTEMS- SHRI DEO DATT, DIRECTOR OPERATION, PANI

Shri Datt highlighted that women have always been at the centre of our social, economic, and environmental systems. Their contributions often remain invisible, yet they play a critical role in

sustaining families, communities, and natural resources.

At the social level, women are the foundation of household well-being and primary care givers. They make important decisions related to nutrition, health, education, and family welfare. Through Self-Help Groups and community institutions, women are increasingly emerging as leaders, strengthening collective action, social inclusion, and local governance. In the economic sphere, women are not only workers but also farmers, entrepreneurs, and decision-makers and household managers. They contribute significantly to agriculture, livestock, fisheries, and allied activities. Social and economic empowerment goes hand in hand and is not an isolated approach.

Shri Datt emphasized that women are also guardians of our environment. He shared PANI foundation approach where more than 800 women every month measures the water level on their water sources in their village, and later plans the water utilization and governance, testifying women's role as guardians of environment. Their close relationship with land, water, forests, and biodiversity gives them a unique role in managing natural resources. Women farmers are adopting sustainable practices such as natural farming, crop diversification, kitchen gardens, water conservation, drudgery reduction and climate-resilient agriculture. Initiatives like women-led water management groups demonstrate how women can become leaders in environmental protection and climate adaptation.

He emphasized that migration is a serious issue involving not only the movement of people, but also the loss of skills, information, and decision-making capacity. As men leave villages, women often struggle to make informed decisions because they lack access to essential information. When

women have access to land, finance, technology, skills, inputs and markets, they create stronger livelihoods, improve household incomes, and build economic resilience for their communities.

He stressed that empowering women strengthens not only individuals but entire communities. When women have equal access to opportunities, resources, and decision-making, they become powerful drivers of social progress, economic transformation, and environmental sustainability. He also emphasized the democratization of resources as essential to strengthening women's roles as social, economic, and environmental guardians.



Figure 24 Address by Shri Deo Datt, Director Operation, PANI

SESSION 4 IDENTIFYING AND NURTURING WOMEN ENTREPRENEURSHIP FOR PROMOTION OF CLIMATE SMART AGRI-TECH- **SHRI ONKAR PANDEY, SOCIAL ALPHA**

Shri Pandey emphasized that development must be approached through an ecosystem-based framework, where multi-stakeholder forums are nurtured as platforms for partnership and collective action. He observed that agriculture, in many cases, has followed an exploitative pattern, leading to soil degradation, depletion of water resources, and declining productivity per acre when compared to international standards. He cautioned that such trends are unsustainable in the long run. He further highlighted that 109 districts in India are currently classified as vulnerable due to climate and

environmental stressors. Citing ICAR research, he warned that if the current “business-as-usual” approach continues, agricultural production in India could decline by around 20% over the next 25 years. These insights underscore the urgent need to shift towards sustainable, climate-resilient, and ecosystem-based agricultural development strategies.

In the context of Uttar Pradesh, Shri Pandey highlighted that the state is blessed with rich natural resources yet faces increasing pressures on their sustainable use. He noted that approximately 90% of water resources are consumed by the agriculture sector, making efficient water management critical for long-term sustainability. He further emphasized that climate change is having a significant adverse impact on agriculture in the state, affecting rainfall patterns, water availability, and overall agricultural productivity. These challenges underline the urgent need for climate-resilient agricultural practices, improved water use efficiency, and sustainable resource management strategies.

To address the challenges of agriculture and climate change, Social Alpha has been actively working in Uttar Pradesh for the past 7-8 years. He noted that if research, development, and innovation efforts are reviewed from a gender perspective, less than 10% of them are women-centric, highlighting a significant gap in inclusive agricultural innovation. He emphasized that farm mechanization must be reoriented to be women centric. According to him, any technology or innovation that reduces the drudgery of women farmers can be considered a women-centric solution, as it directly improves their working conditions and productivity. He also pointed out critical gaps in post-harvest management, where issues such as excessive nitrogen use and lack of decentralized storage

systems require targeted technological interventions. Similarly, in the livestock sector, there is a need to develop improved technologies focused on animal health and nutrition. He further explained that Social Alpha works by identifying innovative solutions to pressing agricultural challenges and evaluating their potential for scalability. This approach supports startups and innovations that can deliver impactful, scalable, and sustainable solutions for farmers, particularly women farmers. He further explained that these startups are nurtured, piloted, and supported through linkages with finance and policy frameworks, enabling them to scale effectively and deliver services to farmers. He emphasized that by connecting innovative enterprises with funding opportunities, government policies, and ecosystem partners, these startups are able to move beyond pilot stages and reach wider farmer communities with practical, scalable, and impactful solutions. He emphasized that layering of technologies across soil, water, machinery, and post-harvest systems is essential for transforming agriculture in a holistic manner. Rather than adopting isolated interventions, an integrated approach is needed where multiple technologies work together to improve productivity, efficiency, and sustainability across the entire agricultural value chain.

He highlighted that small and medium-scale technologies are particularly important for women farmers, as they are more accessible, affordable, and practical for adoption at the farm level. Such technologies help reduce drudgery, improve efficiency, and enable women farmers to actively participate in and benefit from agricultural innovations. He further explained that Social Alpha is piloting these innovations as proof of concept, with the objective of demonstrating their effectiveness and field viability. The organization is

working to build strong linkages with government systems to support large-scale adoption of these technologies.

He highlighted that scaling is being pursued through Self-Help Groups (SHGs), Farmer Producer Organizations (FPOs), and convergence with existing government schemes, ensuring that innovations reach a wider base of farmers, particularly women farmers, in a sustainable and structured manner.

Finally, he summarized that 83 technologies have been identified with strong potential for scale-up in Uttar Pradesh. He emphasized that these innovations, if effectively supported and integrated with existing systems, can significantly contribute to improving agricultural productivity, sustainability, and farmer livelihoods across the state.



Figure 25 Address by Shri Onkar Pandey, Social Alpha

VOTES OF THANKS - SHRI SHASHANK GUPTA, CEO PPG ADVISORY LLP

On behalf of the organizers, Shri Gupta extended his sincere gratitude to all the participants for their valuable presence and active participation in the conference.

He thanked all the speakers who shared their insightful perspectives on climate change, women in agriculture, digital transformation, livestock

development, health, and sustainable livelihoods. Their rich experiences and evidence-based contributions have greatly enriched the discussions and provided meaningful directions for future action.

He expressed special appreciation to the Shri Surya Pratap Shahi, Hon'ble Minister of Agriculture, Agri Education, and Agri Research, Government of Uttar Pradesh, partner institutions, Gates Foundation, development organizations, academic experts, private sector partners, and community institutions for their continued collaboration and support in strengthening agriculture and rural livelihoods. Shri Gupta was also grateful to the women farmers and community leaders whose experiences and voices have remained at the center of this dialogue.

He acknowledged the contribution of farmers to the nation's food security as they work under the enormous risks of climate change and market prices. He acknowledged the efforts of the organizing team and all supporting staff whose dedication ensured the smooth conduct of the event.

As the session concludes, he requested all the participants to carry forward the shared commitment to strengthen climate-resilient, inclusive, and women-led agricultural transformation and plan for implementation of the learning that each participant carry from the conference.



Figure 26 Address by Shri Shashank Gupta, CEO PPG Advisory LLP

Agri Startup Participation and Demonstration Product and Services

Ekosight

Ekosight is committed to support farmers at every step of their journey—from soil preparation to harvesting. Ekosight focuses on one of the most crucial aspects of farming: soil health management.

Through countless interactions with farmers and agricultural experts, Ekosight realized that soil health is just the beginning. Crop yield and farm sustainability are influenced by a multitude of factors, including water management, nutrient optimization, disease and pest control, and technology-driven insights. Driven by this understanding, Ekosight expanded our scope to create a holistic solution that addresses these interconnected challenges.

Today, Ekosight have reached over 4000+ farmers and have truly impacted their lives by enabling them with knowledge they need to make informed decisions about their land. At the conference, Ekosight shared their portable soil testing kit that delivers instant results, precise fertilizer recommendations.

Capsber

Capsber was founded in 2017 in Bengaluru. Capsber Agriscience was built on a single conviction – that biological science holds the answer to agriculture's greatest challenges. Capsber manufacture precision biological inputs that restore the broken chains in agriculture. From their two R&D centres and a team of 80+, Capsber deploy proprietary platforms – BiointelX™, CapsElicit™, CapsulX™ and CAPSHARVEST™ – to take microbial intelligence from the lab to the field, across 20+ states in India. At the conference, Capsber demonstrated their biological inputs for crop productivity.

Stepupify

Stepupify develops smart battery-powered agricultural machines that integrate robotics, AI and sustainable technology. Their multi-utility platform enables farmers to perform several farm operations using a single machine. By combining electric mobility, modular tool attachments, lightweight design and low operating cost, Stepupify helps small and marginal farmers mechanize their farms without heavy capital investment. At the conference Stepupify demonstrated battery operated small farm machinery tools.

Rudra Solar

Rudra Solar is one of the innovators, researcher and manufacturer of sustainable solutions for society with wide range of product development through application engineering in solar thermal energy. They have products related to solar cookers, solar dryers, solar oven, solar desalination with 16 years of experience.

Occamy

Occamy is a woman led DIPP registered startup founded by microbiologists turned entrepreneurs with a vision to provide innovative, simple, affordable, researched and readily scalable microbial solutions. The primary solutions Occamy has developed and commercialized are nutraceuticals for ruminants that are made of microbial protein, proprietary probiotic strains, amino acids, minerals and vitamins. Nutraceuticals are products that offer benefits of nutrition and Pharma together in a preventive approach acting as a bridge filling gaps between the feed industry and veterinary pharma.



Figure 27 Visit of
Shri Surya Pratap Shahi, Hon'ble Minister of Agriculture, Agri Education, and Agri
Research at the startup demo station



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