Panel Discussion on

Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks

Venue: **Convention Hall, Kunming, Yunnan, China**

Date: **May 21, 2025**

Proceedings and Recommendations

Side Event Organized by

Indian Society of Plant Genetic Resources (ISPGR)
New Delhi, India

Alliance of Bioversity International and CIAT, India Office
New Delhi, India

M. S. Swaminathan Research Foundation (MSSRF)
Chennai, India

Trust for Advancement of Agricultural Sciences (TAAS)
New Delhi, India

During the

3rd International Agrobiodiversity Congress

Agrobiodiversity for People and Planet

Proceedings and Recommendations
of
Panel Discussion on
Sustainability Challenges and Solutions for
Farmer-led Initiatives on
Community Genebanks

2025

Indian Society of Plant Genetic Resources
Office Block A, 2nd Floor, National Agricultural Science Centre (NASC) Complex
Pusa Campus, Dev Prakash Shastri Marg, New Delhi-110012, India

Published by:

General Secretary
Indian Society of Plant Genetic Resources (ISPGR)
New Delhi, India
ISBN Number : 978-81-950114-6-9

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Photo Courtesy:

Alliance for Bioversity International and CIAT

Suggested Citation:

Paroda R.S., Tyagi R.K., Tripathi K. and Agrawal A. (2025) *Proceedings and Recommendations of Panel Discussion on 'Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks'*. Side Event held during 3rd International Agrobiodiversity Congress, Kunming, Yunnan, China, May 21, 2025. Indian Society of Plant Genetic Resources (ISPGR), New Delhi, India, v+28 p.

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New Delhi, India
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Preface

A Side Event (S14) titled "Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks" was organized on 21 May 2025 during the 3rd International Agrobiodiversity Congress (IAC) in Kunming, Yunnan, China. The session was co-hosted by the Indian Society of Plant Genetic Resources (ISPGR), New Delhi; Alliance of Bioversity International and CIAT, India Office, New Delhi; M.S. Swaminathan Research Foundation (MSSRF), Chennai, and Trust for Advancement of Agricultural Sciences (TAAS), New Delhi.

The event focused on addressing the growing sustainability challenges faced by community genebanks and exploring innovative, farmer-centric solutions that support their long-term sustainability. Recognizing the critical role of community genebanks in conserving traditional crop diversity and building resilient food systems, the session brought together policymakers, scientists, practitioners, students and farmer representatives for knowledge exchange and collaboration.

The organizers are deeply grateful to Dr R.S. Paroda, President of ISPGR and Chairman of TAAS, for his visionary leadership in conceptualizing and Chairing the Side Event. The session was enriched by a pre-recorded keynote address delivered by Dr T. Mohapatra, Chairperson, Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), New Delhi, along with valuable insights from several distinguished experts.

Special appreciation is extended to members of the organizing committee and supporting institutions, especially Dr R.K. Tyagi, Vice President, ISPGR; Dr Anuradha Agrawal, General Secretary, ISPGR; Dr J.C. Rana, Country Representative, Alliance of Bioversity International and CIAT; Dr E.D. Israel Oliver King, Director-Biodiversity, MSSRF. Sincere thanks are also due to Dr Dinesh Agrawal, Registrar General, PPV&FRA. The contributions of Dr. Kuldeep Tripathi, Session Rapporteur and Treasurer, ISPGR, as well as all technical and logistical team members, are gratefully acknowledged. Collective efforts of all ensured the smooth and successful execution of the session.

We are very grateful to the IAC 2025 Secretariat for providing a platform for this important dialogue. Special thanks for the tremendous support by Alliance for Bioversity International & CIAT especially Mr Stephen Weise, Managing Director for Asia and Acting Director of Partnerships & Communications, Mr Carlo Fadda, Research Director, Biodiversity for Food and Agriculture, Mr Ronnie Vernooy, Genetic Resources Policy Specialist and Ms Sonal Dsouza, Partnerships Manager for Asia.

We also extend our thanks to all delegates, including representatives from international organizations, NGOs, and research institutions, whose active and enthusiastic participation significantly enriched the discussions. Staff of ISPGR (Mr Sunil Bhardwaj and Mr Arup Das) are thanked for help in various ways.

This document provides key recommendations for integrating community genebanks into agricultural development and biodiversity conservation strategies. Based on the technical presentations and key messages from the session, these recommendations are intended to inform future strategies and shape supportive national and global policies.

Editors

July 2025

Acronyms and Abbreviations

ABS	Access and Benefit Sharing
APAARI	Asia-Pacific Association of Agricultural Research Institutions
BDA	Biological Diversity Act
CAAS	Chinese Academy of Agricultural Sciences
CGIAR	Consultative Group for International Agricultural Research
CIAT	International Center for Tropical Agriculture
CMSS	Community Managed Seed Systems
CSBs	Community Seed Banks
CWRs	Crop Wild Relatives
FAO	Food and Agriculture Organization of the United Nations
FPO	Farmers Producer Organisation
GFAR	Global Forum on Agricultural Research and Innovation
ICAR	Indian Council of Agricultural Research
IAC	International Agrobiodiversity Congress
IPR	Intellectual Property Right
ISPGR	Indian Society of Plant Genetic Resources
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
NBA	National Biodiversity Authority
NBAIM	National Bureau of Agriculturally Important Microorganisms, Mau
NBAIR	National Bureau of Agricultural Insect Genetic Resources, Bengaluru
NBAGR	National Bureau of Animal Genetic Resources, Karnal
NBFGR	National Bureau of Fish Genetic Resources, Lucknow
NBPGR	National Bureau of Plant Genetic Resources, New Delhi
NBSAP	National Biodiversity Strategies and Action Plan
NGB	National Genebank
NGO	Non-Governmental Organization
PACS	Payment for Agrobiodiversity Conservation Services
PES	Payment for Ecosystem Services
PBR	People's Biodiversity Register
PGR	Plant Genetic Resources
PPV&FRA	Protection of Plant Variety and Farmers' Right Authority
PGRFA	Plant Genetic Resources for Food and Agriculture
R&D	Research and Development
RHoMIS	Rural Household Multi-Indicator Survey
TAAS	Trust for Advancement of Agricultural Sciences
UNEP	United Nations Environment Programme

Opening Plenary Session of the 3rd International Agrobiodiversity Congress (IAC)

The 3rd International Agrobiodiversity Congress (IAC) was held at Convention Centre, Kunming, Yunnan, China, from May 20 to 22, 2025, with a central focus on the critical role of agrobiodiversity in ensuring sustainable agricultural systems for both people and the planet. Co-hosted by leading organizations like the Chinese Academy of Agricultural Sciences (CAAS), Consultative Group for International Agricultural Research (CGIAR), and the Alliance of Bioversity International and CIAT, the Congress provided a platform for global experts to deliberate on strategies for preserving and utlizing agricultural biodiversity. The event witnessed the participation of over 800 delegates from more than 50 countries.

The Opening Plenary Session was chaired by **Dr Liu Xu**, Academician of the Chinese Academy of Engineering and Professor at the Center for Crop Germplasm Resources, Institute of Crop Sciences, CAAS, Beijing. The Congress was formally inaugurated by **Mr Liu Ning**, Director General-Level Officer, Ministry of Ecology and Environment, People's Republic of China. Several dignitaries graced the Opening Session, including **Mr Tao Huaiying**, National Chief Veterinary Officer of the Ministry of Agriculture and Rural Affairs, China; **Mr Wang Xiangang**, Deputy Secretary of the Leading Party Members' Group of the People's Government of Yunnan Province, China; **Mr Yang Zhenhai**, Secretary of the Leading Party Members' Group of the CAAS, China; **Ms Marcela Quintero**, Deputy Director General, Alliance of Bioversity International and CIAT, Colombia; and Her Excellency **Dr Chanthakhone Boualaphanh**, Deputy Minister of Agriculture and Forestry, Lao PDR.

Dr R.S. Paroda, speaking during the opening plenary session of the 3rd IAC

Dr R.S. Paroda, President, Indian Society of Plant Genetic Resources (ISPGR) and Chairman, Trust for Advancement of Agricultural Sciences (TAAS), New Delhi, India, made first presentation on "*Road from Delhi-Rome-Kunming*". He provided a comprehensive account of India's progress in agrobiodiversity management following the 'Delhi Declaration on Agrobiodiversity Management', adopted during the 1st IAC held in 2016 in New Delhi.

Dr Paroda briefly recalled the organization of the first Congress and underscored the urgent need to conserve and utilize agrobiodiversity to tackle global challenges such as climate change, food insecurity, and environmental degradation. He highlighted several key achievements since 2016, including:

(I) Enhanced coordination among India's five national bureaus on genetic resources (NBPGR, NBAGR, NBFGR, NBAIM, and NBAIM).

(ii) Improved conservation strategies including community seed banks with main thrust of landraces and crop wild relatives (CWRs).

(iii) Establishment of National Safety Duplicate Genebank.

(iv) Trait discovery of landraces and CWRs.

(v) Registration of trait-specific germplasm and farmers' varieties.

(vi) Development of biofortified crops.

(vii) Organization of the '9th Governing Body Meeting of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)' and a 'Global Symposium on Farmers' Rights' in India.

(viii) Amendments of India's 'Biological Diversity Act (BDA)' and the 'National Biodiversity Strategies and Action Plan (NBSAP)'.

A central theme of Dr Paroda's address was the conservation of genetic resources, emphasizing the importance of both genebanks and in situ conservation to save traditional and wild crop varieties. He stressed that the irreversible loss of genetic diversity poses a serious long-term threat to global agriculture and called for greater investment in conservation initiatives.

He also highlighted the role of agrobiodiversity in improving livelihoods, particularly for smallholder farmers, and advocated for supportive policies that promote sustainable practices, including access to markets for diverse crops and incentives for conservation.

Dr Paroda concluded with a strong call to action for global collaboration, urging governments, research institutions, and the private sector to jointly prioritize agrobiodiversity in agricultural development agendas. His presentation eloquently captured the multifaceted benefits of agrobiodiversity, from enhancing food and nutrition security to safeguarding environmental sustainability and cultural heritage. His message resonated with the Congress's theme, "Agrobiodiversity for People and Planet" and reinforced the need for collective and coordinated action to address the pressing challenges facing agriculture worldwide.

View of the audience in the Inaugural Session of the 3rd IAC

Community genebanks, also known as community seed banks or community field genebanks, are grassroots institutions established and managed by farmers and local communities. They serve as vital repositories for conserving traditional crop varieties essential for biodiversity, food and nutritional security, and agricultural resilience. These farmer-led initiatives safeguard genetic diversity that is increasingly under threat from modern agricultural practices prioritizing uniform, high-yielding crops.

Functioning as dynamic centers of seed exchange, innovation, and cultural knowledge, community genebanks empower local communities to conserve and utilize indigenous plant genetic resources. By maintaining a broad and locally adapted genetic base, they enhance the resilience of farming systems to climate stresses and ecological disruptions, while preserving agroecological knowledge embedded in farming traditions. In doing so, they contribute to both the sustainability of rural livelihoods and the global goals of agrobiodiversity conservation.

Despite their importance, farmer-led community genebanks face a complex web of challenges threatening their sustainability. These include limited financial resources, lack of proper seed storage and processing infrastructure, absence of modern conservation technologies, and gaps in documentation and quality assurance systems. Farmers involved

in these initiatives often lack formal training or technical support in seed conservation, regeneration, and distribution. Climate change further compounds these vulnerabilities through erratic weather, droughts, and floods—directly threatening seed security and agricultural continuity.

These challenges are magnified by insufficient policy recognition and inadequate integration with formal genebank networks at national, regional, or global levels. Many community genebanks operate in silos, isolated from mainstream conservation frameworks and unsupported by national agrobiodiversity strategies.

Addressing these constraints requires a comprehensive and inclusive approach. This includes:

(i) Strengthening technical capacity through training, participatory tools, and mobile apps for genebank documentation;

(ii) Enhancing financial sustainability via microgrants, community financing models, public-private partnerships, and integration with Payment for Agrobiodiversity Conservation Services (PACS) and Payment for Ecosystem Services (PES) models;

(iii) Developing robust policy frameworks that formally recognize and incentivize the role of community genebanks within national conservation programs;

(iv) Creating platforms for collaborative networks involving farmers' collectives, facilitating organizations, research institutions, and international agencies to enable resource sharing and peer learning.

Recognizing the strategic importance of these institutions, a high-level satellite session titled 'Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks' was organized during the 3rd International Agrobiodiversity Congress (IAC) on 21 May 2025 in Kunming, Yunnan, China. The event was co-organized by the Indian Society of Plant Genetic Resources (ISPGR), the Alliance of Bioversity International and CIAT (India Office), the Trust for Advancement of Agricultural Sciences (TAAS) and the M.S. Swaminathan Research Foundation (MSSRF). The panel brought together a diverse range of stakeholders—including researchers, practitioners, policy leaders, farmer representatives, and genebank professionals—to foster dynamic dialogue on overcoming sustainability barriers and scaling up successful models. The session also highlighted gender-inclusive approaches, recognizing the central role women farmers play in seed conservation and the specific challenges they face.

Objectives

1. **To discuss the sustainability challenges faced by farmer-led community genebanks**

   Examine operational, financial, and institutional constraints that affect their long-term viability.

2. **To identify innovative solutions for enhancing financial and technical support**

   Explore scalable and context-specific approaches to strengthen infrastructure, capacity, and service delivery.

3. **To explore the role of policy in promoting sustainable practices for community genebanks**

   Assess existing policy frameworks and propose actionable recommendations to support community-based conservation systems.

   The agenda of the panel discussion is provided in Annexure 1.

Proceedings of the Panel Discussion on 'Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks'

3.1 Welcome of Dignitaries and Delegates

Panel Discussion was Chaired by Dr R S Paroda (centre), convened by Dr R K Tyagi (left) and coordinated by Dr Anuradha Agrawal (right)

At the outset, **Dr R K Tyagi**, Vice President of the ISPGR and Session Convener, welcomed the dignitaries, speakers, and delegates to the Side Event on '*Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks*'. He introduced the Chair, Dr R.S. Paroda, President, ISPGR and Chairman, TAAS, New Delhi, along with key speaker Dr T. Mohapatra, Chairperson, PPV&FRA, New Delhi (in absentia); and panellists from the organizing institutions - Dr J.C. Rana (Alliance of Bioversity International and CIAT), Dr E.D. Israel Oliver King (MSSRF, Chennai) (in absentia), Dr Anuradha Agrawal (General Secretary, ISPGR and Event Coordinator) and Dr Kuldeep Tripathi (Rapporteur). Dr Tyagi invited Dr Paroda for his opening remarks.

Welcome by Dr R K Tyagi, Vice President, ISPGR

[1] *Dr T Mohapatra, Chairperson, PPV&FR Authority, could not attend in-person but provided a recorded presentation.*
[2] *Dr E D Israel Oliver King, MSSRF, Chennai, was unable to attend due to sudden illness, however, he shared his presentation in advance. The summary and recommendations, included in this document, are based on his presentation.*

3.2 Remarks by President, ISPGR

Dr R S Paroda, President, ISPGR set the tone of deliberations of the side event focusing on community genebanks and their vital role in safeguarding local seed varieties. The genebanks and their communities are the custodians of agricultural biodiversity, playing a crucial role in ensuring food security and building resilience against the mounting challenges posed by climate change.

Dr R.S. Paroda delivering his opening remarks during the panel discussion

He mentioned that traditional knowledge of farmers and sustainable agricultural practices not only conserve diverse crop varieties but also promote resilient farming systems that are well-adapted to local environments. However, despite their importance, community genebanks face significant challenges, including limited funding, inadequate infrastructure, and the increasing impacts of climate variability, all of which threaten their long-term viability. He advocated that to overcome these challenges, innovative solutions are essential. The adoption of modern technologies, securing robust policy support, and fostering strong community collaboration can significantly enhance the sustainability and effectiveness of these genebanks.

Dr Paroda reiterated that farmer-led genebanks empower communities by preserving cultural heritage and promoting self-reliance, enabling farmers to maintain control over their seeds and livelihoods. The support of governments and NGOs is vital in providing the necessary resources and policy frameworks to sustain these initiatives. In this context, linking national genebanks with community seed banks offers mutual benefits, strengthening seed conservation efforts at multiple levels. Sharing best practices and innovations among farmers and communities further strengthens the network of community genebanks, ensuring that knowledge and resources are effectively disseminated. Today's dialogue among panelists and participants is crucial to identifying actionable steps that can support and scale sustainable farmer-led genebanks.

Dr Paroda also highlighted the significant progress made under the Protection of Plant Varieties and Farmers' Rights Act, notably with over 3,000 farmers' varieties registered and informed that nearly 800 farmers' community seed banks are established in India. This demonstrates the growing recognition and formal support for farmers' contributions to agrobiodiversity conservation.

He expected a fruitful and engaging discussion during this Side Event that will help to develop actionable steps for supporting sustainable farmer-led genebanks to empower communities and safeguard our invaluable crop diversity,

3.3 Keynote Lecture

The keynote lecture was delivered by **Dr T Mohapatra**, Chairperson of the Protection of Plant Varieties and Farmers' Rights Authority (PPVFR Authority), New Delhi as a pre-recorded video. His address on '*Sustainability Challenges and Opportunities for Community Genebanks*' set the thematic foundation for the session, offering a forward-looking perspective on the strategic role of community genebanks within national and global frameworks of agrobiodiversity conservation efforts.

Dr T. Mohapatra delivered the keynote lecture

Dr Mohapatra highlighted the importance of community genebanks as decentralized, farmer-managed repositories that preserve invaluable landraces and traditional varieties, many of which are uniquely adapted to local agro-ecologies and serve as the foundation for food and seed security in marginal farming systems. He identified multiple sustainability challenges currently faced by these grassroots institutions, including:

- Inadequate infrastructure and storage facilities,
- Limited access to trained personnel and technical knowledge,
- Weak legal recognition and policy integration,
- Insufficient and unsustainable financing, and
- Increasing threats from climate-induced hazards such as droughts, floods, and erratic weather patterns.

Dr Mohapatra proposed a comprehensive and integrated sustainability framework, emphasizing:

- The institutionalization of community genebanks into national seed and conservation programs;
- Targeted public investments and micro-financing models to ensure their financial viability;
- Deployment of digital tools and mobile technologies for seed documentation, quality control, and traceability;
- Inclusivity, with a focus on enhancing the participation and leadership of women farmers in seed system governance;
- Implementation of Payment for Agrobiodiversity Conservation Services (PACS) and Payment for Ecosystem Services (PES) to recognize and reward farmers' conservation efforts.

He highlighted the role of PPV&FRA in securing farmers' rights through legal recognition of their varieties, facilitating benefit-sharing mechanisms, and enabling the protection and valorization of traditional knowledge.

Dr Mohapatra concluded by reaffirming the Authority's commitment to empowering farmer-led conservation initiatives. He called for strengthened collaborations among research institutions, policymakers, development organizations, and farming communities to ensure that community genebanks evolve into resilient, recognized, and well-resourced institutions that are central to future food systems.

3.4 Invited Presentations

In continuation of the keynote, three invited lectures were delivered by the experts from India and abroad, each exploring complementary facets of strengthening farmer-led community genebanks. Their presentations offered insights into agrobiodiversity-based livelihoods, participatory conservation, enabling policy environments, and community empowerment strategies.

3.4.1 From Biodiversity to Prosperity: Ecosystem Services for Climate Resilience and Sustainable Agricultural Growth


Dr J.C. Rana

In his invited presentation, **Dr J.C. Rana,** Country Representative, Alliance of Bioversity International and CIAT, New Delhi, spoke on the title '*From Biodiversity to Prosperity: Ecosystem Services for Climate Resilience and Sustainable Agricultural Growth*'. He provided an in-depth overview of how agrobiodiversity, when effectively mainstreamed into agricultural systems, can serve as a foundation for climate resilience, nutrition enhancement, and rural prosperity. Based on field experiences and research-based interventions across India, he presented a comprehensive model developed by the Alliance of Bioversity International and CIAT that integrates conservation, on-farm utilization, and value chain development.

Dr Rana highlighted the alarming trends of genetic erosion and dietary simplification. Of the estimated 250,000 known plant species, only 80,000 are edible, with just 30 crop species providing 95% of the world's calories. He emphasized the ecologically and nutritionally unsustainable reliance on four staple crops—rice, wheat, maize, and potato under threat of climate change. This situation underscores the urgent need to diversify cropping systems using local genetic resources.

He presented a structured approach to revitalizing agrobiodiversity, based on four key steps:

1. **Baseline Surveys and Participatory Diagnostics:** Tools like the Rural Household Multi-Indicator Survey (RHoMIS) survey and Focus Group Discussions were employed to assess existing crop diversity, challenges, and livelihood priorities. These findings informed targeted interventions.
2. **Repatriation and Multiplication of Germplasm:** Native varieties conserved in national genebanks were repatriated to farming communities. Through seed multiplication and crowdsourced varietal trials (using ClimMob), farmers evaluated multiple varieties simultaneously, based on performance and local preferences. This "tricot" approach enhanced the relevance and adoption of genetic material while empowering farmers to make informed varietal choices.
3. **Participatory Variety Selection and Seed System Strengthening:** Farmers, especially women, were trained to conduct single-plant selection and evaluate varieties under local agro-climatic conditions. Successful selections led to the expansion of on-farm diversity and the establishment or strengthening of Community Seed Banks (CSBs). These CSBs emerged as vital hubs for seed access, conservation, and community learning.

Farmers trained on making single plant selection under participatory variety selection process under UNEP-GEF project on mainstreaming biodiversity conservation

4. **Value Addition and Branding for Market Integration:** A pioneering initiative—"Native Basket"—demonstrated how traditional varieties (e.g., indigenous rice landraces) could be elevated into branded, nutrition-rich consumer products. This involved nutritional profiling (e.g., amylose content, rancidity index), processing (like amaranth puffing), labelling, trademark registration, FSSAI certification, and market linkage support. These efforts created new income streams and improved the visibility of native crops in mainstream markets.

Dr Rana further emphasized the ecosystem services offered by native crops, including improved soil health, reduced use of inputs such as pesticides and fertilizers, and greater

adaptability under organic or low-input farming conditions. These ecological advantages, along with higher consumer acceptability due to superior taste and nutritional value, underscore the importance of promoting agrobiodiversity in both subsistence and commercial agriculture.

The presentation concluded with a call for holistic policy frameworks and institutional convergence. Dr Rana advocated for integrating agrobiodiversity into agricultural development plans, incentivizing on-farm conservation, and fostering enabling environments that support community-led seed systems. The success of these models, he noted, rests on their ability to link genetic diversity conservation with livelihood generation, thus, bridging environmental sustainability with socio-economic growth.

Community Seed Banks

3.4.2. Reimagining Community Genebanks: Innovative Approaches to Agrobiodiversity Conservation and Sustainability

Dr Oliver King

Dr Oliver King, Director, Biodiversity, MSSRF, Chennai, could not make his presentation in-person due to his ill health. However, he shared his presentation on the topic '*Reimagining Community Seed Banks: Innovative Approaches to Agrobiodiversity Conservation and Sustainability*'. His presentation emphasized the critical role of community-managed seed systems in conserving traditional, local seed varieties, particularly for small-scale and subsistence farmers. These systems are grassroots initiatives, largely driven by custodian farmers and NGOs, with minimal external intervention or formal structures. The focus is on seed saving and sharing within communities to maintain biodiversity and adapt to climate challenges.

Tribals from Koraput region of Odisha, India, (Globally Important Agricultural Heritage System) (Pic. © Oliver King)

Based on his field experiences, he elaborated on the key characteristics, challenges, and potential solutions associated with Community Managed Seed Systems (CMSS). This model is widely promoted by MSSRF across agroecological regions of India. He stressed that CMSS are vital for maintaining crop genetic diversity, which enhances resilience to climate variability, pests, and disease. By preserving traditional seeds suited to specific agro-climatic zones, these systems contribute directly to food and

nutritional security. For example, in the Koraput region of Odisha—recognized as a Globally Important Agricultural Heritage System—farmers continue to conserve more than 340 landraces of rice, in addition to numerous species of millets, pulses, vegetables, oilseeds, and medicinal plants.

The presentation also referenced collective global efforts such as the FAO-GFAR Collective Action 2022, which includes the Asian Manifesto, Global Manifesto, Global Plan of Action, and Communities of Practice on Forgotten Foods, underscoring the need to revive and support traditional food crops.

Examples of some 'Forgotten Foods' (Pic. © Oliver King)

The central role of custodian farmers who conserve, cultivate, share, and innovate with traditional varieties, providing examples of millet landraces with traits suited for mixed cropping, short duration, and resilience to poor soils was highlighted. Legal literacy on farmers' rights under national acts like PPV&FRA and biodiversity laws was identified as crucial for empowering custodian farmers and recognizing their contributions through mechanisms such as genome saviour's community recognition and registration of farmer varieties. He proposed an alternative seed system approach combining farmers' varieties and improved varieties to enhance diversity and productivity. It also introduced a holistic value chain approach to strengthen on-farm conservation and use within agroecological frameworks, linking nutrition, income, and resilience.

Several critical challenges threatening the long-term sustainability of CMSS include:

(i) **Seed Quality Management:** Ensuring purity, germination viability, and genetic stability of seeds remains a persistent issue due to lack of formal seed testing infrastructure at the grassroots level.

(ii) **Capacity Building Gaps:** Farmers need training in seed production, storage, and documentation practices. There is limited access to technical support for upgrading local seed systems.

(iii) **Policy and Legal Support:** National seed policies often overlook informal seed systems, and farmers are frequently unaware of their rights under legislations like the PPV&FR Act or the Biological Diversity Act.

(iv) **Market Limitations:** Traditional seeds often have limited access to organized markets. Farmers struggle to obtain fair prices or recognition for their native varieties.

(v) **Financial Sustainability:** Without long-term institutional or state support, many community seed banks lack the financial means to regenerate seed stocks or expand their operations.

Dr Oliver King recommended training and capacity building, improved seed quality control mechanisms, market linkages for heritage and organic seeds, technological innovations such as digitization for seed cataloguing and traceability, financial sustainability through business models for community seed banks, and policy support integrating community seed banks into national and state agricultural policies.

Training for farmers on legal aspects of plant protection at MSSRF, India (Pic. © Oliver King)

3.4.3. Framework of Farmers Rights and IPR in Community Genebanks

Dr Ronnie Vernooy, Genetic Resources Policy Specialist, Alliance of Bioversity International and CIAT, Colombia highlighted the multiple roles that community seed banks (CSBs) play in conserving local agrobiodiversity and supporting farming communities. Based on practical experiences from countries such as Nepal, Uganda, Zimbabwe, Kenya, India, and China, he outlined how CSBs serve not only to safeguard indigenous crop and tree diversity but also to enhance access to quality seeds, promote food and income security, and build community organization and empowerment. The presentation emphasized the recognition of women as key custodians and managers of agrobiodiversity, and positioned CSBs as vital platforms for knowledge sharing, farmer training, and representation of local interests.

Dr Ronnie Vernooy

To enhance the long-term sustainability of CSBs, Dr Vernooy highlighted five core strategies that enhance the sustainability of community seed banks:

(i) **Economic Sustainability through Value Addition and Income Generation:** CSBs can generate income by packaging and selling local specialty varieties (e.g., black rice in India, finger millet in Zimbabwe), seed sales (Nepal, Uganda), and processed products like composite flours (Kenya). These activities help make seed banks financially viable and incentivize community participation.

Community Seed Bank Crop Diversity from Zimbabawe (Pic. © R.Vernooy)

(ii) **Environmental Sustainability via Nature-Positive Practices:** Adoption of agroecological practices such as agroforestry, organic manure, composting, drip irrigation, natural pesticides, intercropping, and use of renewable energy (solar panels) supports seed conservation and enhances ecosystem health.

(iii) **Organizational Sustainability through Networking and Digitalization:** Building networks among community seed banks and connecting with formal seed sector actors strengthens knowledge exchange and resource sharing. Examples include the Community Seed Bank Association of Nepal and the Farmers' Seed Network in China.

Composite flours produced by Kenyan community seed bank (Pic. © R.Vernooy)

(iv) **Policy, Legal, and Institutional Support:** Enabling policies and legal recognition at local and national levels are critical for legitimizing CSBs, protecting farmers' rights, and facilitating access to resources and markets.

Zeolite beads and silica gel used to maintain seeds dry (Pic. © R.Vernooy)

(v) **Technical Sustainability by Integrating Modern Seed Conservation Technologies:** Complementing traditional seed storage methods with modern technologies such as airtight containers, desiccants (zeolite beads), and digital tools like QR codes for variety registration improves seed viability and traceability.

The presentation also underscored the multiple benefits of community seed banks beyond seed conservation, including community empowerment, food security, income generation, social cohesion, and recognition of women as custodians and managers of agrobiodiversity.

Dr Vernooy emphasized that managing CSBs requires adequate resources (funds, equipment, time), sound organizational and seed-related technical knowledge, and supportive policy environments. He illustrated these points with examples from diverse countries, showing how CSBs adapt to local contexts and contribute to agrobiodiversity conservation and sustainable livelihoods.

Dr R.S. Paroda

Dr R.S. Paroda reflected on the session's diverse inputs, acknowledging the urgent need to protect and promote farmer-led community genebanks as essential biodiversity nodes in our agricultural landscape. He noted that while ex situ conservation continues to be critical, in situ and on-farm conservation led by farmers remains a foundational pillar for resilience, especially in regions vulnerable to climate extremes.

He emphasized that India and many countries in the Global South are endowed with rich agrobiodiversity, much of which is preserved and regenerated by communities. However, policy frameworks and institutional recognition have yet to catch up with the value these communities contribute. Dr Paroda recommended that:

- A National and Regional Registry of community genebanks should be established.
- A Red List of agrobiodiversity at risk, particularly farmer varieties and landraces under threat, should be developed.
- An effective mechanism for the protection of intellectual property rights (IPRs) should be in place.
- Custodian farmers and indigenous knowledge holders should be formally recognized through incentive mechanisms and inclusion in decision-making bodies.

He reiterated the importance of integrating community seed systems with formal seed systems, allowing mutual reinforcement while respecting the autonomy and traditional practices of communities. He also called for enhanced funding, not only for conservation but for capacity building, value chain development, and the promotion of bio-enterprises

led by rural communities. Highlighting examples of successful community models from India and Southeast Asia, he stressed the need to upscale such initiatives globally through coordinated efforts among GCDT, CGIAR, UNEP, national governments, and civil society organizations. Dr Paroda carved out vital recommendations for strengthening and sustainability of community genebanks which are included in the Recommendations section. He concluded by emphasizing that protecting agrobiodiversity is no longer just a scientific obligation but a strategic imperative to ensure food sovereignty, climate adaptation, and equitable development

Dr Anuradha Agrawal, General Secretary, ISPGR & Project Director, ICAR-Directorate of Knowledge Management in Agriculture (DKMA), New Delhi, proposed the vote of thanks on behalf of the organizers, expressing sincere gratitude to the distinguished Chair, keynote speaker, panellists, and participants who contributed to a thought-provoking and impactful side event.

Dr Agrawal thanked the organizing partners—ISPGR, the Alliance of Bioversity International and CIAT TAAS, and MSSRF, —for their support and the IAC Secretariat for providing the platform. She acknowledged the support of volunteers for coordinating logistics and documentation.

Dr Anuradha Agrawal

Mementoes were presented as a token of appreciation to the participants and volunteers. She hoped that the discussions initiated during the side event would catalyse actionable points and collaborative models to sustain farmer-led genebanks and safeguard agrobiodiversity for future generations.

Consequent upon the discussion and deliberation in the Panel Discussion on 'Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks', the following recommendations emanated:

1. **Institutional Recognition:** Community genebanks, established and operated by farmers, must be formally recognized as key actors within the national and global agrobiodiversity conservation domain. Policies and programs need to be revised to integrate them into national seed systems and biodiversity conservation strategies.
2. **Integration of Policy and Legal Frameworks for Farmers' Rights and Access:** It is imperative to harmonize existing legal instruments such as the Plant Variety Protection and Farmers' Rights Act and the Biological Diversity Act to safeguard farmers' rights to conserve, exchange, and benefit from their traditional seeds. Legal literacy needs to be enhanced and institutional support for custodians is urgently needed.
3. **Sustainable Financial Support Mechanisms:** Dedicated financial support including microgrants, biodiversity stewardship payments, or public subsidies should be made available to support infrastructure, seed regeneration, record-keeping, and operational continuity of CGBs.
4. **Strengthening Technical Capacity and Innovation:** There is a need for structured capacity-building programs on seed conservation techniques, climate-resilient variety management, documentation standards, and participatory variety selection (e.g., crowdsourcing and Tricot trials). Digital innovations (seed Apps, QR coding, traceability) should be introduced.
5. **Integration with Breeding and Climate Adaptation Programs:** Community genebanks should be linked with national and CGIAR breeding initiatives to facilitate the exchange of germplasm and incorporation of locally adapted traits into breeding pipelines.
6. **Gender Equity and Youth Engagement:** Women play a critical role in on-farm seed conservation. Gender-responsive strategies that empower women as key decision makers in governance CGBs and seed conservation need to be developed. To ensure generational continuity, youth participation should be encouraged through agri-entrepreneurship models based on seed production, processing, and marketing.
7. **Developing Value Chains for Indigenous Crops:** Traditional crops conserved by CGBs offer significant nutritional and ecological benefits. Their commercialization should be promoted through branding, value addition, nutrition profiling, certification (e.g., Geographical Indications), and market linkages, targeting organic and niche markets.
8. **Transformation of Community Seed Banks into Sustainable Bio-enterprises:** Genebanks should evolve from conservation-only roles to

sustainable bio-enterprises with community ownership. Seed sales, crop-based processing, farmer producer organizations (FPOs), and local branding initiatives ("Native Basket"-like models) should be scaled to enhance economic viability.

9. **Strengthening Institutional Partnerships and Networks:** To foster knowledge exchange, seed movement and collaborative action, establish multi-stakeholder networks connecting CGBs with research institutions, NGOs, private sector, and international bodies. The organizations such as the Alliance of Bioversity International & CIAT and UNEP may leverage the expertise and support in this regard.

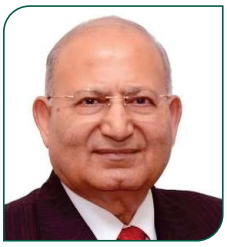
10. **Monitoring, Evaluation, and Impact Documentation:** Regular monitoring of seed diversity, seed use, varietal turnover, farmer preferences, and socioeconomic impact is essential to demonstrate outcomes and attract policy and donor support. Community-friendly tools like RHoMIS or participatory monitoring and evaluation (M&E) models should be adopted.

11. **Enabling Local Governance and Decentralized Seed Sovereignty:** Local bodies (Panchayats, Biodiversity Management Committees, FPOs) should be empowered to manage and protect community seed systems. People's Biodiversity Registers (PBRs) and Local Agricultural Heritage Sites should be leveraged for raising awareness and ensuring accountability.

12. **Inclusion in Climate and Food Security Policies:** National Adaptation Plans (NAPs), agrobiodiversity missions, and food security strategies must embed community genebanks. CGBs should be recognized as resilient, low-input systems for climate change adaptation, food diversification, and livelihood enhancement.

13. **Global Collaboration and Resource Mobilization:** International collaboration is essential for exchanging germplasm, standardizing protocols, accessing climate and genomic data, and mobilizing resources. To foster South-South cooperation and regional alliances of community genebanks, organizations such as CGIAR, UNEP, FAO, GFAR, and APAARI must provide critical support.

Time	Agenda Item	Speaker
17:00–17:05 (5 min)	**Welcome**	**R.K. Tyagi** Vice President, India Society of Plant Genetic Resources (ISPGR)
17:05–17:10 (5 min)	**Introductory Remarks**	**Raj S. Paroda** President, ISPGR & Chairman, TAAS
17:10–17:22 (12 min)	**Keynote Presentation:** Sustainability Challenges and Opportunities for Community Genebanks	**T. Mohapatra** Chairperson, Protection of Plant Varieties and Farmers Rights Authority (PPVFRA) (Video)
17:22–17:43 (21 min)	**Panelist Presentations** (7 min each)	
	From Biodiversity to Prosperity: Ecosystem Services for Climate Resilience and Sustainable Agricultural Growth'	**J.C. Rana** Senior Scientist and Country Representative for India Alliance of Bioversity International and CIAT
	Reimagining Community Genebanks: Innovative Approaches to Agro-biodiversity Conservation and Sustainability	**E.D. Israel Oliver King** Director - Biodiversity, MSSRF
	Framework of Farmers Rights and IPR in Community Genebanks	**Ronnie Vernooy** Genetic Resources Policy Specialist Alliance of Bioversity International and CIAT
17:43–17:53 (10 min)	**Discussion and Q&A Session with Participants**	Moderated by **Raj S. Paroda** President, ISPGR
17:53–17:58 (5 min)	**Closing Remarks & Future Directions**	**Raj S. Paroda** President, ISPGR & Chairman, TAAS
17:58-18:00 (2 min)	**Vote of Thanks**	**Anuradha Agrawal** General Secretary, ISPGR



Dr Raj Paroda is a distinguished Indian agricultural scientist known for his pioneering work in plant breeding, genetic resource management, and agricultural policy development. He served as Director General of ICAR and Secretary of DARE, Government of India. Dr Paroda was the first Chairman of the Global Forum on Agricultural Research (GFAR), Rome, and Executive Secretary of APAARI, Bangkok. Currently, he chairs the Trust for Advancement of Agricultural Sciences (TAAS), Delhi. He conceptualized the 1st International Agrobiodiversity Congress in 2026, now a rolling event. A Padma Bhushan awardee, he holds 21 honorary DSc degrees including from Ohio State University.

Dr Trilochan Mohapatra is a renowned Indian biotechnologist and geneticist specializing in molecular genetics and genomics. He has served as Secretary DARE and Director General ICAR. Currently, he is the Chairperson of the Protection of Plant Varieties and Farmers' Rights Authority (PPVFR Authority), India. Dr Mohapatra is credited with developing high-yielding, disease-resistant Basmati rice through molecular breeding. He has received numerous prestigious awards, including the INSA Young Scientist Award and the DBT National Bioscience Award, and holds multiple honorary doctorate degrees.

Dr Ronnie Vernooy is a rural development sociologist with over 35 years of experience in agricultural biodiversity conservation and sustainable use. Trained at Wageningen Agricultural University, Netherlands, he has worked globally on participatory action research, social and gender analysis, and capacity development. Currently, he is working as Genetic Resources Policy Specialist at the Alliance of Bioversity International and CIAT in Rome, focusing on community seedbanks that empower farmers, especially women, to preserve local crop diversity and traditional knowledge. Dr Vernooy has contributed extensively to research, publications, and initiatives supporting farmers' rights and resilient seed systems worldwide.

Dr ED Israel Oliver King is a plant biologist and ethno-botanist serving as Director – Biodiversity at the MS Swaminathan Research Foundation (MSSRF), Chennai. With over 25 years of experience, he specializes in agrobiodiversity conservation, natural resource management, value chains, gender, and sustainable development. Dr King has led numerous participatory research projects focusing on community biodiversity management, empowerment of tribal and rural communities, and sustainable livelihoods. His work supports the resilience of poor rural communities against food insecurity and climate change.

Dr Jai Chand Rana is a Senior Scientist and the Country Representative of the Alliance of Bioversity International and CIAT, India Office, New Delhi. With over three decades of expertise in plant genetic resources management, on-farm conservation, and climate change adaptation, he took initiatives to enhance agrobiodiversity for sustainable and resilient food systems in India through Alliance. Dr Rana has been working for advancing community seedbanks, participatory varietal selection, and value chain development of native crops in India.

Indian Society of Plant Genetic Resources (ISPGR), New Delhi, was founded in 1987 as a multidisciplinary scientific body involved in various issues of plant genetic resources (PGR) and related fields. The genesis of the Society was from the initiative taken by the scientists at the National Bureau of Plant Genetic Resources (NBPGR), New Delhi. The primary objective of the Society is to provide a forum to those interested in the field of PGR for expressing their views, publishing their findings and interacting with different stakeholders. Membership of the ISPGR is open to all persons involved in PGR in India and abroad. For more information, please visit: http://ispgr.nbpgr.ernet.in/ AboutUs.aspx?id=About%20Society

Alliance of Bioversity International and CIAT, is a global research-for-development organization. Its vision is that agricultural biodiversity nourishes people and sustains the planet. It delivers scientific evidence, management practices and policy options to use and safeguard agricultural and tree biodiversity to attain sustainable global food and nutrition security. Bioversity International works with partners in low-income countries in different regions where agricultural and tree biodiversity can contribute in improving nutrition, resilience, productivity and climate change adaption. Bioversity International is a CGIAR research centre. CGIAR is a global research partnership for a food-secure future. For more information, please visit: https://alliancebioversityciat.org/

The **M S Swaminathan Research Foundation (MSSRF)**, founded in 1988, stands as a global leader in leveraging science and technology for sustainable rural development. Established with the proceeds of the First World Food Prize, MSSRF embodies the visionary ethos of its founder, who transformed the landscape of food security and ecological sustainability. Guided by a pro-poor, pro-woman, and pro-nature approach, the Foundation addresses critical community challenges through holistic, interdisciplinary research and by integrating traditional knowledge with cutting-edge scientific advancements. Rooted in participatory models, MSSRF partners with local communities, public and private sectors, and academic institutions to work towards solutions that are inclusive, scalable, and impactful. For more information, please visit: https://www.mssrf.org/

Trust for Advancement of Agricultural Sciences (TAAS), New Delhi, is a neutral and vibrant Think Tank for strengthening agricultural research and innovation for development (ARI4D). This was established on 17 October 2002 with its Headquarters at the Indian Agricultural Research Institute, New Delhi, with the vision that India becomes a prosperous agricultural country through a science-based crusade for elimination of poverty, hidden hunger and malnutrition. It executes its programs and activities through collaboration and innovative partnerships with other national, regional and international organizations and networks. Its major strategic thrusts are; Policy advocacy, Technology transfer, Information dissemination/knowledge sharing, Human resource development/capacity building. For more information, please visit: https://www.taas.in/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WELCOME


3rd International Agrobiodiversity Congress
May 20-22, 2025
Side Event
WELCOME
Panel Discussion
on
Sustainability Challenges and Solutions for Farmer-led Initiatives on Community Genebanks
Date and Time
May 21, 2025 (Wednesday) | 17:00 – 18:00 h
Kunming, Yunnan, China
Objectives
To discuss sustainability challenges faced by farmer-led community genebanks
To identify innovative solutions for improving financial and technical support
To explore the role of policy in promoting sustainable practices for community genebanks
Raj S. Paroda
Tribuchan Mohapatra
Indian Society of Plant Genetic Resources (ISPGR)
Alliance of Bioversity International and CIAT, India Office
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For details contact:

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