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Cover: Farmers P Balaraju and P Pentamma harvesting Bambara groundnut, Nirven Village, Telangana, India

WHAT'S ON THE TABLE

For one moment, across one country, people from Africa, Europe, Asia and North America came together to shape the future of resilient agriculture. Inside: the journey, farmers' voices, an in-depth training programme, recognition for safeguarding genetic resources, personal reflections, and a new website for two-way learning across the ocean.
Jackie Campbell, Editor

WARM INDIA

Contributors
Dr. DK Yadava
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***23** scientists and researchers.*
***12** countries.*
***9** packed days across India.*

From 7 to 15 September 2026, they built partnerships and explored climate-resilient legumes, receiving a warm welcome from their Indian hosts.

Fusarium wilt can wipe out an entire crop. For researchers working on Bambara groundnut and other underutilised legumes, stopping its devastation across Africa and India is urgent.

The tour started in New Delhi. ICAR-NBPGR[1] hosted a four-day intensive workshop on Fusarium wilt in legumes[2], with a focus on Bambara groundnut, under the Kirkhouse Trust(KT)-supported Stress Tolerant Orphan Legumes (STOL) and Bambara Breeding Initiative (BBI) programme.

The workshop combined disease diagnostics, resistance screening, germplasm conservation and quarantine procedures with practical work on crop improvement and strengthening global ties.

Dressed in protective gear, scientists and researchers stepped inside the NBPGR polyhouse, where cowpea is grown, and watched demonstrations in the quarantine lab[3]. They also got a rare look inside the ICAR-NBPGR National Genebank before heading to the CWR Garden at Pusa Farm[4] to practise hand-crossing Bambara groundnut plants.

The group also held the STOL/BBI annual partnership meeting, a day to strengthen international research ties. In Hyderabad, researchers swapped ideas and built relationships in the Bambara screenhouse and field plot at ICAR-NBPGR Regional Station[5] [6] [7].

Next came the farmers' fields in Nirven Village, Telangana[8], and SKRAU university plots of other forgotten legumes. In Bikaner, the team saw how these legumes go commercial[9], from small local businesses to the Bikaji Foods factory. The final stop was Marama bean in Rojari, a new crop to India whose deep roots could help anchor the Thar Desert's sandy soils[10].

Some problems in farming are too big for one country, one lab or one person.

That message came up again and again.

From New Delhi to Switzerland.
From gene banks to farmers' fields.
One conclusion: progress depends on collaboration.



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2



4



3



10

Rojari

New Delhi

Bikaner



9

Hyderabad

Nirven village



5

6

8





7




Flowering Bambara Groundnut

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Dr Kuldeep Tripathi
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Contributor
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THE REAL TEST

A crop can look promising in a research plot. The real test comes when it leaves the research station and faces the realities of a working farm.

Will it grow with limited inputs?
Will it produce enough pods?
Will farmers want to grow it again?
Will they be able to sell it at market?

Across the world, millions of smallholder farmers make those decisions every year.

At Nirven Village, Telangana, farmers are already helping answer those questions for Bambara groundnut.

Working with a KVK Farm Science Centre, Dr Bhaskar Bajaru and Dr Prasanna Holajjer established and monitored on-farm trials, giving farmers the opportunity to judge the crop under real farming conditions.

As scientists and farmers gathered in the fields, all eyes were on NALBAM-6, a promising variety. Selected from the first phase of the STOL Project, the African Bambara groundnut accession is now being evaluated under local farming conditions.

What interested the international scientists was not simply how the plants looked, but what farmers were saying about them.

In neighbouring fields, Mr P. Anand Kumar and Mr P. Balaraju were seeing similar things. The crop was growing vigorously without fertiliser. Neither farmer had observed significant pest or disease problems. Compared with the groundnut growing alongside it, Bambara groundnut showed no sign of moisture stress.

What caught their attention most was how little water it appeared to need. Mr Balaraju believed it could be maintained with only occasional life-saving sprinkler irrigation during dry periods and was encouraged by the number of pods developing beneath the soil. For Dr W. Athon, the lesson could be relevant far beyond India, including in Namibia's dryland farming systems.

Scientists shared practical advice on sowing, spacing and crop management.

The visit highlighted encouraging results for Bambara groundnut under local conditions. With strong crop performance, low input requirements and positive farmer feedback, the crop has shown clear potential for further evaluation in India.













Row 1: Students, Ms R. Panda, Ms D. Tuaandi, Dr R. Musango and Dr J. Sibiya with farmers.
Row 2: Dr P. Kendabie inspecting crops with farmers; Farmer P. Balaraju shares Bambara groundnut insights; Dr Mwamba praised Bambara groundnut's potential for Indian farmers.
Row 3: Farmers harvesting peanut; P. Sujatha and P. Anand Kumar harvesting Bambara.

WHEN THE WEATHER HAS OTHER PLANS

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International scientists were about to arrive for a field visit. Then the rain came.

At ICAR-NBPGR, New Delhi, weeks of preparation suddenly hinged on the forecast. The Crop Wild Relatives (CWR) Garden held 222 different types (accessions) of Bambara groundnut grown in cemented ring pots inside a team-built mesh cage, while in a neighbouring yard, long bean plants remained uncovered.

Just days before the visit, a downpour soaked the site, turning paths to mud. Ripped netting and the threat of a whitefly-spread virus, common in Delhi, created fresh challenges.

The team acted fast. They monitored the crop continuously and installed yellow sticky traps around the plants to capture whiteflies and track pest activity.

When the participants visited on Day 2 of the workshop, the crop was ready: 222 varieties, labelled and waiting. The ring pots, netting and pest monitoring drew real interest, and the international scientists discussed how to adapt them at home.

Then came the hands-on part. Under guidance, energised scientists bent over the Bambara flowers and carried out crosses themselves, learning the flowering stage, timing and handling. Fine, fiddly work.

Rain, whiteflies and a deadline. The science went ahead because a team made sure it did.







Dr Bajaru demonstrates crossing in the CWR Garden; Dr Tripathi explains a display; scientists tending plants; mesh cage protecting Bambara groundnut accessions.


Field of moth bean at Swami Keshwanand Rajasthan Agricultural University (SKRAU), Bikaner, Rajasthan

LESSONS FROM THE SANDS

Echoes of Home

As I travelled through Rajasthan and Telangana, I found familiar ground. Despite the distance from Namibia, the challenges were familiar: scorching heat, erratic rainfall, sandy soils and precious little water. From Africa to Asia, farmers face a harsher, less predictable climate.

Crops Built for Resilience

One of the most striking lessons came from seeing fast-maturing moth bean (*Vigna aconitifolia*) and mung bean (*Vigna radiata*) thriving in harsh conditions. Their deep roots, efficient water use and rapid growth allow them to produce harvests where many crops would struggle. Seeing these crops flourish reinforced the need to diversify beyond mainstream crops as climate pressures intensify.

The Wow Moment

One of the biggest surprises was seeing research on Zombi pea (*Vigna vexillata*) at ICAR-NBPGR, New Delhi, a wild legume familiar to many Namibians as a traditional food but rarely viewed as a crop for the future. The experience reinforced the need to explore these opportunities more actively. I am encouraging my research team to investigate the domestication and improvement of *Vigna vexillata*, while evaluating other resilient dryland legumes for adaptation in Namibia.



Contributor
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> ***"It made me realise that some of the solutions to our future food and climate challenges may already be growing in our own landscapes."***

Farmers must be at the centre of research. Testing crops in real-world conditions helps identify resilient varieties and practical solutions. The experience changed my perspective on the potential of drought-resilient legumes to provide more reliable options for Namibian farmers.


Moth bean.

WHO OWNS THE FUTURE OF FOOD?

Contributor
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Every crop breeder depends on genetic diversity. Much of that diversity exists today because generations of farmers have saved seed, maintained traditional varieties and protected crops that might otherwise have disappeared.

Yet the people who safeguard these resources are often the least recognised when those same resources are used in research and breeding programmes.

For plant breeder Monika Messmer, that imbalance is impossible to ignore.

"It's a topic close to my heart," she says, reflecting on years spent working alongside farming communities.

Her concern centres on a simple but important question:

How can farmers receive proper recognition and benefit from the genetic resources they have conserved for generations?

The challenge is not straightforward. Modern agriculture depends on the movement and exchange of genetic resources. Breeders need access to diverse plant material to develop crops that can withstand drought, disease and changing



Farmer P Sujatha, prominent figure in the village, harvests Bambara groundnut for her village.

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climates. Yet systems designed to regulate access and benefit sharing often operate at national or international level, meaning the farmers who originally maintained the seeds may see little direct benefit.

Farmers' Rights

Monika believes the answer goes beyond financial compensation. In her work, she has seen the value of helping farmers become active participants in research. Training in seed selection, variety evaluation and seed multiplication helps farmers become active partners in crop improvement. Participatory breeding approaches allow farmers and scientists to learn from one another rather than working in isolation.

One example comes from a long-running organic cotton breeding project in India. Farmers, universities and breeding organisations worked together to test material across different environments. The collaboration not only improved understanding of crop performance but also generated enthusiasm among farmers who could see their contribution shaping future varieties.



ICAR-NBPGR-KT award ceremony honouring P. Sujatha and P. Anand Kumar.

Seed Custodians

Recognition matters just as much.

Monika argues that recording the names of farmers, their villages and the origins of genetic material is an important step towards ensuring that the custodians of crop diversity remain visible. Keeping farmers informed about how their material is being used helps turn them into partners rather than anonymous contributors.

She is also concerned about what may be lost if action is not taken. During a joint Chad-Swiss collection project, researchers discovered that many traditional varieties had already disappeared, leaving only a fraction of the diversity that once existed.

For Monika, the solution lies in balancing access with protection. Genetic resources need to remain available for research and crop improvement, but the communities that have conserved them should not be forgotten. She supports new approaches, including "share alike" principles and stronger recognition of farmers' contributions, while continuing to advocate for genetic resources as a public good that benefits everyone.

There may be no single solution, but one thing matters: the people who have safeguarded genetic diversity for generations should never be left out of the conversation.

Reference: Kloppenburg et al, 2024. 'The Nagoya Protocol and nitrogen-fixing maize: Close encounters between Indigenous Oaxacans and the men from Mars'



Scientists and farmers, Nirven Village, Telangana

ONE CROP. ONE COMMUNITY.

Contributor
Sean Mayes
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UK



A researcher in Kenya.
A breeder in India.
A gene bank curator in Nigeria.
A food scientist in Europe.
A collaboration project in Cambridge, Nigerian, Ghana, South Africa and India.

All may be working with Bambara groundnut. Yet until now, there has been no single place bringing that knowledge together.

BAMNUTGLOBAL aims to change that.

Bambara groundnut is drawing growing interest from researchers, breeders, development organisations and food innovators worldwide. But the work is scattered. Teams tackle similar problems without knowing who else is on the case, or where the answers already sit.

Sean Mayes describes BamNutGlobal as a single place where people can discover who is working on the crop, what projects are underway and what resources exist. More than a website, it is a community hub, open to anyone with an interest in Bambara groundnut, from researchers and breeders to organisations exploring new products. It aims to build connections across disciplines that would otherwise be hard to make.

Why does it matter? Unlike many major crops, Bambara has lacked a long-term central resource. Research is funded in short bursts, and knowledge fragments when projects end. Sean notes that previous Bambara websites lasted only as long as their funding. Groups end up competing for small grants instead of building on each other's work, and projects keep starting from scratch.



Delegates at the valedictory session of the International Training Workshop, New Delhi, 10 September 2026.

THE CASE FOR BAMBARA

2.1 billion people live in dryland regions where drought and heat are the main threats to yields.

India's 2026 monsoon was **13%** below normal. When staple crops struggle, farmers need reliable alternatives.



3 years in 5: How often maize is projected to fail in parts of Zimbabwe.

20–30 years of advocacy for more diverse farming systems.

One global community working to unlock the potential of Bambara groundnut.

The fix is already under way. In Sri Lanka, a research team led by Prof Asha Karunaratne and Prof Eranga Wimalasiri is transferring information from published Bambara studies into an underlying ‘Germinate’ database, creating a shared knowledge base so future researchers don’t repeat work that has already been done.

BamNutGlobal will not belong to any single project or organisation. It is being developed as a long-term community resource, backed by multiple partners, where anyone can contribute knowledge and experience long-term.

The crop is worth the effort. The recent group visit to Telangana, India found farmers growing Bambara groundnut without chemicals and with less water than their groundnut, and still getting viable yields.

In time, it could also serve farmers, with guidance on cultivation, crop management and disease identification in accessible formats and different languages. But first comes connecting the people already working across the Bambara landscape.



Dr. Wanga documenting some of the plants Bambara farm, Nirven Village.

The goal: move from isolated projects to a connected global community that shares knowledge, shapes priorities and speeds up progress. That community, not the website, may prove its greatest achievement.



Group visit to ICAR-NBPGR Regional Station, Rajendranagar, Hyderabad.

INSPIRED BY INDIA

Contributor
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What did you gain from participating in the international training programme in India?

I expected a basic tour of research stations. Instead, expert-led training broadened my scientific perspective. Field, laboratory and classroom sessions gave me hands-on experience in Bambara groundnut breeding, disease screening and plant pathology.

What lessons will you take home?

The seed screening, germplasm exchange and quarantine sessions had the biggest impact. They highlighted often-overlooked biosecurity steps. I now hope to work with regulators to improve seed certification and quarantine systems, because disease-free seed boosts productivity, supports farmers and strengthens food security.

What surprised you most?

I was impressed by local farmers growing Bambara groundnut for the first time, and by seeing women's empowerment in action. Despite no formal agronomic training, they showed excellent crop management and efficient water use. Every field we visited was green, with promising yields. Their success boosted my confidence: **if they can do it, why not us?**

What did your peers teach you?

Engaging with international peers gave me fresh perspectives. I was in a room full of generous people with different experiences, and I never stopped learning, particularly about Fusarium wilt, yellow mosaic virus and promising Bambara accessions from Zimbabwe.

What's next for you?

I aim to introduce and evaluate underutilised legumes under Namibian conditions, train future researchers and farmers, and become a plant breeder. This is just the beginning.

What excites you about Bambara research?

Germplasm characterisation, disease screening and cultivar development offer significant opportunities. Research into post-harvest processing, cooking quality and value-added products could also drive wider adoption and commercialisation.



Maria inspecting Bambara groundnut

PURPOSE IN BAMBARA RESEARCH

From exploring crop diversity to building connections beyond borders.

During my PhD at ICAR-Indian Agricultural Research Institute (ICAR-IARI), New Delhi, I worked on wild *Lathyrus* species, exploring their genetic diversity and potential for crop improvement.

Working with these underutilised genetic resources taught me that today's overlooked crops may hold some of tomorrow's most important solutions.

That belief stayed with me when I joined ICAR-National Bureau of Plant Genetic Resources (ICAR-NBPGR) under the Kirkhouse Trust-supported STOL Phase-II project, focusing on Bambara groundnut.

Although the crop was relatively new to me, my experience with wild legumes helped me appreciate its remarkable diversity. But I soon realised that reading about a crop and working with it in the field are two very different experience.

Mr. B. Sawil, Dr A. Wanga, Ms. R. Panda, Dr. K. Tripathi, Dr. J. Obara, Dr S. Mayes





Contributor

Rinky Resma Panda

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The international training workshop held at ICAR-NBPGR in September 2026 was a turning point. It offered far more than technical training.

Walking through Bambara groundnut trial plots in Hyderabad and farmers' fields in Telangana transformed the crop from a subject of study into a living reality, revealing how researchers and farmers work together to test its potential under different agro-climatic conditions.

Just as valuable were the conversations taking place with scientists, collaborators and farmers.

> ***Listening to their experiences, challenges and research approaches made me realise how differently the same crop can be perceived across countries, yet how closely our scientific goals are connected.***

The experience taught me that research does not end with identifying genetic diversity. It's true value lies in turning that diversity into opportunities for farmers.

Bambara groundnut has become more than a research subject. It represents collaboration, resilience and the potential to contribute to global food security.

COLOURFUL PROMISES

Contributor
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After the Bambara germplasm was removed, the remaining pulse seeds formed a striking mosaic of colours and patterns.

As a child, I was always fascinated by the natural world and by how different things work together to shape the world around us. That curiosity eventually led me towards agriculture as a career.

During the early days of my doctoral journey, many of my peers were working on major crops. I found myself drawn towards orphan and underutilised crops. I was fascinated by their potential, but I did not know where to begin.

The turning point came when my mentor, Dr. K. Tripathi, introduced me to a crop I had never heard and seen before: Bambara groundnut.

At 25, I had never even heard the name. Yet, it piqued my curiosity. In those early days, we had more questions than answers. As we explored the literature, we came across the work of ICAR-NBPGR under the KT-funded STOL programme. Suddenly, a new world of possibilities opened. From not knowing the crop to having the opportunity to work on it felt truly special.

One of our first discoveries was the remarkable diversity of Bambara groundnut seeds - their vibrant colours and patterns are amazing.

> ***The variation reminded us of a rainbow, each seed different, yet part of the same crop.***

But the journey was not without challenges. Adapting Bambara groundnut to Indian conditions has its own complexities. A field day in Wanaparthy, Telangana, gave us a different perspective. Listening to farmers who were already growing the crop helped us understand that successful research begins with understanding the realities of the field.

Meeting researchers from around the world gave me my first international exposure. We learned new techniques and practised delicate Bambara plant crossing, while conversations with doctoral and postdoctoral researchers encouraged me to think beyond my own experiments and realise that our work is part of something much bigger.

From discovering a crop, I had never heard of to becoming part of a growing community working to unlock its potential, Bambara groundnut has become more than a research subject. It has become a journey of curiosity, learning, collaboration and purpose.

Dr V. Celia Chalam, Dr Kuldeep Tripathi, and Mr N. Akhil Sai, ICAR-NBPGR





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AFRICA AND INDIA: ACCELERATING TWO-WAY LEARNING

The Stress Tolerant Orphan Legumes (STOL) programme was designed as a platform for sharing germplasm, the seeds and genetic material breeders rely on, across India and Africa. Building on that foundation, KT brought together partners from eight African countries, Europe, Asia and North America, alongside consultants and Indian scientists, to create something lasting.

The exchange was the trip's real strength: African crops can diversify India's dryland options, and Indian expertise can reinforce African breeding programmes.

This two-way learning now goes well beyond sharing seeds, with each side strengthening the other.

Work on Bambara groundnut, Marama bean and other arid legumes showed that both sides were learning.

By linking hands-on training with strategic planning, KT's investment made the exchange possible, bringing immediate learning and long-term action together.

The ICAR-NBPGR-KT Memorandum of Understanding shows what is possible. By connecting African priorities with Indian institutional capability, it turns India's South-South commitments into shared research, trained people and measurable results in the field.

That is the real return on KT's investment: trusted institutions and a network able to move stress-tolerant legumes from research into use. Because the learning runs both ways, so will the benefits, for farmers in Africa and India alike.

KT's support helps make it last.

APPRECIATION

With heartfelt thanks to the speakers, staff and organisers at ICAR-NBPGR, our partner organisations, Nirven Village farmers, and the KT community who shared their time, expertise and support. Your passion and collaboration make this work possible.



Delegates at the Crop Wild Relatives Garden, ICAR-NBPGR, Pusa Farm, New Delhi, India, September 2026

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