



Digital
Green

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GATES foundation

National Workshop on Digital Innovations for Chilli Farmers

8th February 2023 | Guntur, India





Overview

The agriculture sector is undergoing a transformation driven by promising new technologies, enabling this primary sector to move to the next level of farm productivity and profitability. Agriculture has gone through various phases of revolution, which has brought significant changes in the ways of production being undertaken by farmers.

India contributes to nearly 36% of the world's chilli production, and Andhra Pradesh and Telangana are the largest producers contributing almost 60% of chilli produced in the country. An estimated 200,000 farmers in Andhra Pradesh produce more than half the chilli grown in India, harvesting as much as one million metric tons cultivated on 209,000 hectares of land annually. However, most chilli producers face severe constraints in producing and marketing chillies due to heavy price fluctuation, inadequate market intelligence, lack of regulated markets, and storage facilities. Further, due to changing climatic conditions, there is an increased incidence of pests and diseases and the non-availability of quality inputs at the right time, which affects the quality of chilli produce. In such a scenario, digital technology has been pivotal in building the capacities of smallholder chilli farmers towards making them more resilient and has the potential to enable sustainable impact.

To increase the adoption of technologies and digital innovations in agriculture, there needs to be better education and training of farmers, sharing of information, easy availability of financial resources, and farmer-facing services. Digital Green envisages that using technology in agriculture can lead to cost savings and increased quality food production with more environmentally friendly practices.



Project EMircha contributes to the Government of India Farm to Fork Working Group under the NITI Aayog. The project introduced farmer-facing digital technology innovations among chilli farmers of Andhra Pradesh & Telangana to increase their productivity, incomes and resilience. Project EMircha has facilitated the introduction of scalable technologies in quality assaying, traceability, soil testing, and market connect, resulting in additional value creation and income opportunities for farmers. This project is working closely with the Department of Horticulture in Andhra Pradesh and Telangana and partnering with AgNext, Kalgudi, GS1, Spices Board/NEC, Krishi Tantra and ITC e-Choupal platform.

This project also demonstrates a scalable and replicable digital model based on Digital Green's video-based extension approach incorporating appropriate technology platforms to deliver timely, high-quality advisories to chilli farmers in Andhra Pradesh. Through localized digital video extension messaging, increased adoption of improved practices for chilli production has been reported. According to a research study conducted by Kalgudi Digital, one of the consortium partners of the EMircha project, there has been a 16.4% savings on inputs which have ultimately helped farmers reduce the excess use of inputs. On similar lines, through market linkages, farmers realized a benefit of Rs. 1250 per quintal, which also helped them reduce transportation costs, market committee charges and commission for intermediaries.

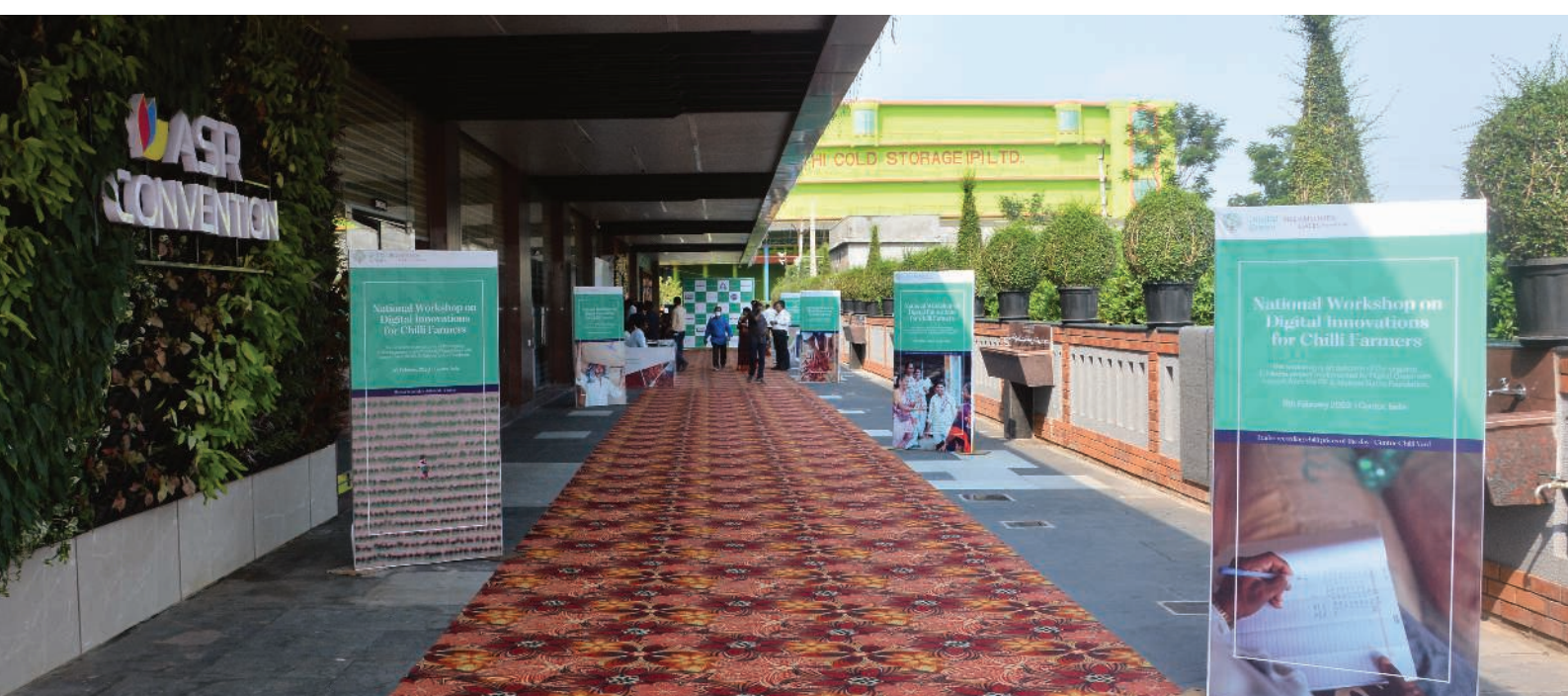
A public-private partnership approach in this project provides the opportunity to scale up, which leads to cost-effectiveness, improved data linkages between partners, and enables sustainable impact. This has been observed in the flagship SaguBagu program designed by the Government of Telangana, and C4IR, World Economic Forum.

Digital Green is implementing the EMircha and SaguBagu projects across five chilli-growing districts in Andhra Pradesh and Telangana. Learnings from these interventions will allow for the replication and transferability of technologies and approaches to a broader set of commodities and additional geographies across the country.

In the backdrop of this, Digital Green, in collaboration with the Department of Horticulture, Andhra Pradesh, organized a national workshop with the participation of key stakeholders in the ecosystem to discuss & share learnings on digital innovations for smallholder farmers and how this can enhance farmers' productivity and resilience.

Purpose of the event

The National Workshop on Digital Innovations for Chilli Farmers brought together farmers, experts, and industry partners to share their learnings from efforts on the ground and lay the foundation for successful future collaboration between government and ecosystem players to help farmers unlock the potential of digital agriculture.



Objectives of the event

- To deliberate on the opportunities of digital innovations in strengthening the chilli value chain for farmers and farmer organizations.
- To discuss learnings from the field on leveraging technology to enhance productivity and resilience.
- To further collective thinking and action on how ecosystem players can work together to unlock the potential of digital agriculture.

OPENING SESSION

Speakers:

- Mr Krishnan Pallassana, Country Director – India, Digital Green
- Mr D Sivanagamalleswara Rao, Farmer Representative, Board of Director, Akulaganapavaram FPCL, Guntur
- Ms Vemula Padmavati, Farmer Representative, Sri Jai Hanuman SHG, Guntur
- Dr Srivalli Krishnan, Senior Program Officer, Agricultural Development – Asia, Bill & Melinda Gates Foundation
- Mr Rikin Gandhi, Co-Founder & CEO, Digital Green
- Mr Yesu Ratnam, Chairman, Guntur Chilli Yard

Chief Guest: Dr S S Sreedhar, IFS, Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh

PANEL DISCUSSION 1

Role of Technology in Strengthening Chilli Value Chain for Farmers and Farmer Organisations

Moderator: Mr Vineet Singh, Senior Platform Architect, Digital Green

Panel Speakers:

- Mr Vepuri Shadrak Dharmaja, Deputy Director, Department of Horticulture, Government of Andhra Pradesh
- Mr Vivek Sehgal, Chief Business Officer, Kalgudi Digital Pvt. Ltd.
- Ms Kriti Mittal, Entrepreneur in Residence, Omidyar Network India
- Mr Amarander Y, Senior Manager, Crop Development & Procurement, ITC Limited

PANEL DISCUSSION 2

Technology Innovations to Enhance Productivity and Resilience for Chilli Farmers

Moderator: Mr N M Prusty, Board Member, Digital Green

Panel Speakers:

- Mr M Venkateswarlu, Additional Director, Department of Horticulture, Government of Andhra Pradesh
- Dr Srikanth Rupavatharam, PhD, Head, Innovations Hub, ICRISAT
- Mr Sandeep Kondaji, Founder & CEO, Krishitantra
- Ms Erica Arya, India Head, Project Tech4Dev
- Squadron Leader Mr Pratik Datta, AVP, Operations, AgNext Technologies
- Ms Ayushi Singh, Head, Training & Capacity Building, Digital Green

Q&A SESSION

VOTE OF THANKS

Speaker: Mr Narendra Kandimalla, Regional Head – Andhra Pradesh & Telangana, Digital Green

Digital Green

**NATIONAL WORKSHOP ON DIGITAL
INNOVATIONS FOR CHILLI FARMERS**

Opening Session



Opening Session

The National Workshop on Digital Innovations for Chilli Farmers started with the anchor welcoming the chief guest, distinguished speakers, participants, and especially all the farmers at the event. Chief Guest Dr S S Sreedhar, IFS, Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh, and his fellow esteemed speakers on the stage lit the ceremonial lamp to inaugurate the event.

The opening session spotlighted distinguished speakers – Mr Krishnan Pallassana, Country Director – India, Digital Green; Dr Srivalli Krishnan, Senior Program Officer, Agricultural Development – Asia, Bill & Melinda Gates Foundation (BMGF); Mr Rikin Gandhi, Co-Founder & CEO, Digital Green; and Mr Yesu Ratnam, Chairman, Guntur Chilli Yard. Dr S S Sreedhar, IFS, Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh, delivered his chief guest address at the workshop. More than 300 farmers participated in the event, and representing farmers' voices were distinguished speakers – Mr D Sivanagamalleswara Rao and Ms Vemula Padmavati.

Mr Krishnan Pallassana

Country Director – India, Digital Green

Mr Krishnan Pallassana opened the event by welcoming the farmers assembled from the state. He set the tone for the event by acknowledging that farmers do not just produce our food but have the enormous responsibility to ensure food security, rural employment, and rural productivity. Farmers significantly contribute to India's agrarian economy. He noted that despite their contribution, three fundamental issues that all farmers face are: low levels of income and productivity, lack of readiness in mitigating climate and market-related risks, and the lack of timely, precise information to make their decisions. Over the last 15 years, Digital Green's mission has been to leverage technology and data to empower farmers by increasing their productivity, enhancing their agency and building their resilience to address the plethora of challenges they face. He added that farmers and farmer organizations, in particular, should be active participants in co-creating an enabling agriculture ecosystem. Farmer organizations can be the institutions to mobilize farmers and channelize capital, inputs & technologies to build their resilience.

EMircha has been an initiative to demonstrate how technology can be an 'enabler' to accelerate farmers' and farmer organizations' outcomes. During his opening address, he thanked Chief Guest Dr S S Sreedhar, IFS, Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh, for their support, and Dr Srivalli Krishnan, Bill & Melinda Gates Foundation, for funding the EMircha project. He also thanked all the knowledge and technology partners of the project, the World Economic Forum for the SaguBagu project in Telangana, and fellow distinguished speakers.



For farmers, data is not just a transactional commodity. Data is power. Empowering farmers with ownership and control of their data can enrich agriculture productivity and vitalize markets.

Mr Krishnan Pallassana
Country Director – India, Digital Green



Mr D Sivanagamalleswara Rao

Farmer Representative & BOD Member, Akulaganapavaram FPCL, Guntur

Mr D Sivanagamalleswara Rao is a progressive chilli farmer from Guntur. He is one of the project's beneficiaries and has availed the digital services like video-based advisories, quality testing, and market linkages. At the event, he expressed that he attended the Chilli output buyer-seller meet organized by Digital Green and Kalgudi Digital at Guntur a year ago. Chilli farmers had the chance to interact with the buyers and understand the market requirements for better prices.

Back then, they were unaware of the quality parameters and the importance of having quality produce for higher prices. With the support of Digital Green, 600 farmers from their FPO located at Akulaganapavaram could get their products tested for their quality, of which 180 tested A grade, which has helped them generate a better price for their produce in the market. Also, they could get ready access to inputs like biofertilizers, Azolla, VAM, Buevaria Bassiana and others provided by the Kalgudi team. He expressed his satisfaction with the services offered by being a project beneficiary and stated that this would greatly help the farmers in the long run.



Ms Vemula Padmavati

Farmer Representative, Sri Jai Hanuman SHG, Guntur

Ms Vemula Padmavati is a model chilli farmer from Sri Jai Hanuman SHG in Nagireddipalem village, Guntur. She represented women farmers at the event. She explained that videos have helped her farming community understand good agricultural practices for chilli and pest management practices. She further shared that through mobile phones, they have been able to share videos with fellow farmers in their community, making them more resilient in the face of numerous challenges.



Dr Srivalli Krishnan

Senior Program Officer, Agricultural Development - Asia, Bill & Melinda Gates Foundation

Dr Srivalli Krishnan began by congratulating Digital Green and all consortium partners for reaching 43,000 chilli farmers in Andhra Pradesh and Telangana. She also thanked Chief Guest Dr S S Sreedhar, IFS, for his participation in this event and for establishing strong collaboration with the government.



Dr Srivalli Krishnan highlighted the increasing relevance of digital technology to find solutions for the issues that farmers face and added that BMGF has been working to identify digital innovations in the farm sector that can achieve impact at scale. She stated that the EMircha project has been a success story of collaboration, coordination and convergence between agricultural ecosystem players. This initiative has successfully identified and demonstrated digital innovations that can inspire wider replications and adaptations to impact farmers at scale.



The Foundation has been supporting to identify digital innovations in the farm sector that can impact at scale. EMircha project has identified and demonstrated some of those innovations that can inspire wider replications and adaptations. We thank the Governments in Andhra Pradesh and Telangana and congratulate Digital Green and other partners for the excellent delivery of the project impact.

Dr Srivalli Krishnan
Senior Program Officer
Agricultural Development - Asia
Bill & Melinda Gates Foundation



Mr Rikin Gandhi

Co-Founder & CEO, Digital Green

Mr Rikin Gandhi thanked the Department of Agriculture, Department of Horticulture, Bill & Melinda Gates Foundation, and all project consortium partners who have made this project successful. He also acknowledged and expressed his gratitude to all the farmers present at the event.

Mr Rikin Gandhi recounted his journey of starting Digital Green. While growing up, he always regarded astronauts as heroes. That is until he encountered a very different kind of hero in 2006 when he visited rural India – the smallholder farmers. Not only do they work tirelessly to make agriculture a source of prosperity for themselves and their communities, but they also represent a very unique combination of 'brains and brawn' that inspired him to start this journey. He saw the gap technology could fill in connecting farming communities and the agricultural ecosystem.

At Digital Green, community videos by and for farmers helped amplify farmers' social networks and government extension systems. He remarked that the EMircha project is an inspiration as it has demonstrated that farmers gain agency when collectivized and when they have control over their data. He spoke about the future vision of technology in agriculture, stating that data is the 'digital and social infrastructure' that can empower farmers to connect with a convergent set of public and private organizations to bring transformative change in their lives and communities.



Agricultural technologies have had a long history: from the plough to the mobile phone. At Digital Green, we've seen how videos by and for farmers can amplify the informal social networks of farmers and government extension. Farmers gain agency when collectivized and when they have control over technology and their own data.

Mr Rikin Gandhi
Co-Founder & CEO, Digital Green



Mr Yesu Ratnam

Chairman, Guntur Chilli Yard

Mr Yesu Ratnam addressed the gathering and shared his journey as a retired DIG Police who served for 37 years. Post-retirement, out of personal interest in farming and intending to help better his farming fraternity, he took up the office of the Guntur Chilli Yard as a Chairman. Mr Ratnam expressed the need for quality chilli right from the sowing time as it significantly impacts health, nutrition, and farmers' economic livelihood. He added that the Guntur Chilli Yard is the largest dried chillies export market that caters to farmers across Andhra Pradesh and Telangana, Tamil Nadu, and other nearby states to trade their chillies. Approximately 150,000 bags of chillies are sold every day. He promised to extend his full support, in collaboration with the Government of Andhra Pradesh, Department of Horticulture and Digital Green, to help the chilli farmers earn a better living.



Farmers are our heroes. Newer technologies and innovations are the most impactful when they reach the last mile farmer. In a major chilli growing district like Guntur, programs such as EMircha have demonstrated the importance of technology in building the capacities of farmers to enhance their productivity and income.

Mr Yesu Ratnam
Chairman, Guntur Chilli Yard



Dr S S Sreedhar, IFS

Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh

Chief Guest Dr S S Sreedhar, IFS, Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh, congratulated Digital Green for delivering a high-impact project that has benefitted more than 43,000 small and medium chilli farmers in the states of Andhra Pradesh & Telangana. He stated that Andhra Pradesh is the largest producer of chillies in the country, and roughly a third of the chillies produced are exported to countries in South East Asia, the Middle East and other parts of the world. Agriculture and allied sectors contribute significantly to the country's GDP, but farmers' remuneration does not reflect that. He shared that under the able leadership of the honourable Chief Minister of Andhra Pradesh, they introduced the unique concept of RBKs or the Rythu Bharosa Kendras (Farmers Assurance Centres) and other initiatives to help farmers procure subsidized inputs and enhance their incomes. Cognizant of the previous year's climate aberrations that have accrued an enormous loss for farmers, he added that the government is helping to build a robust digital ecosystem by promoting various technologies in the state.

Dr S S Sreedhar, IFS, concluded that technologies such as quality assaying have increased farmers' awareness of the importance of graded chillies, which ultimately increased their bargaining power. Addressing farmers at the event, he assured them that government systems would continue to support them in adopting new practices and achieving higher remuneration. He welcomed Digital Green and Bill & Melinda Gates Foundation to expand the scope of their interventions to cover more farmers and crops across the state.



The Department of Horticulture has implemented several farmer-facing initiatives, including the Dr YSR Thotabadi program, to build a robust digital ecosystem and help farmers enhance their productivity and incomes.

We would welcome Digital Green and Bill & Melinda Gates Foundation to expand the scope and reach of their interventions to cover more farmers.

Dr S S Sreedhar, IFS
Commissioner of Horticulture &
Sericulture, Government of Andhra Pradesh



Digital Green was awarded a certificate of appreciation by the Department of Horticulture, Government of Andhra Pradesh.



PANEL DISCUSSION 1

Role of Technology in Strengthening Chilli Value Chain for Farmers and Farmer Organisations



Role of Technology in Strengthening Chilli Value Chain for Farmers and Farmer Organisations



Mr Vepuri Shadrak Dharmaja
Deputy Director, DoH
Government of Andhra Pradesh



Mr Vivek Sehgal
Chief Business Officer
Kalgudi Digital Pvt. Ltd.



Ms Kriti Mittal
Entrepreneur in Residence
Omidyar Network India



Mr Amarander Y
Senior Manager
ITC Limited



Moderator:

Mr Vineet Singh

Senior Platform Architect, Digital Green

Digital technologies have penetrated even the most traditional human activities and exchange centres – markets. Agriculture as a sector has also benefited from it. Digital marketplaces, which started as a niche, have become a norm, and several technologies have been deployed to create inclusive spaces for farmers to sell their products and get fair prices. Experts in the panel shared successful models of technology implementation in the agriculture sector that have the potential to scale and discussed the white spaces in the chilli value chain where technology has a more significant role to play.

Moderating the discussion, Mr Vineet Singh invited Ms Kriti Mittal, Entrepreneur in Residence at Omidyar Network, to share her thoughts on digital public infrastructure (DPI) in agriculture. Ms Mittal stated that digital public infrastructure could be regarded as the backbone of the digital economy, akin to the significance of public infrastructure to our country's economy. The primary layers of DPI are already in place in India, with unique digital identities and digital payment interfaces enabling financial inclusion. In agriculture, DPI can enable technology innovations to be built on the same rails and scale up. Ms Mittal shared that specific components of Agri DPI are already in place, such as data registries on farms and farmers and sector-specific standards. She emphasized a crucial component – a mechanism for secure data exchange between ecosystem players, which is where Digital Green's Farmstack solution fits in. Farmstack can inform many of the efforts to build Agri DPI at the state and national levels. She concluded that solutions like Farmstack, when scaled up, can add much value, enabling farmers to unlock opportunities and efficiently access resources like credit, advisories and markets.

Mr Vineet Singh thanked Ms Kriti Mittal for explaining what digital public infrastructure can do for the digital economy. He then invited Mr Vivek Sehgal, Chief Business Officer at Kalgudi Digital, to talk about the technological innovations Kalgudi offers in the chilli value chain and other commodities.

"The starting point for establishing better market linkages is the digitization of the ecosystem." Mr Sehgal stated that in the EMircha project, the first step was to digitize FPO and individual farmer profiles to capture dynamic data and generate traceability channels. Dedicated e-commerce pages for chilli farmers built a network where farmers could procure inputs at better prices. He added that Kalgudi Digital also created digital stock-keeping units (SKUs) or market lots for chilli producers to explore an expanded market for their produce, thereby reducing their dependency on local traders and intermediaries.

Mr Vineet Singh thanked Mr Vivek Sehgal and posed the same question to Mr Amarander Y, Senior Manager, Crop Development & Procurement, at ITC Limited, to talk about ITC's innovations in the chilli value chain and agriculture.

Over the last decade, smallholder farmers have faced more uncertainties due to unpredictable weather conditions, rising input costs and high price volatility. Mr Amarander shared ITC's response in addressing these challenges through "predictive agriculture" to help farmers be more prepared. To address the chronic challenges of productivity, sustainability, climate vulnerability and market access, ITC's e-Choupal platform has been one of the most extensive rural development infrastructures that has helped over 4 million farmers achieve sustainable gains in crop yields, quality, incomes and markets. In the EMircha project, the e-Choupal platform served as a solution integrator for physical and digital solutions across all stages of interventions to help chilli farmers improve their quality and productivity. Mr Amarander also introduced ITC Maars, an innovation supporting next-generation agriculture and inclusive growth and listed its four key components – agri-advisory services, helping farmers procure high-quality inputs at better prices, financial assistance and subsidies to smallholder farmers, and finally, onboarding FPOs and technical partners. He concluded that there should be convergence in the ecosystem to develop digital innovations that build the resilience of farmers to face all uncertainties and challenges. Further, FPOs are the institutions that should be tapped to take these solutions at a large scale to reach all farmers.

Mr Vineet Singh noted the gamut of solutions that ITC provides, ranging from predictive agriculture to financing. Given the range of interventions from public institutes, he posed the following question to Mr Vepuri Shadrak Dharmaja, Deputy Director at the Department of Horticulture:

"How does technology play a key role in the policy intervention by government departments?"

Mr Dharmaja pointed out the incremental profits farmers could gain by utilizing the benefits provided by various public and private interventions. Farmers can reap up to 80% profits if they follow all the recommended Package of Practices (PoPs) and quality standards during cultivation. Additionally, farmer organizations can reap up to 120% of profits by digitizing and sharing their data. He stated that farmer organizations must be empowered to leverage emerging technologies to solve their farming challenges independently. He added that collaboration between the Department of Horticulture, agritech players, and Digital Green is needed to help farmers access affordable technologies, markets and capital.

To conclude, a final question was asked to all panelists: "From the experience and learnings of the EMircha project, what are the key takeaways and recommendations in making technology available for farmers to adopt?"

- **Ms Kriti Mittal** shared her crucial takeaway from the panel discussion: any technology intervention should also be accompanied by non-tech elements. An essential non-tech component, in this case, is user-centricity; technology designed for farmers and FPOs should be accessible, cost-effective, and cater to their evolving needs. Therefore, digital public infrastructure in agriculture should be built with feedback loops to understand the demands on the ground.
- **Mr Vivek Sehgal** stated that over the life of the project, farmers realized the advantages they get from technological innovations with consistent support from field teams. Mr Sehgal added that there needs to be a shift so that farmer organizations can independently access and employ affordable technologies for the collective prosperity of farmers.
- **Mr Amarander Y** congratulated the EMircha project's success in building chilli farmers' capacities and connecting them to buyers to help them get higher remuneration. As we advance, he suggested that along with addressing productivity and quality-related issues, we should also address sustainability and traceability issues as consumers are becoming increasingly conscious of the production and processing of the produce.
- **Mr Vepuri Shadrak Dharmaja** stated that a significant advantage of the EMircha project had been the delivery of real-time information to farmers. He particularly noted that quality testing has been crucial in getting higher prices when chillies are purchased directly from farmers in the markets. He reiterated that emerging technologies need to be developed and implemented across all commodities.



PANEL DISCUSSION 2

Technology Innovations to Enhance Productivity and Resilience for Chilli Farmers



Technology Innovations to Enhance Productivity and Resilience for Chilli Farmers



Mr M Venkateswarlu
Additional Director, DoH
Government of Andhra Pradesh



Dr Srikanth Rupavatharam PhD
Head, Innovations Hub
ICRISAT



Mr Sandeep Kondaji
Founder & CEO
Krishitantra



Ms Erica Arya
India Head
Project Tech4Dev



**Squadron Leader
Mr Pratik Datta**
AVP, Operations, AgNext Technologies



Ms Ayushi Singh
Head, Training & Capacity
Building, Digital Green



Moderator:
Mr N M Prusty,
Board Member, Digital Green

While many agricultural technologies are being developed worldwide, adapting them to the needs of small-scale producers in India at a large scale has been a challenge. With 15 agro-economic zones, 600+ commodities and the fragmented nature of agriculture, the key is to develop a system that decentralizes content generation making it available to farmers on a timely basis in a medium they can access. In this session, experts weighed in on how technology innovations enhanced the productivity and resilience of smallholder farmers and discussed the challenges in implementing these technologies at scale.

Mr N M Prusty

Board Member, Digital Green

Mr N M Prusty led this session and expressed that many of his sector learnings have come from farmers in the field across various parts of the country. He introduced the esteemed panelists and asked them the following question:



Technology is often looked at as a solutions provider. How do you see technology as an enabler so farmers can use the information they receive to enhance their productivity and build climate resilience? How can we improve the issues of access to technology?

Mr N M Prusty
Board Member of Digital Green



Mr M Venkateswarlu

Additional Director, Department of Horticulture, Government of Andhra Pradesh

Mr M Venkateswarlu addressed how technology can improve farmers' climate resilience. He shared that in just the previous year, untimely rains created havoc among chilli farmers – yields reduced by 25%, and expenditure had tripled, leading to a significant loss. “We cannot control nature,” he said, “but it is in our power to make information available to farmers so that they can utilize and apply it to their fields.” Chilli farmers in the state face many challenges in their farms, from land preparation to harvesting their chillies, yet recommendations for farmers are still generalized. He urged for recommendations for farmers to be farm-specific. He also spoke of the various forms of data – scientific, non-scientific, market-oriented, and farmer-specific data – but it is only meaningful when a farmer can benefit from it. Data ownership and specificity are crucial in effective decision-making.

Mr Sandeep Kondaji

Founder & CEO, Krishitantra

Mr Sandeep Kondaji commented that technology could become a decision support system for farmers. A farmer is constantly occupied from start to end, from sowing to production to harvest and sales. He emphasized the value of timely and contextualized information to reach farmers. He highlighted the importance of democratizing technology by making it affordable and accessible to reach the last-mile farmer. At every stage, if farmers can get timely information on topics ranging from climatic conditions, pest management practices, timely harvest, and price information, they can make informed decisions that can improve their incomes and resilience. In the EMircha project, Krishitantra has provided farmers with soil test reports and fertilizer recommendations within 24 hours. Mr Kondaji concluded that working in sync with nature will also have an environmental impact.

Ms Erica Arya

India Head, Project Tech4Dev

Ms Erica Arya reiterated that technology is an enabler. She stated that technology is the easiest part of the puzzle, and the most challenging part is identifying the problem. Farmers might be at different stages of the cropping cycle, and their practices might be weeks apart. To complement video-based advisories reaching farmers, Ms Arya talked about the differential experience of chatbots and voice bots in humanizing technology and building a one-on-one conversation with farmers. She listed the most important considerations while developing this solution for farmers:

- Farmer centricity and active engagement.
- Timely and targeted advisories relevant for farmers at each cropping stage.
- Advisories that can be accessed at any point in time when farmers most need them.
- Leveraging popular platforms like Whatsapp to deliver these advisories.

She stated that solutions like chatbots and voice bots designed with the above considerations help make technology truly accessible.

Dr Srikanth Rupavatharam, PhD

Head, Innovations Hub, ICRISAT

Dr Srikanth Rupavatharam stressed the importance of convergence and remarked that non-profit organizations have a role in executing an honest brokerage between government and private players. Dr Rupavatharam identified gamification as a participatory approach to identifying problems and solutions. Public-private partnerships are the future, and there needs to be collective responsibility in making innovations work for farmers. He conveyed that not-for-profits also have an additional role in attracting young entrepreneurs to create innovative technology for farmers.

Squadron Leader Mr Pratik Datta

AVP, Operations, AgNext Technologies

Mr Pratik Datta remarked that the two determining factors for any trade are 'quantity' and 'quality.' While quantity has been adequately addressed using technology and automation tools, quality is still a virtually unsolved component. He introduced AgNext's solution of doing objective, low-cost quality assessments on the field, covering the entire gamut of physical and chemical parameters. He cited the example of the EMircha project to also shed light on the usefulness of data for farmers and end-buyers. Through quality assaying practices in the project, chilli farmers instantly received their results to determine the value of their commodity at the onset. Alternatively, farmers would have the necessary intel to take the appropriate steps to increase the market value of their chillies.

Ms Ayushi Singh

Head, Training & Capacity Building, Digital Green

Ms Ayushi Singh began by reflecting on what farmers need: increased incomes, yields, and the agency to make their own decisions. She cautioned that technology must not be a top-down solution but a conduit that is a part of the ecosystem to open doors for farmers and give them options. Citing Digital Green's video-based approach as a tool for capacity building and a channel to deliver contextualized, timely information, Ms Ayushi added that steps should be taken such that farmers do not just receive this information to apply but also own it. Moreover, male and female farmers must have different learning pathways to drive more inclusiveness. She concluded that there needs to be a collectivization approach so that solutions are not just designed to work for one single farmer but for a collective, as collective decision-making is instrumental in driving change.

Mr N M Prusty closed the session and thanked his distinguished co-panelists for an insightful, power-packed discussion.



Technology in isolation is not a solution and has to work with a combination of capacity building and a collectivisation approach. Putting decision-making in the hands of farmers is instrumental to drive change.

Ms Ayushi Singh
Head, Training & Capacity Building, Digital Green



Farmers Q&A Session

A Q&A session was conducted between farmers who participated in the event and panelists. Many farmers expressed that one unrelenting challenge they have faced is pest-related issues in their chilli crops despite using high-quality seeds and fertilizers. They asked panelists whether there could be a solution for this so that they could improve the quality of their chillies to match up to export standards.

Panelists responded that the EMircha project was designed precisely to make technology accessible so that farmers can find solutions to mitigate the various challenges they face on their farms. Solutions like quality assaying, soil testing and market access on digital platforms have also helped farmers improve their production and incomes. Panelists assured there would be more village-level awareness meetings and capacity-building initiatives. They also encouraged all farmers at the event to further share these solutions and knowledge with other farmers in their networks.

Vote of Thanks

Mr Narendra Kandimalla

Regional Head – Andhra Pradesh & Telangana, Digital Green

Mr Narendra Kandimalla delivered his concluding remarks and vote of thanks. He underlined the recurring theme throughout the event – the convergence between public and private partners has been crucial to the success of the EMircha project. He outlined that this national workshop has been an opportunity to discuss learnings and further collective thinking on how ecosystem players can collaborate to bring farmers to the centre of the agritech & ag-data ecosystems.

He thanked the Chief Guest, Dr S S Sreedhar, IFS, Commissioner of Horticulture & Sericulture, and the Departments of Horticulture in Andhra Pradesh & Telangana for their partnership and participation at the event. He also thanked Bill & Melinda Gates Foundation for supporting the EMircha & SaguBagu projects. Mr Kandimalla thanked all technology & knowledge partners, panel members, NGOs, FPOs, and farmers at the event. He finally thanked the media and Digital Green teams who have worked together to curate and organize the event.

Key Takeaways

Ecosystem-level

01 **Collaboration, coordination and convergence are vital in making digital innovations work for farmers**

The EMircha project has been a success story of collaboration, coordination and convergence, bringing together public and private players. This workshop emphasized the need for collective responsibility in making digital innovations work for farmers to achieve impact at scale. Moreover, technology has played a significant role in driving collaboration between partners & ecosystem players through secure data exchange that helps deliver scientific and targeted advisories & services to farmers.

02 **Technology can be an enabler if it is truly farmer-centric**

Technology cannot be top-down; it is a conduit in the larger agricultural ecosystem that can open doors for farmers and give them options. The ultimate aim is for farmers to have the agency to make well-informed decisions for themselves and their communities.

03 **Digital public infrastructure in agriculture can unlock a gamut of opportunities**

Digital public infrastructure (DPI) is the backbone of the digital economy, and DPI can work as an open-source digital public good in agriculture to enable inclusive farmer-centric solutions. One crucial component in Agri DPI is a mechanism for secure data exchange between ecosystem players with feedback loops to capture farmers' needs. This can pave the path for farmers to unlock opportunities and efficiently access resources like credit, advisories & markets.

Farmer-level

04 **Data can be meaningful if farmers own and use it**

Information shared with farmers cannot take a one-size-fits-all approach. Agriculture in India is highly diverse and fragmented, with multiple commodities growing at various stages of time. There are different forms of data in the agricultural ecosystem, from scientific to farmer-specific data. Still, it is only meaningful when a farmer can own and use it for effective decision-making. Timely information and quality assaying in the EMircha project are all examples of data that can be used for farmers' benefits.

05 **User centricity is crucial in technology solutions for increased adoption**

While technology accelerates impact in agriculture, one critical design philosophy should be 'farmer-centricity.' Understanding farmers' evolving needs and pain points should be the starting point in designing technology, which would help make technology more cost-effective and accessible to farmers.

Digital Green

**NATIONAL WORKSHOP ON DIGITAL
INNOVATIONS FOR CHILLI FARMERS**

Speaker Profiles



Speaker Profiles

DISTINGUISHED SPEAKERS



Dr S S Sreedhar, IFS

Commissioner of Horticulture & Sericulture, Government of Andhra Pradesh

Dr S S Sreedhar, IFS, is the Commissioner of Horticulture & Sericulture, Department of Agriculture, Government of Andhra Pradesh. He has worked previously as an Additional Principal Chief Conservator of Forests (Budget & CAMPA), Office of PCCF (HoFF), Special Secretary to Government, Panchayat Raj, and Rural Development.



Dr Srivalli Krishnan

Senior Program Officer, Agricultural Development – Asia
Bill & Melinda Gates Foundation

Dr Srivalli Krishnan is the Senior Program Officer, Agricultural Development – Asia at the Bill & Melinda Gates Foundation and focuses on agricultural programs in India and Bangladesh. She is also the lead for all livestock, digital agriculture, and food systems programs in India. Prior to joining the Gates Foundation, she was with the United States Agency for International Development (USAID) India Office as the coordinator for agriculture and climate change programs in India, Africa and Asia region; and with the Australian Government's Department of Agriculture, Fisheries and Forestry providing technical and policy advice to enhance Australia's bilateral engagement with India in agriculture trade, economy and policy. Dr Krishnan holds PhD in Crop breeding and genetics from TERI University and has done Graduate work with Cornell University, Masters in Life Sciences from the University of Delhi and an advanced diploma in Intellectual Property Law from WIPO Academy, Geneva.



Mr Rikin Gandhi

Co-Founder & CEO, Digital Green

Mr Rikin Gandhi is the Co-Founder and CEO of Digital Green. With a Masters in Aeronautical and Astronautical Space Engineering from Massachusetts Institute of Technology (MIT) and a Bachelors in Computer Science from Carnegie Mellon University, Mr Gandhi began his career at Oracle. He later joined Microsoft Research India's Technology for Emerging Markets team, where he researched ways to amplify the effectiveness of agricultural development globally. The time Mr Gandhi spent in India's rural communities changed his life. He developed a passion for helping the country's rural farmers, whom he saw as heroes. More than a decade later, that passion has become his career; in 2006, he co-founded what has become Digital Green.



Mr Krishnan Pallassana

Country Director – India, Digital Green

Mr Krishnan Pallassana is the Country Director of Digital Green in India. Digital Green aims to accelerate the reduction of poverty with the help of technology. Using technology, they have reached over 2.3 million of the world's poorest. Mr Pallassana did his B.Sc in Physics from Calicut University and an MBA in Marketing Management from the Institute of Business Administration. Before joining Digital Green, he had 25 years of work experience in the sustainable development sectors. He served as COO for Population Foundation India, India Director for The Climate Group, and Country Director in Afghanistan for ActionAid International.



Mr D Sivanagamalleswara Rao

Farmer Representative & BOD Member, Akulaganapavaram FPCL, Guntur

Mr D Sivanagamalleswara Rao is a Board of Director at Akulaganapavaram Horticulture Farmers Producer Company Limited. He is a natural farming model farmer and has received multiple awards at the state and central levels as the 'Best Farmer'. He is one of the beneficiaries of the EMircha project and availed services in improving chilli yields and getting better market prices.



Ms Vemula Padmavati

Farmer Representative, Sri Jai Hanuman SHG, Guntur

Ms Vemula Padmavati is a member of the Sri Jai Hanuman SHG in Nagireddipalem village, Guntur. She is an advocate and a model farmer for natural farming within her community and works as an Internal Community Resource Person (ICRP) for the APCNF project with RySS. She is also one of the beneficiaries of the EMircha project and has received video advisories in person and via chatbot to improve her farming practices and chilli yields.

PANEL 1 - SPEAKERS

Role of Technology in Strengthening Chilli Value Chain for Farmers and Farmer Organisations



Mr Vineet Singh

Senior Platform Architect, Digital Green

Mr Vineet Singh is helping build FarmStack and Direct to Farmer Organisations (D2FO) at Digital Green with his deep passion for agriculture and belief that open-source technology can play a critical role in improving livelihoods. He brings 15+ years of experience in diverse tech startups across India, where he steered product development from concept to execution. With a degree in Aerospace Engineering from the Indian Institute of Technology – Kanpur, he co-founded drone manufacturing company Aurora Integrated Systems in 2006, where he oversaw technology and product. After exiting, he helped build the innovation team at Delhi, where he led the development of machine learning programs. A lifelong thinker and tinkerer, he loves discussing and experimenting with new ideas in any domain.



Mr Vepuri Shadrak Dharmaja

Deputy Director, Department of Horticulture
Government of Andhra Pradesh



Mr Vivek Sehgal

Chief Business Officer, Kalgudi Digital Pvt. Ltd.

Mr Vivek Sehgal leads Kalgudi Digital's business focusing on driving traction on its various marketplaces and adding value for stakeholders using its digital platform. Kalgudi Digital provides all stakeholders in the agriculture, allied and rural livelihood sectors with appropriate digital solutions to execute their activities efficiently on its platform. He started his career with Hindustan Unilever Ltd in Sales & Marketing. He has been an entrepreneur for approximately three decades in various sales and marketing entities in automobiles etc., and Data Analytics, before joining Kalgudi in 2019. He is an Economics graduate from Delhi University and an MBA from IIM Ahmedabad.



Ms Kriti Mittal

Entrepreneur in Residence, Omidyar Network India

Ms Kriti Mittal leads the Open Digital Ecosystems (ODE) portfolio at Omidyar Network India, focusing on shaping strategy, investments and partnerships. This initiative supports organizations that are designing population-scale digital solutions (Digital Public Infrastructure & Digital Public Goods), policies and governance frameworks and community engagement. She has 10 years of experience in the development and policy sector and worked closely with policymakers at all levels in India. She was an advisor to the Ministry of Housing and Urban Affairs. She has also co-founded a development advisory organization, and led teams to work with Members of Parliament on constituency development and legislative research. Ms Mittal has a Masters in Development Administration & Planning, from University College London.



Mr Amarander Y

Senior Manager, Crop Development & Procurement, ITC Limited

Mr Amarander Y currently handles crop development and procurement of IPM and organic spices (Chilli, Turmeric), Seed Spices (Cumin, Coriander, Celery, and Fennel) at ITC Ltd. He joined as a Leaf Superintendent in the tobacco division. In May 2010, later moved to the Spices division in 2013 as Crop Development Manager in Warangal, Khammam, Kurnool, taking care of chilli crops exclusively. In 2016, he moved to Guntur as in charge of IPM Chilli Crop development and, in 2019, took over the responsibility for crop development and sustainability for the spices IPM program.

PANEL 2 - SPEAKERS

Technology Innovations to Enhance Productivity and Resilience for Chilli Farmers



Mr Nilamadhab Prusty

Board Member, Digital Green

Mr Nilamadhab Prusty is a humanitarian and sustainability professional with nearly four decades of experience in the government, corporate, and non-profit sectors. His areas of interest include climate resilience and adaptation, disaster risk management, cooperatives and farmers' collectives, and technology for building resilience and development governance. He currently serves as Chief Mentor of the Center for Development and Disaster Management Support Services, an expert group of sustainability professionals, and the President of Humanitarian Aid International, an organization committed to using technology for development and humanitarian action. He has held senior leadership positions with the International Resource Group, CARE India and the National Dairy Development Board. He is a recipient of the Global Best Practice award for social housing and has been nominated for the Hubert Humphrey Fellowship and the Ramon Magsaysay Award. He has a Masters degree in International Trade and Business from the Indian Institute of Foreign Trade in Delhi and a Bachelors degree in Engineering from the National Institute of Technology, Rourkela.



Mr M Venkateswarlu

Additional Director, Department of Horticulture
Government of Andhra Pradesh



Mr Sandeep Kondaji

Founder & CEO, Krishitantra

Mr Sandeep Kondaji is the Founder & CEO of Krishitantra, a leading agri start-up in India. He has more than 6 years of experience in business consulting in India, MENA (MIDDLE EAST AND NORTH Africa) and Europe. He is a serial entrepreneur and has successfully developed and implemented business plans for his ventures. He worked with LTS solutions, majoring in the active RFID market-based in Paris, France and provides smart sensors for field instrument monitoring. He also worked with Amplebit, System controls, and Bharthi info builder, where he contributed to the field of Automotive product design and development. He has one patent granted on Soil testing equipment and another Joint IP (pending with ICAR-IIRR) on Soil testing equipment. He has received several awards in his career. Recently, Krishitantra, along with Telangana Government, received DIGITAL INDIA AWARD in January 2023.



Dr Srikanth Rupavatharam, PhD

Head, Innovations Hub, ICRISAT

Dr Srikanth Rupavatharam leads the Digital Agriculture initiatives and the iHub, ICRISAT's innovation platform for agritech start-ups. He is a Senior Scientist in the Digital Agriculture cluster of the Global Research Program 'Resilient Farm and Food Systems'. Dr Rupavatharam holds a PhD in Post-harvest technologies from Massey University (NZ) and a Masters in the same field from Writtle College, University of Essex, UK. He is a Marshal Papworth Scholar and recipient of the prestigious Gardner's Prize, 2005, in the field of Horticulture from the Worshipful Company of Gardeners (London) for excellence. Dr Rupavatharam received a Helen E. Akers PhD scholarship to undertake doctoral study and was recently awarded by the Global Challenges Research Fund sponsored 'David Livingstone Fellowship' from the University of Strathclyde, Glasgow, UK. He has over 23 years of experience implementing agricultural research and development projects. He has worked in diverse cultural backgrounds in the United Kingdom, Africa, Oceania (NZ) and India and has over 20 research publications to his credit. Dr Rupavatharam has expertise in conducting quality assessments using non-destructive techniques and digital agricultural strategies for agritech start-ups. He is experienced in process engineering innovations using Artificial Intelligence, UAV (Drones) and Big Data analytics. He likes his work to impact smallholder farmers by building their capacities through innovative digital tools for agricultural extension and management.



Ms Erica Arya

India Head, Project Tech4Dev

"What gets measured, gets improved..." and "What gets repeated must be automated..." Ms Erica Arya strongly believes in these two principles in life. Among the multiple hats she has worn in the last two decades, she has always loved to be a creator who likes designing solutions for the Digital Transformation of Non-Profits, with a deep focus on Cost, Efficiency, Speed, and Quality. Currently, she heads Project Tech4Dev in India, with the mission to transform how non-profits use technology and data.



Squadron Leader Mr Pratik Datta

Assistant Vice President, Operations, AgNext Technologies

Squadron Leader Mr Pratik Datta (Retd.) is a Mechanical Engineer from Punjab University, Chandigarh and Post Graduate in Aeronautical Engineering from VIT. Having served in the Indian Air Force for 10 years, Mr Datta has been involved in various National and International Exercises and Campaigns of the Indian Air Force, including active participation in Balakot Air Strikes. After taking a premature release from IAF, he joined AgNext in 2021 and is currently heading the domestic operations of AgNext. As the AVP of Operations, his primary focus is to drive inspection business for AgNext across various states in India with public and private agencies. Mr Datta and his team are responsible for providing quality assessment solutions in Andhra Pradesh and Telangana for the EMircha and SaguBagu projects.



Ms Ayushi Singh

Head, Training & Capacity Building, Digital Green

Ms Ayushi Singh is the Head of Training & Capacity Building at Digital Green. She has a background in video-based content creation and capacity enhancement for strengthening systems for farmer interactions. With over 10 years of experience, she has experimented with different models of training, including technical and efficiency skills for capacitating the last mile. Using technology as a means of up-skilling at scale is her focus area.

EVENT MODERATOR



Mr Narendra Kandimalla

Regional Head – Andhra Pradesh & Telangana, Digital Green

Mr Narendra Kandimalla is the Regional Head for Andhra Pradesh & Telangana at Digital Green. He has over 15 years of experience in the rural development sector and has a Masters in Social Work from Acharya Nagarjuna University, Andhra Pradesh.

Event Reach

PARTICIPATION

The National Workshop on Digital Innovations for Chilli Farmers comprised a diverse group of 400+ participants. Distinguished speakers & panelists were from the Government of Andhra Pradesh and partner organizations like AgNext Technologies, Kalgudi Digital, ITC Ltd., Omidyar Network, Krishitantra, ICRISAT, & Tech4Dev. There was also significant participation from chilli farmers who are beneficiaries of the EMircha project.

The event was live-streamed and published across leading national and state-level media platforms such as The Hindu, Indian Express, City News, ETV Andhra Pradesh, etc. This event has also garnered a positive response across social media.

SOCIAL MEDIA REACH

(As of 3rd March 2023)

 **10,800+** Impressions

 **10,200+** Impressions

 **2,500** Impressions

RECORDING LINK

[Livestream link](#)



Guntur chilli farmers sensitised in digital technologies

February 09, 2023 08:32 am | Updated 08:32 am IST - GUNTUR

THE HINDU BUREAU

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There is an urgent need to make advanced technology accessible and affordable to farmers, observed S.S. Sreedhar, Commissioner of Horticulture and Sericulture, who participated in a workshop on 'Digital Innovations for Chilli Farmers' in Guntur on Wednesday.



Working with Digital Green to build **#WhatsApp** **#Chatbots** that take their interventions to the farmer **#beneficiaries** was a great experience. Glific is committed to building **#open-source** tech products that help **#NGOs** take their programs to scale.

Looking forward to being part of this conversation and many more!

Project Tech4Dev Dasra
#nonprofit #techforgood



About Us

Digital Green is a global development organization that is creating a world where farmers can use technology and data to build prosperous communities. We join forces with governments, private agencies and, most importantly, rural communities themselves to co-create digital solutions that are of the community and for the community.

When farmers have the tools they need to connect with one another, they're far more likely to apply what they've learned on their farms and in their households — improving their own livelihoods and those of others in their community in a manner that's nutrition-sensitive, climate-resilient, and inclusive.

ABOUT THE WORKSHOP

The National Workshop on Digital Innovations for Chilli Farmers was an outcome of the EMircha project (Enhancing Markets, Income, and Resilience for Chilli Farmers in Andhra Pradesh & Telangana), implemented by Digital Green with support from the Bill & Melinda Gates Foundation.

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