



PPSA
Philippines Partnership for Sustainable Agriculture

FARMERS DIALOGUE 2025



**digital agriculture
and AI in the eyes of
our Farmers.**

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The Farmers Dialogue Series

CONTEXT

As highlighted in the [Philippine Development Plan \(PDP\)](#) for 2023-2028, the existing agri-food system in the Philippines struggles to generate sufficient incomes for its stakeholders and to ensure the sustainable use of natural resources. In 2018, the Philippine Statistics Authority reported that [farmers and fisherfolks posted the highest poverty incidences among the basic sectors](#) at [31.6% and 26.2% respectively](#). To address these challenges and achieve improved economic and environmental outcomes, the PDP emphasizes the modernization of agriculture with the digitalization of agriculture playing a central role in pursuing regenerative agriculture. Digital agriculture offers potential benefits such as increased productivity, efficiency, market opportunity, and environmental sustainability. These gains can be realized through innovations like precision agriculture technologies and data-driven approaches to inform farming practices.

When discussing digital tools in agriculture, one cannot miss the increasing prevalence of AI in agriculture. With a [projected global growth to \\$4.7 billion by 2028](#), implementing AI presents not only financial opportunity but also opportunity for greater climate-ready and sustainable practices. AI allows for effective predictive performance analytics which can allow farmers to [“forecast future conditions and outcomes, transforming reactive farming practices into proactive agricultural management strategies.”](#)



However, a further concern is the potential for digitalization and adoption of AI to exacerbate a digital divide, especially in developing countries where smallholder farmers struggle to access and adopt the technologies. This can be due to low levels of digital literacy, limited connectivity and lack of electricity access, economic constraints, and perceptions of farmers within their specific cultural and institutional contexts. Additional variables which affect adoption of digital agriculture include, access to credit, farm size, land tenure experience with technology, available supports, cost of equipment, willingness to take risks and social milieu. Generational barriers to the adoption of digital agriculture remain high and nearly three-fifths of farmers and fisherfolk are aged 50 and above, while those under the age of 40 only account for 16 percent.

Despite the role of farmers as major stakeholders in the modernization of agriculture through digitization and the ongoing struggle of adoption, farmers often find themselves excluded from emerging conversations about technology in agriculture. As adoption of digital practices and AI in agriculture is growing, it is of utmost importance that farmers are at the forefront of these conversations, to better inform future policy and programming.



DESIGN AND METHODOLOGY OF DATA COLLECTION

This Farmers Dialogue Session was conducted online on July 10th, 2025 through Zoom. Tagalog was used as the main the language of interaction with occasional translation to vernacular by other participants.

The session began with an overview of key terms to ensure all participants were on the same page for the discussions. Following this, participants were split into a total of four breakout rooms.

Breakout Rooms (BR)

Breakout room discussions were preceded with a series of yes-or-no icebreaker questions to gauge participant experience, comfortability and views of agricultural tech.

Moderators were then tasked with providing carefully crafted questions that were consistent across all breakout rooms but were also given the freedom to delve deeper into topics based on participant interactions with the topics.

A careful relay of information was observed to ensure as much democracy in the session considering that there might be conflicting views.

For the breakout room portion the participants were grouped into groups of 4-6 to better maximize the participation of the farmers and allowed more interaction and cross-learnings. Some rooms included external observers and all rooms had one moderator and one notetaker.

The questions asked in the breakout rooms [can be found here](#).

Objectives

The goals of the FGD, as clarified during the session, were to provide an opportunity for the farmers to share their experiences, concerns, and needs around digital agriculture and AI usage in the agriculture sector. This session was meant to provide a space to share ideas and discover similarities and differences between the different participants. During the discussions, the moderators observed the participant interactions with each other and with the various topics explored with the questions. These questions provided were meant to serve as a points to spark conversation rather than control conversation.

Insights were gathered to help draw out the buildup of well-coordinated, effective, and productive streams of support provided to farmers, sharing relevant information for research and policy enhancement purposes.

The dialogues tackled the following thematic areas:



Use of Digital
Agriculture
Tools



AI Awareness,
Hopes and
Fears



Digital Literacy
and Capacity
Building



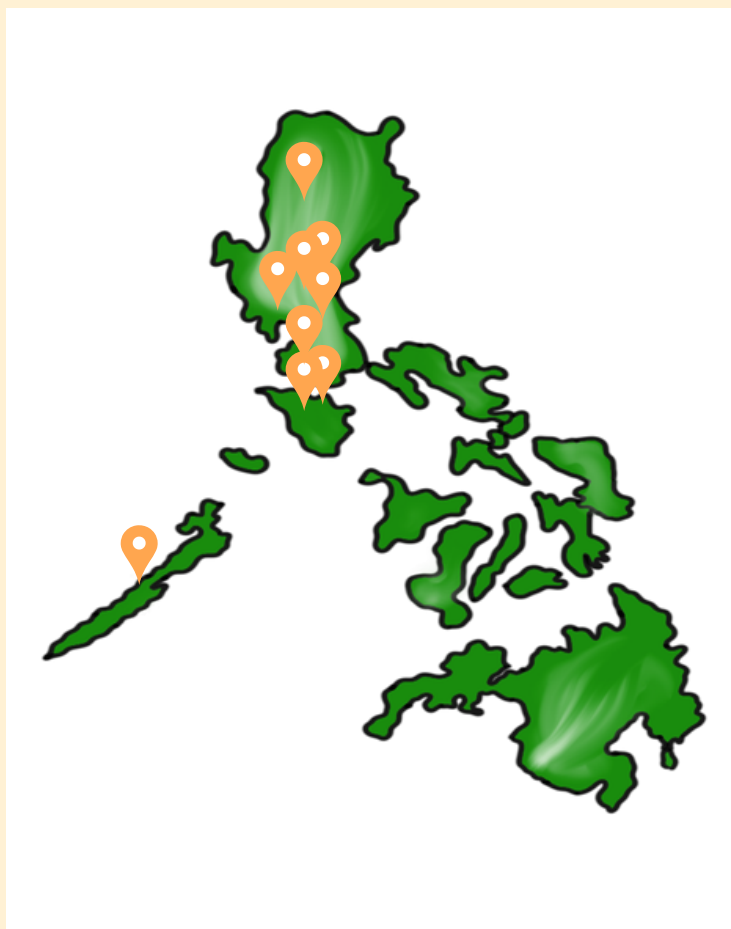
Enablers and
Challenges for
Integration of
Agri-Tech

The information gathered during the dialogues are handled with confidentiality. If names are specified, consent from the farmer-participants will be sought in case any portion of the findings will be published outside of this report.

Participants

- ✓ **Farmers (men and/or women) currently engaged in farming**
- ✓ **Farmers with and without experience accessing agri-tech, digital farming tools, AI applications or climate-smart agriculture practices;**
- ✓ **Farmers who are curious and interested in accessing agri-tech, digital farming tools, AI applications or climate-smart agriculture practices;**
- ✓ **A mix of age groups represented, and a mix of last-mile farmers, budding farmer leaders, and entrepreneurial farmers.**

There were a total of 20 active participants in the discussion, most representing various areas in the Luzon region.



Crops Represented:

- Corn**
- Eggplant**
- Cassava**
- Yam**
- Soya Beans**
- Mushrooms**
- Bananas**
- Sweet Potatoes**
- Cacao**
- Other Vegetables**
- Other Fruits**
- Other Herbs**

Fig. 1 Geographical Distribution of FGD Participants

FINDINGS

Access to information has been observed to be an effective lever that enabled farmers to find opportunities to participate in, benefit from, and extend solutions to their fellow farmers.

A summary of [notes from individual breakout rooms can be found here](#).

45% of participants indicated that they felt comfortable with using agri-tech on their farms



Agricultural Technology:

This includes various technologies used to make farming easier and more efficient—examples include:

Smart irrigation systems, Drones and Global Positioning System (GPS) technologies, Pest control technologies, Data analytics, and many more.

All of these tools help increase crop yields, reduce costs, and make farm operations more efficient.

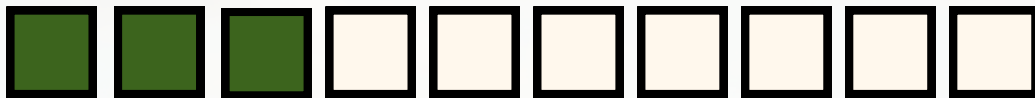
This was the definition developed by PPSA and presented to participants prior to the breakout room discussions.

“Most available agri-tech tools are too complex or not designed for small-scale, local farm contexts.”

“Adoption to new tech depends on user-friendliness.”

FINDINGS

30% of participants indicated that they currently use digital agriculture on their farms



Digital Agricultural Tools:

**This refers to digital tools or applications used in farming.
Examples include:**

- **Mobile apps for monitoring weather or market prices,**
- **Internet of Things (IoT) sensors attached to the soil or crops to measure moisture, humidity, and other environmental conditions,**
- **Farm management software used for record-keeping of harvests and other farming activities.**

The goal of these tools is to enable more informed decision-making for more sustainable and profitable farming.

This was the definition developed by PPSA and presented to participants prior to the breakout room discussions.

“High cost of technology remains a major barrier, especially for rural or resource-constrained farmers.”

“There is a mismatch between tech distribution and actual farmer use.”

FINDINGS

50% of participants indicated that they were familiar with AI use in Agriculture



Artificial Intelligence (AI):

AI is a technology where computers learn and make decisions or programs based on large amounts of data.

In agriculture, AI can be used to predict weather patterns, pest outbreaks, or determine the best time to plant and which crops are most suitable for your soil.

This was the definition developed by PPSA and presented to participants prior to the breakout room discussions.



“[Our farm] currently uses AI for identifying proper fertilizers and to plan wet/dry seasons.”

“The use of AI is good naman po since it can help a lot po, however, I think dapat may limitations pa rin and dapat maeducate properly ang farmers regarding its use.”

Challenges Faced in the Sector.

- Climate Change Adaptation
- Outbreak of Pests and Diseases
- Lack of/No Water Irrigation Systems
- Keeping track of unorganized records
- Low economic activity
- Lack of Access to Stable Markets
- High Cost of Technology
- Heavy Labour Burden
- Diminishing Labour Supply
- Optimizing Harvest Timing

Current Best Practices Identified

A summary of best practices identified by the farmers are as follows:

- peer-to-peer learning
- farmer-led marketing groups to address challenges in selling produce
- partnerships with government institutions and state universities
- mixing well-dried sand with acidic soil
- fertilizers: CRH, Vermicast, Photopip
- learning sessions/seminars about agricultural innovations

“Mas madali if may answer agad kung saan yung market—among kailangan nila and AI will help.”

“It would be easier if there was an immediate answer to where the market is—what they need—and AI would help.”





Utility and Opportunities with Digital Agriculture and AI

Opportunities in which digital agriculture and AI can support their farms as indicated by participants include:

- Farm and Harvest Management
- Weather Predictions
- Digital Marketing
- Smart Irrigation
- Record Organization
- Market Access and Optimization

60% of participants believe that agri-tech can improve yield, efficiency and profitability on their farms



Farmers' Suggested Support Interventions

Farmers have demonstrated enthusiasm for the integration of new technologies to help them overcome their current challenges. Listed below are suggestions farmers made during the session which they believe will further enhance their businesses.

Infrastructure and Technologies:

- solar water irrigation systems
- smart greenhouses
- mobile phones
- weather update technologies
- additional machineries: rotovator machines, farm tractors, combine harvesters, transplanters
- drone seeding

Digital Literacy and capacity development:

- customized digital literacy programs
- field demos for technologies
- marketing skills
- using photos and icons in educational components
- hands-on practical training on digital tools and AI
- subsidies or financial support for acquiring technologies
- improves internet and service for rural and coastal areas
- market linkage supports

“Filipinos are very passionate about knowledge and sharing technologies.”



Risks with Digital Agriculture and AI

When discussing the integration of these new technologies, it is important to acknowledge the risks that come with it.

Digital Divide

There is a risk that use of digital agriculture and AI by some farmers may exacerbate the digital divide, leaving other agricultural workers behind.

Risks of AI

There are opportunities for AI to be misused by farmers but also for farmers to misinterpret information facilitated through AI.

Misuse or lack of use of technologies provided

Even if tools are provided there is no guarantee that farmers will use the tools.

Mismatch of Tools and Farmers

New innovations may be too complex for farmers to invest time to learn how to use or may not match the needs of the farmers.

“Dapat akma sa gagamit, you go for practicality, may mga tech na di nagagamit kasi complicated, it’s useless. Dapat madaling magamit, madaling matutunan.”

“It should be suitable for the user, you go for practicality, there are techs that are not used because they are complicated, it's useless. It should be easy to use, easy to learn.”



The Main Challenges/Barriers to Implementation of Agri-Tech

1. Digital Divide/Structural Barriers

Many farmers lack access to:

- Smartphones or tablets
- Reliable electricity and internet
- Technical support or training

2. Mindset and Demographic Barriers

Many older farmers are unfamiliar or uncomfortable with digital tools. Nearly 60% of farmers are aged 50 and above, with only 16% under 40, hindering tech adoption

3. Affordability

High costs of devices, infrastructure, and maintenance remain a major deterrent.

4. Complexity

Available agri-tech tools are often too advanced or not tailored to local, small-scale farms. Even if a digital solution works in one context, it may not be practical for all.

“Wala pa rules and regulation ang ATI sa pagtuturo ng digital farming.”

“ATI (Agricultural Training Institute, an agency of the Philippine Department of Agriculture) does not yet have rules and regulations for teaching digital farming.”





“Many farmers do not own smartphones, in order to adapt to digital tech, smartphones are integral.”

CONCLUSIONS

“Exciting din sya, at the same time, paano maisasabay si farmer sa technology, paano magiging aware, paano mamaximize yung technology?”



There remains an unmet need for farm/business management support, record keeping, access to markets and overall economic productivity.

Record-Keeping Support:

It can be difficult for farmers to keep track of farm records especially when there is no centralized system of record keeping. Organized record keeping is integral for effective farm management, digital agricultural tools and AI can help support the organization of important records and data which can then be used for future farm guidance.

Market Access:

Farmers are still struggling with gaining access to stable markets and with establishing themselves within these markets. At the same time, there remains physical barriers for reaching these markets. Support through AI systems can help farmers keep track of projected market demands and match farmers to appropriate markets. However, additional development in efficient transportation systems is still needed to ensure market access and greater productivity.



Lack of finances to purchase and participate in the use of new agri-tech.

Many participants still lack the purchasing power to obtain smartphones blocking them from using any new technologies which are often connected to and controlled through these devices. There also remains a high cost to purchase technologies which prevent farmers, most who experience unstable income, in adapting these innovations on their farms.



There is a critical gap in access to service and technology, especially in remote and rural communities.

Most farmers are unable to access mobile phones which are integral in adapting digital tools. At the same time, service is either unstable or completely lacking in remote communities where most farmers reside. These foundational infrastructure requirements must be met if farmers are to integrate digital solutions onto their farms.



There remains a critical gap in digital literacy.

Although some participants are involved in peer-to-peer learning and learning sessions/seminars about agricultural innovations, there still remains a lack of digital literacy among the population. This is due to lack of usage and access to mobile phones, lack of interest or time to pursue knowledge about digitalization, a lack of guidelines for learning sessions as well as a mismatch between complex explanations and farmers with low education levels.



Younger stakeholders are more adaptable and can act as change agents to bridge the generational gap in adoption.

Youth tend to have greater experience with technology and are able to adapt at a quicker pace in comparison to most farmers with the average age of a Filipino farmer being 57 years old. Youth can play a big role in helping older farmers learn how to use digital tools. Enabling and mobilizing youth champions can help with better technological adoption and greater overall sustainability of the agriculture sector of the Philippines.



Increased partnerships and collaboration between government and non-government actors remains a priority.

Participants identified “partnerships with government institutions and state universities” as a “best practice.” Vertical and horizontal cooperation and knowledge-sharing is integral to optimize solutions. Further connections should be drawn with agri-businesses, agri-tech innovators, and market-buyers which can be facilitated through local CSOs.



Government Intervention is Integral to Ensure Enabling Conditions for Success are Established.

Interventions by the DA is still needed whether it be through establishing rules and regulations for digital literacy programs. The government is the main determinant for whether or not foundation infrastructure is built to ensure the success of farmers. Government bodies can also contribute through other financial support and mobilization of experts.



Investment into localized agri-tech solutions and agri-tech specific training should be continued.

Many available agri-tech solutions remain too complex or not designed for small-scale, local farm contexts. Continued investment into agri-tech solutions for the specific needs of farmers. Most farmers still struggle with integrating efficient irrigation systems. Investment into new irrigation technologies catered towards local smallholder farmers is needed alongside proper financial support and training for the maintenance of these practices. Other agri-tech supports identifies include smart greenhouses, accurate weather update technologies and various precision technologies. It is integral that farmers are not only provided with these technologies but also capacitated to utilize these technologies to increase farm productivity.



RECOMMENDATIONS

Based on the findings, while farmers demonstrate an active interest in the integration of new agricultural technologies through the use of digital agriculture tools and AI, there still remains barriers and concerns in successful integration. Therefore further support is needed by various actors in the public and private sector to ensure farmers are not left behind in this new digital age.

Taking into account farmer recommendations for support and overall findings and conclusions made from the FDG, a total of 5 main areas of recommendations have been identified as seen below.



01 Investment in Farmer Education

There needs to be investment in the overall education of farmers in the following areas: the benefits and uses of technology, farm management with technology, financial literacy with an emphasis on e-commerce, social media marketing and AI-risk awareness. These can be implemented through localizing agri-tech hubs in cluster areas where experts can pass knowledge within the community, and through DA's the development of guidelines and accessible learning materials for these learning sessions.

02 Market Linkage Support & Market Integration

Stable market access remains one of the most prominent barriers for farmers' economic success. Support should be provided to farmers to match them to appropriate markets and access AI-powered systems that can predict market market demands. These supports will help agripreneurs to better establish themselves and their businesses to better utilize their market power.

03 Focus on Youth Engagement

The engagement of youth is integral not just for the longevity of the agriculture sector but for the further integration of technologies on farms. Youth often have greater experience with technologies and can help farms adapt to the increasingly digital world. This will enhance farm productivity and sustainability.

04 Inclusive Agri-Tech Adoption

It is important the digital tools provided to farms are tailored to the needs and capacity of farmers in each region. One technology may be applicable in one area or for one specific crop, but render useless for another. Therefore there must be continued investment in localized agri-tech. At the same time, specific training must be tailored to local farmers, whether it be through the way it is delivered (in person or online) or the materials used to deliver the information (verbally, written or with pictures and icons) it is important that it matched the beneficiaries it is aimed at. For example, using icons or photos in educational material can enhance the understanding of farmers, many of whom have little educational background.

05 Infrastructure Development

Many areas in which farms are established in the Philippines, lack stable service or internet connection, actively preventing them from integrating new technologies which could improve their market access, productivity and efficiency. It is important that the government invest in the infrastructure needed for farms to sell their products effectively. This can be seen through the creation of service towers, increasing accessibility to mobile phones or improving transport mechanisms.



ACTIONABLE STEPS

It is important to note that strategic partnerships and constant monitoring and evaluation are integral to the successful integration of recommendations. Below is a list of actionable steps that can be taken by various stakeholders to ensure better success and of the 5 areas of recommendations seen above and minimize risk.



Public Sector

Investment in Farmer Education

- Equip regional training centres with the necessary tools and funding to offer specialized training in the following areas:
 - Digital Literacy
 - Financial Literacy (e-commerce)
 - Marketing
 - AI risk awareness
- Strengthen monitoring and evaluation by regional development councils and prescribe as much as a practicable special menu of farmer training and agri-tech integration programs based on regional needs, taking into account unique ecological profiles, trade, and economic potentials

Market Linkage Support & Market Integration

- Enhance systems to better support agricultural workers economically, including minimum income security, market regulation, supporting micro-finance institutions etc.
- Foster connections between producers, agricultural businesses, and buyers through partnerships with CSOs and private-public sector partnerships to match farmers to markets.

Focus on Youth Engagement

- Initiate a nation-wide campaign to encourage youth to pursue careers in agriculture.
- Develop incentives for youth to participate in the agriculture sector, eg. minimum wage for youth in the agriculture sector, subsidies for youth who study an agriculture-related degree, subsidies for children of farmers who want to maintain their family farms.

Inclusive Agri-Tech Adoption

- Create agri-tech hubs in cluster areas to further encourage peer-to-peer learning and to create a space for experts to share knowledge.
- Support regional demonstration projects that exhibit successful integration of agri-tech, serving as models for local adaptation and learning

Infrastructure Development

- Ensure all regions nation-wide have access to stable service and internet connection.
- Provide subsidies to ensure farmers have access to mobile devices to better market their farms and integrate new technologies.
- Aid in the coordination of efficient transport systems to allow for products in remote communities to reach target markets.

Private Sector

Investment in Farmer Education

- Strengthen partnerships with agricultural schools and NGOs to deliver training programs focused on the use of new agri-tech.

Market Linkage Support & Market Integration

- Fund innovations, especially related to market access and forecasting and smart irrigation systems.

Focus on Youth Engagement

- Offer job opportunities for youth interested in the agriculture sector.

Inclusive Agri-Tech Adoption

- Continue to invest in research and development for new and innovative farmer centred agricultural technologies that can be patented and scaled across the industry.
- Connect and collaborate for data sharing for purposes of complementation, deduplication, and stronger resource mobilization potential
- Collaborate with local and national government units to implement pilot projects that demonstrate the efficacy of new technologies.

CSOs

Investment in Farmer Education

- Strengthen partnerships with agri-businesses and agri-innovators to deliver training programs focused on the use of new agri-tech.
- Support farmer agri-tech champions who can serve as peer educators and role models in their communities.

Market Linkage Support & Market Integration

- Promote and facilitate interactions between producers and buyers to allow for better access of farmers to appropriate markets.
- Mobilize youth to use their understanding of digital media to aid in digital marketing.

Focus on Youth Engagement

- Encourage youth to participate in agriculture through initiating youth learning programs.

Inclusive Agri-Tech Adoption

- Promote interactions between innovators and social enterprises, including cooperatives, to introduce new technologies and digital services.
- Establish a centralized platform to consolidate different agri-tech innovations, serving as a hub for sharing useful technologies, successful integration programs and learning materials.
- Leverage local CSOs to extend the platform's reach to remote communities, ensuring effective communication and implementation of government programs and private sector initiatives.

Infrastructure Development

- Facilitate access to mobile phones.
- Engage in advocacy to influence government investment in infrastructure developments in rural communities.
- Foster direct farmer participations in policy and program discussions through forums and other platforms.

REPORT USE

The outputs of these sessions will be shared with the PPSA Working Groups and the concerned agencies of the Department of Agriculture to help better prioritize the support for smallholder farmers.

This series of focus group discussions could also inform future PPSA program and policy recommendations on digital agriculture /AI literacy and adoption

Limitations of the Report

Most of the participants of the FGD are the farmers associated with PPSA's partner organizations - the strong ones in terms of farmer engagement. Hence, it can be gleaned that most of them are relatively entrepreneurial and have access to resources, to some extent, that address their practical needs.

Other limitations are:

- virtual setup
- time limitation
- sufficient representation (region, commodity, age demographics, etc.)

Recommendations for Future Dialogues

- Give participants the opportunity to collectively define terms according to their thoughts and experiences to gain a greater understanding of the topic from their point of view.
- Induce commodity-specific answers.
- Keep a record of participant ages to see how age demographics may affect the issues at hand.

***The Philippines Partnership for Sustainable Agriculture
pays gratitude to the following partners who helped mobilize the
participation of farmers and achieve the desired sampling targets for
this Farmers Dialogue Series.***





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