Available online at
http://currentagriculturetrends.vitalbiotech.org/

ISSN (E): 2583 – 1933

Curr. Agri.Tren.:e- Newsletter, (2025) *4*(10), 21-24

Current Agriculture Trends: e-Newsletter

Article ID: 473

Digital Literacy Initiatives for Farmers: Bridging the Technology Gap in Rural Communities

N Krishna Priya[1*], Anil Kumar[2], Rita Fredericks[3]

[1]Coordinator, DAATTC Kadapa 516 003 ANGRAU, Guntur
[2]Assistant Professor, School of Agriculture, Eklavya University Damoh, M.P.-470661
[3]CEO, Precision Grow (A Unit of Tech Visit IT Pvt Ltd)

Open Access

*Corresponding Author
N Krishna Priya*

Article History
Received: 26. 9.2025
Revised: 1. 10.2025
Accepted: 6. 10.2025

INTRODUCTION

Agriculture is the pillar of rural economies in most developing nations, with a majority of the population being employed in agriculture. The evolution of Information and Communication Technologies (ICTs) has seen digital means become transformative enablers of agricultural change. These technologies offer solutions for crop planning, weather forecasting, soil health monitoring, pest and disease management, and market linkages. However, the most significant challenge remains the digital divide between rural and urban areas. Most farmers lack the skill and confidence to effectively utilize mobile apps, e-market platforms, and government portals. Closing this tech divide necessitates systemic digital literacy programs, not only to equip farmers with devices and the internet, but also to train them to utilize these productively.

Significance of Digital Literacy in Agriculture

1. Access to Information – Farmers receive live information regarding weather, market price, and availability of inputs.

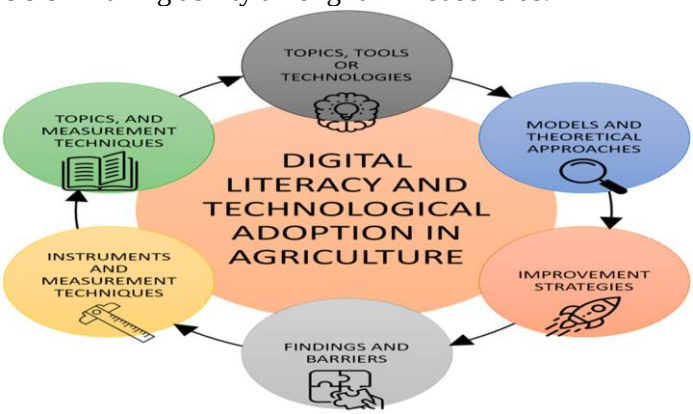
2. Effective Resource Management – Intelligent irrigation, fertilizer advice, and pest warnings minimize loss.

3. Market Integration – Direct access to buyers through e-NAM and other portals is facilitated by digital literacy among farmers.

4. Financial Inclusion – Access to mobile banking, UPI, and government subsidy websites demands digital literacy.

5. Climate Resilience – ICT advisories help farmers to cope with climate variability.

Digital literacy, therefore, is more than just handling technology; it is about improving livelihood security and decision-making ability among farm households.



Source: Current Digital Literacy Initiatives for Farmers

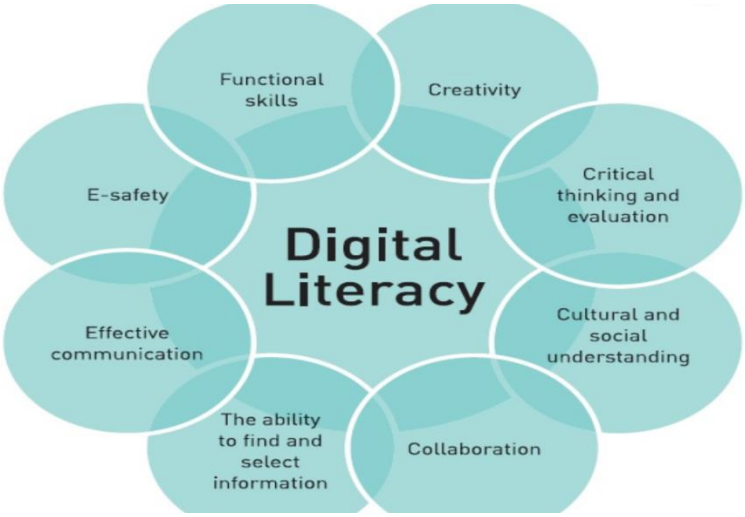
1. Government-Led Schemes

The Indian government has launched various schemes to spread digital literacy and close the gap of technology in rural India, with great emphasis on empowering farmers. The Digital India Programme is the mission of excellence that seeks to make India a digitally empowered nation and knowledge economy. It offers a backbone for agricultural digital inclusion through rural internet connectivity, Common Service Centres (CSCs), and BharatNet.

The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) targets rural families specifically by making at least one member of every family trained in simple digital literacy. The farmers under the program are able to access government portals, online banking, and agriculturals advisories better, thus enhancing productivity and decision-making.

To offer instant and local assistance, the Kisan Call Centres (KCCs) were established. Farmers can dial a toll-free number and receive expert opinion on crop management, pest management, weather forecasting, and market analysis in their local language to have timely interventions.

One more milestone project is e-NAM (Electronic National Agriculture Market), a national-level online marketplace. It links agricultural markets to enable transparent price discovery and direct transactions between farmers and buyers, curtailing the intermediaries' role and increasing farmers' incomes.



Source: https://medium.com/@amandabaptiste_61605/digital-skills-vs-digital-literacy-bee

2. Agricultural Universities and Extension Systems

Agricultural universities and their extension arm have an important role to play in building digital literacy among farmers. Krishi Vigyan Kendras (KVKs) organize regular digital training camps, demonstrations, and workshops to enhance farmers' ability to apply ICT tools in the management of crops, forecasts, and market access. Farmers learn better to adopt modern practices through these training programs. Furthermore, e-extension platforms such as mkisan.gov.in and the Agri-Diksha mobile app extend farm knowledge modules, video tutorials, and advisory services in local languages to reach more farmers. These initiatives reinforce the technology transfer from laboratories to farms via electronic media.

3. NGO and Private Sector Initiatives

Private firms and NGOs also play a substantial role in digital literacy among farmers. Digital Green leverages farmers' own participatory videos to disseminate useful knowledge on better practices. In the meantime, private agri-tech companies such as AgroStar, RML, and DeHaat offer mobile apps providing personalized advisories, input, and market linkages, facilitating farmers' informed decisions digitally.

4. International Initiatives

A number of global organizations are actively encouraging digital literacy for agriculture to assist smallholder farmers globally. The Food and Agriculture Organization (FAO) developed the E-agriculture Strategy Framework, which assists nations in the formulation and implementation of ICT-based agricultural

development plans. The framework highlights farmer-led digital solutions, knowledge markets, and extendable rural coverage. In a similar way, the World Bank is financing several projects to enhance ICT capacity development among smallholder farmers. These initiatives aim at upgrading digital infrastructure, creating mobile advisory systems, and advocating for digital financial services. By ensuring international cooperation, these programs equip farmers with the skills and tools required to compete in the digital economy.

Challenges in Adoption of Digital Literacy

Although rural digitalization has made tremendous advances, farmers continue to experience several challenges that limit the full potential of ICT in farming. Low consciousness is a central concern, since farmers remain ignorant of the value and uses of digital tools for crop planning, market outreach, or financial services. Infrastructural lacunas, such as poor internet penetration, erratic power supply, and unaffordable smartphones, go a long way to discourage adoption, particularly in rural villages. Language barriers also hinder use since most portals and apps are in English or Hindi, making them less accessible for farmers speaking regional dialects. The gender gap remains a concern, as women farmers often lack equal access to devices and training opportunities. Additionally, trust issues persist, with farmers skeptical of online transactions, fearing fraud or misinformation. Lastly, sustainability is an issue since most digital projects are one-off short-term tasks that do not have continuity and follow-up over time.

Strategies for Closing the Technology Gap

To address these issues, some strategies can be implemented. Training modules will be created locally, like farmer field schools with direct digital demonstration, along with apps in local languages with voice-aided functionality. Enhancing extension services by issuing tablets to field officers and building rural digital resource centers will enhance last-mile outreach. Public-Private Partnerships (PPPs) play a critical role in scaling up, facilitating partnership between governments, agri-tech startups, and NGOs, while encouraging telecom operators to push rural coverage. Inclusive strategies need to focus on women, youth, and disadvantaged groups through customized training and subsidized handsets. Lastly, capacity development and follow-up through ongoing training and farmer-to-farmer electronic knowledge transfer are required to achieve long-term impact and sustainable use.

Future Outlook

The future of farming is in the intuitive marrying of digital technology with conventional farming methods. Artificial Intelligence (AI) and Machine Learning (ML) will enable tailored advice to farmers based on real-time information on soil health, climate, and crop status, thus enhancing efficiency and profitability. Blockchain adoption will make supply chains transparent and unalterable, giving farmers equitable prices and minimizing exploitation through middlemen. The Internet of Things (IoT) spreading in villages, using sensors, drones, and intelligent irrigation systems, will promote precision farming, but its real potential can be achieved only when aligned with farmer education and digital literacy. Another notable model is the emergence of digital farmer cooperatives, in which farmers organize and control online platforms for input buying, access to credit, and sales of produce. The cooperatives have the potential to increase bargaining power, lower costs, and promote income security.

CONCLUSION

Agricultural transformation in the 21st century is built on digital literacy. Though infrastructural gaps, poor awareness, and social impediments still hold back adoption, well-designed programs, public-private collaborations, and participatory training strategies can overcome the technology divide. Equipping farmers with digital literacy will not only raise productivity and earnings but also build climate-resilient, sustainable, and market-connected agriculture systems. Finally, digital literacy is not about technology it is about enabling farmers, building strong rural livelihoods, and securing food for generations to come.

REFERENCES

Chauhan, T., Visnu, S., & Kumar, S. (2025). Bridging the Digital Divide: A Review on Digital Literacy, E-Learning, and LMS Solutions for Rural Communities.

Chen, J., Hou, H., Liao, Z., & Wang, L. (2024). Digital environment, digital literacy, and farmers' entrepreneurial behavior: A discussion on bridging the digital divide. *Sustainability*, *16*(23), 10220.

Kimote, Z., & Mutunga, D. (2025). Digital Technology and Community

Empowerment: Bridging The Rural-Knowledge Center Gap.

Sindakis, S., & Showkat, G. (2024). The digital revolution in India: bridging the gap in rural technology adoption. *Journal of Innovation and Entrepreneurship*, *13*(1), 29.

Upadhyaya, L., Burman, R. R., Sangeetha, V., Lenin, V., Sharma, J. P., & Dash, S. (2019). Digital Inclusion: Strategies to Bridge Digital Divide in Farming Community. *Journal of Agricultural Science & Technology*, *21*(5).