AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 03, Issue: 09 (September, 2026)
Available online at http://www.agrimagazine.in
©Agri Magazine, ISSN: 3048-8656

From Farms to Apps: The Digital Revolution Empowering Women and Young Agri-Preneurs

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The term "digital agriculture" describes the application of modern-day technology in agriculture, including sensors, mobile applications, drones, artificial intelligence (AI), the Internet of Things (IoT), satellite mapping and data analytics. Agriculture is evolving from conventional methods into a clever, effective and lucrative business thanks to this technology. Digital agriculture is creating new opportunities for women and young people to start their own businesses in farming, processing, marketing and advisory services both in India and around the world. According to recent studies, digital agriculture is growing quickly and has the potential to provide access to markets, money and information, particularly for underprivileged populations like women farmers.

Introduction

More than half of India's rural population works in agriculture, either directly or indirectly. However, there are a number of issues facing agriculture today, including unstable markets, growing input costs, workforce shortages and climate change. Agriculture continues to be the primary source of livelihood for rural households in India, with women comprising nearly 33–48% of the agricultural workforce (FAO, 2021). Digital innovation is becoming crucial to solving these problems. Agriculture is becoming less labour-intensive and more knowledge-intensive thanks to cell phones, weather applications, internet marketplaces and precision agricultural equipment. Young people from rural areas and women are becoming major contributors in this change. They are increasingly managing farms, starting agribusinesses, selling goods online and advising other farmers through the use of digital tools. This generates both jobs and chances for self-employment.

Major Components of Digital Agriculture

1. Precision Agriculture

PA is an umbrella terminology used for ICT-based farming where IoT, robotics, drones, and AI are employed to manage the farm in terms of soil and crop health Friedl (2017) . Precision agriculture is site-specific farm management. It uses GPS, sensors and satellite imagery to monitor crops and soil conditions. Farmers can apply fertilizer, water and pesticides only where needed. This reduces costs and increases efficiency.

2. Mobile Platforms and Apps

Agriculture apps that use big data analysis feature improved production, weather decisions, and cost-effectiveness in terms of crop yield and pesticide application. Big data analytics solutions tend to optimize the ensuing advantages rather than the expense of operations Bendre *et al.* (2016). Mobile applications are helping farmers access real-time information. In India, apps like Kisan Suvidha and IFFCO Kisan provide weather, mandi prices and expert advice. Digital marketplaces such as e-NAM connect farmers to buyers across states. These platforms improve transparency and reduce dependence on middlemen.

3. Data-Driven Farming

Data-driven farming uses information collected from sensors, weather stations, farm records, satellite imagery and market databases. These data are analyzed to make better decisions regarding sowing, irrigation, pest control and harvesting. AI can predict crop diseases and market trends.

Opportunities for Women in Digital Agriculture

Women contribute significantly to agriculture but often lack access to land, training and markets. Digital technologies can reduce these barriers.

1. Information Access

Women can obtain information directly through digital extension services and smartphones. They are no longer dependent just on local agents or male family members.

Advantages:

Weather warnings

Guidelines for managing pests

Provide suggestions

Videos for training

2.Financial Inclusion

Online banking and digital payment systems enable women to obtain subsidies, obtain crop loans, make use of digital wallets and participate in online transactions. They become more economically independent as a outcome. Women's control over agricultural revenue and services can be greatly increased via gender-focused digital infrastructure.

3.Women-led Agri Enterprises

Women can launch business enterprises like production of seeds, the installation of organic inputs, food preparation, raising a nursery, advisory services for agriculture and selling vegetables online. Self-help groups are increasingly adopting drones, custom hiring services and digital marketing.

4. Skill Development

Digital platforms provide online learning opportunities. Women can learn packaging, branding, accounting and marketing farm management This increases their entrepreneurial capacity.

Opportunities for Young Agri-preneurs

Youth are more adaptable to technology and innovation. Digital agriculture creates attractive career opportunities.

1. Development of Startups

Startups are being founded by young entrepreneurs in Agri-tech remedies, services for drones, intelligent irrigation, analytics for farms, management of the supply chain and online retailers of agricultural inputs. These startups make money by resolving issues on farms.

2. Creation of Jobs

Digital agriculture creates employment in areas like operators of drones, analysts of agricultural data, developers of apps, consultants for input, online advertisers and coordinators of e-commerce.

3.Businesses with Value Addition

Young people can contribute value by fruit and vegetable packaging, spice processing, making dehydrated goods, branding regional goods and marketing for exports. They can contact both domestic and foreign customers with the use of digital platforms.

4. Social Entrepreneurship

Young agribusiness owners can start businesses that help communities FPO administration, cold chain services, centres for farm advice, service centres for farmers and hubs for community mechanization. According to research, agri-preneurship is a powerful tactic for getting young people back into agriculture.

Digital Agriculture-Strengthening Informed Data-Driven Decisions

Digital platforms, AI-enabled advisory systems, and integrated information networks are delivering timely and contextualised knowledge to millions of farmers and empowering employees through digital governance.

By integrating gender-responsive approaches, community participation and inclusive development strategies, ICAR is ensuring that agricultural innovation creates equitable opportunities and resilient livelihoods for all ICAR (2026).

Important Technologies Supporting in Agribusiness

1. The Internet of Things

IoT links internet-based systems with farm equipment. For instance, sensors for soil moisture, intelligent irrigation, monitoring livestock and automation of greenhouses.

2.Artificial intelligence (AI)

AI facilitates to identification of diseases, prediction of yield, forecasting prices and planning of resources.

3. Drones

Government initiatives are increasingly training women SHGs for drone operation. Drones use in spraying pesticides, crop health mapping and surveying, fertilizer application.

4. Blockchain

Assurances traceability of products, assurance of quality, transparent dealings and customer confidence.

Government Support

The Government of India is promoting digital agriculture through Digital India Mission, National e-Governance Plan in Agriculture, Agri-Stack, e-NAM, FPO promotion, Drone initiatives and Skill development schemes.

Suggestions for Enhancing Opportunities

- ✓ Improve rural internet infrastructure.
- ✓ Provide affordable smart devices.
- ✓ Offer digital training for women.
- ✓ Support startup incubation.
- ✓ Promote women-led FPOs.
- ✓ Facilitate online credit systems.
- ✓ Encourage university-industry collaboration.
- ✓ Create rural innovation hubs.
- ✓ Strengthen extension services.
- ✓ Promote digital marketing platforms.

Conclusion

Digital agriculture is transforming farming by making it more intelligent, effective and focused on the market. In terms of production, processing, service delivery and marketing, it offers women and young agri-preneurs significant prospects. Digital tools have the potential to revolutionize rural livelihoods and empower the next generation of entrepreneurs with the right infrastructure, policy backing and training. Young people can create companies and creative agribusinesses, while women can achieve greater economic freedom and decision-making authority. Therefore, digital agriculture is a social and economic revolution for inclusive rural development in addition to a technology change.

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