

Mobile Apps for Farm Advisory Services: The Smartphone Revolution in Indian Agriculture

Dr. Rajdeep Madavi¹ and Dr. Gudepu Roupesh²

¹M.V.Sc Scholar, Department of Veterinary and Animal Husbandry Extension Education, Nagpur Veterinary College, MAFSU, Nagpur, MH, India

²PhD Scholar, Department of Animal Nutrition, Nagpur Veterinary College, MAFSU, Nagpur, MH, India

Corresponding Author: rajdeepmadavi@gmail.com

Introduction

Imagine a farmer in a remote village of Wayanad who notices unusual yellowing on her pepper vines early one morning. A decade ago, her options were limited wait for an extension officer who might arrive weeks later, consult a neighbour whose advice may or may not be reliable, or visit the local agri-input dealer who would likely recommend the most expensive pesticide on the shelf. Today, she pulls out her smartphone, opens an app, photographs the affected leaves, and within seconds receives an AI-powered diagnosis, a treatment recommendation, and the nearest input supplier all in Malayalam, her mother tongue. This is not a distant vision. It is the quiet agricultural revolution unfolding across rural India, driven by the explosive combination of smartphone penetration, affordable mobile data, and a rapidly maturing ecosystem of farm advisory mobile applications. With rural smartphone penetration in India expected to reach 75% by 2030 (Tripathi, 2024), mobile apps are rapidly becoming the most scalable and accessible vehicle for delivering agricultural knowledge, market intelligence, weather data, and government scheme information directly into the hands of farmers.

India's mKisan Portal alone has connected agricultural research institutes with rural farming communities, reaching over 40 million Indian farmers with crop management, pest control, fertilizer, and market information through mobile advisory services. (Anurag and Asma, 2025). Globally, expert systems and mobile advisory platforms including mKisan, Plantix, Kisan Suvidha, and AgroStar have expanded the reach of expert guidance to rural farming communities in ways no conventional extension system could replicate. This article examines the landscape of farm advisory mobile applications how they work, what the leading platforms offer, the evidence of their impact, and the challenges that remain on the path to universal farmer access.

Why Mobile Apps Are Transforming Farm Advisory

The appeal of mobile apps for farm advisory is rooted in a set of structural advantages over conventional extension methods:

- **Accessibility:** Available 24/7, at any location, without requiring a physical extension visit or travel to a service centre

- **Timeliness:** Delivers advice at the critical moment of need whether it is a disease outbreak, a weather event, or a market price decision rather than days or weeks later
- **Personalization:** Increasingly capable of delivering location-specific, crop-specific, and season-specific recommendations based on the farmer's registered profile
- **Scalability:** A single well-designed app can serve millions of farmers simultaneously at a marginal cost approaching zero, compared to the prohibitive cost of proportionally scaling a human extension workforce
- **Multilingual reach:** Leading Indian agricultural apps operate in 11 or more regional languages, dramatically widening access for non-Hindi-speaking farming communities
- **Offline functionality:** Several major platforms, including AgroStar, have been specifically optimised to function on 2G and 3G connections and retain core features in offline mode addressing the connectivity limitations of rural India

Mobile applications, combined with AI and satellite data integration, are rapidly moving from basic information delivery tools to sophisticated decision support systems that can guide farmers through the entire crop production cycle (Cerjak et al., 2025).

Leading Farm Advisory Apps in India

Kisan Suvidha

Developed and maintained by the Ministry of Agriculture and Farmers Welfare, Kisan Suvidha is the Government of India's flagship multi-service agricultural mobile application. It provides farmers with real-time weather forecasts for their location, market prices of agricultural commodities in nearby mandis, information on government schemes and subsidies, a directory of input dealers and cold storage facilities, and integrated pest management guidance. A key feature is a machine learning-based crop disease prediction system that helps farmers detect and manage crop problems early through image-based diagnosis. The app also enables direct connection to the

Kisan Call Centre preserving a human advisory layer alongside the digital tools.

Plantix

Plantix, developed by PEAT GmbH and operating globally, is one of the most widely used AI-powered plant health diagnostic apps in the world, with over 10 million downloads across 60+ countries. Farmers photograph a diseased plant with their smartphone, and Plantix's deep learning algorithm analyses the image against a database of over 30,000 plant problems pests, diseases, and nutrient deficiencies to deliver an instant diagnosis and management recommendation. Pioneer's integration of Plantix technology into its *Threat ID* tool demonstrates the platform's credibility in commercial agriculture as well. The International Potato Center (CIP) has built upon Plantix's AI image recognition model for smartphone-based diagnosis of crop diseases in developing countries extending the platform's reach in South Asia and Sub-Saharan Africa.

AgroStar

AgroStar is India's most prominent agri-tech startup in the farm advisory space, operating on a mission of *#HelpingFarmersWin*. Its app connects farmers directly with certified agri-doctors and experts for personalized crop advisory, while also offering a full e-commerce platform for agricultural inputs. Operating in Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, and Uttar Pradesh, AgroStar serves over five lakh farmers through its Kisan Helpline, with the app available in 11 regional languages (Google Play, 2025). Its offline functionality and low data consumption make it particularly suited to rural India's connectivity conditions.

mKisan Portal and App

The mKisan Portal, maintained by the Department of Agriculture and Farmers Welfare, is India's largest farmer-facing mobile advisory network integrating contributions from agricultural universities, KVKs, and state departments to deliver location-specific SMS and app-based advisories on crops, weather, market prices, and pest alerts. The portal has connected agricultural research institutes with rural farming communities, reaching over 40 million Indian farmers and delivering real-time crop management and pest control guidance at scale (Anurag and Asma, 2025).

Kisan e-Mitra

Launched in 2023, Kisan e-Mitra represents the cutting edge of AI integration in farm advisory services. This voice-enabled AI-powered chatbot supports farmers by answering queries on key government schemes including PM Kisan Samman Nidhi, Kisan Credit Card, and Pradhan Mantri Fasal Bima Yojana. Operating in 11 regional

languages and addressing over 8,000 farmer queries per day, Kisan e-Mitra had successfully responded to more than 93 lakh queries as of December 2025 demonstrating the enormous pent-up demand for accessible, conversational agricultural advisory.

IFFCO Kisan Agriculture App

The IFFCO Kisan app offers voice-based advisory services in local languages, satellite-based crop health monitoring, and real-time mandi price tracking making it particularly accessible to farmers with low literacy levels. It's simple navigation and locally relevant content across major Indian crops have made it one of the most widely adopted agriculture apps among smallholder farming communities in North and Central India.

AI and the Next Generation of Farm Advisory Apps

The integration of Artificial Intelligence, Machine Learning, and Remote Sensing is rapidly elevating farm advisory apps from passive information delivery tools to active, intelligent advisors. A smartphone application for wheat crop disease diagnosis, developed using machine learning models trained on thousands of disease images, demonstrated the capacity to provide farmers with actionable crop health insights within seconds streamlining the diagnostic process and empowering faster, more accurate crop management decisions (Niaz et al., 2025). At Iowa State University, researchers have developed a smartphone app capable of identifying over 1,000 insect species and are integrating it with drone-based field scouting and ground robots to create a synchronized, AI-driven IPM scouting system capable of plant-level precision pest management.

The MyIPM series of smartphone applications provides farmers and extension agents with high-resolution pest identification images, integrated management options, pesticide search and resistance management tools, and detailed pest life cycle information complementing traditional extension outreach with a portable, always-available IPM reference library (Reay-Jones, 2025). These advances confirm that farm advisory apps are no longer supplementary tools they are rapidly becoming the primary channel through which scientific agricultural knowledge reaches the farmer.

The Gender and Inclusion Dimension

The transformative potential of farm advisory apps can only be fully realized if they are designed with deliberate attention to inclusion. Women farmers who constitute nearly 60–80% of India's agricultural labour force are disproportionately excluded from the benefits of mobile advisory due to lower smartphone ownership rates, restricted

digital literacy, and social norms that limit independent technology use.

Voice-based interfaces such as Kisan e-Mitra and IFFCO Kisan's voice advisory system are particularly important in bridging this gap enabling access for low-literacy farmers regardless of reading ability. Apps designed with simple, icon-driven navigation and regional language support

further reduce barriers. However, deliberate policy attention including subsidized smartphone distribution for women farmers, digital literacy training through women's SHGs, and co-design of app content with women farmer communities remains essential to ensure that the mobile advisory revolution does not deepen existing gender inequities in agricultural knowledge access.

Table 1: Leading Farm Advisory Mobile Applications Features and Reach

App	Developer	Key Features	Languages	Farmer Reach
Kisan Suvidha	Ministry of Agriculture, GoI	Weather, market prices, pest diagnosis, scheme info, KCC	12 Indian languages	Pan-India; millions of users
Plantix	PEAT GmbH	AI plant disease diagnosis, 30,000+ problems database	18 languages	10+ million downloads globally
AgroStar	AgroStar Agri. Tech.	Expert agri-doctor advisory, input e-commerce, offline mode	11 regional languages	5 lakh+ registered farmers
mKisan Portal	Dept. of Agriculture, GoI	SMS + app crop advisories, KVK-linked alerts, market data	Multiple languages	40 million+ farmers
Kisan e-Mitra	Ministry of Agriculture, GoI	AI voice chatbot, scheme queries, 8,000 queries/day	11 languages	93 lakh+ queries resolved
IFFCO Kisan	IFFCO	Voice advisory, satellite crop monitoring, mandi prices	Local languages	Pan-India smallholders
MyIPM	Clemson University	IPM pest ID, pesticide resistance management, life cycles	English	Farmers and extension agents

Source: Adapted from Press Information Bureau (2025); Reay-Jones (2025)

Challenges Ahead

Despite impressive growth, the farm advisory app ecosystem faces several structural challenges:

- **Connectivity barriers:** Reliable 4G/5G connectivity remains inconsistent in hilly, tribal, and remote agricultural zones though offline functionality in platforms like AgroStar partially addresses this
- **Data quality and localization:** Many apps provide generic, crop-level recommendations that do not account for local soil conditions, microclimate variations, or farm-specific contexts reducing their practical relevance
- **Digital literacy gap:** Farmers unfamiliar with smartphone interfaces or app navigation may abandon complex applications despite their potential value
- **Information overload:** A farmer registered on multiple platforms may receive conflicting advisories underscoring the need for integrated, unified advisory ecosystems
- **Trust and credibility:** Farmers are often more influenced by peer recommendations and trusted local extension agents than by anonymous digital advisories highlighting the importance of hybrid phygital delivery models

Conclusion

Farm advisory mobile applications are among the most democratizing innovations in the history of agricultural extension. They place the cumulative knowledge of agricultural science from soil health diagnostics to market price intelligence, from AI-powered pest identification to government scheme navigation directly in the palm of every farmer with a smartphone. India's growing portfolio of government and private farm advisory apps, reaching tens of millions of farmers across diverse agro-climatic zones and languages, demonstrates that this technology has moved decisively beyond pilot projects into mainstream agricultural practice. The decade ahead will be defined not by whether mobile apps can deliver farm advisory at scale that question has been answered but by whether these platforms can achieve true universality, reaching the smallholder woman farmer in a remote highland village with the same quality of timely, personalized, and trusted advice currently available to a progressive farmer in Punjab or Gujarat. That challenge demands continued investment in connectivity infrastructure, digital literacy, gender-inclusive design, and the integration of human extension support with digital platforms. The smartphone in the farmer's pocket is no longer just a communication device. Increasingly, it is the most powerful agricultural advisory tool ever built and the task now is to ensure every farmer knows how to unlock its full potential.

References

- Anurag S. and Asma F. (2025). *Mobile and decision support application for farmers*. *Journal of Agronomy*, 8(12S), 68–77. <https://www.agronomyjournals.com/archives/2025/vol8issue12S/PartE/S-8-11-22-638.pdf>
- Cerjak, M., Mesić, Ž., & Štefanić, I. (2025). *Adoption of mobile-based agricultural extension services*. *Computers and Electronics in Agriculture*. <https://doi.org/10.1016/j.compag.2025.00292X>
- Niaz, A. A., Ahmad, S., & Iqbal, M. (2025). *An efficient smartphone application for wheat crop disease diagnosis*. *PMC*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11709305/>
- Press Information Bureau, Government of India. (2025, November 19). *Artificial Intelligence (AI) transforming Indian agriculture*. <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2227914>
- Reay-Jones, F. P. F. (2025). *MyIPM smartphone applications tools to increase adoption of integrated pest management*. *Journal of Integrated Pest Management*, 16(1), Article 3. <https://doi.org/10.1093/jipm/pmae051>
- Tripathi, R. (2024, December 25). *The future of crop advisory services in India: A decadal outlook*. LinkedIn. <https://www.linkedin.com/pulse/future-crop-advisory-services-india-decadal-outlook-tripathi-ph-d-wvl3e>
