



MANAGE Agricultural Extension “Evening4Learning (E4L)” Webinar Series



Theme: “Innovations in Extension with Entrepreneurship”



Topic: “Krisiyukta: Leveraging Agri-Startups to Transform Agricultural Extension”



Schedule:

27-04-2024, 19:45 – 20:30 PM



About the Program

The MANAGE Agricultural Extension “Evening4Learning” Webinar Series is aimed at enhancing knowledge and professional engagement in the field of agricultural extension. The four-day series is structured with each day focusing on a distinct topic under a common theme, allowing participants to gain comprehensive insights into key areas of extension. The program is intended for a diverse audience, including postgraduate and doctoral students, agricultural faculty, and industry professionals. It covers broad themes ranging from entrepreneurship and sustainability to emerging technologies in agriculture.

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Agricultural Extension
“Evening4Learning”
Webinar Series
April 27-30, 2024
19.00-20.30 pm (IST)

Theme: Innovations in Extension with Entrepreneurship



Speaker

Mr. Naganagouda Malkaji

Co-Founder

Eco Agripreneurs and Krisiyukta
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 Naganagouda Malkaji

About the Speaker

Mr. Naganagouda Malkaji, Co-Founder of Eco Agripreneurs and Krishiyukta, Karnataka, is a highly experienced professional with over 20 years of experience in promoting sustainable agriculture. He has served as a Master Trainer on key areas including sustainable agriculture, Integrated Pest Management (IPM), and Farmer Field Schools (FFS). Through his extensive field experience, he has contributed to strengthening farmer capacities, promoting eco-friendly agricultural practices, and facilitating participatory learning approaches for improved farm-level decision-making.

Current Extension System

The current agricultural extension system can broadly be categorized into three major components: public extension, private extension and digital extension platforms. Each of these systems plays an important role in providing information, advisory services and technologies to farmers, but also faces certain limitations.

Public Extension System

The public extension system is primarily delivered through agricultural universities, government departments and Krishi Vigyan Kendras (KVKs). Its major focus has traditionally been on technology transfer and provision of advisory services to farmers, generally free of cost. The major strengths of the public system include access to research, product evaluation and specialized expertise available within universities and public institutions. However, challenges include limited coordination among specialists, inadequate updating of product-related knowledge, and insufficient emphasis on farmer-oriented and non-formal communication. The system also needs stronger linkages between research and extension to ensure that available knowledge is effectively translated into practical farm-level solutions.

Private Extension System

The private extension system includes agricultural companies, consultants, input dealers, retailers and wholesalers. These actors often provide advisory services along with agricultural inputs. However, the concerns regarding the objectivity and quality of such advisories, particularly where commercial interests influence recommendations. Limited follow-up and inadequate focus on outcomes may result in farmers purchasing unnecessary inputs and consequently increasing their production costs.

Digital Extension Platforms

Digital extension has emerged as an important component of the contemporary extension system. Universities, government departments and private companies are increasingly using digital platforms and mobile applications to deliver agricultural information and advisory services. Many platforms utilize Artificial Intelligence (AI) and Machine Learning (ML), particularly for crop and pest diagnosis. However, the effectiveness of digital extension depends not only on diagnostic capability but also on the quality and contextual relevance of advisories. Some of the existing digital platforms provide recommendations that may not be sufficiently accurate, precise or easily understandable for farmers. Advisories should ideally specify appropriate solutions based on factors such as severity of the problem, crop condition and required dosage, rather than providing generic product recommendations.

Overall, the current extension system needs to move beyond conventional technology transfer and generic advisories towards a more integrated, farmer-centric and need-based approach. Greater coordination between research and extension, improved accountability of private advisory services, and better integration of agricultural expertise with digital technologies are essential for providing reliable and actionable information to farmers.

Eco Agripreneurs: Innovative and Sustainable Extension Model

The experience of Eco Agripreneurs represents an innovative model for delivering scientific and need-based agricultural extension services. The organization provides paid scientific advisory services, depending on the crop and distance involved. The model is based on the principle that farmers are more likely to recognize and value advisory services when they perceive them as contributing directly to improved farm decision-making and profitability.

A key feature of the model is the emphasis on need-based and cost-effective input use. Although the organization's advisory services are linked with input retailing, it follows an ethical approach of not recommending or selling unnecessary inputs. Inputs are suggested only when technically required, thereby helping farmers avoid avoidable expenditure and strengthening the credibility of the extension service.

Eco Agripreneurs also facilitates market linkages and contract farming, particularly for hybrid seed production. The integration of scientific advisory, input services, market linkages and contract farming provides a diversified and sustainable business model while keeping farmer advisory at its core.

Despite the success of the physical advisory model, the organization recognized that physical extension services have limitations in terms of scalability and outreach. This led to the development of a digital solution aimed at extending scientific advisory services to a larger number of farmers and enabling technology-driven, scalable extension delivery.

INNOVATIONS WHICH HELPED AGRIPRENEURSHIP

- 01

Scientific advice
 Strong technical knowledge
 Varying charges for the advisory
- 02

Input Shops
 Need based inputs
 Cost effective, non-residual
- 03

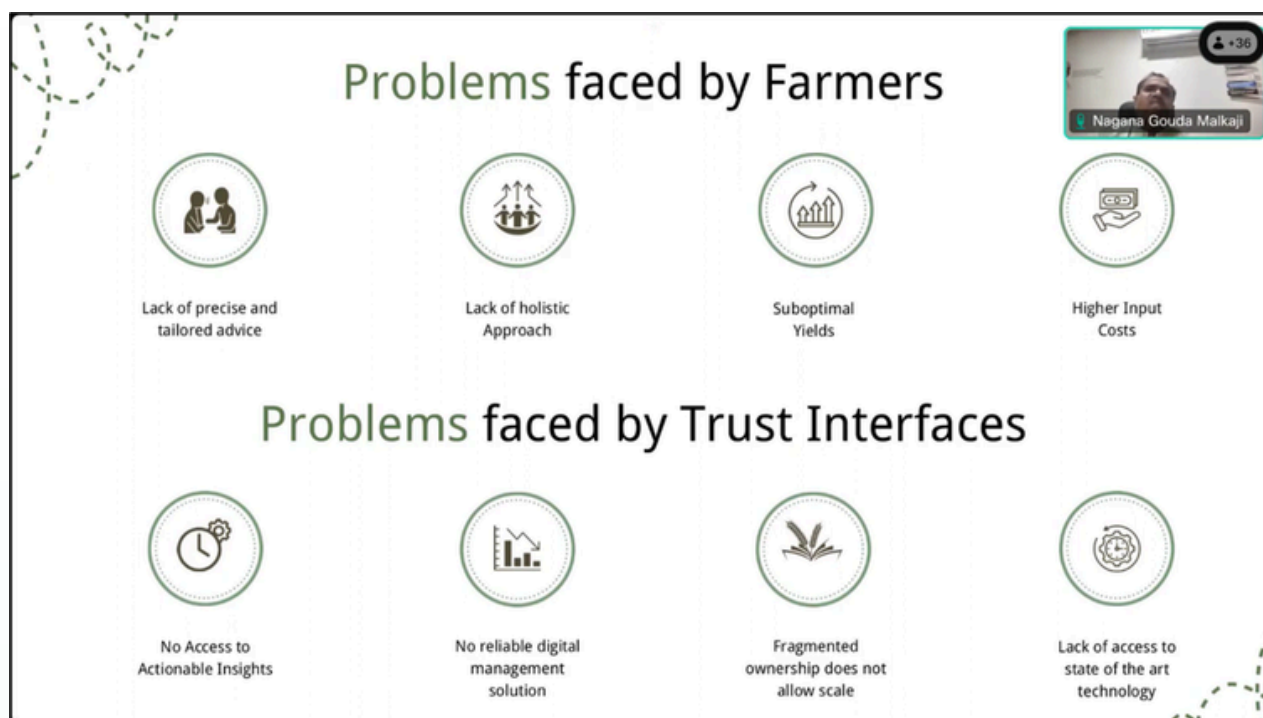
Market linkage
 Outputs - Rice, Pomegranate, Papaya
 More revenues for the farmers
- 04

Contract farming
 Hybrid seed production field crop, vegetable crops
 Working with 15 seed companies





Problems faced by farmers and Trust Interfaces



Krisiyukta: AI-Enabled Digital Advisory

Krisiyukta, an AI-enabled agricultural platform that integrates Generative AI, Machine Learning, Data Analytics, and agricultural expertise to provide digital advisory and agribusiness solutions. The platform aims to enhance farm productivity, optimize input use, and improve farmers' profitability while supporting FPOs, NGOs, and other extension organizations.



AI-Powered Advisory Services

Krisiyukta provides crop-specific advisory services based on crop stage, nutrient status, and pest or disease severity. The recommendations are generated using AI models combined with field-based expert knowledge, enabling farmers to receive context-specific solutions.

Digital Solution for FPOs and Extension Agencies

The platform supports FPOs, NGOs, and development organizations through farmer database management, advisory dissemination, crop monitoring, and notification systems. Organizations can subscribe to the platform and deliver customized advisories to large numbers of farmers.

Dynamic Crop Profiling

A key feature of the platform is the Dynamic Crop Profile, which compiles information on crops cultivated, area under cultivation, and expected production. This information can be used for production planning, market linkage, aggregation, and value-chain development.

Comprehensive Soil and Water Testing

Krisiyukta offers advanced soil and water testing services, including secondary and micronutrients, cation exchange capacity, and other critical indicators. The comprehensive testing improves the accuracy of nutrient management recommendations.

Crop-Specific Subscription Models

The platform provides season-long advisory packages for commercial crops such as ginger. These packages include crop schedules, nutrient management recommendations, pest and disease advisories, digital support, and expert field visits. Currently, pest and disease management schedules are available for nearly 60 crops.

Seedling Supply and Technology Promotion

Krisiyukta connects farmers with seedling suppliers through a digital marketplace. The platform is promoting technologies such as Apical Rooted Cutting (ARC) for potato and single-bud seedling technology for ginger, enabling farmers to access quality planting material while helping suppliers plan production.

Disease Surveillance and Alerts

The platform includes an early warning system that allows extension agencies to quickly disseminate alerts regarding pest and disease outbreaks. Farmers in affected areas receive timely notifications and management recommendations.

Customizable Advisory Framework

Krisiyukta can be customized for specific projects and production systems, including organic farming initiatives, enabling organizations to provide location-specific and need-based advisories.

How Krisiyukta Differs from Other Digital Advisory Platforms

Several features distinguish Krisiyukta from conventional agricultural advisory applications. Unlike many platforms that generate recommendations solely based on image recognition, Krisiyukta adopts a comprehensive and precision-based approach by analyzing multiple parameters, including weather conditions, soil characteristics, severity of pest or disease incidence, and previous crop management practices before generating recommendations. This enables the platform to provide more accurate and context-specific solutions.

Krisiyukta is powered by advanced technologies such as Generative Artificial Intelligence (GenAI) and Machine Learning, making it one of the early agricultural platforms to integrate GenAI into its advisory services. These technologies enhance the platform's ability to deliver personalized and data-driven recommendations to farmers and extension agencies.

Another key strength of the platform is the expertise of its founding team, which collectively possesses over 100 years of experience spanning agriculture, technology, and startup development. This multidisciplinary experience has contributed to the development of a robust and innovative digital solution.

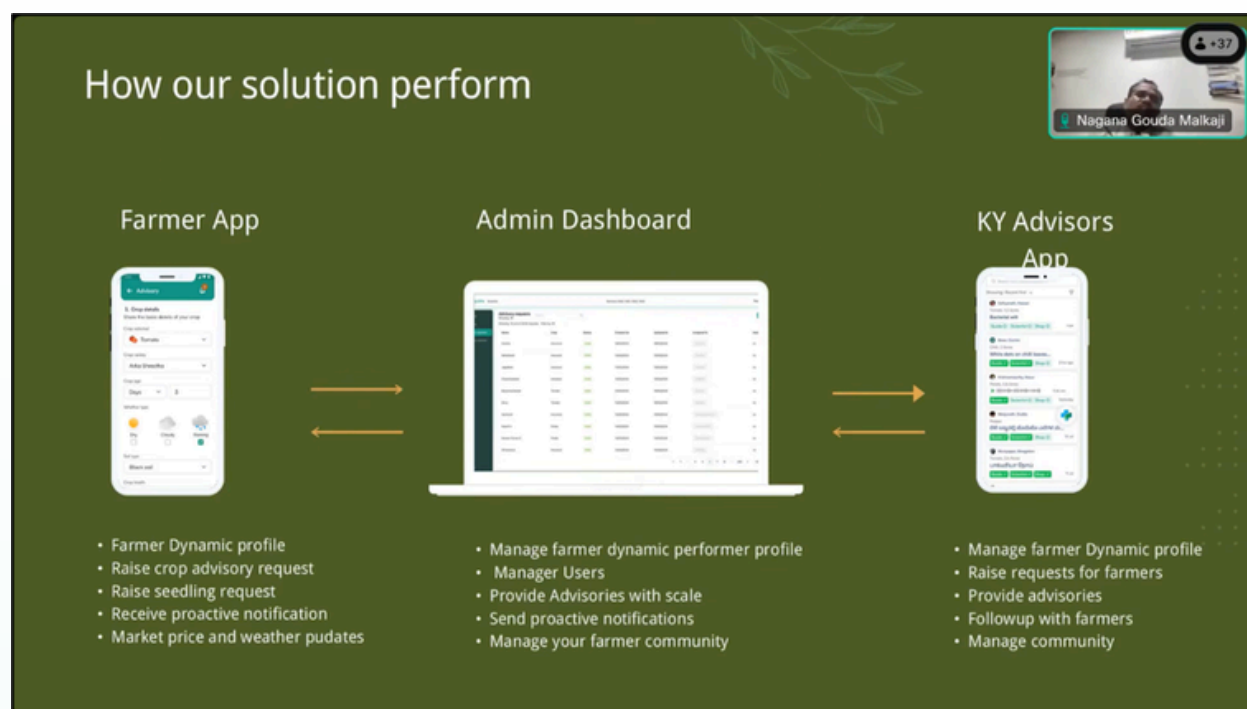
The platform is also highly customizable, allowing organizations to tailor advisory services according to crop, region, production system, and project requirements. Furthermore, its architecture is designed for large-scale deployment, enabling extension agencies and farmer organizations to disseminate customized advisories and notifications to specific farmer groups quickly and efficiently.

How does Krisiyukta performs?

Krisiyukta operates through three interfaces: the Farmer App, Advisor App, and Admin Dashboard, enabling farmers, extension workers, retailers, and organizations to access advisory services efficiently. A unique feature of the platform is that extension workers can raise advisory requests on behalf of farmers during field visits, ensuring that farmers receive expert recommendations even when they do not directly use the application.

The platform allows retailers and extension agencies to maintain complete records of farmers' crop management histories, facilitating better advisory support and continuity of services. The system also includes crop calendars and automated notifications that guide farmers in planning subsequent crops and accessing timely advisories.

Krisiyukta is designed to support NGOs, government agencies, and development projects by providing a customizable advisory engine. The platform was providing advisory services to turmeric farmers through an NGO in Karnataka and was in discussions with the Government of Meghalaya to support ginger and turmeric farmers.



The platform follows a partner-based model, allowing organizations to customize advisories according to their specific requirements, such as organic farming or sustainable agriculture practices, while ensuring data privacy among partner organizations and extension agents.

Key Highlights

- 1. Integrated Extension Ecosystem:** The current agricultural extension system comprises public, private and digital extension platforms, each contributing to farmer advisory services while facing specific limitations.
- 2. Need for Farmer-Centric Extension:** The session emphasized moving beyond conventional technology transfer and generic advisories towards integrated, need-based and actionable extension services, supported by stronger research-extension linkages.
- 3. Eco Agripreneurs' Sustainable Model:** Eco Agripreneurs demonstrated a paid scientific advisory model combined with ethical input use, market linkages and contract farming, providing a diversified and sustainable approach to agricultural extension.
- 4. AI-Enabled Digital Advisory through Krisiyukta:** Krisiyukta integrates Generative AI, Machine Learning, data analytics and agricultural expertise to provide crop-specific, context-sensitive and personalized advisory services.
- 5. Comprehensive and Precision-Based Advisory:** Unlike platforms relying mainly on image recognition, Krisiyukta considers weather, soil characteristics, pest/disease severity and previous crop management practices to generate more precise recommendations.

Interactive discussion

1. Is limited extension support primarily due to a shortage of extension personnel or the effectiveness of the existing extension system?

The challenge stems from both factors. Extension workers often face difficulties in keeping pace with rapidly evolving agricultural technologies and market developments, resulting in a gap between official recommendations and field-level practices whereas the practical challenge of managing extensive technical information related to crop protection and nutrient management.

To address these issues, KrishiGPT functions as a decision-support tool that assists extension workers by providing updated, context-specific recommendations based on factors such as disease severity, weather conditions, and previous crop management practices. The platform also regularly updates its advisory schedules, enabling extension personnel to deliver accurate and timely recommendations more efficiently.

2. What challenges have been encountered in facilitating the adoption of digital advisory platforms among illiterate farmers and those with limited access to smartphones, and what strategies have been employed to address these challenges?

Digital adoption can be challenging, especially for older and less digitally literate farmers. However, a Karnataka survey of 2,000 farmers found that nearly 86% of farm households had access to at least one smartphone. To enhance accessibility, extension workers and local retailers can access advisories on behalf of farmers and provide need-based recommendations. Growing awareness, community support, extension services, and improved digital infrastructure are further encouraging farmers to adopt digital platforms.

3. What are the major challenges in scaling physical agricultural advisory services, and how can digital tools complement field visits?

Physical advisory is resource-intensive and difficult to scale due to extensive travel and farm visits. Since 75–80% of farmers' problems are familiar to experienced extension workers, many routine issues can be addressed remotely. Krisiyukta enables farmers to share images, videos, text, or voice messages for remote diagnosis. A pilot with 150 farmers reportedly achieved 96% accuracy. While physical visits remain important for complex cases, digital tools can reduce routine visits and expand advisory reach.

YouTube Link:

<https://youtu.be/V8QKoDlu7Lw?list=PL6mI4tMrzHzTHqX8i3oQ6o-B4Pfc5gPQs&t=1347>

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