



## **MANAGE Agricultural Extension “Evening4Learning (E4L)” Webinar Series**



**Theme: “Innovative Technologies for Advancing Agricultural Extension”**



**Topic: “Drone Technology for Agricultural Extension”**



**Schedule:**

**28-12-2024, 19:00-20:30 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 programme 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.

  
**MANAGE**  
Agricultural Extension  
“Evening4Learning”  
Webinar Series  
Dec 27-30, 2024  
19.00-20.30 pm (IST)  
Theme: Innovative Technologies for Advancing  
Agricultural Extension



## Speaker

**Dr. Shankar Goenka**

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Kirshi Viman

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[in](#) Dr. Shankar Goenka

## About the Speaker

Dr. Shankar Goenka, Managing Director of Kirshi Viman, is the founder of WOW Factors India. He also spearheads innovation in agricultural mechanization through WOW Go Green LLP, a leading player in India's agricultural drone sector. His work uniquely brings together technology, sustainability, and human potential development.

## Introduction

Agriculture is increasingly being viewed as a cultural system that requires precision, planning, and innovation—areas where Indian agriculture faces significant gaps. Challenges such as inefficient water use, uneven manual spraying, crop losses due to poor coverage, and health risks from pesticide exposure highlight the need for safer and more effective technological solutions.

Agricultural drones have emerged as a viable solution for uniform spraying, reduced input use, improved crop protection, and enhanced farmer safety. Although regulatory processes exist, drone technology presents strong future potential for Indian agriculture. It opens new avenues for youth and agricultural graduates in technical services, field operations, and entrepreneurship. With supportive government initiatives, including women-focused livelihood schemes, drones are increasingly seen as key drivers in building a more efficient, sustainable, and future-ready agricultural culture in India.

## Need for drones

Drones are needed in agriculture to address several persistent challenges associated with conventional farming practices. Excessive use of fertilizers and water, inaccurate and uneven spraying, labour shortages, and low productivity continue to limit farm efficiency and sustainability. Manual spraying often leads to poor coverage, resulting in crop losses, while also exposing farmers to serious health risks such as pesticide inhalation and snake bites. Drone-based solutions offer a safer and more precise alternative by enabling uniform application of inputs, reducing water and chemical usage, improving yields, and minimizing human exposure to hazardous conditions. In this context, drones emerge as an effective technological intervention to enhance productivity, resource efficiency, and farmer safety.

## Conventional spraying Vs Drone Spraying

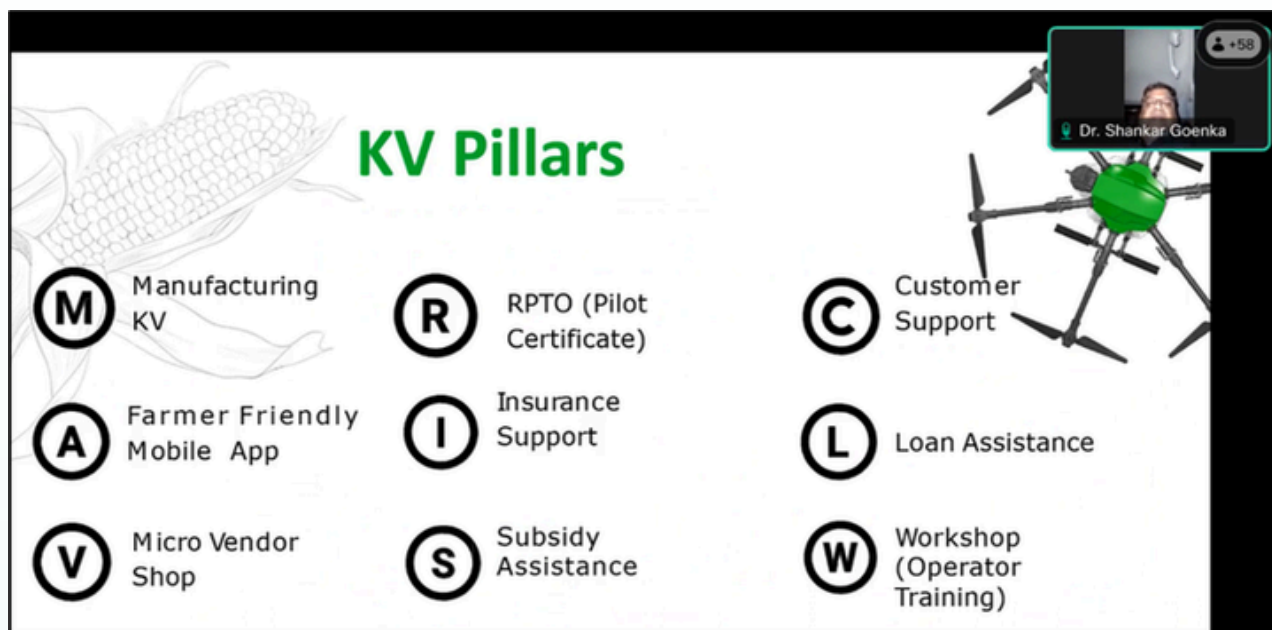
While conventional spraying involves higher labour dependence, longer time requirements, and lower accuracy, drone spraying demonstrates improved precision with reduced labour and time inputs. Although the initial cost may appear comparable, the efficiency gains from drone use particularly in accuracy and operational speed make it a more effective option. Overall, drone-based spraying offers a more reliable, efficient, and scalable solution for modern agricultural practices than traditional manual methods.

## Initiation of Krishi Viman

Krishi Viman was conceived in response to the practical limitations of conventional crop-spraying methods observed through sustained engagement with farming communities. Insights gained during the introduction of Nano Urea among farmers underscored the need for safer, faster, and more precise application technologies, leading to the exploration of drone-based solutions.

The company was established with a clear vision to emerge as a market leader in the drone industry by 2027. Its mission centres on becoming the preferred choice in the drone ecosystem while catering to a broad spectrum of users from farmers and small and medium enterprises to large corporations. With a focus on nationwide outreach through integrated physical and digital platforms, Krishi Viman emphasizes resource-efficient innovations, particularly precision drone spraying to conserve water and enhance agricultural sustainability.

## Pillars of Krishi Viman



## Key features of the Krishi Viman drone

The Krishi Viman drone highlights efficiency, productivity, and livelihood potential. It can spray one acre in just 5–7 minutes and cover up to 30 acres per day, significantly reducing time and labour requirements. Precision application contributes to a 15% increase in agricultural output, lowers input costs by approximately 25%, and saves nearly 90% of water. The technology ensures uniform crop coverage, including both upper and lower leaf surfaces, and offers health benefits by eliminating direct exposure to chemical fumes. In addition, the model supports skill development through residential training, Green Pilot certification, and income opportunities of around ₹80,000 per month, contributing to improved farmer livelihoods and rural employment.

## Achievements of Krishi Viman

Since its inception, Krishi Viman has facilitated drone operations across more than 1.5 million acres of agricultural land nationwide. While Gujarat has emerged as the largest market, its presence has steadily expanded across states such as Maharashtra, Rajasthan, Uttar Pradesh, Andhra Pradesh, Punjab, Chhattisgarh, Bihar, and West Bengal. The services have been applied to a wide range of crops, including sugarcane, rice, mustard, vegetables, orchards, and other agricultural commodities.

## Role of Drones in Precision Farming

- Crop spraying
- Field mapping and monitoring
- Disease and pest management
- Application in tall crops such as sugarcane, grapes, orchards, and plantation crops
- Improved management in waterlogged crops like rice

## Entrepreneurship and Employment Opportunities

Drone technology is primarily a service-based model, encouraging:

- Young entrepreneurs
- Agricultural graduates and students
- Rural youth

Key opportunities include:

- Drone pilot services
- Custom hiring centers
- Drone maintenance and servicing
- Training and capacity-building centers

It was highlighted that one drone can generate sustainable monthly income depending on crop type, region, and service planning.

## Key Highlights

- Agricultural drones address critical challenges in Indian agriculture by improving spray uniformity, reducing water and chemical use, enhancing crop protection, and minimizing health risks to farmers.
- Drone-based spraying is significantly more efficient than conventional methods, offering time savings, higher precision, and scalability, especially for large and difficult-to-access crops.
- Krishi Viman has demonstrated large-scale impact, covering over 1.5 million acres across multiple states and diverse crops, showcasing operational viability and adoption potential.
- Drone technology creates strong entrepreneurship and employment opportunities for youth, agricultural graduates, and rural entrepreneurs through a service-based model.
- Government support through training, SOPs, and subsidy schemes such as SMAM and Namo Drone Didi is accelerating the adoption of drones for precision farming and sustainable agricultural development.

## Interactive discussion

### 1. What challenges limit the effective use of drones in fields during peak agricultural seasons, and what is the most practical solution?

During peak seasons, drone operations face challenges such as high demand, limited availability of trained operators, time-sensitive spraying windows, and variations in crop height and field conditions. Since farmers must cover every acre on time, any delay can directly affect crop productivity and returns. A practical solution is a service-provider model rather than individual farmer ownership. Trained youth, students, or rural entrepreneurs can own drones, obtain certification, and offer spraying services to farmers on a per-acre basis, similar to tractor hiring systems. This approach reduces costs for farmers, ensures timely operations, creates local employment, and is well suited to India's predominantly small and marginal farming structure.

### 2. What is the training package and duration for operating agricultural drones, and is DGCA training sufficient?

As per DGCA norms, a pilot licence requires a minimum of five days of training. In addition, 7–10 days of advanced technical training is recommended for effective operation, maintenance, and troubleshooting. However, DGCA training alone is not sufficient for field-level operations. Practical drone use requires hands-on training to address real-world challenges such as drone maintenance, nozzle cleaning, pesticide mixing, spray pressure and speed management, and handling varying field conditions. Therefore, additional OEM or technical training is strongly recommended to ensure safe, efficient, and professional operations.

### 3. What government support and schemes are available in India to promote the adoption of agricultural drones?

The Government of India has introduced several support schemes to encourage the use of agricultural drones by farmers, FPOs, training institutes, and rural entrepreneurs. Subsidy levels differ by beneficiary category, with individual farmers receiving around 40–50% support, SC/ST and women farmers up to about 50%, and FPOs or custom hiring centres up to roughly 75%. Training institutions and agricultural research bodies may also receive special grants. In addition, the Namo Drone Didi Scheme offers up to 80% subsidy along with free pilot training for eligible women's self-help groups. Together, these initiatives aim to reduce costs, promote precision farming, and accelerate the adoption of modern technologies in Indian agriculture.

#### YouTube Link:

<https://youtu.be/8DULevnJKVw?list=PL6mI4tMrzHzTHqX8i3oQ6o-B4Pfc5gPQs&t=2>

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