

Success Story

Empowering Rural Women through Drone Technology

Name of the Enterprise / Crop: Farm mechanization

Name of the Farmer: Mrs. Rohini Pankaj Shinde

(First “Drone Didi” of Latur District)

Address: At Post. Gangapur, Tq. & Dist. Latur, Maharashtra- 413 531



1. Situation Analysis / Problem Statement

Gangapur village of Latur district is located in a drought-prone region of Marathwada characterized by erratic rainfall, frequent dry spells, and limited irrigation resources. The major crops grown in the area include soybean, chickpea, pigeon pea, sorghum, safflower, maize, sugarcane (in irrigated pockets), vegetables, flowers, and mango orchards. Crop productivity in the region largely depends on timely plant protection measures.

However, farmers in the village were facing serious constraints in plant protection management. Acute labour scarcity during peak spraying periods resulted in delayed pesticide application. Traditional knapsack sprayers were labour-intensive and required large volumes of water (200–250 liters per hectare). Spray coverage was often uneven, especially in tall crops such as sugarcane and pigeon pea. Farmers were directly exposed to harmful chemicals, causing health concerns. Due to improper and delayed spraying, pest and disease incidence in soybean and chickpea led to yield losses of 10–25 percent in several cases.

Women in agriculture were mainly engaged in manual farm operations and had limited access to advanced agricultural machinery. There were very few income diversification opportunities for rural women, and no structured drone-based custom hiring services were available in Latur district at that time.

Despite these constraints, the district had strong institutional support and progressive farmers willing to adopt innovative technologies. Recognizing the need for precision agriculture and women empowerment, KVK, Latur initiated efforts to introduce drone-based pesticide spraying technology in the region.

2. Plan, Implementation and Support

To address the identified problems, Krishi Vigyan Kendra, Latur initiated On-Farm Trials (OFTs) on drone spraying technology in soybean and chickpea crops. The objective was to evaluate its efficiency, spray uniformity, reduction in chemical consumption, and economic feasibility under local conditions.

The trials demonstrated that drone spraying required only 20–25 liters of spray solution per hectare and achieved uniform droplet distribution with high field efficiency (1.5–2.0 hectares per hour). The technology significantly reduced operator exposure to pesticides and ensured timely plant protection.

Mrs. Rohini Pankaj Shinde from Gangapur actively participated in these demonstrations and training programmes. She underwent structured skill training conducted by KVK, which included drone

operation, calibration, safety protocols, battery management, pesticide handling, minor troubleshooting and business planning for custom hiring services. Farmer–scientist interactions, field demonstrations and exposure visits further enhanced her confidence and technical competence.

With technical guidance from KVK, she applied under the Government of India’s Drone Didi Scheme and successfully procured an agricultural spraying drone. KVK provided continuous advisory services and field-level support during the initial phase of operation. With this initiative, she became the first “Drone Didi” of Latur district, marking a significant milestone in women-led agricultural mechanization in the region.

3. Output

After procuring the drone, Mrs. Rohini Shinde started providing custom hiring services for pesticide spraying across various crops in Gangapur and neighboring villages. During the operational year, she covered a total spraying area of 810 acres.

She sprayed 185 acres of sugarcane at a rate of ₹700 per acre, generating ₹1,29,500. In soybean, she covered 150 acres at ₹500 per acre, earning ₹75,000. Chickpea spraying was conducted on 175 acres, generating ₹87,500. Safflower was sprayed on 127 acres with an income of ₹63,500. Additional crops included sorghum (5 acres), green gram, black gram and pigeon pea (50 acres), maize (20 acres), flowers (15 acres), tomato (65 acres), and mango orchards (18 acres at ₹1000 per acre). Through these operations, she generated a total income of ₹4,51,000 from 810 acres of spraying services.

The introduction of drone technology resulted in several immediate outputs. Farmers experienced 25–30 percent reduction in chemical usage due to low-volume precision spraying. Labour requirements were reduced by nearly 40–50 percent. Timely spraying improved pest and disease management, leading to better crop protection. Mrs. Rohini significantly enhanced her technical skills, entrepreneurial capacity, and digital agriculture knowledge.

Sr. No.	Crop	Spraying Area, Acre	Spraying Rate per Acre	Total Income
1.	Sugarcane	185	700/-	129500/-
2.	Soybean	150	500/-	75000/-
3.	Chickpea	175	500/-	87500/-
4.	Safflower	127	500/-	63500/-
5.	Sorghum	05	500/-	2500/-
6.	Green gram, Black gram and Pigeon Pea	50	500/-	25000/-
7.	Maize	20	500/-	10000/-
8.	Flowers	15	500/-	7500/-
9.	Tomato	65	500/-	32500/-
10.	Mango	18	1000/-	18000/-
Total		810	--	451000/-

4. Outcome

The success of drone spraying services created a positive ripple effect in the surrounding villages. Farmers from neighboring villages began availing her services, leading to horizontal spread of the technology. More than 550 farmers benefitted directly from drone spraying services in a single year.

Farmers reported improved crop health and yield stability due to timely and uniform spraying. On average, yield improvement and cost savings together provided an estimated additional benefit of approximately ₹1,500 per acre. For 810 acres, this translated into an indirect economic benefit of nearly ₹12,15,000 to the farming community.

The technology also reduced excessive pesticide application, thereby minimizing environmental contamination and improving soil and water quality. Reduced human exposure to chemicals improved occupational safety.

From a women empowerment perspective, Mrs. Rohini Shinde emerged as a role model for rural women and Self-Help Groups. Her increased income improved the financial stability of her family and strengthened her decision-making role within the household and community.

5. Impact

At the district level, the initiative contributed to the promotion of precision agriculture and digital farming practices in Latur. Drone spraying gained visibility as a viable alternative to conventional plant protection methods. The custom hiring model demonstrated by Mrs. Rohini created a sustainable rural service enterprise.

Economically, her enterprise generated ₹4.51 lakh annual income and stimulated the rural service economy. Indirect benefits to farmers strengthened the agricultural economy of the area. Socially, her recognition as the first Drone Didi of Latur district enhanced the status of women in mechanized agriculture. Her success improved household living standards and educational opportunities for her children.

Institutionally, KVK, Latur strengthened its role as a technology incubation and extension center by successfully promoting drone-based precision agriculture. The model demonstrated effective convergence of government schemes, institutional support, and grassroots entrepreneurship.

Environmentally, the technology promoted climate-smart agriculture by ensuring timely spraying during narrow weather windows, reducing chemical load, and improving resource-use efficiency in drought-prone conditions.

Conclusion

The journey of Mrs. Rohini Pankaj Shinde from a rural woman farmer to the first Drone Didi of Latur district reflects the transformative potential of agricultural mechanization combined with institutional support. Through strategic intervention by Krishi Vigyan Kendra, Latur, she adopted advanced drone technology, generated substantial income, provided precision spraying services across 810 acres, and delivered measurable economic and environmental benefits to the farming community.

Photographs



Active participation of Mrs. Rohini Shinde in skill development training on precision agriculture technologies.



Practical session on drone calibration and safe pesticide handling during training programme.



Certificate distribution ceremony after successful completion of Training at KVK, Latur.



Drone Didi Scheme beneficiary Mrs. Rohini Shinde with her agricultural spraying drone unit.



Mrs. Rohini Pankaj Shinde operating agricultural drone for spraying





Mrs. Rohini Pankaj Shinde operating agricultural drone for spraying in sugarcane and soybean field.