



Oilseed Kisaan Mitra

Sucharita Rout¹, Suchismita Tripathy², Jyoti Rekha Patnaik³

¹M.Sc. Scholar, Department of Agronomy, College of Agriculture, OUAT, Bhubaneswar, Odisha India- 751003

²Associate Professor, Department of Agronomy, College of Agriculture, OUAT, Bhubaneswar, Odisha India- 751003

³Assistant Professor, Department of Agronomy, College of Agriculture, OUAT, Bhubaneswar, Odisha India- 751003

*Corresponding author email ID: sucharita03@gmail.com, suchismita.agro@ouat.ac.in

ABSTRACT

Oilseed crops are vital to Indian agriculture and its economy, yet farmers often encounter productivity issues stemming from climate change, pest disease attack, variation in market prices and most importantly lack of proper and scientific expertise and guidance. To bridge this gap between research and field-level application, ICAR- IOR has developed a digital extension platform, 'The Oilseed Kisaan Mitra'. It is a mobile decision-support system delivering personalized and timely expert advisory across India. The platform operates for all the major edible and non-edible oilseed crop growing in India, providing recommendations in regional language directly to smallholder farmers. Operating on the most used digital platform, WhatsApp, the Oilseed Kisaan Mitra accelerates technology transfer, optimizes input efficiency and lowers cultivation costs all while improving productivity and production, ultimately enhancing farmer livelihoods and propelling India towards Atmanirbhar Bharat in oilseed production.

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1. INTRODUCTION

Indian agriculture serves as the cornerstone of Indian economy providing livelihood support for almost 51% of the population and feeding a population of 1.45 billion. In the face of evolving consumption patterns, self-sufficiency does not only account for food grain production but must expand to include oilseeds and pulses critical for food security and price stability. Presently, India is one of the largest producers of oilseed yet imports of edible oil account for approximately 57% of the total domestic production.

The heavy import dependence exposes the country to volatile prices fluctuations and foreign exchange reserves. This highlights the persistent paradox of falling domestic output that makes external procurement a necessity. To improve the domestic production scenario and protect the farmers, the Government of India had launched National Mission on Edible Oil- Oil Palm (NMEO- OP) in 2021, raised import duties, aiming to carry forward the nation towards self-reliance/ Atmanirbhar Bharat in edible oilseeds. However, boosting production on papers is

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constrained by the slow transfer of technology and delayed advisories for farmers on scientific know-how on suitable varieties, crop management practices and post-harvest handling. The system is solely dependent on extension workers, leaflets or television programme, all of which have their own limitations. Despite all the efforts, farmers still face challenges such as limited expert advisory support, delayed extension services and appropriate and timely agricultural guidance, all of which contribute to low productivity and financial losses. With the advent of Artificial Intelligence and Machine Learning approaches, many apps and platforms have been created for faster, easier and scientific dissemination of information and expert advisory to the farmers and consumers. One such initiative to bridge the gap is by ICAR- IIOR who has designed 'Oilseed Kisaan Mitra', a WhatsApp-based AI chatbot to function as a digital expert system, allowing farmers to receive adequate and timely guidance based on their specific crop condition.

2. OILSEED KISAN MITRA

To strengthen oilseed farming and provide farmers better access to scientific expertise, the Indian Council of Agriculture Research (ICAR) has launched 'Oilseed Kisaan Mitra', an AI based WhatsApp chatbot that is available 24/7 and provides research-based support to oilseed farmers in multiple Indian languages. The service developed by ICAR- Indian Institute of Oilseeds Research (ICAR- IIOR), Hyderabad and formally launched by the Secretary, Department of Agricultural Research and Education (DARE) and Director General of ICAR during the National Oilseeds Conference held in New Delhi on February 6, 2026. The launch was synchronized with the onset of kharif sowing season to increase domestic production and cut imports reliance. Keeping in view the broad user base and familiarity of WhatsApp, the platform is so designed as to accommodate the queries of farmers round the nation, without the need for external app download. The chatbot provides responses to queries relating to a range of topics including crop variety selection, management practices, pest, disease and weed control; irrigation scheduling and post-harvest operations.

The extensive knowledge base is the result of collaboration between ICAR- National Soybean Research Institute, Indore; ICAR- Indian Institute of Groundnut Research, Junagarh; ICAR- Indian Institute of Rapeseed and Mustard Research, Bharatpur and PC Unit (Sesame and Niger). This ensures the coverage of major oilseeds grown in the country viz. groundnut, mustard, sesame, soybean, safflower, sunflower, niger, linseed and castor into one single platform which is

accessible to farmers 24/7, free of cost, in their own preferred language. The initiative was taken with the aim to strengthen the dissemination of scientific knowledge among farmers to improve their productivity which ultimately adds up to the country's net production.

3. HOW THE SYSTEM OPERATES

Farmers only need to save the number +91 4024598180 as 'Oilseed Kisaan Mitra' as a contact on WhatsApp and send a message either by text or voice mail in their preferred language. This will activate the AI engine to respond instantaneously with research-based guidance for the submitted queries. The extensive knowledge base and quick real-time service powered by the multilingual AI agent will help to remove the barriers of distance, language, time and cost thus bridging the gap between lab and land. The chatbot covers entire crop cycle which includes suitable variety selection, seed availability, agronomic practices, intercultural operations, pest and disease management, irrigation scheduling and post-harvest management. Currently, it supports Hindi, Telugu, Tamil, Kannada and English languages for efficient query and knowledge transfer. This end-to-end coverage means farmer can return to the same chat window at various stages from pre-sowing till post-harvesting to receive consistent, research-backed advice suited to their specific location and crop condition.

- Step 1: Save +91 4024598180 in your phone as 'Oilseeds Kisaan Mitra'
- Step 2: Open WhatsApp and send a message in your preferred Indian language
- Step 3: Receive instant, research-based advisory on your oilseed crop, free of cost, available 24x7

4. OPERATIONAL PRINCIPLES

The AI-based system has the capability to analyse and retrieve huge volume of data, recognize patterns and utilize it to provide accurate, real-time recommendations. The WhatsApp based chatbot utilizes the principles of Natural Language Processing (NLP) to understand farmers questions and provide solutions in their preferred language. The system features inbuilt weather forecasting to deliver location-specific alerts and customized farming advices. The scalability and robust knowledge base of 'Oilseed Kisaan Mitra' empowers farmers by providing expert advice round the clock, free of cost, in their native language in WhatsApp without the need for external browser and apps which require high technical know-how and user command to operate. It overcomes the barriers of language, literacy and accessibility. Unlike

other open- end AI platforms that may provide incorrect information, Oilseed Kisaan Mitra is strictly designed to fetch consolidated, research- based data to the end user.



Figure 1. Poster on Oilseed Kisaan Mitra

5. NATIONAL IMPACT AND STRATEGIC VALUE

The launch of Oilseed Kisaan Mitra represents a transformative leap in Indian agriculture, narrowing the gap between lab and ground level knowledge deficit with real- time advisory. This initiative was equally important considered to policy and infrastructure support. It is especially beneficial to small holder farmers who often face delayed extension services due to geographical, economic and literacy barriers, delayed communication, unawareness about modern farming techniques. The tool empowers farmers through directly accessible free of cost service platforms like WhatsApp. Beyond serving the domestic farmers, it showcases the nations broader digital agriculture paradigm and proficiency in utilizing IoT and Artificial Intelligence for public welfare.

6. CONCLUSION

The launch of unprecedented 'Oilseed Kisaan Mitra' marks a pivotal landmark in India's agriculture sector, offering scalable technology for digital extension services and farmer empowerment. By fetching free, research backed advice, round the clock at every stage of oilseed production according to specific agro-climatic conditions, the platform narrows down the knowledge gap and enables data- driven decision making at field level. The strategic value of this AI- driven advisory system lies in its immense potential for future technological integration and large-scale national adoption. For further advancement, the platform can incorporate advanced deep leaning architecture to enhance query comprehension and precision. Upgradations regarding inclusion of all the local languages of India with improve its scalability and accessibility thus, removing literacy and technical barriers. Improvements can be made for offline arrangements to suit the poor connectivity regions. Interconnecting the platform with policy reforms and government schemes will enhance rural access to subsidies, crop insurance, MSP support and much more. The development and launch of Oilseed Kisaan Mitra have portrayed India's digital infrastructure and its deployment to modernize agriculture and secure socio- economic benefits for farmers. It has also established a resilient, self- reliant system encouraging farmers to be digitally sound, laying foundations for nation's agriculture future.

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