



HOW FARMERS CAN BENEFIT USING KISAN DRONES IN FARMING





India is primarily an agrarian economy. Agriculture remains the chief source of income for the majority of the rural households. India's economy is also strongly reliant on agricultural products, which account for a large amount of the country's exports. Hon'ble Prime Minister **Narendra Modi** on **20 February, 2022** virtually addressed a group of farmers in Manesar and flagged off 100 Kisan drones as a part of the **"Drone Kisan Yatra"**. Kisan drones will be used for crop assessment, digitization of land records, and spraying of insecticides and nutrients. He concluded in his speech "Till recently, there was a conception that drones were meant for armed forces and fighting enemies. However, the Kisan Drone Suvidha has added a new chapter in the direction of modern agricultural facilities of the 21st century". Crop failure due to adverse weather conditions and uncontrolled pests problems have been the key contributors to this situation. Furthermore, Indian farmers are still reliant on monsoon rains for irrigation and also follow old farming practices. As a result, the quality and quantity of agricultural produce is sometimes affected in spite of the relentless efforts of farmers. Fortunately, there is hope. What if crop failure could be detected in advance and necessary steps could be taken?





What is kisan drones ?

Drones are uncrewed aerial vehicles (also known as UAVs), which are used for surveillance in various industries. The **Kisan Drone** is an unmanned tank filled with insecticides and nutrients. The drones are expected to have a high capacity of 5 to 10kg. The drones are projected to hold a payload of 5 to 10 kg. In just 15 minutes, the drone will spray the same amount of pesticide on about one acre of land. This will save time, effort, and ensure that spraying is done uniformly. They can also be used to transport vegetables, fruits, seafoods from other farm product to markets. These products will be delivered to the market with less harm and in less time, resulting in higher income for farmers and fishermen.

Till now, they were primarily used by companies working in industrial sectors such as mining and construction, army, and hobbyists. But now, drone technology is increasingly available for use in various sectors of agriculture as well. The department of agriculture estimates that the service of a drone that has the capacity to carry a 10 kg payload will cost Rs. 350-450 per acre. Despite the fact that the technology is still developing in India, many companies are working to make it readily available to Indian farmers and ready to be used to increase agricultural productivity.



ADVANTAGES OF USING DRONES IN AGRICULTURE

Crop monitoring

Crop surveillance refers to the monitoring of a crop's progress from seeding to harvesting. This includes applying fertilizers at the appropriate times, checking for pests attack, and tracking the impact of weather conditions. Crop surveillance is the only method that a farmer can ensure a timely harvest, especially when dealing with seasonal crops.

Any errors at this stage can result in crop failure. Crop monitoring helps in understanding and planning for the upcoming farming season. Drones can help in effective crop monitoring by checking the field with infrared cameras and based on their real-time information, farmers can take active measures to enhance the state of plants in the field.

Plantation

Drones can help in planting trees and crops, which was formerly done by the farmers. This technology will not only save labor but also help in saving fuels. Budget-friendly drones are projected to replace large tractors in the near future, as they release toxic gases and pollute the environment.





Crop spraying

Agri-drones can be used to spray chemicals as they have reservoirs, which can be filled with fertilizers and pesticides for spraying on crops in very short time, as compared to traditional methods. Thus, drone technology can usher in a new era for precision agriculture.

Soil and field analysis

For efficient field planning, agricultural drones can be used for soil and field quality analysis. They can be used to mount sensors to assess the moisture content in the soil, terrain conditions, soil conditions, nutrients content, soil erosion and fertility of the soil.

Livestock management

Drones can be used to monitor and manage huge livestock as their sensors have high-resolution infrared cameras that can detect a sick animal and swiftly take actions accordingly. As a result, drones' effect on precision dairy farming is quickly becoming the new normal.



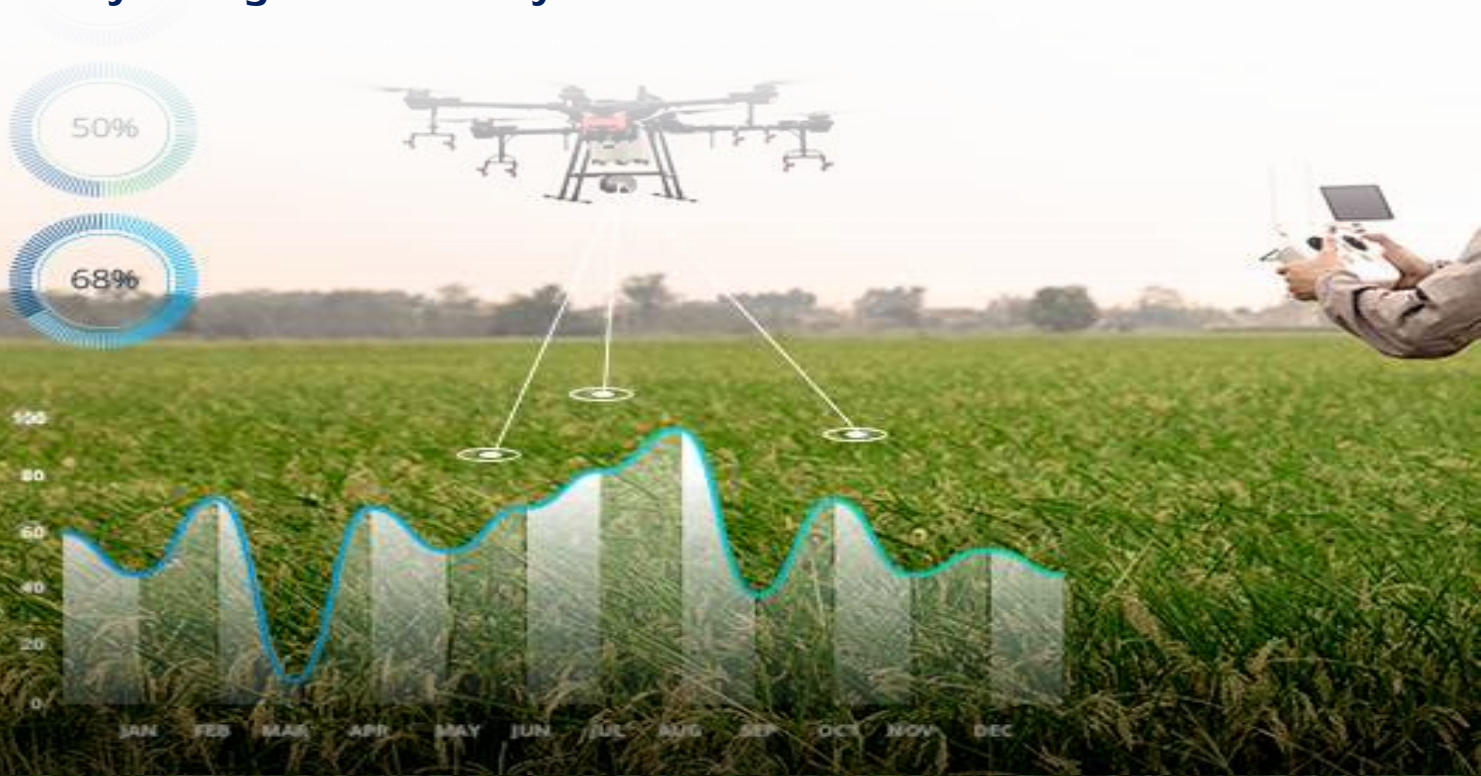


Check crop health

Farming is a large-scale operation that takes place across thousands of acres. Constant surveys are necessary to monitor the soil's health and the crop that has been planted. Manually, this may take days, and even then, there is space for human error. Drones can do the same job in a matter of hours. Drones can acquire information about both the health of the soil and the crop using infrared mapping.

Monitor growth

Even when everything is going as planned, crops need to be surveyed and monitored to ensure that the right amount of yield will be available at the time of harvest. It is also important for long-term planning, whether it is about determining the right price for the open market, or harvesting cyclical crops. Drones can provide accurate data at every stage of crop development, and alert farmers to any changes before they become a crisis.





Prevents Invasion

Drones fly around the fields to place an infestation. These are devices launched into the sky to keep an eye on farm round-the-clock. Any pests sign prompts farmer that there is either an animal or insect infestation. Infestation causes harm to all plants. When there is insect or animal contamination, farmers face a source shortage. The presence of the Drone on the farmlands terrifies the animals. Small animals are irritated by ultrasonic vibrations, which drive them away from the plantation. Ultrasonic waves keep insects from returning to the farm.

Limitations of Agri Drones

- **Connectivity issue:** Often, online coverage is unavailable in rural areas. Under such circumstances, a farmer needs to invest in internet connectivity, which can turn into a recurring expense.
- **Weather dependent:** Drones do not have any operational delays and can work double the speed of human labor.
- **Weather dependent:** Drones are heavily dependent on good weather conditions. Under rainy or windy weather conditions, it is not advisable to fly drones.
- **Knowledge and Skill:** Using new technology is a welcoming change but using it daily requires the right skillset and adequate knowledge. An average farmer may struggle to understand drone functions. Either he must acquire the knowledge or remain dependent on an experienced person.



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