

Machinery

Background 8 Apr 2019

Indian state turns to drones to modernise agriculture

In order to increase agricultural production with the help of precision farming technologies, the Indian state of Maharashtra turns to drones.

The Maharashtra state government has been looking to work together with drone companies. A workshop was held in November 2018, where the process of drone mapping was studied for irrigation and agricultural use.

Drone mapping to improve irrigation systems

Recently, the state government signed a partnership with the World Economic Forum (WEF) [Centre for the Fourth Industrial Revolution](#) exploring the use of drones for various governmental services. Timothy Reuter, the WEF Portfolio Head for Drones and Tomorrow's Airspace, said that with farmers suffering from drought, drone mapping can be used to improve irrigation systems and agricultural yields.

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The high-resolution multi-spectral images from drones, coupled with artificial intelligence and machine-learning, help to gain insight into plant health, soil conditions and can help to predict crop yield. - Photo: India Flying Labs

According to Dr. Ruchi Saxena, Director of [India Flying Labs](#), part of [WeRobotics](#), in the tribal villages of the Dahanu-Palghar belt in Maharashtra farmers are being educated in applying advanced and sustainable technologies to their farmlands.

Villagers have learnt about crop rotation, aquaponics and hydroponics, fish farming, bio-waste management, organic farming and bio-based crop protection using drones. Apart from this, these farmers are using drone-based technologies on their farms and orchards.

Predict crop yield

The high-resolution multi-spectral images from drones, coupled with artificial intelligence and machine-learning, help to gain insight into plant health, soil conditions and can help to predict crop yield, Dr. Saxena added.

Explaining further how the drone technology will bring changes to farmers, Dr. Saxena said that each individual plant can be located separately and analysed by using precision agriculture that can help in identifying stressed plants. That way, farmers can take action early and prevent diseases spreading to other crops.

Remote sensing data

The data collected by drones is combined with satellite-based remote sensing data. Soil-based sensor data can provide actionable insights to take timely action to prevent losses from crop disease, optimise irrigation and reduce the impact of climate change and unpredictable seasonal variations.

35 drone start-ups in India

Drones can help farmers calculate exact land sizes, classify types of crops, perform soil mapping along with pest management and also plan their harvesting. In India, there are over 35 drone start-ups that are working to raise the technological standards and reduce the prices of agriculture drones.

Cost of drones

However, the cost of drones is a challenge. It is extremely expensive to hire an urban drone team to conduct a survey for a small field in a remote location. According to Dr Saxena small farmers should be equipped with the right skills in order for them to become entrepreneurs, so that they can form a group and own the drones. At this moment, small and medium-scale farmers are hesitant to use

drones because of the costs involved, an official from Mumbai-based drone startup [Pigeon Innovative](#) said.

Drone batteries

Prices for agricultural drones, which can be used by farmers for soil analysis, surveying farms, planting, spraying and irrigation purposes, start at around USD \$ 2,000 and can amount to USD \$ 15,000 a piece. And even when a farmer is able to buy a drone, the costs of maintaining it are too high. Batteries for instance are expensive.

Lack of trained pilots

Apart from technical know-how and affordability, the lack of trained pilots is a major restraining factor in the growth of the UAV market in India.

In December 2018, the Indian government launched a drone policy, which allows for the agricultural application of drones, next to for instance their deployment in infrastructural works.



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