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Drone Technology: A Break Through to the Modern Agricultural World

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Introduction

India's agriculture sector is the largest contributor to the nation's GDP. Economic growth of any country is strongly reliant on agricultural commodities, which account for a maximum share of the country's exports. The majority of rural families still rely on agriculture as their prime source of income. Despite its growing importance worldwide, agriculture is still lagging behind in terms of technological improvements. Crop failure due

to inclement weather and unregulated pest infestations have been the main causes of this context. Further more, Indian farmers are still depended on monsoon rainfall for their irrigation requirements and follow conventional farming methods. As a result, even after the farmer's persistent efforts the quantity and quality of the agricultural produce become jeoparalized.

What if crop failure could be predicted and preventative measures implemented in advance? So, most of the problems can be eliminated from the field and here is the answer "The drone technology". Since its inception, drone technology seems to have a consistently favourable impact on the multiple sectors now it's time to do miracle in the field of agriculture.

Drone is the Important Key to Boost up Agricultural System

Drones can be defined as an unmanned aerial (UAVs) or unmanned aircraft systems which are mainly used for surveillance in various industries. This technology is already well established in industrial sectors such as mining, construction, Military etc., but now, this technique is getting more attention from various sectors such as agriculture due to its versatile feature. The objective of developing drone technology is to eliminate any uncertainty or guesswork from the field by providing accurate data. Climate, soil conditions and temperature are all important aspects in agriculture and drones system acts as a mastermind to keep an eye in mentioned parameters to works according to crop requirements. As a result crop health, irrigation monitoring, crop damage assessment and soil analysis can be performed on the basis of information gathered. The drone technology helps to boost production and productivity with minimum cost. As new technologies are introduced by innovators, their commercial applications grow day by day. Central government has also show their positive approaches towards this technology by removing many restrictions on it and start-ups

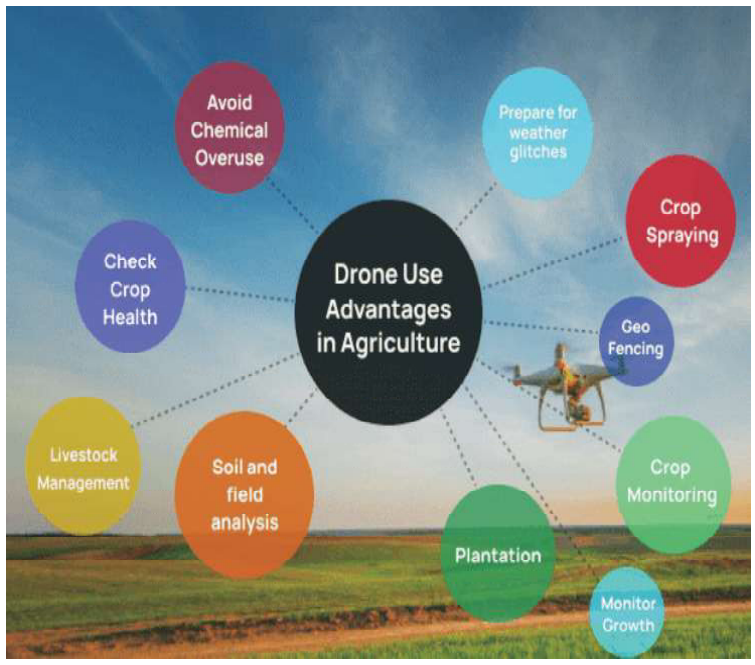
are also being encouraged to come up with innovative concepts.

How does drone technology work?

Drones usually contain a navigation system, GPS, multi sensors, high-resolution cameras, programmable controllers and autonomous drone equipment. Unmanned aerial vehicles (UAVs) equipped with modern technology can obtain more exact data for precision farming or agriculture as compared to satellites. They then input the data into agri-tech programs to generate useful information.

Amazing drone techniques

Irrigation Monitoring : In drones, multi sensors are employed which aids for assessment of any are as condition like drought, irrigated and well-watered. Drone survey helps to find out the exact water requirement by plants.



Crop Growth Screening and Surveillance

It is very crucial to keep checking on plant during its growth and development because it the sensible period of any pest infections. Plants usually emits several lights including Near-Infrared Spectroscopy light (NIRS), received by drone. This information is used to give output as multispectral images that can be used to track crop health.

Evaluation of Crop Failure

Agricultural drones equipped with multispectral and RGB sensors can also identify weeds, diseases and pests in farm regions. Due to this farmers can evaluate exact amount of chemicals required to cure pests and diseases issue.

Soil Assessment in the Field

Farmers can use the drone system to learn more about the soil conditions on their land. Captured data can be used for seed planting patterns, field soil analysis, irrigation system and nutrients management. Farmers can thoroughly examine their soil conditions using precise photogrammetry.

Reducing Expenses

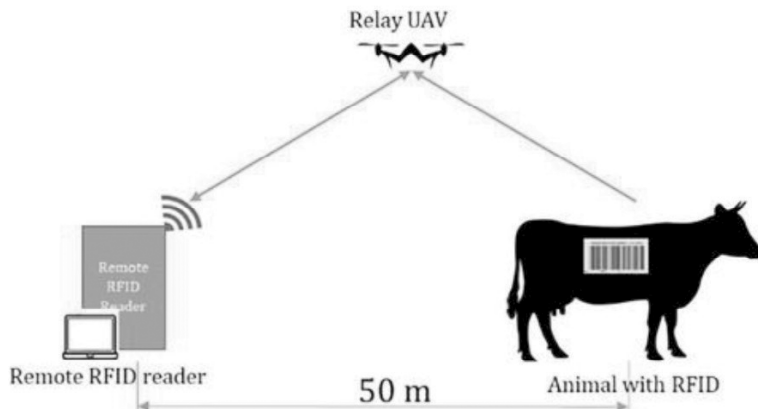
Drone-execution programs have been designed for the purpose of monitoring plant growth and its characteristics along with soil survey, irrigation management etc., its helps in cost cutting as well as improve consistency and efficiency.

Aerial Spraying

Through drone technology use of harmful chemical get limited in use by farmers. Agri-drones can spray chemicals much quicker than vehicles/airplanes.

Tracking of Livestock

Farmers can also use the drone technique to keep track on their cattle's movements along with crop. Thermal sensor technology provides the evidences to find the missing cattle and the detection of animal injury or illness.



Benefits of Drone Technology

Drone technology has proven to be a boon to farmers in agriculture, offering plenty of benefits. Here are a few examples:

a. Effective and Adaptive Approaches: Drone used to deal with regular crop updates and aids in the development of improved agricultural techniques.

b. Expanded Production: A farmer's overall productivity can be improved by comprehensive irrigation planning, efficient crop health monitoring, increased soil health knowledge.

c. Quick Decision Making: According to the survey drone provides most accurate data for crop analysis basis on that farmers can do rapid and precise assessment without any second-guessing ultimately it saves time for crop scouting.

d. Insurance Claims: Farmers can file crop insurance claim in the event of any crop losses with the help of interpreted information collected by drones. While being insured, they even assess the chances of risks and losses linked with the land.

Drawback of Agricultural Drones

Connectivity is the Major Hindrance

- Usually In remote areas, internet access is unavailable. In such cases, farmers need to invest in better internet connectivity, which will create an issue of extra cost.

Weather Depended

- For better result of drone technology one should keep good weather in their minds. Drones cannot be operated under adverse climate conditions.

It Need an Expertise Pilot

- Uses of drone system arise several difficulties for the common farmers due to lack of skill or knowledge. So, farmer first needs to acquire this expertise or he must rely on an experienced pilot.

Conclusions

As previously state that the drone technique is the future of modern agricultural world. It has the power to reshape traditional farming practices into emerging innovations. Even though this technology is more difficult to grasp but proper training and workshops can be the answer of that. Farmers need to understand thebasic principle, concepts, applications and software of drone technology, to get rid of obstacle which they used to face. Many Indian start-ups are also expressing interest in this market, with plans to invest in low-cost drones that may assist farmers while also providing work possibilities for rural youngsters and upgrading farmers learning.

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