HOW DRONES WILL REVOLUTIONIZE AGRICULTURE

Since the 1980s, Unmanned Aerial Vehicles (UAVs), also known as drones, have been used commercially. With growing businesses, robust investments and easing governing regulations regarding their use, drones are making their way in to practical uses in various industries. To keep up with this fast growing technology, companies are devising new businesses and models for UAVs.

Agriculture is one of the most favorable fields where drones have the opportunity to offer solutions to many prevalent issues.

$ 127 BILLION

Total addressable **value of drone-powered solutions** in all applicable industries according to a recent PwC analysis.

$ 9 BILLION

Estimated **increase in the world's population** by **2050.**

70%

Estimated **increase in agricultural consumption** by **2050**

People in the agriculture industry need to welcome innovative approaches for producing food and increasing production while keeping sustainability essential. A good partnership between governments, technology leaders and industry along with drones are a part of the solution.

$ 32.4 BILLION

Market for **drone-powered** solutions in agriculture*

*According to PwC

Being able to plan and strategize based on real-time data gathering and processing with the help of drone technology will revolutionize the agriculture industry.

6 WAYS AERIAL & GROUND-BASED DRONES WILL BE USED THROUGHOUT THE CROP CYCLE

1. SOIL AND FIELD ANALYSIS

At the beginning of a crop cycle, drones can make 3-D maps for early soil evaluation which aids in planning seed planting patterns. Once seeds have been sowed, drones provide soil analysis which helps in soil irrigation and nitrogen-level management.

2. PLANTING

New companies have developed drone-planting methods that can accomplish an **uptake of 75% while reducing planting costs by 85%.** These drones are able to target and shoot pods and plants with seeds and nutrients essential for the plant to sustain life.

DECREASE IN PLANTING COSTS WITH THE HELP OF DRONE-PLANTING METHODS

85%

3. CROP SPRAYING

Drones use distance-measuring equipment—ultrasonic echoing and lasers such as those used in the light-detection and ranging, or LiDAR, which allows them to adjust their altitude according to landscape and geography which prevents collisions. With the ability of scanning the ground, drones are able to reduce their distance from the earth and **spray precise amounts of liquid needed in real time for uniform coverage.** This leads to **increased productivity** and **decreases the amount of chemicals** seeping into groundwater.

AERIAL SPRAYING IS 5X FASTER THAN TRADITIONAL SPRAYING METHODS

4. CROP MONITORING

Nowadays with drones, time-series animations depict the exact growth of a crop and show production inefficiencies, allowing better crop management.

Farming's **largest hindrance** is **big fields** paired with **low efficiency of crop monitoring.** Additionally, unpredictable weather conditions increase risk and field maintenance costs. In the past, satellite imagery was the most developed option. However, images had to be ordered in advance. These could be taken only once a day, and were inaccurate. Additionally, services were expensive and the quality of the image was sometimes low.

5. IRRIGATION

With hyperspectral, multispectral, or thermal sensors, drones can **distinguish which parts of a field are dry or need enhancements**. Furthermore, once the crop is growing, drones help in the **calculation of the vegetation index**, which describes the relative density and health of the crop, and shows the heat signature, the amount of energy or heat the crop releases.

6. HEALTH ASSESSMENT

Evaluating crop health and identifying bacterial or fungal infections on trees is fundamental. Drone carried devices can recognize which plants reflect different amounts of green light and NIR light using both visible and near-infrared light. This helps in making multispectral images that **follow changes in plants** and **show their health. A whole plantation can be saved with such a fast response.** Additionally, farmers can **treat and monitor** remedies more accurately **as soon as sickness is spotted.** These two options increase a plant's chances of overcoming disease. If a crop was to fail, a farmer would be able to record his losses more efficiently for insurance claims.

Source: https://www.technologyreview.com/s/601935/six-ways-drones-are-revolutionizing-agriculture/

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U.S. SOYBEAN EXPORT COUNCIL
16305 Swingley Ridge Road, Suite 200
Chesterfield, MO 63017
contact@ussec.org