DRONES AND AGRICULTURE

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INTRODUCTION

Drone technology is an innovation that continues to have far-reaching effects across today's society, transforming our lives and the way we do business. High-tech drones allow farmers to increase efficiency in certain aspects of the farming process such as from crop monitoring to planting, livestock management, crop spraying, irrigation and mapping. This approach to farming is based on observing, measuring and taking action based on real-time crop. It erases the need for guesswork in modern farming and provides farmers the ability to maximize yields and enhancing crop production. In recent years the cost of agriculture drones has rapidly declined, which has led to the explosion of drone and use in agriculture. In fact, the agricultural drone market is expected to grow over 38% in coming years. There are multiple uses for agricultural drones, including:

- Scouting land and crops
- Checking for weeds and spot treating plants
- Monitoring overall crop health
- Managing livestock and monitoring for health issues

Drones are equipped with technology like propulsion systems, infrared cameras, GPS and navigation systems, programmable controllers and automated flight planning. Plus, with custom-made data processing software any collected information can instantly be put to use towards better management decisions.

THE USE OF DRONES IN AGRICULTURE:

1. Soil and field analysis

During the various stages of a crop cycle drones can be very helpful in obtaining useful data like quality of the existing soil. By obtaining 3D maps of existing soil, we are able to see if there are any issues related to soil quality, nutrient management, or soil dead zones. This information can help farmers to determine the most effective patterns for planting, managing crops, soil, utilize water resources and manage crop nutrient levels.

2. Seed planting

Drone planting is a newer technology and not widely used, but some companies are experimenting with drone planting. Manufacturers are experimenting with such custom systems that have the ability to shoot seed pods into prepared soil.

3. Crop spraying

With approval from the FAA Drones can be equipped with large reservoirs, which can be filled with fertilizers, herbicides, or pesticides. Using drones for crop spraying is much safer and cost-effective. Drones can be programmed to run on specific schedules and routes.

4. Spot spraying

Spot spraying of crops used to be incredibly difficult. If you had an issue with weeds or a disease at a certain spot we can easily target that region rather than spraying whole field and thus saving resources, money and time.

5. Crop mapping and surveying

One of the biggest advantages of drone technology is the ease large-scale crop monitoring. Today, we can obtain real-time footage and can illuminate crop progression in real-time. With near infrared (NIR) drone sensors we can actually determine plant health. With agriculture drones we can collect information like, the overall crop and plant health, land distribution based on crop type, current crop life cycle and detailed GPS maps of current crop area

6. Irrigation monitoring and management

A drone that is equipped with thermal cameras can help to spot irrigation issues and areas that are receiving too little or excessive moisture. With this information, we can maximize drainage, check natural land runoff, and avoid water pooling, which can damage sensitive crops.

7. Livestock monitoring

Thermal imaging cameras enable a single pilot to manage and monitor livestock. This allows farmers to keep track of livestock with less time and staff investment. The drone operator can quickly check if there are any injured or missing livestock, see livestock giving birth and predators attack. Drones are used to keep an eye on the heard at all time.

SOME COUNTRIES ADOPTION DRONES IN AGRICULTURE:

1. UAE

The UAE has adopted drones in agriculture and is one of the first countries in the world to integrate technology in food security and environmental protection, according to Falcon Eye Drones Services (FEDS), the Middle East's leading and one of the world's top Drone-As-A-Service (DaaS) companies.

2. INDIA

India is the first country to control locusts through drones. The activities of locusts swarms were monitored by drones and control measures were applied accordingly.

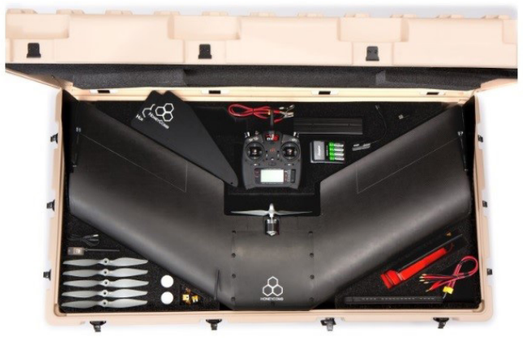
3. AFRICA

In Africa, agriculture employs majority of the active population. However, they face various difficulties in agriculture to which drones are a powerful solution. By facilitating an information revolution, drones encourage the emergence of ever more efficient agricultural management systems which support precision agriculture.Valinatiaetem sentimus, no.

BEST AGRICULTURAL DRONES 2020

1. Honeycorp AgDrone

The 2017 Honeycorp AgDrone has a wing that is composed of Kevlar fiber. This material cannot be cracked like carbon fiber, or quickly fall to pieces like foam can, and makes for a very durable, versatile, and powerful selection for drones in agriculture



3. DJI T600 Inspire1

The DJI T600 Inspire Quadcopter is another drone that is suitable for agricultural use, its battery does not hold a charge for long. You get 4k video recording capability, separate flight and camera control, and the frame is carbon fiber. The propellers are attached easily you just press down and twist, and they are locked.

4. Agras MG-1 DJI

Chinese drone manufacturer DJI launched the Agras MG-1 .The Agras is an octocopter designed to spray large areas of farmland with pesticides or fertilizers. It can cover an extraordinary amount of distance quickly – 4,000-6,000 m^2 in just 10 minutes.

2. DJI Matrice 100

The DJI Matrice 100 is one of the best quadcopters for agricultural use on the market today: it has dual battery that allows for extended flight time of up to 40 minutes, and has many options. The standard features of DJI systems such as GPS, flight controller, and DJI Lightbridge will help navigate through even the most difficult of tasks, and in turn allow the pilot more time to focus on flight.