AIR CONTROLLED SEEDING AND SPROUTING

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ABSTRACT- To scale back the seeds sowing time, a seed sowing device fabricated with a drone setup that delivers the machine in a programmed location. The design has a GPS system and an auto-pilot mode. The paths are defined as per the zone area updated in the server through surveying within the "Mission-Planner" software during the setup of the base station and may be altered if required. Detection of pests and other harmful insects to the cultivating field will be captured by the camera inbuilt in the drone. And the PH value is also recorded during seed sowing.

Keywords: Drone, seed sowing, monitoring, PH value .

I. INTRODUCTION

Drones are originated for military applications used in expanding surveillance, disaster management, crowd monitoring, aerial footage, and lots of other applications. Drones can also have applications in the Foresting sector, like planting and applying solid fertilizers. Still drones can be used during a dynamic areas of Foresting sector like sowing seeds and applying solid fertilizers.and zone management .

This paper discusses the design of an autonomous drone suitable for planting seeds in natural habitat . The low-cost Foresting drone is capable of flying long distances, which may carry 1 kg of seeds per flight time. Moreover, the proposed technology is automatic and capable of sowing seeds uniformly.

Yet they are expensive and low power efficiency. The seeds sowing rate is often controlled from the bottom control station where the utmost seeds sowing rate is 498 meters per minute. The Foresting drone will automate the seeds sowing technique. The PH Value helps to require the supply of the nutrients within the water also as within the soil. The PH sensor used for irrigation shows the water condition. And the camera is to monitor the field and helps to detect the pest, weed and overview the entire farm.

II. EXISTING SYSTEM

The Existing framework is done in this paper "Design and development of an autonomous foresting drone for sowing seeds" exhibits the arranging and manufacture of a self-ruling Foresting drone for planting seeds inside the harvest fields. A downside of this paper is manually control and wastage of seeds in overabundance.

In this paper "Rice seed sowing agriculture drone" talked about the arranging, improvement, and trial of a quad-rotor drone inside the rice seed planting procedure of the wet seeded rice cultivating. The disadvantage during this paper is the Vibration sway on the flight solidness parameter that influence the structure position of the rice are drone height, drone speed, and spinner engine speed. These disadvantages are frequently over whelmed by the proposed plan of our automaton.
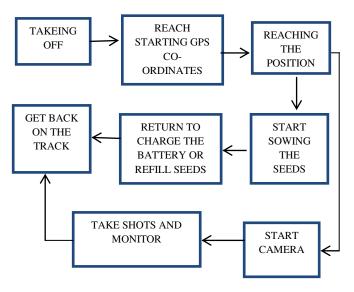
III. PROPOSED SYSTEM

This project proposes a low-cost model of a quadcopter with a bio-mimetic function of the natural seeding process. Our project has two segments Seeding and sprouting In seeding, the drone consists of a seed bag connected with a supply rotor and a program to locate the plot and resources to record them with sensors In sprouting, the drone consists of a bag to carry

manures to deliver above the seed and it has a camera to watch over the seeds sprouting and these drones are programmed to monitor and nurture the seeds within the selected area on NDVI (Normalized difference vegetative index). Once the drone sites the sprouts, they move on to other square areas repeating the whole procedure.

BLOCK DIAGRAM.

SYSTEM MODEL

DESIGN:

Our ACSS drones have an initial position on the charging pads waiting

for the instructions from the computer or the controlling device.

As it receives the commands for operation it will initialize the surveillance. And, uploads the dimensions of the load in a matrix format in the server

It computes and decides the seeding plot in that matrix by variables as a1b1,a1b2...

Then the seeds are sown on that decided plot also the sensor placed on legs of the drone will detect chemical factors of the land.

And distributes natural fiber and malleable manures above the seed plot .when it rains, it becomes a stable environment for the seed to sprout.

Medicines for seeds will be filled in the extra compartment below the drone and it is injected regularly.

At the end of the cycle, the drone will automatically return to a charging pad

as it has a low power efficiency of 15 minutes.

All the data collected will be recorded with coordinates for research and analysis purposes.

I repeat this is not an agricultural drone.

METHOD FOR SOWING THE SEED:

The concept of an ACSS drone is to combine advantages of the sowing techniques. The broadcasting technique improves the processes of seed sowing mechanism to be as quick that installed in the drone. while the position of seed planting is typically controlled and precisely. In our ACSS invention, a capsule of seeds is needed which contains nearly (3-4)seeds in it. Seeds are crammed in each capsule. Capsule is filled with seeds according to its growth and different kind of seed. This make the seed planting position easy and also easily monitored when

dropped into the field. The drone reaches the ground level and drops of the seed so that the damaging level of seed or capsule is decreased. Simultaneously it helps in reaching PH meter so that the PH level of the soil is calculated and recorded.

HARDWARE SPECIFICATIONS

A. DRONE

It goes after the momentum of conservation law. Propellers use exact force on air to the direction of the area of land and the drone gets a lift up force. Motors 1 & 2 rotate a clockwise direction that creates a torque in one direction. In contrast, motors 3 & 4 rotate in the opposite direction that is the clockwise direction and create torque in the vice visa direction. Thus, both torques cancel each other and get the required thrust for flying.
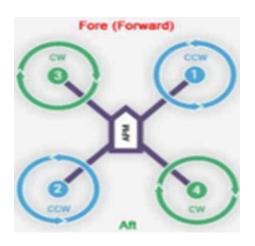
Fig-1: Motor rotation direction

B. HJ- 450 Frame

This frame is made up of the glass fiber which is very easy and simple to build the frame. This Frame is one among the foremost popular frames out there for variety of excellent reasons: It's comparatively cheap ,it's in a way that is widely known durable and it's comparatively weight less

Fig-2: HJ-450 FRAME

C. Brushless DC motor

It could also be marked out as a stepper motor. However, this term tends to be used for the specifically designed motors that to be operated in a mode where they are often stopped in a specific angular position.With the electromagnets on the stat-or, they cool very easily.

❖ Kilo-volts (KV): 1300 KV

❖ Pulls- 950 g (~1kg)

❖ Motor size- 28*30 mm

❖ Battery- lipo (2-4s)

Fig-3: Brushless DC Motor

D. Electronic speed controller

The electronic speed control or ESC is the thing that advises the

engines on how to turn at some random time. It needs four ESCs for a quadcopter, associated with each engine.

Fig-4: ESC-30A

E. Propeller

Here in this project quad copter there arises the need for two types of propellers to need the purpose of flying a drone. It needs a set of a clockwise propeller and anticlockwise propellers. The serious attention should be needed in agreeing with an aspect of the propellers.

Fig-5: Propeller

SEED SOWING DEVICE

- With an equal interval of time, the seeds are dropped in specified spots.

- The cost of this device is extremely low as it usesbasic configurations for the seeding process.Advantage of the proposed system is it helps farmers in sprouting their fields quickly and efficiently. This saves times in determining the status of fields.

- Camera installed helps in finding wet and dry patches on the field, this helps farmers avoid wastage of water.
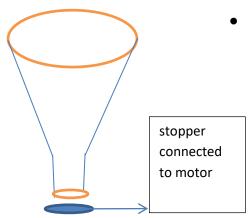

Fig-6: Seed sowing device

IV. EXPECTED RESULT

Thus the drone that we designed and developed will sow the seeds without any damage of seeds and also reads the PH values of the soil simultaneously. It also helps to monitor the field throughout the process. It can be controlled by all types of smartphones.

V. FUTURE SCOPE

- At present only 17% of the agriculture industry owns a drone. 40% of the agriculture industry

- will own a drone within the span of two or more years.

- With 3D mapping technology strapped onboard, drones will be possible to detect critical factors, including field geography.

Flight time can be increased by increasing the battery capacity. Even seed carrying capacity is often increased by increasing the dimension of the tank.

VI. CONCLUSION

Summary, we planned and developed a Foresting drone having the ability to sowing seeds over the area of land. The drone is often remotely controlled from the bottom control station by utilizing a Mission-Planner software. The proposed ACSS drone can fly at a range of a maximum of 500 meters

of altitude and a minimum of 1 m of altitude. The most flying speed of the drone was approximately 15 km/hour. Among various operational modes, the highest seeds sowing capacity of 4 gm/s and low. Experimental proposed results confirmed that our Foresting drone is all most seven times capable of moving at high speed than the conventional process of manual seed sowing. We firmly believe that the Foresting drone will play significant roles in saving the valuable time of the farmers and can be deployed for sowing seeds in remote areas of a country.

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