

Bee-Drone

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ABSTRACT

India is an agriculture oriented country, most of the country's revenue is generated by agriculture commodities, but we are unaware of the problems faced by the man behind the scene i.e farmers work day and night, face worst climate conditions even worst financial conditions from sowing of the seed to harvesting the crop. So, here is small but effective technology BEE-DRONE which requires less skill and can reduce the labor of farmer up to substantial extent. What is BEE-DRONE? It is a devices laced with technology that'll help in sowing seeds, close monitoring of crops, irrigation and sensing which will reduce the farmer's labor to much extent. It is connected with the weather satellite to receive weather report from the same.

General Terms

Bee drone, irrigation, crop-protection.

Keywords

India, agriculture, farmer, productivity, weather report, less human effort.

1. INTRODUCTION

Indian agriculture system is pacing towards the need of technology. With advancements in ICT sector there is a strong need to reform the existing agriculture system in order to support our agriculture financially and economically.

Day by day the dependence on agriculture is increasing, so to fulfill the needs of consumers we need an efficient and durable technology to produce high quality crops with less human effort and time.

Research show that the use of satellites CCTV's, sensors, geo-fencing and GPS systems in field of agriculture can enhance the productivity up to 10% of the existing productivity.

So how about combining all these technologies in one device which is cost efficient and requires less skill to operate. So a common farmer with 2 to 3 days of training can operate this Bee-Drone.

2. EXISTING AGRICULTURE SYSTEM

Existing farming is not a cakewalk the farmer has to cross various hurdles from the day if sowing to the day of harvesting this includes:

- The first step is sowing of seeds which is a manual task
- After 8 to 12 days from sowing of seeds rain is necessary for the seeds to germinate which is not a certain thing.
- If it doesn't happen the quality of seeds gets hampered.

- Rigorous irrigation is required for fruitful results which in turn require manual work of analyzing soil moisture.
- Manual monitoring of crops is required until harvesting which is also a hectic task.

3. METHODOLOGY

DRONE:

- Sprinkling of seeds and pesticides.
- Moisture level sensing
- Geo-fencing
- Receives weather data using SAT phone
- Alerts farmers using SMS's
- Close Crop scouting

3.1 Functionalities

3.1.1 Crop Scouting

Scouting is done for inspection of the crop field. Farmers go on a round manually to inspect the well growth of what they have grown. But with the help of drone this can be done with a remote for much larger fields.

-Count plants and determine population/spacing issues

-Identify canopy patterns and color density of the plants

-Damage observations and comparison of other previous data

-Close monitoring of dense field could improve water use and pest management

The Drone will have cameras fitted into it. The images can be shown in a LCD screen present with farmer. It can also be stored in other devices to view and share with other colleagues. The scouting and taking images seemed to give the best results.

- BEE-DRONE is a remote controlled drone with cameras.
- Drone will also have a container for sprinkling of seeds and pesticides.
- It will collect data from the sensors installed in the field through Radio Frequencies

It will download the GRIB file from the satellite and adjust the data of the GRIB file to the pre-installed location map.

Drones can provide farmers with three types of detailed view:

1. Seeing the crop from the air can reveal pattern that expose everything from irrigation problems to soil variation and even pest and fungal infection infestation that are not apparent at high level
2. Airborne cameras can take multispectral images capturing data from the infrared as well as from the visual spectrum
3. A drone can survey the crop every day, week, or even every hour and the images can show the changes in the crop.

3.1.2 SPRINKLING OF PESTICIDES AND SEEDS

Drone is equipped with the apparatus of storing and sprinkling of seeds and pesticide while hovering over the farm.

3.1.3 WEATHER ALERTS VIA SATELLITE

The drone receives the GRIB files from one of the equatorial weather satellite and then through a preprogrammed algorithm of terrains and maps give out the weather report alert to the farmer via SMS.

3.1.4 GEO FENCING

A virtual boundary is created along all the 4 sides of the field if any animal approaches the sensors get activated and the send a prompt to the drone.

The drone will get the co-ordinates of the part of farm parameter breached and immediately trace the location go there and capture the images of the area.

3.1.5 MOISTURE LEVEL SENSING

There will be a number of humidity sensors planted in the farm that will regularly monitor the humidity level 24x7 and give a prompt to farmer as well as drone about drastic reduction in the humidity level.

4. CONCLUSIONS

By implementing this idea a lot of efforts and time of farmers can be saved. A close scrutiny of crops is possible which was earlier not possible through naked eyes, GPS and GPRS enabled drones can even track meteorological data.

The facility of solar charging can solve the problem of electric charging. Future scope of this idea is to transform farming into technology laced farming, it has applications beyond farming as well such as it can be used for surveillance in naxalite prone areas.

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