

# Weather-Responsive Drone System for Soil Health Monitoring and Risk Mitigation

Team : Code Gangster





# **Problems in field and Solution by drones**



# Problems in field

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graph TD; A[Problems in field] --> B[Suboptimal Application]; A --> C[Crop Monitoring]; A --> D[Check crop health]; A --> E[Primitive Measures against loss];
```

Suboptimal Application

Crop Monitoring

Check crop health

Primitive Measures against  
loss

## Problems in field

### Suboptimal Application

Agri-drones can be used to spray chemicals as they have reservoirs, which can be filled with fertilizers and pesticides for spraying on crops in very little time, as compared to traditional methods.

Thus, drone technology can usher in a new era for precision agriculture.



Crop Monitoring

Check crop health

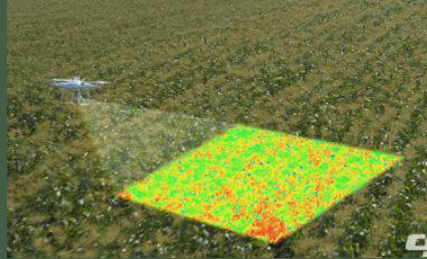
Drone Pollination

Suboptimal Application

## Crop Monitoring

Crop surveillance is the supervision of crop progress from the time seeds are sown to the time for harvest. This includes providing fertilizers at the right time, checking for pest attack, and monitoring the effect of weather conditions. Crop surveillance is the only way that a farmer can ensure a timely harvest.

Drones can help in effective crop surveillance by inspecting the field with infrared cameras and based on their real-time information, farmers can take active measures to improve the condition of plants in the field.



## Problems in field

Check crop health

Primitive Measures against  
loss

**Suboptimal Application**

**Crop Monitoring**

**Check crop health**

Multispectral and thermal sensors mounted on drones can capture data beyond visible light, providing insights into crop health that are not apparent to the naked eye. These sensors can detect subtle variations in plant biomass, chlorophyll content, and water stress levels, allowing farmers to assess crop health and vigor more accurately. By monitoring these indicators over time, farmers can make informed decisions regarding crop management practices and optimize overall Yield potential.



**Problems in field**

**Primitive Measures against loss**

## Problems in field

Suboptimal Application

Crop Monitoring

Check crop health

Primitive Measures against loss

Some of the most recent drone applications in farming are still in the testing and research stages. Drone technology for pollination is one of its most well publicized (and frequently fictionalized) applications.

Small drones that can pollinate plants without harm are being developed by researchers in the Netherlands.



# Solution by drones

01

02

03



# Solution by drones

01

## Soil and field analysis

For efficient field planning, agricultural drones can be used for soil and field analysis. They can be used to mount sensors to evaluate moisture content in the soil, terrain conditions, soil conditions, soil erosion, nutrients content, and fertility of the soil.



# Solution by drones

02

## Faster alertness and reduced loss

Set up weather stations on-site equipped with sensors to continuously monitor temperature, humidity, wind speed, and precipitation. These stations can provide real-time data and early warnings of weather changes.



# Solution by drones

03

## Monitor growth

Even when everything is going according to plan, crops need to be surveyed and monitored to ensure that the right amount of yield will be available at the time of harvest. Drones can provide accurate data about every stage of crop growth, and report any variations before they become a crisis. Multispectral images can also provide accurate information about subtle differences between healthy and unhealthy crops that may be missed by the naked eye.



**Plan to execute and  
solve the problem**

**Frontend- HTML & JS**  
**Backend-PYTHON**

## **In Front End**

The HTML page now displays the risk message along with the weather data and crop health assessment.

## **Back End**

The script will set up a Flask server, fetch weather data, assess crop health, and serve the HTML page.

It includes risk management and primitive measures. For simplicity, we'll simulate alert messaging by printing to the console.

Open the browser

Click "Check Crop Health" to fetch weather data, assess risk, and view recommendations.

# THANKS !

