Design of Quad copter for Agricultural Application

Anilkumar Patil, Ashish Mishra, Anita Bhandary, Priya Patil

[1]*Anilkumar Patil, Asst. Professor Dept. of E&TC, DYPIEMR, Pune ,India*
[2]*Ashish Mishra, student , Dept. of E&TC, DYPIEMR, Pune, India*
[3]*Anita Bhandary, student , Dept. of E&TC, DYPIEMR, Pune, India*
[4]*Priya Patil, student , Dept. of E&TC, .DYPIEMR, Pune, India*

Abstract - *The paper focuses on the need of innovative methods in agriculture for increasing the yield. Sustainable agriculture along with new technology is presented. The use of quad copter along with digital image processing techniques to detect plant diseases and anomalies is shown for decreasing human efforts and saving cost and time.*

Key Words: Quad copter, sustainable agriculture, crop diseases, anomalies

1.INTRODUCTION

India is an agricultural country with agricultural produce being about sixteen percent (16%) of total GDP and ten percent (10%) of total exports. Agriculture depends on many factors like availability of water, pesticides and insecticides. There is a bad effect of unavailability of water that causes willowing of leaves and bad produce. Also due to insects the quality of produce is affected. Therefore if we can monitor all these factors affectively then we can get best possible harvest in limited supplies. This project focuses on the growing need of new and innovative methods to be applied to agriculture. the major problems in Indian Agriculture are inadequate use of manures and fertilizers, inadequate water supply and inadequate use of efficient farm equipment. The main problem is that even today, we use age old practices of farming and we are not open to new methods that could help the agricultural industry.

1.1 Objectives of project

Objective of this project is to create the agriculture revolution across the globe. This project focuses on the use of low cost color sensors for monitoring leaf color of plant tissues growing in a modified micro propagation system . A cost effective productive and innovative method of precision agriculture which can help the farmers to achieve their target in a modern way and thus provide stable economy with the help of agriculture productivity.

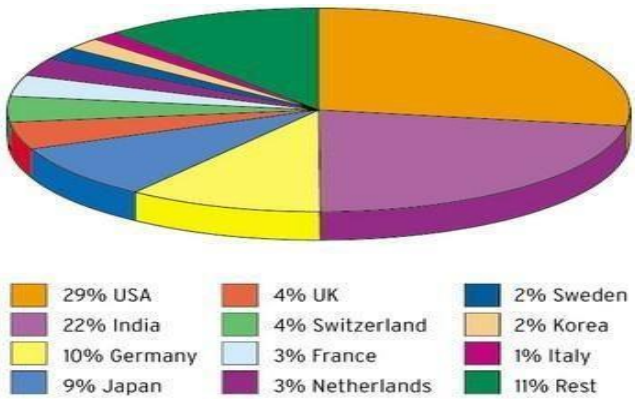

Figure 1.4-World Agriculture Contribution

2. Case studies of crop diseases

Main focus of our project is to make a survey of crop diseases that why we choose two types of crops and ma de a survey on them .

- **Leaf spot Cotton crop disease**

  Causal organism of these disease is Alter Narnia macro

Symptoms:

The disease may occur when plants are 45-60 days old. Measuring 0.5 to 6 mm diameter, small, pale to brown, irregular or round spots may appear on the leaves. Several spots coalesce together to form blighted areas. The affected leaves become brittle and fall off. Each spot has a central lesion surrounded by concentric rings

Intermittent rains and moderate temperature 25-28°C And high humidity.[2]

Figure 1. Bacterial blight (angular leaf spot) caused by Xanthomonas campestris pv.malvacearum.

3. Research platform

There are numerous advantages to using quad copters as versatile test platforms. Quad copter are a useful tool for university researchers to test and evaluate new ideas in a number of different fields, like flight control theory, navigation, real time systems, and robotics. In some recent years many universities have shown quad copters performing increasingly complex aerial maneuvers. Swarms of quad copters can hover in mid-air fly in formations, and autonomously per f or m complex flying routines like flips, darting through hula organizing themselves to hoops and fly through windows as a group.

Military and law enforcement

Reddening Disease:

Causes of this disease is soil being puddled or ill drained or bad soil conditions.

Symptoms:

In this disease leaves of the affected cotton plants turn yellow or red during all the stages of growth. The red color may also develop as patches in interveinal portion of the leaves. In some cases, the whole leaf is involved. The affected leaves roll down wards, ultimately shed and begin to dry . The affected plant exhibits excessive shedding of the bolls and early fruiting.[3]

Figure 2- Cotton crop affected by Reddening disease.

4. APPLICATIONS:

Quad copter unmanned aerial vehicles are used for observation and reconnaissance by military and law enforcement agencies, like search and rescue missions in urban environments .One such example of this is the Aeryon Scout, created by Canadian company Aeryon Labs, which is a small UAV that can quietly hover in place and use a camera to observe objects and people on the ground.

5. CONCLUSIONS

- The outcome of these project will be a quad copter that would be used for precision agriculture and would capture images of crops and send them for monitoring.
- This system would be a cost effective solution to increase the crop produce in a scientific and innovative manner by providing real time locations.
- Also the presence of GPS module would help in locating the area of interest. Thus we would be able to increase crop produce and its quality with limited resources in a smart and effective way.[1]

6. REFERENCES

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