



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 2, February 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.542



9940 572 462



6381 907 438



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www.ijircce.com

Quality Analysis of Crop Seeds by Grading System Using IoT

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ABSTRACT: This paper presents the design of the Internet of Things(IoT) - based crop seed protection recordkeeping of seedlings farmers and finally finding grade Level of seeds. Traced seed are generally of high quality and high commercial value making the voluntary adoption of trace ability processes for the market in processed products and trade in fresh products more common today. The proposed project prototype consists of moisture sensor, loadcell, Wi-Fi, RFID reader. Each crop seeds having different moisture content. To measure that moisture content sensor is interfaced and to measure the weight of crop seed load cell was utilized. At first, we need to select the specific crop and it will detect moisture content then it measures the seed quality and displays the grading level in LCD display and also in LED indications. The farmers data will be stored in cloud database. The additional automation effect is achieved by maintaining humidity level inside the seed storage unit.

I. INTRODUCTION

As the world is trending into new technologies and implementations. It is a necessary goal to trend up in agriculture also. Many researches are done in the field of agriculture. Most projects signify the use of wireless sensor network collect data from different sensors deployed at various nodes and send it through the wireless protocol. The collected data provide the information about the various environmental factors. Monitoring the environmental factors is not the complete solution to increase the yield of crops. There are number of other factors that decrease the productivity to a greater extent. Hence automation must be implemented in agriculture to overcome these problems. So, in order to provide solution to all such problems, it is necessary to develop an integrated system which will take care of all factors affecting the productivity in every stage. But complete automation in agriculture is not achieved due to various issues. Though it is implemented in the research level it is not given to the farmers as a product to get benefitted from the resources. Hence this paper deals about developing agriculture. Quality analysis of crop seeds using IoT and given to the farmers. In this paper, IOT technology helps in collecting information about conditions like temperature, humidity moisture and control motor using microcontroller. IOT leverages farmers to get connected to his farm from anywhere and anytime. Agricultural crop seed monitoring and control can be done using PIC microcontroller. Wireless sensor networks are used for monitoring the crop seed conditions and micro controllers are used to control and automate the farm processes. This paper is useful for farmers in maintenance of crop seed production.

II. LITERATURE SURVEY

Crop Seed Protection Technology

The system performs data acquisition, processing, transmission and reception functions. The aim of their experiments is to realize green house environment system, where the of system efficiency to manage the environment area and reduce the money and farming cost and also save energy. IOT technology here is based on the B-S structure and cc2530 used like processing chip to work for wireless sensor node and coordinator. The gate way has Linux operating system and cortex A8 process or acta score. Overall, the design realizes remote intelligent monitoring and control of green house and also replaces the traditional wired technology to wireless, also reduces man power cost. Nelson Sales experimented within connection of smart objects embedded with sensors that enabled them to interact with the environment and among themselves, forming a Wireless Sensor Network (WSN). These network nodes performance acquisition, collection and analysis of data, such as temperature and soil moisture. This type of data can be applied to automate the irrigation

processing agriculture for decreasing the water consumption, which would result in monetary and environmental benefits. Authors propose to use cloud computing which has highest range and processing capabilities, the rapid elasticity and pay-per-use characteristics makes an attractive solution to the provided might help researchers to highlight issues in the agriculture domain

Storing Data in Cloud

Elias proposed the deployment of a wireless sensor network to monitor and analyse air quality in Doha. Data stored on the server is subjected to intelligent processing and analysis in order to present it in different formats for different categories of end users.

This experiment brings out a user-friendly computation of an air quality index to disseminate the data to the general public and also the data presentation for environmental experts using dedicated software tools, for example- the R software system and its Open-air package. Depending on the target end-user the stored data can be accessed and data is played in different formats.

IOT in Agriculture

Development of Knowledge Sharing System for Agriculture Application, proposes a methodology where the data related to the agricultural field can be shared using the Knowledge sharing system. The main theme of the research is to design a methodology to share the data and it also involves inheriting of agricultural data. The methodology involves data collection by two methods. First one is the automatic environmental data collection by a sensor, and second method is the experienced data collection by a farmer. Optimal design of solar powered fuzzy control irrigation system for cultivation of green vegetable plants in Rural India, proposes methodology called fuzzy-logic that acts as a solution for irrigation control in order to cultivate the vegetable plants. Smart Farming System Using Sensors for Agricultural Task Automation, proposes a unique methodology that links smart sensing system and smart irrigator system which is collectively known as smart farming process.

III. METHODOLOGY

The architectural design to monitor the crops seed is shown in above diagram. In this implementation model we used PIC microcontroller, Sensors and ESP8266 Wi-Fi module as an embedded device for sensing and storing the data in to cloud. PIC microcontroller consists of 40 pins and there are 33 pins for input and output. Wi-Fi module connects the embedded device to internet. The Wi-Fi connection has to be established to transfer sensors data to end user and also send it to the cloud storage for future usage. If the threshold limit is crossed the corresponding controlling action will be taken. All the sensor devices are connected to internet through Wi-Fi module. After successful completion of sensing, the data will be processed and stored in database for future reference. After completing the analysis on data, the threshold values will be set for controlling purpose. Initially the sensors and Wi-Fi module are connected to the microcontroller i.e., node MCU. The sensor data are processed using the microcontroller and embedded C in MPLAB IDE. The commands are sent to ESP8266 Wi-Fi module. The Wi-Fi module is checked whether it is functioning properly or not.

If Yes, the Wi-Fi network is connected or else the commands are received once again. All the sensor data which is being monitored is sent to cloud. The values are plotted on the graph and the monitoring parameters are displayed on Ubidots. The various sensors used are temperature, humidity and moisture sensor. Even a threshold value can be set and the motor switches on automatically as the threshold level is met. A continuous output voltage power source is provided to the microcontroller.

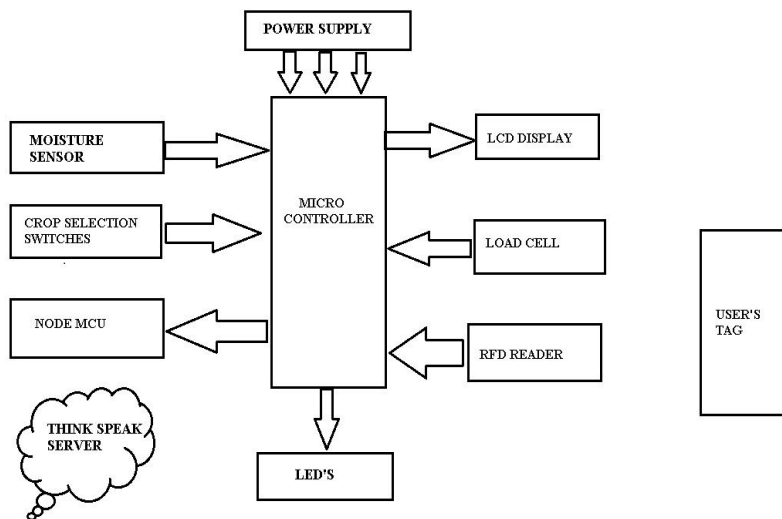
Proposed System

The existing system consist of crop seedprotection method by measuring the moisture content of the seeds only and store it in a place. But the additional working of our project is to find and measure the moisture content of these dans and additional to store the data base consists of weight of the seed, moisture level of the seeds in graphic method or manner. The information about the farmers seed collection is stored using a tag byRFID reader.

Working Principle

The working of our project is to find and measure the temperature ,humidity and moisture content of the sedans by using sensor. Additionally the database of farmers would be stored in he cloud IOT.The database consists of weight of the seed, moisture level of the seeds in graphic method or manner.The inform about the farmers seed collection is stored using a tag by RFID reader.

Block Diagram



IV. FUTURE ENHANCEMENT

The Wi-Fi connection has to be established to be transfer sensors data to end user and send it to the cloud storage for future usage.If the threshold limit is crossed the corresponding controlling action will be taken.After the sensor the devices are connected to internet through Wi-Fi module.After successful completion of sensing,the data will be processed and stored in database for future reference. After completing the analysis on data threshold values will be set for controlling purpose.

V. CONCLUSION

Seeds have to be stored, of course, because there is usually a period of time between harvest and planting. During this period, the seed have to be kept somewhere. While the time interval between harvest and planting is the basic reason for storing seed, there are other considerations, especially in the case of extended storage of seeds. The purpose of seed storage is to maintain the seed in good physical and physiological condition from the time they are harvested until the time they are planted. It is important to get adequate plant stands in addition to healthy and vigorous plants. Seed suppliers are not always able to market all the seed they produce during the following planting season. In many cases, the unsold seed are “carried over” in storage for marketing during the second planting season after harvest. Problems arise in connection with carryover storage of seed because some kinds, varieties and lots of seed do not carryover very well. Seeds are also deliberately stored for extended periods so as to eliminate the need to produce the seed every season. Foundation seed units and others have found this to be an economical, efficient procedure for seeds of varieties for which there is limited demand. Some kinds of seeds are stored for extended periods to improve the percentage and rapidity of germination by providing enough time for a “natural” release from dormancy. Regardless of the specific reasons for storage of seed, the purpose remains the same maintenance of a satisfactory capacity for germination and emergence. The facilities and procedures used in storage, therefore, have to be directed towards the accomplishment of this purpose.

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