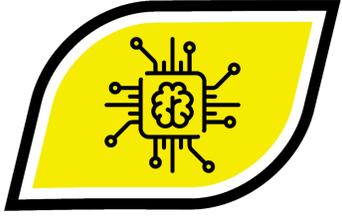


A Simple Crop Moisture Sensor For Local Farmers

Brian Philip Chami and Macrine Priscus Chuwa
Arusha Science Secondary School



Introduction

WHAT WE ARE TRYING TO SOLVE

•The aim of this project is to assist local farmers to solve the problem of decaying of stored crops, such as; maize crops, beans, and cereal crops due to moisture.

WHY THIS PROJECT

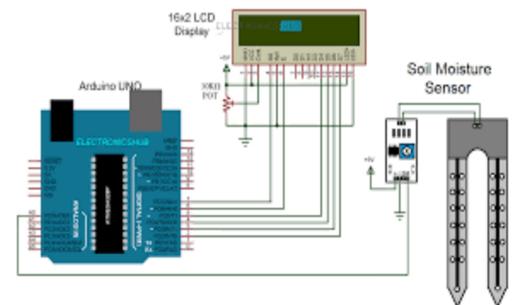
•Most of the local farmers face a problem with the storage of crops due to the presence of moisture which leads to the growth of micro-organisms such as fungi example;

causing the decay of crops within a short period of time.
•So, this project aims to solve the problem faced by those farmers as it ensures them to know the appropriate time to store the crops so as to avoid growth of such micro-organism due to presence moisture.



Method

- 1 Arduino uno.
- 12 Jumper wires.
- 1 Moisture sensor module.
- 1 LCD screen.



Digital Mode – Interfacing Arduino and Soil Moisture Sensor

To connect the soil moisture sensor FC-28 in the digital mode, we will connect the digital output of the sensor to the digital pin of the Arduino. The Sensor module contains a potentiometer, which is used to set the threshold value. This threshold value is then compared with the sensor output value using the LM393 comparator which is placed on the sensor module. The LM393 comparator will compare the sensor output value and the threshold value and then gives us the output through the digital pin. When the sensor value will be greater than the threshold value, then the digital pin will give us 5V and the LED on the sensor will light up and when the sensor value will be less than this threshold value, then the digital pin will give us 0V and the light will go down.

Analog Mode – Interfacing Soil Moisture Sensor and Arduino

To connect the sensor in the analogue mode, we will need to use the analogue output of the sensor. When taking the analogue output from the soil moisture sensor FC-28, the sensor gives us the value from 0-1023. The moisture is measured in percentage, so we will map these values from 0 -100 and then we will show these values on the serial monitor.

You can further set different ranges of the moisture values

Project Log

DAY 1
On Friday, 28th January 2022. We came up with the idea of making the moisture sensor devices after observing the challenges that the local farmers are facing in the areas we come from, which is the decay of crops. And together as a team agreed to make it.

DAY 2
On Monday, 31st January 2022. We presented the idea of moisture sensor device to the teacher involved with projects in our school. Gladly the teacher accepted the project and agreed to help us, so we gave her the list of materials we wanted.

DAY 3
On Monday 21st February 2022. The tools were brought by the teacher and we appreciated that since it seems as if we are already there.

DAY 4
On Tuesday 8th March 2022. We began the mechanical part of the project after the exams were done. On this day what was done was assembling the instruments.

DAY 5
On 25th March 2022. By this day all was done and the project was successful

Results

We tested the device in crops and the device could respond by showing the amount of moisture present in the crops and this helped us as well as the farmers at school to know the appropriate time when the moisture content is all gone and the crops are ready for storage. And the stored crops did decay by growth of fungi caused by wet condition or environment thus its successful.

Conclusion

The project proved to be positive and significant as it solved the problem of decaying stored crops due to moisture and this was actually proved here at school

Acknowledgments

•I would like to express my deepest appreciation to Madam Rukia Hatibu and Mr. Adinani Shabani for showing full support to the project whenever we need help, they would support us