Project 13:

IoT Base Soil Moisture using Ubidots with Telegram API

1. Introduction

More and more it has become necessary to use technologies in the field, not to use soil management for crops, not to use water for irrigation and human management indispensable for modern agriculture.

An example of a technique is the use of sensors for IoT and actuators that make everything in the field more efficient and modern, have you ever thought about seeing what is happening in the field, seeing the state of a plant, knowing when to replace water, and when the lack of water, with a modern graphic interface that is already possible.

In this article, we will take the first step towards developing an intelligent system aimed at monitoring and controlling soil moisture in plants and plantations.

We will start by learning how to use the soil moisture sensor, also called a hygrometer, together with an WeMos, showing data in variables on the Ubidots IoT platform.

COMPONENTS: -

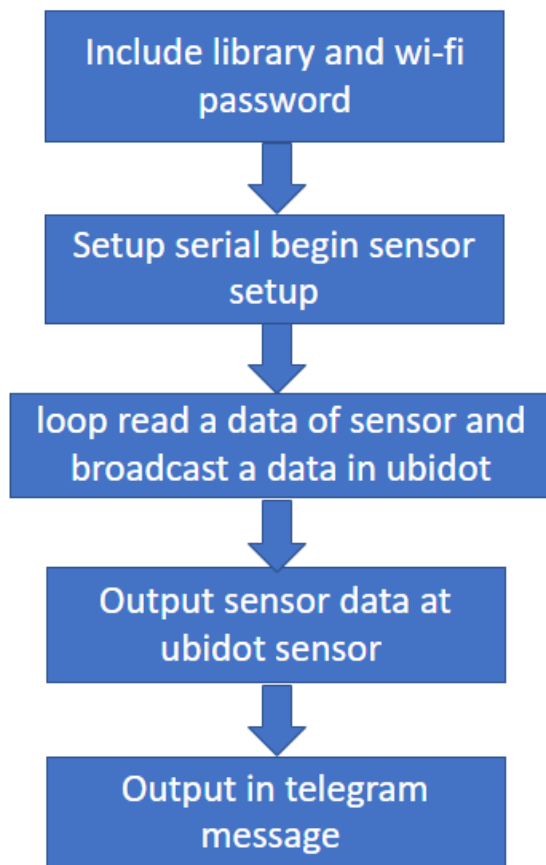1. WEMOS

2.SOIL MOISTURE

APPLICATION: -

The humidity sensors measure the humidity level of the different plants (water content).

OBJECTIVES: -

Efficient irrigation management can improve yields, grain quality, conserve water and energy, and reduce nutrient leaching. One of the easiest and most effective ways to improve irrigation efficiency is to implement soil sensor technology in irrigation scheduling.

FLOW CHART:-

```
Include library and wi-fi
password
        ↓
Setup serial begin sensor
setup
        ↓
loop read a data of sensor and
broadcast a data in ubidot
        ↓
Output sensor data at
ubidot sensor
        ↓
Output in telegram
message
```

PROGRAMMING: -

```
#include "UbidotsMicroESP8266.h"
#define TOKEN "seu token aqui" // Ubidots TOKEN
#define WIFISSID "nome da rede wifi" // Wi-Fi SSID
#define PASSWORD "senha da rede wifi" // WIFI Password

Ubidots client(TOKEN);
```

```
void setup()
{
Serial.begin(115200);
client.wifiConnection(WIFISSID, PASSWORD);
}


void loop()
{
amostra_umid = analogRead(0);
//We will use the map function to map the values read on the analog input range from 0 to 1023, and will be remapped to another range from 0 to 100%.


float value1 = map ( amostra_umid, 0, 1023, 0, 100 );


client.add("Umidade", value1);
client.sendAll(true);


delay(5000);
}
```

HARDWARE CONNECTION: -

1. Connect rain water soil moisture to wemos
2. Connect pin A0 to A0

3. Connect pin GND to GND
4. Connect pin 5V to 5V

CIRCUIT DIAGRAM: -