

## **A Precision water saving irrigation system using IOT**

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**Abstract:** India is mainly an agricultural country. Agriculture is the most important occupation for the most of the Indian families. It plays vital role in the development of agricultural country. In India, agriculture contributes about 16% of total GDP and 10% of total exports. Water is main resource for Agriculture. Irrigation is one method to supply water but in some cases, there will be lot of water wastage. Therefore, in this regard to save water and time we have proposed project titled Arduino based automatic irrigation system using IOT. In this proposed system, we are using various sensors like temperature, humidity, soil moisture sensors that sense the various parameters of the soil. In addition, based on soil moisture value land is automatically irrigated by ON/OFF of the motor.

**Keywords:** Internet of things (IOT), Arduino, Soil moisture sensor, GSM module, LED display.

### **1. INTRODUCTION**

Agriculture is the backbone of all developed countries. It uses 85% of available fresh water resources worldwide and this percentage continues to be dominant in water consumption because of population growth and increased food demand. Due to this, efficient water management is the major concern in many cropping system in arid and semi-arid areas. An automated irrigation system is needed to optimize water use for agricultural crops. The need of automated irrigation system is to overcome over irrigation and under irrigation. Over irrigation occurs because of poor distribution or management of waste water, chemical which leads to water pollution. Under irrigation leads to increased soil salinity with consequent build up of toxic salts on the soil surface in areas with high evaporation. To overcome these problems and to reduce the man power smart irrigation system has been used.

### **2. EXISTING SYSTEM**

The sensors and LED display are successfully interfaced with Arduino uno board for irrigation process. All observations and experimental tests proves that project is one solution to field activities, irrigation problems, and storage problems using remote controlled, smart irrigation system. Implementation of such a system in the field can definitely help to improve the yield of the crops and overall production.

### **3. PROPOSED SYSTEM**

In proposed system we are using GSM module for sending the notifications to farmers mobile. The system water cool monitors is connected to the arduino uno and it is acts as remote to control the overall module. It is the wireless communication make all irrigation incidents automatically. Estimates of best irrigation for greenbelt and automatic control by using this Arduino.

### **4. LITERATURE REVIEW**

- Experts study show that moisture deficit and high temperature are two main environmental region during plants growing season.
- Scholars study shows that the impact on different soil water handling on stem weight, and root weight.
- Plant leaves relative moisture content and water consumption volume per plant decrease with the reduction of soil water.
- when soil water content is too high, it will not only cause decay of the root, but also a waste of water resources at the same time, and as a result of too much irrigation, water infiltration will take away large fertilizer

### **5. OBJECTIVE**

In India, agriculture in villages plays an essential role in developing the country. Basically, agriculture depends on the monsoons which have not enough water source. Soil moisture and water level in the soil are wirelessly transmitted using wireless technology for better production. To save

water and reduce human intervention in the agriculture field. To get the output of soil water sensor and provide water to crop. We are using GSM module for sending the notifications to farmer's mobile. The system water cool monitors is connected to the Arduino Uno and it is acts as remote to control the overall module.

## 6. BLOCK DIAGRAM

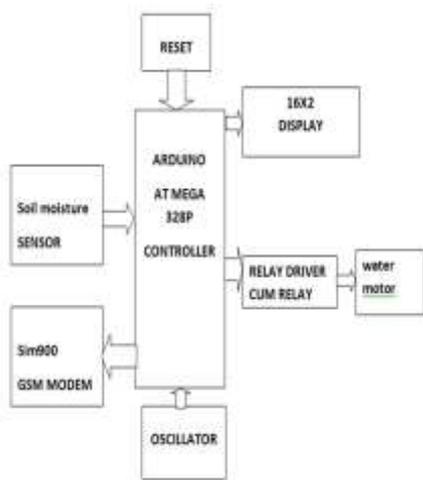
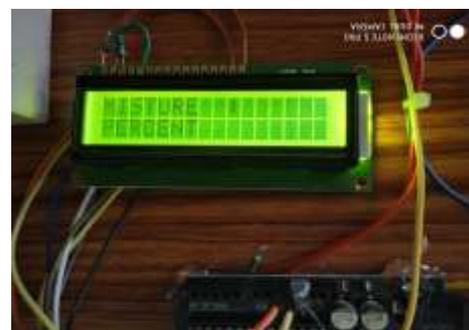
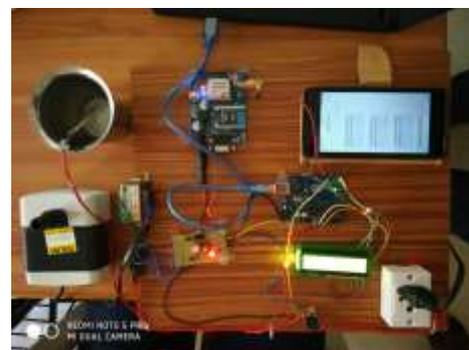


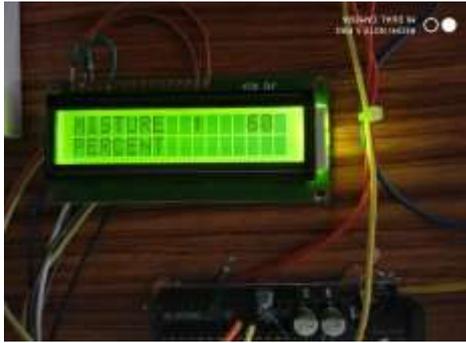
Fig.1 Block diagram is shown in figure.

## 7. WORKING PROCEDURE

Working of this A Precision water saving irrigation system using IOT is quite simple. First of all, it is a Completely Automated System and there is no need of manpower to control the system. Arduino is used for controlling the whole process and GSM module is used for sending alert messages to user on his Cell phone. If moisture is present in soil then the moisture sensor sends signals to the GSM module through pin A0 to Arduino board. Hence the moisture percentage is showed on the display. When Arduino reads HIGH signal at A0 pin, then it sends LOW signal to the transistor. Which is present at relay module .due to this LOW signal transistor turns off with relay module. Hence it tends to switch off the motor. Motor turned OFF” and water pump remains in off state. Now if there is no Moisture in soil then Arduino Pin A0 becomes LOW. Then Arduino reads the Pin A0 and turns on the water motor. Motor turned ON”. A message was send to the mobile through GSM module of LOW MOISTURE DETECTED MOTOR ON PLEASE CHECK. Motor will automatically turn off when there is sufficient moisture in the soil.

## 7. RESULTS





## 8. CONCLUSION

The smart irrigation system is feasible and cost effective for optimizing water resources for agricultural production .The irrigation system allows cultivation in places with water scarcity there by improving sustainability. It proves that the use of water can be diminished. The use of solar power in this system is significantly important for organic crops.

## REFERENCES

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