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AUTOMATED PADDY FIELDS EXCESS WATER MANAGEMENT SYSTEM

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Abstract - *The farmer fails to maintain the proper water levels in relation to the age of the growing crop due to his lack of expertise. This leads in excessive water use, which has an impact on agricultural output. This integrated system means that farmers only need to perform little manual monitoring. The opening and closing of the reservoir and field gates, as well as the verification of the plant's age and the matching optimal water level necessary for that time of plant age, are all automated. Farmers may use their mobile phones to check the water level in the field since they are continually receiving updates on the field work. The most labor-intensive and time-consuming activity in agriculture is water management. It is a difficult undertaking to provide water to paddy fields at the right time and in the right quantity. Crop damage and crop growth are harmed by either too much or too little water, as well as delays in water delivery. In our project, the water level in the paddy field is measured, and if it is lower than the required level, the paddy field is automatically irrigated for the water source or tank using a water pump. If the water level in the paddy field is greater than the required level, the excess water is collected by a water pump and stored in a separate tank to be reused when the water is needed.*

***Key Words*: WIFI Module, Water Level Sensor, Arduino, Relay, Water pump, Mobile phones.**

1. INTRODUCTION

The two most essential commodities in the world today are water and rice. Because the rice crops alone demand around 35-45 percent of the irrigation water, they are inextricably linked. However, we have always been concerned about the waste of a considerable amount of water in these agricultural fields. The overflow that happens as a result of the negligent manual operation of providing water wastes a lot of water for the rice fields in India. In India, the majority of farmers lack the necessary expertise and equipment to properly manage water in their fields and maintain the essential water levels during various phases of rice crop growth. The most labor-intensive and time-consuming activity in agriculture is water management. It is a challenging undertaking to provide water to paddy fields at the right time and in the right quantity. Crop damage and crop development are harmed by either too much or too little water, as well as delays in water delivery. When the water level of a paddy field falls below the required level, the paddy field is automatically watered for the water source or tank via a water pump. If the water level in the paddy field is greater than the required level, the surplus water is collected by a water pump and stored in a separate tank to be reused when the water is needed. There is no need for human intervention in the collection process because everything is done automatically. Water level sensors provide the necessary information. The information is communicated with paddy field maintainers through Wi-Fi module, and the information may be seen on a mobile phone using the Blynk app in the cloud. When the water level rises, an alarm message is delivered to the user's phone. Turn on the water pump. Through the Blynk app, we can control the water pump. Field maintainers can receive information from wherever they wish thanks to wireless connection. Until a component needs to be replaced, the entire process is automated, and no human intervention is required.

1.1 PROPOSED METHODOLOGY

Water level sensor are connected to arduino uno. Where the arduino will sent the obtained data to the user by WIFI module. The main process is to control the water form water tank to paddy field automatically and also water level is increased in paddy field the water is collected and stored in separate tank for later use. The block diagram consists of water level sensor, Arduino uno, WIFI Module, relay, LCD and water pump. Where the water level sensor is the major input source. The water level senor will measure the depth of the water in paddy field, when the water level decrease or increase water level sensor will send the data to Arduino. The water level sensor will detect the water level in paddy field, the information first display in LCD display. Arduino uno will process the obtained data form water level sensors.

After processing the data, it will send the information about paddy filed water level to user by using WIFI module. WIFI module is connected with arduino, the information will reach the user through the wireless communication, the user can view the information through their cell phone. The user can control the water pump by on and off using the WIFI module and Blynk application.

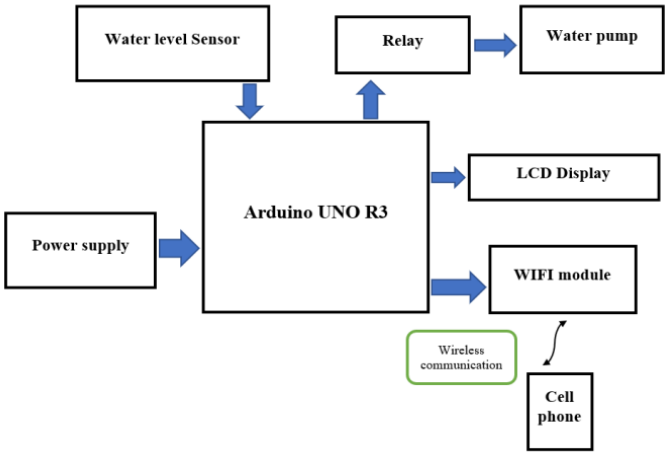

Fig -1: Block diagram

2. RESULTS AND DISCUSSION

In the project model, Arduino UNO R3 is the main component. The Arduino UNO R3 is cost efficient, and suitable option for our project. The hardware connection of **automated paddy fields excess water management system.** The LCD display, relay, WIFI module are connected with arduino uno. And the water level sensor and water pump are also connected with arduino uno. When the power supply is given the hardware starts to work. First the water level sensor will measure the water level in paddy field. When the water level is high the start to display the details in LCD display. The WIFI module will sent the information to cell phone which is connected to the hardware. User can control the hardware through cell phone by using the Blynk application. The water pump is on and off through the Blynk application.

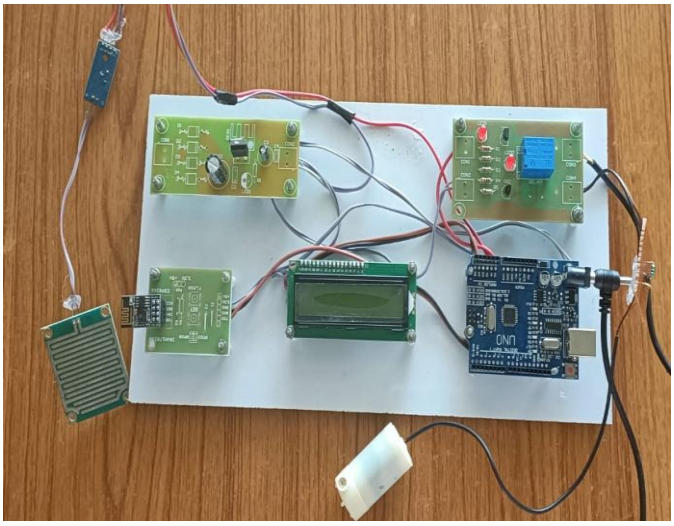

Fig -2: Hardware connection

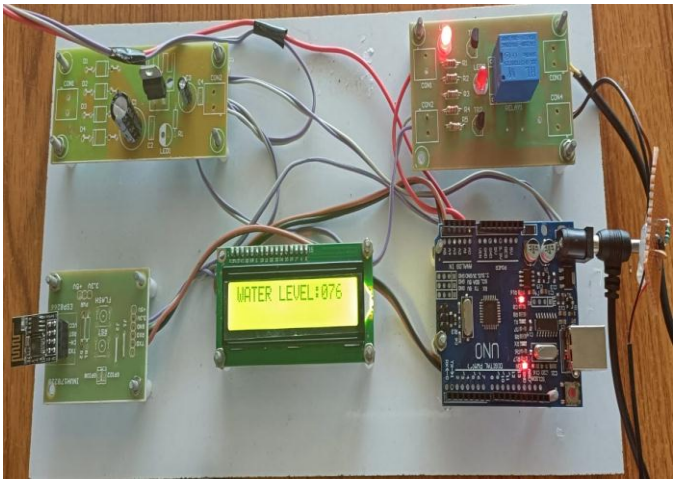

Fig -3: Hardware Working

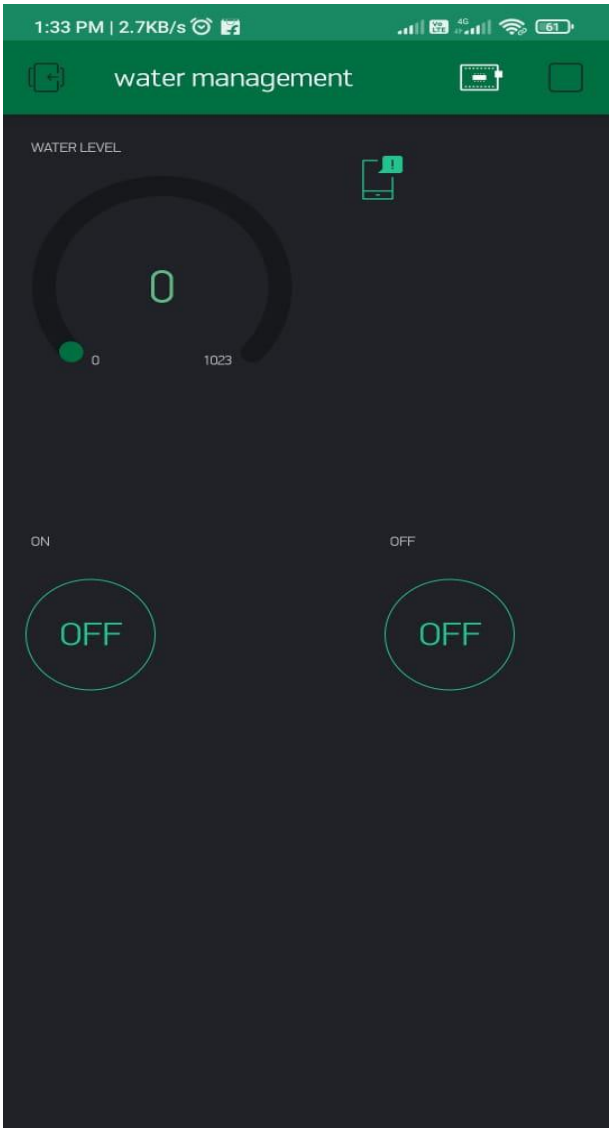

Fig -4: Blynk app initial output

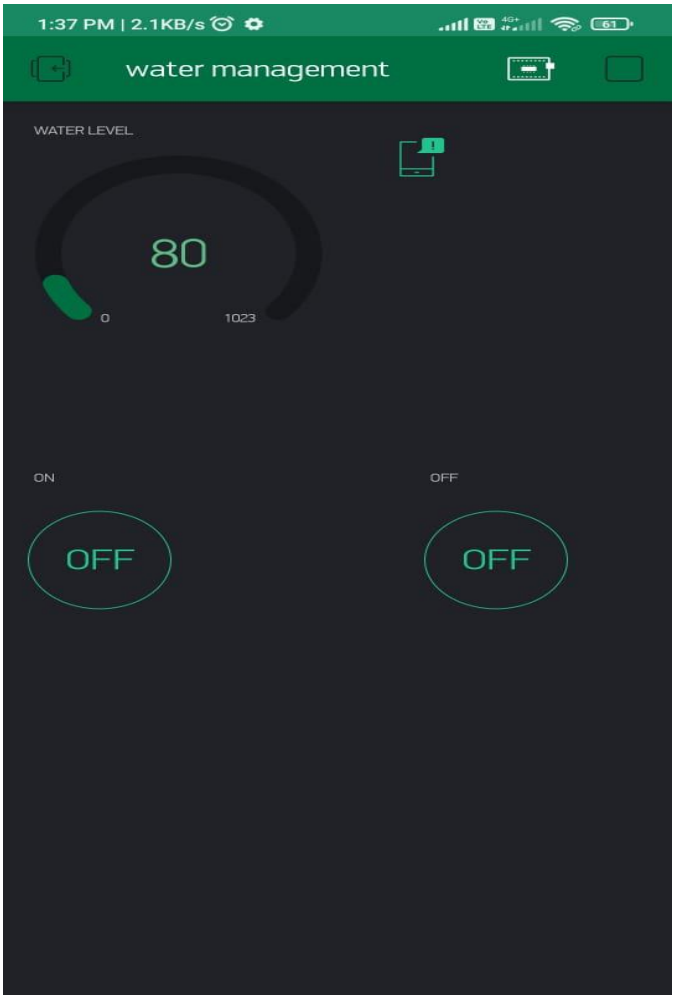

Fig -5: Blynk app high output

3. CONCLUSIONS

In our project water level in paddy field is measured, if the water level in paddy field is less than requirement, in that case paddy field will irrigated automatically for the water source or tank through water pump. If the water level in paddy field is higher than the requirement the excess water is removed from the paddy field by water pump and the excess water is stored in separate tank for reuse it, when the water is needed. The complect process is done through automatically their no need of human interference. The needed information is obtained through water level sensor. The information is shared to paddy field maintainer through Wi-Fi module, At the receiver end information can view by mobile phone using cloud the Blynk app. If the water level is high the alert message is sent to user mobile phone. The water pump is turn on. We can control the water pump through the Blynk app. Where the communication done through wireless, so field maintainer can receive the information where ever they want. Whole process is automatic and no need of human interference until the need of component replacement.

4. Future scope

This project monitors and maintains the water level in paddy fields. Despite the fact that it promotes paddy development. Paddy growth and water requirements will vary according on the soil type and soil nature; hence soil monitoring is necessary. Soil type and character will alter from field to field. So along with water level sensor, Soil monitor has to be added. It helps good in paddy growth and to find soil nature so we manage water level according to soil type.

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