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Advancement in Irrigation Techniques & Water Supplying in Agricultural Works

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ABSTRACT: This paper shows the advancement techniques in irrigation & providing proper Water Supply to Agricultural lands to reduce water scarcity & increase in crop growth by using previous work done on this section (taking care of small & marginal Farmers). The paper focusses on how corruption in water supply in agricultural land can be reduced by direct linking of the agricultural workers to the Government Organization providing facilities. A new setup of components used in agriculture is shown in this paper which advances the techniques of water supply & to provide proper irrigation of crops. This paper also focuses on measuring the water content in soil .The water level will be measured and if it is found less than the actual requirements then necessary steps will be taken and facilities will be provided according to the need by direct linking the needed to the supplier.

I. INTRODUCTION

Agriculture uses nearly 85% of water resources worldwide and this percentage will continue to be dominant in water consumption because of population growth and increased food demand. There is an urgent need to create strategies based on recent science and technology, for the sustainable use of water. There are many systems to achieve water savings in various crops which include monitoring the status of water and irrigation is scheduled based on that. Every single drop of water is important and should be used effectively.

The farm irrigation systems in the past are done according to the visible circumstances & no record is maintained of any parameter for particular fields which results in corruption in water supply & due to water scarcity crop failures takes place resulting loss in agriculture yield & economic harm both to the farmers and the country. Incorporation of advanced sensing, monitoring and control technologies has increased the efficiency and has radically reduced the labor requirement in theirrigation sector. However, the major drawback of these systems is that they arecomplex and expensive, making them ineffectual for small scale and marginal farmers. Thus, the challenge is to develop an affordable and simplified irrigation automation system. A wireless sensor based irrigation control system is a potential solution to optimize yields and maximize the use of water effectively for fields with requirement and variation in water availability. Along with water regulation& weather conditions, controlling of pest is important to maximize the yield which can be done by providing proper information to farmers as well as to the responsible departments of government so they can take proper steps & provide a better agriculture yield. Troubleshooting the problems before any loss is made.

II. EARLIER USED TECHNIQUES

There aremany sytems made for efficient irrigation system like using Infra Red Sensor, Raspberry Pi, Webcam monitoring , automated water management level system in nearby water sources to provide water supply when needded.

Raspberry PI. The Raspberry PI is a series of credit card-sized single board computers developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools. The original Raspberry Pi is based on the Broadcom BCM2835 system on a chip (SoC), which includes an ARM1176JZF S700 MHz processor, Video Core IV GPU, and was originally shipped with 256 megabytes of RAM, later upgraded (models B and B+) to 512 MB. The system has Secure Digital (SD) (models A and B) or MicroSD (models A+ and B+) sockets for boot media and persistent storage. Raspberry pi has interfaced with IR sensor, Soil moisture sensor, Camera, LCD display to get the data from these peripherals and store them in the memory. It takes the control over these peripherals and give theinstructions to order the sequential work of the corresponding peripherals.

IR Sensor. IR sensor is equipped with our agriculture monitoring kit to notify the growth of the crops. It keeps on monitoring the length of the crops and if any obstacle presents, it immediately alerts the user to check for the affected crops.IR sensor has both transmitter and receiver that is it works as a transceiver. It sends IR signals from one sensor to another and it senses any obstacle like weeds and unwanted sprouting etc.

Web camera. Camera is used to monitor the crops. 25 mega-pixel camera is used to capture the field even during night time. This camera detects the pest spread in the field, connects it with the web server and notifies the user about the affected area.

Automated Water Level Management System. In It A setup is made in the water source which works on communication basis in the water tank & supply according to the information provided to it and works the way it is programmed.

III. Problems Involved in Earlier Techniques

In previous techniques the major drawback is there cost consumption and a large setup required. They are efficient in their working and they will provide better results but they are not meant for small and marginal farmers. As they can't setup this techniques and also can't afford its expenditure and maintenance. Farmer are not aware of these components and in case of failures the circuitry is only familiar to the technical person. The farmer has to rely on technical Support.

IV. Proposed System

This system deals with controlling and continuous monitoring of crop field by the use of sensors. Humidity value is measured by the soil moisture sensor. If the amount of moisture content in the soil is reduced or insufficient, it will hinder the crop growth.

The Block Diagram of this System Consists of:

1. Power Supply (Battery/Solar Power)

The system is supplied power, it can be from a battery or solar panel attached to it.

The solar power is anon-conventional Source of energy which involves one time installation.

2. Soil Moisture Sensor

Soil moisture sensor is used to monitor the moisture content of the soil consequently. The sensor keeps on recording the moisture content of the soil. When the soil temperature falls below the crops needed moisture level, then the cultivator need to manually set-out water to the crops.

3. Sensor Amplifier

It is a part of the read circuitry that is used when data is read from the memory. Its role is to sense low power signals from a bit line that represents a data bit and amplify the small voltage swing to recognizable logic levels so that data can be interpreted properly by outside logic.

4. **Microcontroller**

Microcontroller is a computer on a chip that is programmed to perform almost any control, sequencing, monitoring and display the function. Because of its relatively low cost, it becomes the natural choice to the designer. Microcontroller is designed to be all of that in one. Its great advantage is no other external components are needed for its application because all necessary peripherals are already built into it. Thus, we can save the time, space and cost which is needed to construct low cost devices.

5. Transmitter Section

It transmits the data of the soil moisture to nearby local controlling station. It involves a transmission circuitry which transmits the data to the nearest server. The transmission is done wirelessly.

6. Local Station

It is the nearby location where the data is received and analyzed.

It consists of 3 Steps:

1. Data Communication(Receiving Part)
2. Data Acquisition& representation
3. Remote Communication

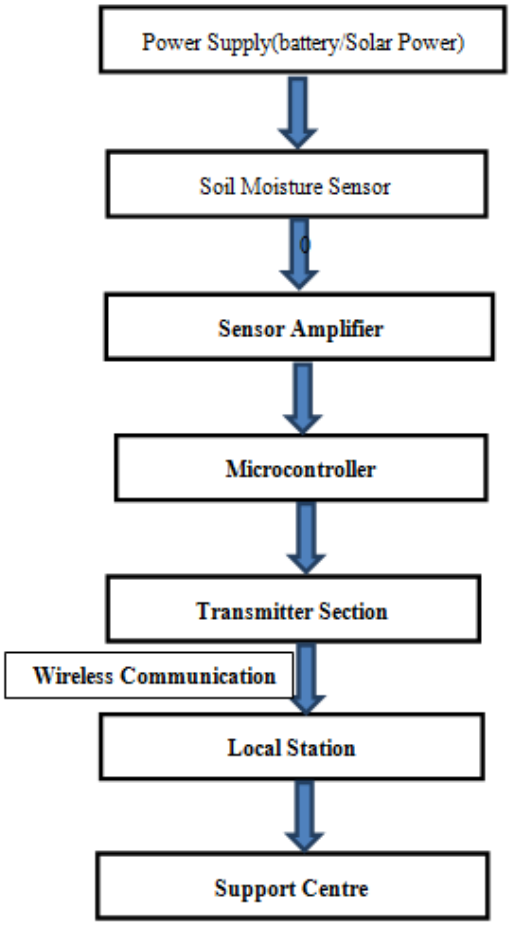

Fig.1. Block Diagram of Proposed System.

7. Support Centre

This works on the analysis results and providing Information about the further steps to be taken after the receive data from the fields. It also provides the information of the climatic conditions & also about the crop requirements & its good yield techniques (pest control etc.)

It will contact the farmer as well as the authorized department whether there is a need of irrigation or the amount of water to be supplied for a healthy yield of the crops. After response it will schedule the irrigation process for the crops.

V. CONCLUSION

The today's world is facing a huge scarcity of water, agriculture is the most important part as it provides the food which is our lifeline.

If the rate of crop failures increases with time there will be a huge loss to bear for everyone.

On the other hand farmer suicides due to crop failures in which water scarcity plays an important factor.

The above proposed system is the use of both electronics and communication part. Electronic components as well as communication techniques is in today's trend.

This system is an economic friendly setup which will be helpful for any scale of farmer on any other cultivator.

There is a list of huge scams in water supply, nowadays we are hearing about the water scam & suicides of farmers due to it. If the government is directly linked to the farmer and is keeping record of each requirement and its 100% fulfillment digitally.

The corruption in this sector will be reduced and a good yield in agriculture will be produced which is beneficial for all and no one will be left empty stomach.

REFERENCES

[1]. R. Arthi, Dr. A. Shaik Abdul Khadir, "An efficient method of irrigation using sensors", *IJARCCE*, Vol. **4**, Issue 7, July 2015.

[2]. S. M. Khaled Reza, Shah Ahsanuzzaman Md. Tariq, S.M. Mohsin Reza, "Microcontroller based automated water level sensing & controlling: Design & implementation issue", *WCECS 2010*, Vol.**1**, October 2010.

[3]. Poh Kiong Teo, Chee Chiang Derrick Tiew, "Automated water level management system", *IJCER,* Vol. **4**, Issue Feb2015.