Technical Review: Drip Irrigation System Using Wireless Sensor Network

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Abstract: India is a country,which totally depends on agriculture,so it requires huge amount of water for irrigation water resource is major problem in agriculture,so efficient distribution of available water is expected.so,reduce water wastage a sensor network based irrigation system can be developed so, this paper introduce the drip irrigation system to optimize use of water for the agriculture crops. This system is consist of nodes,which consist of sensor,and uses radio frequencies for communication using sensors water level of crop field can be determined. Further sensor can part of water level information to computer. On the basis of water level information decision can be taken to supply water or not entire sensor network can be connected to internet and remote controlling of pumps and irrigation system can be possible.

Keyword:- Automation, Cellular Network, Internet, Irrigation, Wireless Sensor Network, Crop Field Monitoring, Temperature, Humidity.

INTRODUCTION

Wireless Sensor Network in Agriculture Drip Irrigation is highly important in the crop production everywhere in the world. Indian economy is basically depend of the agriculture. In Agriculture used mostly available fresh water resource plant and used of fresh water resource will day-by-day increase because population growth increased and food demand is increased. irrigation system is allowed to the scale up for large farm or open fields. Drip irrigation is used in farms, commercial greenhouses, and residential gardeners. This is a system of irrigation which supplies water to the plant equivalent to its consumptive use. this is highly water use efficient system of irrigation having very less irrigation water requirement. Especially in arid region, drip irrigation is very benefitting technique of irrigation.

In arid areas there are two basic constraints of surface irrigation. turing the land level is the very costly venture and also with low water availability, getting production becomes a question. Drip irrigation system server both the purpose. It is equally effective in undulated land terrain. As the water is applied through drippers, the system naturally takes care of limited water availability.

There are two types of drip irrigation system:

1.**High pressure drip system:** This system works at operating pressure of 30psi or more.

2.**Low pressure drip system:** This system operates at less than 30 psi pressure

Drip Irrigation System

: Drip Irrigation System

LITERATURE REVIEW

In Automated irrigation for Monitoring Crop Field Using Wireless Sensor Nework. **Sathya.A, Arthi.B,Rupa Mahendran [1]**

Crop field monitoring is an important class of sensor network applications with enormous potential benefits for the farmers and society as a whole. Two commercial sensors have been successfully integrated to measure these environmental key variables in a brinjal field. Our WSN design also successfully meets the goal of detecting plant fire at an early stage. This can help in the containment of plant fire before it propagates in the entire crop field causing massive crop destruction. They have achieved a wireless communication range of more than 1 km, which can effectively monitor a normal crop field area. The WSN once installed is also economical to use since the only additional costs incurred are when the batteries need to be recharged. This will not only reduce the time taken to detect a fire but also enhance the capability of identifying the location of the fire more accurately.

In Control of Irrigation Automatically By Using Wireless Sensor Network**. Rashid HUssain, JL sahgal, Anshulgangwar, Md.Riyaj[2].** In this field of agriculture are the most important part is: first, to get the information about the fertility of soil then second moisture content of soil. After measure this two factors a farmer can start sawing of seeds. In this paper describe the brief outline about different techniques to measure soil fertility in order to check the productivity of crop. they using here two devices to measure the constituents of soil. After measuring the fertility automatic drip irrigation through microprocessor to measure the of soil moisture.

In A wireless application of drip irrigation automation supported by soil moisture sensors.

Mahir Dursun' and Semih Ozden[3].

Irrigation are help of freshwater resources in agricultural areas are very important because of highly increasing demand of freshwater, optimal usage of water resources has been provided with greater extent by automation technology such as solar power, drip irrigation, sensors and remote control. This paper describes an application of a wireless sensor network for low-cost wireless control irrigation solution of water content of soil. The designed system has 3 units namely: base station unit, valve unit and sensor unit . The obtained irrigation system not only prevents the moisture stress of trees but also provides an efficient use of fresh water resource.

METHODS

In Automated irrigation for Monitoring Crop Field Using Wireless Sensor Nework. **Sathya.A, Arthi.B,Rupa Mahendran [1]**

The topology of WSN implemented in the design of the WSN. A hierarchical architecture been shown at the lowest level of hierarchy are two sensor nodes, each sensing temperature, humidity and luminosity. It interfaces with the digital sensors on the sensor module and takes the data according to the application. Since the wireless communication range provided by the radio frequency modules is above 1 km, the sensor nodes can be widely separated. Sensor 1 and 2 transmit data through sensor 3 through wireless links. The coordinator aggregates the data from the two sensor nodes in a time-multiplexed manner, which helps in avoiding collisions.. The network formed by the three sensor nodes is called patch network. The advantage of making a sensor node coordinator is that the total field area that can be monitored by the WSN is twice than by sensor nodes when directly communicating with the gateway node. The gateway then transmits the sensor data received from the coordinator to the remote computer terminal. The computer terminal has the facility of data logging and the temperature, humidity and luminosity measurements can also be uploaded over Internet for further investigation.
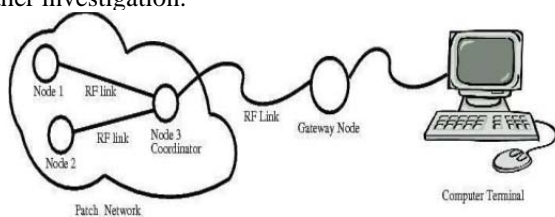
The automatic plant irrigation has been play a vital role in enhancing the productivity of agriculture and to monitor the agricultural practice. These technique of irrigation are proposed to an economic as well as automatic irrigation system that are based on WSN with GSM BLUETOOTH for control the irrigation of agriculture. The sensors which is install for the monitoring of crops are controll through SMS using a GSM module. This SMS is share by BLUETOOTH or GSM technique interfaced with the main micro-controller chip. The microcontroller are control the desire operation at the farmland. Above system also inform about temp The above system includes an 8-bit microcontroller chip, a GSM and Bluetooth module as well as. they are using microcontroller which is different sensors to monitor the crop. The Analog-Digital converter convert the analog data of sensors to digital data. This data are microcontroller and according a SMS is sent to subscriber mobile through GSM & Bluetooth.

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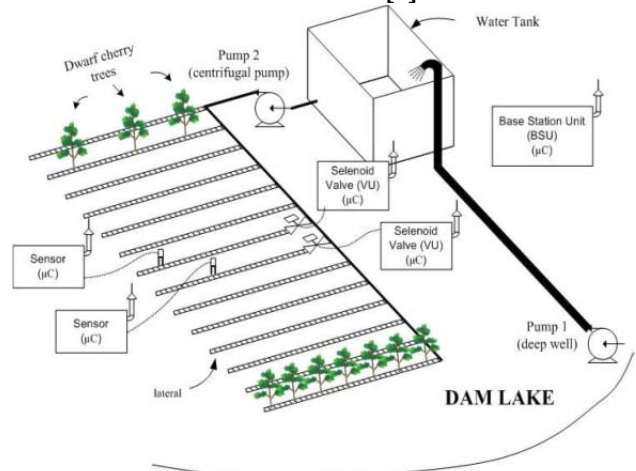
Overview of the system installed in the area.

The Agricultural irrigation is a highly important in the crop production everywhere in the world. In Turkey, 75% of the current fresh water of consumed in the agricultural irrigation Therefore, efficient water management plays of the important role in irrigated agricultural cropping systems (Kim and Evans that demand for new water saving techniques in the irrigation is increasing hurriedly right now. In that order to produce "more crop per drop", growers in which arid region current explore irrigation system in the range too used less fresh water (Balendonck et al., 2008; Ngaira, 2007). One of that is making agriculture in which manner of sense, which uses different type of sensors (Lopez, et al., 2009). That site-specific wireless sensor-based irrigation control system is a potential solution to the optimize yields and maximize water use efficiency for the fields with variation in water availability due to different soil characteristics and crop water needs or site-specifically control irrigation valve.

CONCLUSION

From above literature review we conclude that design and the implementation of a Wireless Sensor Network that monitors the air temperature, humidity in a crop field. a WSN guide in Precision Agriculture, which was based on existing WSN deployments. These deployments were analyzed according to various issues such as power, network, maintenance, etc. second method implemented two features mainly drip irrigation, mobile network technique. First it explains the drip irrigation and how it is controlled by the mobile network. The mobile network keeps the user updated and in control of the system remotely. The automated irrigation system implemented was found to be feasible and cost effective for optimizing water resources for agricultural production.

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