

IEEE 802.15.4 ZIGBEE BASED WIRELESS SENSOR TECHNOLOGY IN AGRICULTURE-A SURVEY

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ABSTRACT

The prime focus of this paper is to create an Intelligent Farming Technology using wireless sensor network (WSN). In present research work, a survey is done to study the wireless sensor technology, its standards and implementation in agricultural fields. In a country like India, which is developing at a faster rate, this technology is a boon. A ZigBee based wireless sensor network can be helpful in keeping track of various environmental factors like weather, temperature, soil- moisture, weed-diseases, etc., that effect the crop growth rate and quality. The precision agriculture monitoring is the need of the hour.

Keywords: Precision agriculture monitoring, ZigBee, Wireless sensor network.

I. INTRODUCTION

The precision agriculture monitoring, provides power to the farmers to control and manage the input of water, fertilizers, pesticides and other elements in order to ensure good quality crop production. This would help the farmers to minimise the risk of crop failure and prevent their financial losses. This wireless sensor network will increase the production of healthy crops and will be beneficial for the farmers as well as the nation. ZigBee is a small technology that can be easily employed in the fields and provides various information to the farmers using different sensors and GSM technology. Farmers will get all the information via text message on their mobile phones.

II. THE RESEARCH WORK

Wireless sensor networks are a group of various transducers which senses the environment and gives the output. These sensors are small in size, low on cost and consumes very less power. These networks can be installed very easily. The fundamental units of a sensor mote are: data acquisition unit, memory and processing unit, communication unit and power unit[1].The design sequence is shown in the figure below:

IV. APPLICATION OF ZIGBEE IN AGRICULTURE

To enhance the crop yield and quality, ZigBee wireless sensor network is an effective technology. Using the sensing and GSM technology any individual can keep an eye on different environmental factors that are affecting his fields. This would help to monitor the soil continuously, measure the quantity of elements that are essential and control the excessive amounts of elements to prevent the crops from decay. The system not only easy to deploy but also very energy efficient[8].

In Xinjian Xiang, a zigbee wireless sensor network was designed using fuzzy control for drip irrigation. They have measured four parameters, soil moisture, temperature and light intensity and electrical conductivity for drip irrigation decision making[9].

V. CONCLUSION

In this paper, an intelligent farming system has been developed for the betterment of the farmers. This technology will help them to monitor and control the crop yield, to maintain the quality of crops and to minimise their risk of crop failure. This will enable them to reduce the chances of incurrinf unnecessary financial losses and maintain a healthy production.

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