INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

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RESEARCH METHODOLOGY
RESULTS & DISCUSSION
FINDINGS
RECOMMENDATIONS/SUGGESTIONS
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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

AGRICULTURE USING SOLAR TRACTOR WITH WIRELESS SENSOR NETWORK ESSENTIALS

K.DEEPASHREE
RESEARCH SCHOLAR
DEPARTMENT OF COMPUTER SCIENCE
D.K.M COLLEGE FOR WOMEN
VELLORE

G.SANGEETHALAKSHMI
ASST. PROFESSOR
DEPARTMENT OF COMPUTER SCIENCE
D.K.M COLLEGE FOR WOMEN
VELLORE

ABSTRACT

This paper presents an overview on agriculture using wireless sensor with solar tractor. The wireless sensor can make lot of changes in world. Using wireless sensor, here we discuss about Soil Monitoring, Animals Protections, Fertilizer, Harvesting and so on. The farmer cultivates the land in level by level to protect plants growth, and farmers spend lot of money for human workers, and waste time for yielding. So we use solar tractor with wireless sensor network. And one more important task, the farmer lands are covered by power supply to protect plants from animals like elephant, forest cow, tiger. The tractor avoidance system give an alarm to protect the animals and send the information to farmer through messages with the help of Bluetooth, it prevents the death of animals.
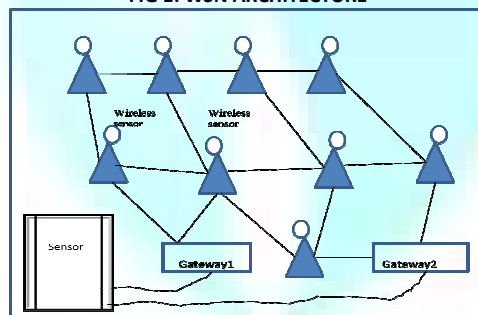
KEYWORDS

Precision Agriculture, Environmental Monitoring, Process Control, Wireless Sensor Network.

1. INTRODUCTION

India is an agriculture country. The basic need of an Indian cultivation is agriculture, 75% sides are surrounded by water, 25%sides land. By using solar tractor they yield land very easy with less amount of time, with WSN we collect the day to day data factors like soil, weather condition, and others. Farmer plays an important role. Automatic sensor and Wireless network enable local and real-time observation and monitoring. In future robotics plays an important role to cultivate. In some country they invent this type of robotics for research.

1.1 REQUIREMENT OF WIRELESS SENSOR AND TRACTOR

Sensor and Telecommunication technology has quickly developed. Using Grass Land and labor-intensive Downloading to develop wireless on-line sensors and is moving towards interoperable and also self-sufficient sensor webs. Most new tractors are implements are sold with factory installed (GNSS) global navigation satellite system and receive a variety of sensors.

FIG 1: WSN ARCHITECTURE

2. RELATED TO WIRELESS SENSOR NETWORK MODULES

Based on soil characteristics, plant resources, crop protection, some other diseases and pest attacks are inform through the farmer with WSN. Using tractor, the necessary action taken like spraying, cropping, yielding, spraying chemicals to plants depend on farmer land. How many acres of land can calculate by using sensor and done the process.

The different factors related to task are

- Soil monitoring
- Plant protections
- Insect protections
- Animal protections
- Fertilizers
- Tractor Guidance system
- Irrigations
- Harvestings

2.1 SOIL MONITORING

Wireless sensor helps the farmer depending on soil characteristics. A huge quantity of fertilizer is used depends on place to another, can estimate by using Wireless Sensor Network. It help farmer to reduce time consumption and yield cost more toward farmer. The tractor using sensor update the data's day to day activity.

2.2 PLANT PROTECTION

Using WSN, The seed or disease which is caused can be easily monitored through sensed or detected(removed). After sensing the unwanted seeds or disease can be used to destroyed. The use of checking the plant protection is growth of a plant can be yield more cost.

2.3 INSECT PROTECTIONS

The agriculture can spoil more with and without insects protection. The insects can cause some disease to plant, spoils the growth of a plant. To control these, By use sensor tractor to spraying Chemicals to avoid the insects.
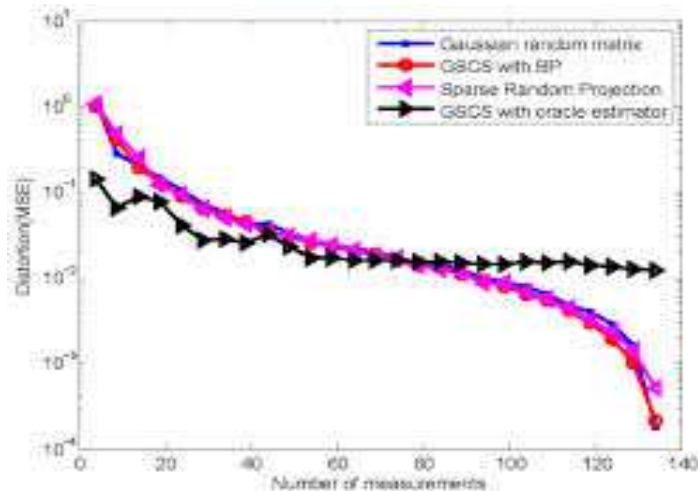
2.4 ANIMAL PROTECTIONS

Farmers have large acres to cultivate the plants. Animals entered and destroy the field and they cause more loss to farmer. They covered his acres to power supply through current wires, They prevent yielding but it causes the death of animals. Whether WSN entered into field, An alarm given to a farmer for such kilometers animals are entered and they inform to forest department.

2.5 FERTILIZERS

The progress has been made in the use of proximal remote measurements with handheld &tractor mounted sensors for nutrient management inerrable farming.

FIG 2. GRAPH BASED SENOR MEASUREMENT

It helps to growth the plant health and good culture to soil, destroy the insects. Because of these farmer earned more profit

2.6 TRACTOR GUIDANCE SYSTEM

Using tractor guidance system upload Soil Type Data, Plant culture, Sheltered Machine mechanism, Spraying the Chemical, manure are recorded in the data's with sensor network. Depends upon the climate condition summer to winter(6 months) and winter to summer(6 months) variations are saved into it. Farmers obtain an safety measure through messages with help of Bluetooth.

2.7 IRRIGATION

The potential of sensor technology for irrigated agriculture has been studied since standard 80's. Since then rapid development of communication technologies has been replaced with wired soil conditions monitoring systems with wireless sensor. The wireless techniques made systems faster to deploy and provide flexibility. While challenges were founded in cost of sensors, depending on staff experience in electric supply.

2.8 HARVESTING

In harvest there are several techniques of sensors, that may include

A moisture sensor, a ground speed sensor, a cut with sensor, an elevation speed sensor and a DGPS(Differential global positioning system)

The grain field sensors are

- Mass Measurements
- Flow Measurements
- Impact Sensors and Indirect Methods

3. EQUIPMENTS OF SENSOR WITH AGRICULTURE

Fleet management in agriculture crop production consist of two main components a transport telecommunication

- Located on the vehicle
- And a software Application

FIG. 3: USING WIRELESS SENSOR TO YIELDING WITH SOLAR

3.1 TELECOMMUNICATION MONITORING

The transport Telecommunication consists of a positioning system

a) A keyboard for fleet management and

b) A series of networked sensor nodes

Large and intensive crop production farms invest heavily in machinery. Therefore their usage and safeguarding must be efficiently planned and implemented.

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Fleet management in WSN agricultural crop application can be classified into two groups

1) Plant production vehicles and equipment,

2) Unmanned aerial vehicles

The field operations are soil monitoring, plant and animal protections, insect protections, fertilizers, irrigations and harvestings.

3.2 WIRELESS MACHINERY AND DATA

The automatically collected and processed operational task for agricultural machinery in real time.

The machinery-based unit collects

1) The machine position and

2) Attitude data

The office-based unit collects

1) Data fusion to estimate the machine position accurately wireless

Data-link layer transmits the data between machinery and office based units.

The machinery positioning data and sampling rate of 50 hertz. Apart from research journalism and prototyped trial, major agricultural equipment company are becoming key actors in agriculture.

FIG 4: FARMER MAGNITUDE THE PATH

One drawback to spraying the seeds with the help of flying vehicles the plants are not in correct manner to growth. They presented an ultra low volume sprayer for a UAV helicopter. The spraying seeds will in specific portion.

Production management focused on the use of a combination of simple digital photographic cameras with spectral filters. Successful test were performed on ten varieties of wheat grain in trail micro-plots can seen using a tractor mechanism.

4. CONCLUSION

India being an agricultural country needs some becoming increasingly concentrated on monitoring and innovation in the field of agriculture. The tractor is used for unknown thermal places like foreset, river, dams… etc. This can be achieved controlling the entire conservatory yielding process. During recent technologies which support computing, the necessities in the aspect of WSN based crop communication and control within devices ad solar .WSN suit for monitoring system functions can be mainly summarized. Technologies have become a backbone for modern precision agriculture monitoring. Our population increases year by year. So this WSN techniques are very helpful to the farmer to gain more cost depend on the climate situation. In Future we concentrate on machineries replacement and sensor signal and also cost of machinery. By using back propagation algorithm with neural network the data are created. It helpful to cultivator, and robotics are implemented in future enhancements.

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Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

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