FUTURE OF FARMING

Ms. A.NIVETHA[1], Ms. P.PAVITHRA[2]
Mr. V.RAMESH ARAVIND[3], Ms. J.A.RISHIGHA[4] & Ms. M.RAMYA PRINCESS[5]

B.E.Student [1,2, 3&4] & Assistant Professor[5,] Department of EIE,
SRM Valliammai Engineering College, Chennai.

ABSTRACT

Agriculture is one of the most important industry for providing fuel for our survival. Robots are playing an important role in field of agriculture for farming process autonomously. Agrobot is a robot designed for agricultural purposes. It is designed to minimize the labour of farmers in addition to increasing the speed and accuracy of the work. Agricultural Automation System with field assisting robot for harvesting and cultivation. We have precisely developed a multitasking robot keeping the ideology that multiple small autonomous machines could be more efficient than traditional large tractors and human effort.Our project is an attempt to one such advancement in the field of autonomous farming.This project strives to develop a robot cabale of performing operations like automatic ploughing,seeding and spraying water /pesticides.This device has several sensing applications like humidity sensing,ultrasonic sensing and tempature sensing.

1. INTRODUCTION

Agriculture is the backbone of India. The history of Agriculture in India dates back to Indus Valley Civilization Era and even before that in some parts of Southern India. Today, India ranks second worldwide in farm output. The special vehicles play a major role in various fields such as industrial, medical, military applications etc., The special vehicle field are gradually increasing its productivity in agriculture field. Some of the major problems in the Indian agricultural are rising of input costs, availability of skilled labors, lack of water resources and crop monitoring. To overcome these problems, the automation technologies were used in agriculture. The agricultural census gives vital information on the distribution of land holdings in our country. According to the census majority of the farmers are having the land less than 1 hectare. This is one of the major drawbacks for the mechanization in agricultural sector in India. The vehicles are being developed for the processes for ploughing, seed sowing, levelling and water spraying. All of these functions have not yet performed using a single vehicle. In this the robots are developed to concentrate in an efficient manner and also it is expected to perform the operations autonomously. The proposed idea implements the vehicle to perform the functions such as ploughing, seed sowing, mud levelling and water spraying. These functions can be integrated into a single vehicle and then performed.

2. LITERATURE SURVEY

[1].Shah N, Das I. Precision Irrigation Sensor Network Based Irrigation, a book on Problems, Perspectives and Challenges of Agricultural Water Management, IIT Bombay, India, April 2008; 217–232.

Availability of water for agriculture is a global challenge for the upcoming years. This chapter aims at describing components of precision irrigation system and its potential in future farming practices. A case-study of deploying Wireless Sensor Network (WSN) monitoring soil moisture, estimating Evapotranspiration (ET) and driving drip irrigation for a large grape farm in India on pilot basis is described.

[2] Kim Y, Evans R, Iversen W. Remote

Sensing and Control of an Irrigation System Using a Distributed Wireless Sensor Network. IEEE Transactions on Instrumentation and Measurement, July 2008; 1379–1387.

Efficient water management is a major concern in many cropping systems in semiarid and arid areas. Distributed in-field sensor-based irrigation systems offer a potential solution to support site-specific irrigation management that allows producers to maximize their productivity while saving water. This paper describes details of the design and instrumentation of variable rate irrigation, a wireless sensor network, and software for real-time in-field sensing and control of a site-specific precision linear-move irrigation system. Field conditions were site-specifically monitored by six in-field sensor stations distributed across the field based on a soil property map, and periodically sampled and wirelessly transmitted to a base station. An irrigation machine was converted to be electronically controlled by a programming logic controller that updates georeferenced location of sprinklers from a differential Global Positioning System (GPS) and wirelessly communicates with a computer at the base station. Communication signals from the sensor network and irrigation controller to the base station were successfully interfaced using low-cost Bluetooth wireless radio communication. Graphic user interface-based software developed in

this paper offered stable remote access to field conditions and real-time control and monitoring of the variable-rate irrigation controller.

[3] Wang Q, Terzis A, Szalay A. A Novel Soil Measuring Wireless Sensor Network. IEEE Transactions on Instrumentation and Measurement, August 2010; 412– 415.

For agricultural environment develop a smart application is the main purpose of the system. The system contain various observations regarding to agricultural environment such as temperature, humidity and soil moisture along with other factors can be of importance. A normal way to compute these factors in an agricultural environment meant individuals manually taking dimensions and inspecting them at different times. The system use agriculture monitoring application in which use wireless mechanism for sending data to central server which can collect data, stores and also perform analysis on it for displaying on client mobile

[4] Aziz I, Hasan M, Ismail M, Mehat M, Haron N. Remote Monitoring in Agricultural Greenhouse using Wireless Sensor and Short Message Service. International Journal of Engineering Technology 2010; 9: 1– 12.

Monitoring of environmental factors is very important over the last few decades. In particular, monitoring agricultural environments for various factors such as temperature, moisture, humidity along with other factors can be of more significance. A traditional approach to measuring these factors in an agricultural environment meant individuals manually taking measurements and checking them at various times. In this paper remote monitoring systems using wireless protocols used by different researchers for betterment of agricultural yield with best possible technologies is discussed. This is followed by proposed introductory model for agricultural monitoring with wireless protocol implemented using field programmable gate array (FPGA).

[5] Mendez GR, Yunus MA, Mukhopadhyay SC. A Wi-Fi based Smart Wireless Sensor Network for an Agricultural Environment. Fifth International Conference on Sensing Technology, January 2011; 405–410.

The main objective of the present work is to develop a smart wireless sensor network (WSN) for an agricultural environment. Monitoring of environmental factors have increased in importance over the last decade. In particular monitoring agricultural environments for various factors such as temperature and humidity along with other factors can be of significance. A traditional approach to measuring these factors in an agricultural environment meant individuals manually taking measurements and checking them at various times. The ability to document and detail changes in parameters of interest have become increasingly valuable, to such an extent that unattended monitoring systems have been investigated for this function. This study investigates a remote monitoring system using WiFi, where the wireless sensor nodes are based on WSN802G modules. These nodes send data wirelessly to a central server, which collects the data, stores it and will allow it to be analysed then displayed as needed.

3. PROPOSED SYSTEM:

In our project we are going to perform fruit picking and automatic seed sowing. Solar panel used to capture solar energy and then it is converted into electrical energy. This energy is used to charge 12V battery

3.1. MANUAL BROADCASTING SYSTEM

A field is initially prepared with a plough to a series of linear cuts known as furrows. The field is then seeded by throwing the seeds over the field. The result is a field planted roughly in rows but having a large

number of plants [2]. Many projects are undertaken to overcome the drawbacks of broadcasting system. Some of those projects are given below. Drawbacks of manual broadcasting system are no control over the depth of seed placement. No uniformity in the distribution of seed placement. Loss of seeds. Time required for sowing is more.

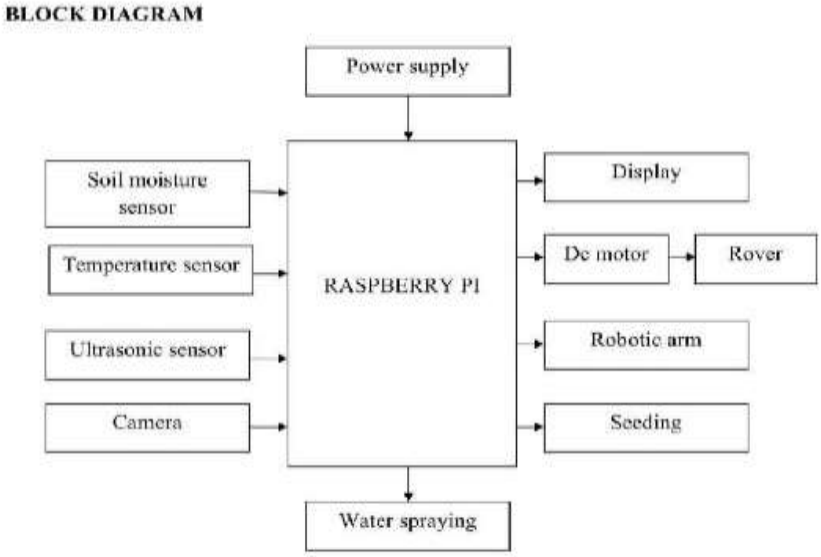

Fig.3.1 Block diagram of proposed system.

3.2. CONVENTIONAL SEED SOWING MACHINE

Another method of sowing the seeds is with the help of a simple device consisting of bamboo tube. This bamboo tube with a funnel on it is attached to a plough. When the plough moves over the field, the tube attached to it leaves the seeds and kept in the funnel at proper depth as well as spacing. The plough keeps making furrows in the soil in which the seeds are dropped by the seed drill [2]. Drawbacks of this system are no proper germination of seeds. Wastage of seeds. No control over the depth of seed placement.

3.3. SOLAR POWERED SEED SOWING MACHINE

In this system the basic objective of sowing operation is to put the seed and fertilizer in rows at desired depth and spacing, cover the seeds with soil and provide proper compaction over the seed [1]. This system uses solar panel which is made up of photovoltaic (PV) cells, which turns sunlight into electricity. The main disadvantage of this project was this system is not automatic which is utilized by DC motors. Through camera we are capturing an image of the fruit and then through robotic arm are picking the fruit. Here we used ultrasonic sensor for obstacle detection. Machine will seed dropper motor starts to rotate. Seed is dropped in pit and cover the seed with soil. This process is continuously repeated till one row is completed. And then additionally we are monitoring soil moisture, temperature, all these data are send to the IOT.

4. CONCLUSION:

Innovative fruit picking and seed sowing equipment's has exceptional influence in agriculture. By using this innovative project of fruit picking and seed sowing gear we can spare more time required for sowing process and additionally it reduces lot of labor cost. It is very helpful for small scale farmers. After comparing the distinctive method of fruit picking and seed sowing and restrictions of the existing machine, it is concluded that this solar powered fruit picking and seed sowing machine can:

Maintain row dispersing and controls seed rate. Control the seed depth and legitimate utilization of seeds can be done with less misfortune. Perform the different simultaneous operations and hence saves work requirement so as labor cost, labor time and also save parts of energy. Hence it is easily affordable by farmers. So we feel that this project serves something good to this world and we would like to present it before this prosperous world.

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