Intelligent Monitoring System For Agricultural Conservatory

K.Vinothkumar,
Assistant Professor, Department of Electronics and Communication Engineering,
N.S.N College of Engineering and Technology,Karur,Tamilnadu,India.

S.Dinesh Kumar,
Assistant Professor, Department of Electronics and Communication Engineering,
N.S.N College of Engineering and Technology,Karur,Tamilnadu,India.

Dr.P.Gomathi,
Dean, Department of Electrical and Electronics Engineering,
N.S.N College of Engineering and Technology,Karur,Tamilnadu,India

Abstract - The global population is shift towards smart agriculture practices. A greenhouse environment is an incredibly and dynamic environment and strongly influences in crop cultivation. The plant production in greenhouse depends on perfect climate conditions to attain high yield at low cost, good quality and good environment. To achieve these, we should use several techniques parameter such as air temperature, humidity, light intensity CO_2 concentration and ventilation must be controlled given certain criteria through heating. In this paper developed a smart green house, which helps the farmers to carry out the work in a farm automatically without the use of much hand-operated inspection.

Keywords – Microcontroller, Sensor-probes, ZIGBEE, IoT

I. INTRODUCTION

Agriculture is the backbone of our Indian economy because it provides lot of raw materials, food for all the people to sustain and enhance their life for long duration in the world. Food plants are very sufficient in natural life. These are rice, tomato, chili, pomegranate, onion, baronial etc. Agriculture provides the lot of raw materials like food crops such as wheat, maize and various medicinal plants such as tulsi, and cash crops like as sugarcane, tobacco etc. These are supplied to over the entire world through food committee. It consists of various plants depending upon the place and climates such as mountain plants, river area plants. Medical plants used to resolve human problems. Which is used to enable the human life for long duration comparing other plants rice and sugarcane can give the large profit.

Rural people only depended on agriculture. It is transitioning a process to a capitalist economy, with substantial changes in the civil, proper, structural, productive and supply set-ups, as is the case with all other sectors of the economy. Agriculture is safe the world from famine. In the upcoming modern world, only some of the people can interest farming. Those people can cultivate the plants and farming and to maintaining an agricultural field is a tedious process because heavy manual work is involved in it. The farmers have to field trips daily for watering the crops and he will be checking whether any disease affected in the plants often. This will be his routine work and his might not be applied to other works. Due to various environmental problems not only these leaves, all crops can be affected. The plants are affected and threatened by pathogens like bacteria, fungi, nematodes, virus as well as a biotic problem. Therefore it can reduce the quality and the quantity of the agricultural products. So the farmers are worried about the financial losses because of incorrect diagnosis of plant leaf disease and its severity leads to inaccurate results and inappropriate use of pesticides. Farmers get affected by various diseases due to long exposure to pesticides.

The crops can affect different disease. Farmers must know the pesticides of each and every crop. At the particular time, he applies the pesticide on his farming method. Because many plants have different lift time like rice plant has 5 months, tomato, chili, onion, sunflower plant has 3 months and brinjal has a 1 year of the lifetime. Not only have we known the plant lifetime we can also know the distance to keep the plants. Chili, the tomato has the ¾ feet and onion has the ¼ feet. So the farmer can handle this situation. During this time period, farmers can apply the correct level of pesticides in the vertical. Robots can play important role in the agriculture field. In the

automation world everything to be work independently. It can reduce the problem even human cannot do that. It can equally reduce the human work.

II. LITERATURE SURVEY

Advances in greenhouse automation and controlled environment agriculture, it discusses the traditional data monitoring techniques in greenhouse frequently suffer from lack of sharing and availability, great labour-intensity, low spatiotemporal resolution, a lack of data centralization[1]. It describe deal with the Application of sensor technology and challenges in the application of IoT to the food supply chain, the communication technology were limited to conventional methods which employs low range communication technology [2]. Leaf Disease Diagnosis and Pesticide Spraying using Agriculture Robot (Agrobot), an automated pesticide sprayer is involved to spray the pesticide to localized area of the affected crops. This will give accurate and continuous flow of fluid, even if the fluid properties and fluid condition are varies [3]. Intelligent Monitoring Device for Agricultural Greenhouse framework is employed for irrigational checking and controlling utilizing remote sensor system. The detected information can be checked and the yield gadgets can be controlled using IoT [5]. The different papers have been reviewed and developed the proposed system based on the limitation in present monitoring system. It also focuses on the Generic architecture which can be applied for many other automation manners [6]. The developments in the field of the IoT technology have led to renewed interest in developing the greenhouse technology [7]. The demand war the powered grapes is more in the present successor. Now a day the cultivation of the crops in the greenhouse under specified conditions which is suitable for the crops is increased [8]. Green house farmers cannot precisely detect level of humidity inside the green house. They only know the condition inside the green house manually and by feel it by themselves [9].

III. PROPOSED SYSTEM

Smart Farming system consists of two main parts. The first one is a sensor system, which includes temperature and humidity sensor, a soil moisture sensor, rain sensor, water level sensor and light intensity sensor. The second part covers the control system. The control system includes a blower, watering system and roofing system.

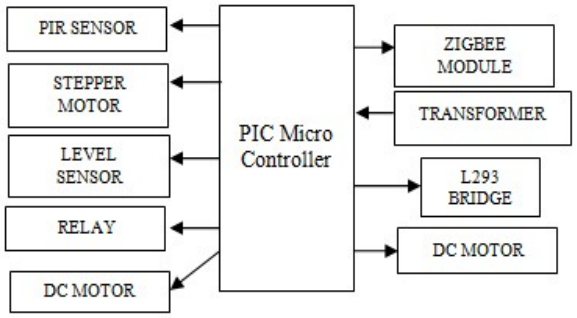

Figure-1: Transmitter of proposed system

The system provides the sensed data from all the sensors so as to help the farmer to make a proper decision about controlling the system. Along with the sensor output, we make use of a weather forecast repository from an open weather map to obtain the real-time weather forecast. Weather report obtained from the open weather map is compared with the results obtained from the sensor system and a proper decision making action is carried out. Two Arduino boards are programmed for sensing and controlling the system. Results obtained from the sensing subsystem are tabulated and a proper decision is taken to control the system.

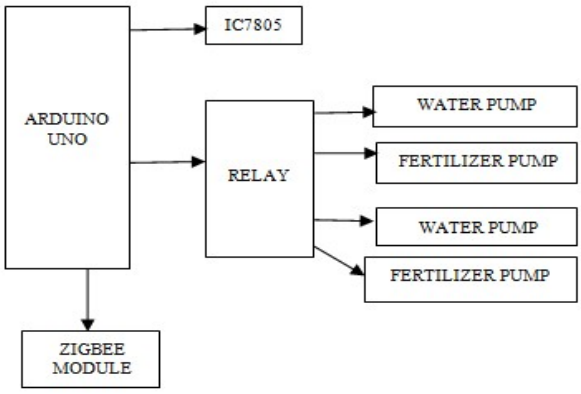

Figure-2: Receiver of proposed system

Watering subsystem and a blower are controlled using a DC motor. Roofing subsystem is controlled by a servo motor. Programming is done with Python GUI for the control part. In order to maintain the proper humidity, we use the blower. Increase in the temperature leads to hot air presence, which is cooled down by blowing cool air by the blower. Increased temperature and sunlight intensity can be overcome by operating the roofing system to provide shelter for the crop. Roofing system also provides an aid in the presence of rain. Water level sensor indicates the amount of water in the reservoir which is used as a source for the watering subsystem. Looking on to the output value of the soil moisture sensor, the watering subsystem is turned on and off in order to maintain the proper moisture content of the soil.

The system consist of PIC Microcontroller, Zigbee Module, Relay, PIR sensor, Color sensor, Arduino UNO, Level sensor, DC motor and IC 7805. When the PIR sensor is idle, both slots detect an equivalent amount of IR, the ambient amount radiated from the space or walls or outdoors. Level sensors are wont to monitor and regulate levels of a specific free-flowing substance within a contained space. Zigbee is primarily used for two-way communication between a sensor and an impact system. Like Bluetooth, and Wi-Fi, it is a short-range communication and offers connectivity up to 100 meters current. . A relay is an electromagnetic switch operated by a comparatively small current which will activate or off a way larger electric. An electric motor is an electrical machine which converts electricity into energy.

IV. CONCLUSION

The proposed design is implemented with Arduino platform with microcontroller for greenhouse Environment Monitoring humidity and soil moisture with transmit help of using ZIGBEE module in IoT. While biological sensors, like those that measures plant stress are the key to such high level automations. In addition it is not clearly well known the cost of increased automation relative to increase in profitability. The benefits of IoT and data analytics, and open challenges have been identified and discussed in this paper. IoT is expected to offer several benefits to the agriculture sector. However, there are still a number of issues to be addressed to make it affordable for small and medium-scale farmers. The key issues are security and cost. One major area that is likely to draw lot of research attention is the deployment of low power wide area communication technology for agriculture purposes. The NB-IoT is expected to stand out among the LPWA technologies. This is because of the 3GPP open standard and adoption by the Telco companies.

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