

Identification of Fertility and Effective Educational Strategies influencing the Professional Competencies of Agricultural People

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ABSTRACT:In recent days, many cultivable lands are becoming uncultivated. This is because people interest towards agriculture has been reduced as they face loss in the farming. The reason behind this problem is, they don't know which nutrient the soil possess. So the proposed method tends to design an advanced technology in agriculture. Here the crops will be allowed to sow based on the fertility of the soil. The soil fertility is diagnosed by using the pH analysis method. The pH value indicates whether the soil is acidic, neutral or alkaline in nature. Different crops are sown in different field, and the water is irrigated to the crops based on the crop how much water it requires. Water with huge mechanical force is irrigated to the crops from the pump set. This mechanical force is converted into electrical energy and can be saved in a battery, then it can be used for small application. The previous agricultural system didn't followed this type of farming and it overcomes the people problem and increases the economy of a country in agricultural sector.

KEYWORDS: fertility of the soil, pH analysis, power generation.

I.INTRODUCTION

Agriculture is the process of cultivating plants and livestock. Agriculture is the main key development in the growth of human civilization. The project is to make use of the uncultivated land (empty lands). The reason behind this uncultivated lands are the growth of unmatched crops which leads to enormous loss to the farmers. Many people don't know the nature of the soil. They are cultivating their lands without knowing the soil nature. While some people test their land and cultivate based on the soil fertility. But this is done only in the agricultural labs. Instead of testing the soil in the agricultural lab, we can test the soil in the agricultural land. The pH sensor can be used to check the soil nature. The soil nature may be acidic, neutral, alkaline. After knowing the soil nature, the crops can be sown. For each nature of the soil, different crops can be grown. The list of crops that has to be sown in the field will be displayed in the LCD display.

In agriculture water is the main source. Many people don't think the value of water. They just sow the crops and irrigate it. By doing this, water may get waste. So, better solution to overcome this drawback is by knowing the moisture of the soil with the help of moisture sensor, water will be irrigated to the crops accordingly. From the pump source, water with some force will be supplied to pass through the field. This force can be used to generate the electric current with the help of generators and can be stored for small applications

II.RELATED WORK

Mat, I., Kassim, M. R. M., & Harun, proposed a system for Precision agriculture applications using wireless moisture sensor network. Improper irrigation will result in waste of water. Proper irrigation system could be achieved by using sensor networks technology. Monitoring and control applications have been tremendously improved by using Wireless sensor networks technology. It enabled efficient communication with many sensors. Efficient irrigation could be achieved through the utilisation of MSN. MSN enabled efficient irrigation in a greenhouse for Precision Agriculture (PA) application. In this paper, we describe the overall system design,

system architecture, implementation, system test results of WMSN for PA in a greenhouse. Moisture Sensors are used to measure amount of water in the media. Close loop system acquires sensors data and activates the control devices based on predetermined threshold value. A test was conducted to compare the efficiency of irrigation using two methodologies; schedule and automated

FrahanLeftahRaziim, discussed In order to save electrical power by using the energy of supplied water through pipe line from dams to the cities. The hydroelectric power is generated by establishing a micro hydroelectric generator on the pipe line of the water supplied.

AaryanOberoi, SagarBasavaraju, S Lekshmi, proposed a system for effective implementation of automated fertilization unit using analog pH sensor. Unplanned use of fertilizers leads to inferior quality of crops. Excess of one nutrient can make it difficult for the plant to absorb the other nutrients. To deal with this problem, the quality of soil is tested using a PH sensor that indicates the percentage of macronutrients present in the soil. This novel technique also has a fast response time as it enables real time, in-situ soil nutrient analysis, thereby maintaining proper soil pH level required for a particular crop, reducing potentially negative environmental impacts.

III. PROPOSED SYSTEM

The proposed system seeks for the development of agricultural growth in the country. As many of the lands remain uncultivated and some of them are being plotted and made for sale by the people. The reason behind this problem is people face excessive loss in their cultivation. This problem can be overcome with the help of this project. The nature of the soil (say acidic, alkaline, neutral) can be predicted by using the pH sensor. The crops are allowed to sow based on the soil nature. Water loss will be avoided in this system during irrigation with the help of moisture sensor. The moisture sensor will be fixed in the land, and it senses the threshold value of how much water does the soil requires. Once the sensor reaches its threshold value, the water supply to the land will get tripped off with the help of relay system which is fixed in the pipelining. A small amount of electricity will be generated at the pump set end, with the help of generator and can be stored for small applications.

IV. PROPOSED BLOCK DIAGRAM

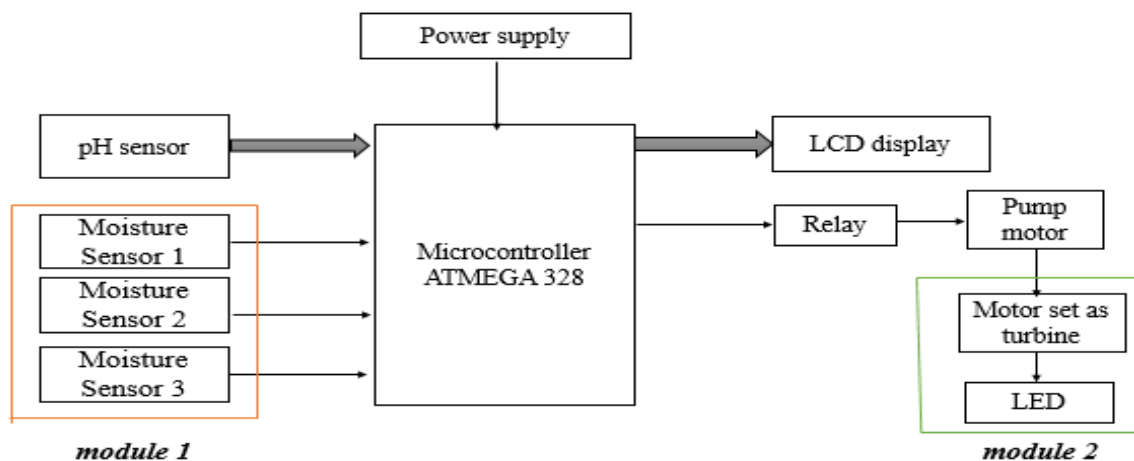


Fig 1: Block diagram

V. WORKING PRINCIPLE

MICROCONTROLLER ATMEGA 328:

The microcontroller ATMEGA328 which sends and receives the signal is the main component of the system. It receives the fetched data which is sent by the pH sensor and moisture sensor and sends the data to the LCD display and the relay part.

pH SENSOR :

It is used to check the nature of the soil (acidic, alkaline, neutral). The pH sensor is dipped in the solution (soil + water - 1:2 ratio). Depending on the pH value of the soil, it shows whether the soil is acidic, alkaline, and neutral in nature.

The pH sensor shows,

- Acidic (pH<7)
- Neutral (pH=7)
- Alkaline (pH>7).

MOISTURE SENSOR:

It is used to determine the moisture level of the soil. Some threshold value is given to the moisture sensor depending on the soil. When the moisture level goes down the threshold value, the water will be supplied to the soil. When the moisture level exceeds the threshold value, the water supply will be turned off. The threshold value will be given to the microcontroller and the ON/OFF process of the water will be carried by the microcontroller.

LCD DISPLAY:

The LCD display gets the data from the microcontroller. It is used to display the soil nature and the crops to be sown in the soil.

RELAY:

It acts as a switching device. When the moisture level goes down the threshold value, the relay will get turned ON. When the moisture level exceeds the threshold value, the relay gets turned off.

MOTOR SET AS TURBINE:

The water from the pump set with some small force will be irrigated to the field. Instead of wasting the force, a turbine is set near the pump set. The turbine rotates with the force generated by the pump set and the mechanical energy is converted into electrical energy with the help of generator and is stored in the battery.

VI. EXPERIMENTAL RESULTS

The microcontroller fetches all the data from the sensors and it displays the soil nature and the crop that has to be sown in the field in LCD display. The experimental setup is shown below.

Organized by

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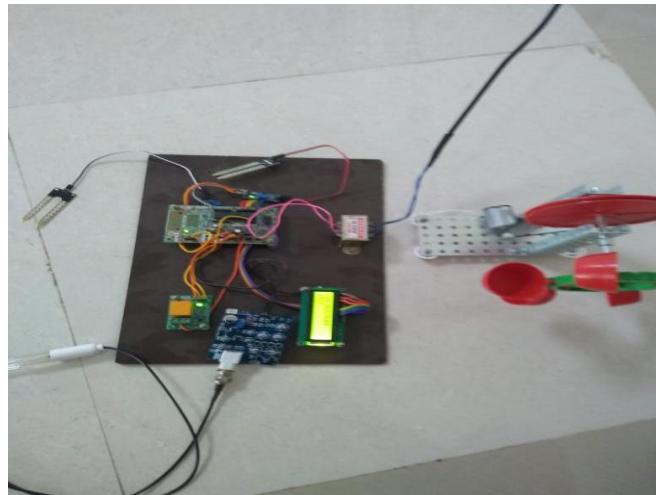


Fig 2: Experimental Setup

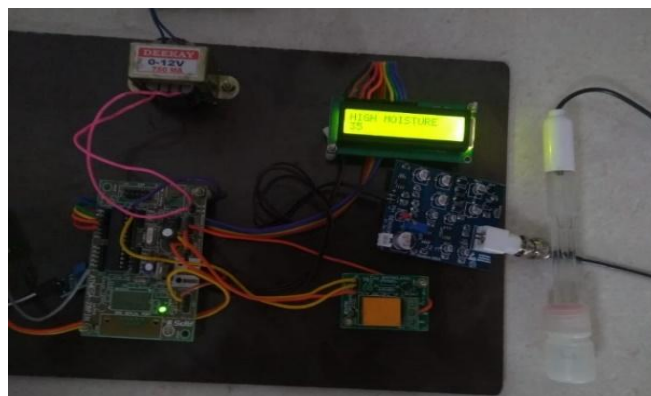


Fig 3: Moisture Level Is High

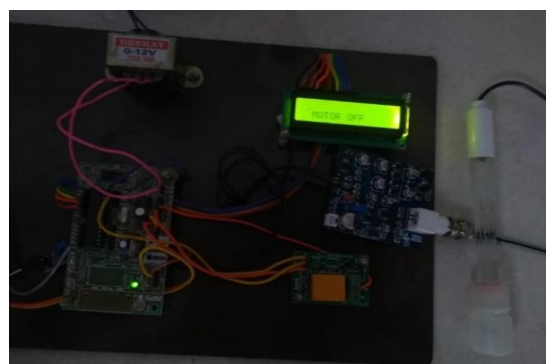


Fig 4: Moisture Level Is low

VII. CONCLUSION AND FUTURE ENHANCEMENT

Thus the empty land will be able to cultivate by knowing the nature of the soil. The soil nature will be found and an healthy agricultural system will be developed. Water consumption will not be maintained and it reduces the wastage of water while irrigating. This reduces the agricultural import and enhances the agricultural export which increases the economy of the country or a nation in the agricultural sector.

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