REVIEW ON 'I' FARMING

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ABSTRACT

Nowadays Internet of Things (IoT) technology is one of the fastest growing fields in different domains including agriculture. IoT improves the quality of our lives by bringing and fostering changes in many fields of activities to make them become handy, smart and endowed by sufficient artificial intelligence. Thanks to this technology, Smart Farming systems know a cultural change toward modern agriculture which is more productive, consuming less water and even cheaper. The main goal of our project is to use IoT in the agriculture field in order to collect data instantly (soil Moister, temperature…), which will help one to monitor some environment conditions remotely, effectively and enhance tremendously the production and therefore the income of farmers. The present prototype is developed using Arduino Technology, which comprise specific sensors that helps to collect instant data online. Worth mentioning the testing of this prototype generated, highly accurate data because while we were collecting them remotely any environmental changes were detected instantly and taking in consideration to make decisions. In addition to this we are also detecting the leaf disease with the help of image recognition and making a RF (Radio Frequency) Remote to operate the Water Pumps remotely, so that it will be easy for the farmers to operate the Water Pumps from a specific distance.

INTRODUCTION

Farming is growing crops or keeping animals by people for food and raw materials. Farming is a part of agriculture.

Agriculture started thousands of years ago, but no one knows for sure how old it is. The development of farming gave rise to the Neolithic Revolution whereby people gave up nomadic hunting and became settlers in what became cities.

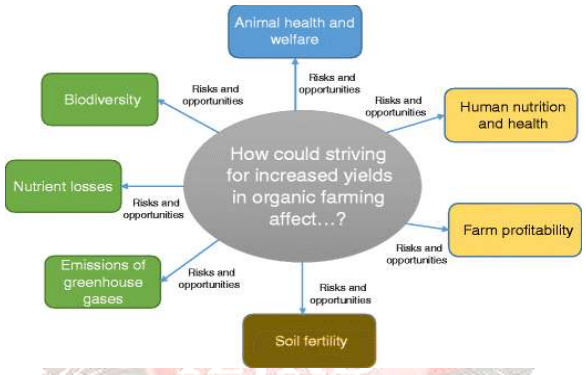
Agriculture and domestication probably started in the Fertile Crescent (the Nile Valley, The Levant and Mesopotamia). The area called Fertile Crescent is now in the countries of Iraq, Syria, Turkey, Jordan, Lebanon, Israel, and Egypt. Wheat and barley are some of the first crops people grew. People probably started agriculture slowly by planting a few crops, but still gathered many foods from the wild. People may have started farming because the weather and soil began to change. Farming can feed many more people than hunter-gatherers can feed on the same amount of land.

The present project deals with smart farming system, which would allow farmers access to live data such as temperature, humidity, and soil moister.

IOT AND AGRICULTURE

IoT contains a solid mainstay of several technologies that enable networks of wireless sensors such as, embedded systems, big data, cloud computing, web services, and computer networking and protocols. In agriculture's fields Internet of Things have several benefits, encompassing: The various sensors designed for this specific field of farming that gives the opportunity to work remotely on many projects related to agriculture. The different used sensors help instantly to collect and store data easily in cloud computing services. These live data can be accessed promptly and from any intelligent smart device. As approved by experts, farmers can use the IoT systems to increase their productivity as well as the quality of their products. In fact, it increases profits/incomes and reduces significantly their costs. Having access promptly to exact accurate data helps in increasing the efficiency level in the use of water, pesticides, and fertilizers amounts managements. Thus, IoT would help in protecting the environment and ecosystems as well.

CONCEPTUAL FRAMEWORK



Sub-Content: -

- Greenhouse.
- Leaf disease.
- Smart irrigation.
- Smart remote for operating water pump based on transmitter receiver.

CONTAINS

❖ **GREEN HOUSE**

A greenhouse (also called a glasshouse, or, if with sufficient heating, a hothouse) is a structure with walls and roof made chiefly of transparent material, such as glass, in which plants requiring regulated climatic conditions are grown. These structures range in size from small sheds to industrial-sized buildings. A miniature greenhouse is known as a cold frame. The interior of a greenhouse exposed to sunlight becomes significantly warmer than the external temperature, protecting its contents in cold weather.

Many commercial glass greenhouses or hothouses are high tech production facilities for vegetables, flowers or fruits. The glass greenhouses are filled with equipment including screening installations, heating, cooling, lighting, and may be controlled by a computer to optimize conditions for plant growth.

Different techniques are then used to evaluate optimality degrees and comfort ratio of greenhouses, such as air temperature, relative humidity and vapour-pressure deficit, in order to reduce production risk prior to cultivation of a specific crop.

❖ **SMART IRRIGATION**

Smart irrigation technology is the answer. ... Unlike traditional irrigation controllers that operate on a pre-set programmed schedule and timers, smart irrigation controllers monitor weather, soil conditions, evaporation and plant water use to automatically adjust the watering schedule to actual conditions of the site.

❖ **RF TRANSMITTER-RECEIVER**

An RF module (short for radio-frequency module) is a (usually) small electronic device used to transmit and/or receive radio signals between two devices. In an embedded system it is often desirable to communicate with another device wirelessly. This wireless communication may be accomplished through optical communication or through radio-frequency (RF) communication. For many applications, the medium of choice is RF since it does not require line of sight. RF communications incorporate a transmitter and a receiver. They are of various types and ranges. Some can transmit up to 500 feet. RF modules are typically fabricated using RF CMOS technology.

❖ **LEAF DISEASES**

Leaf spot is a common descriptive term applied to a number of diseases affecting the foliage of ornamentals and shade trees. The majority of leaf spots are caused by fungi, but some are caused by bacteria. Some insects also cause damage that appears like a leaf spot disease

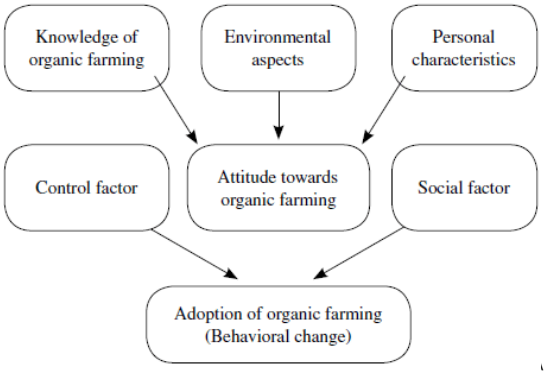
PROBLEM DEFINATION

The short-run situation in which weather variability creates large fluctuations in farm prices, combined with the long-run situation in which technological advances increase production capabilities even though the demand for agricultural production declines relative to the growth of the overall economy. Taken together these two situations lead to highly unstable farm incomes that tend to decline over time. The solution to this problem has been significant government intervention in the agricultural industry, especially through assorted subsidies and price floors.

STATEMENT OF THE PROBLEM

Agriculture is an art of raising crops and livestock flourished primarily on the fertile banks of most of the alluvial rivers of the world. With the spread of agriculture to almost all parts of the tropical and temperate world, human life gradually is tended to be more settled, organized and socialized. As a spontaneous but significant response to the natural environment and growing social needs, agriculture has emerged both as a major claimant of the land resources and a principal livelihood for most of the people.

Organic farming is very effective for the human health and it does not contain toxic pesticide. Presently organic farming is on the rise across the world. Significantly people are concerned about the health and sustainability of agriculture. The land has become infertile for the use of modern chemical fertilizers such as pesticides, nitrogen etc. That is why farmers are disappointed and start cultivating through Organic farming. With the increase in population our compulsion would be not only to stabilize agricultural production but to amplify it further in sustainable manner. The scientists have realized that the Green revolution with high input use has reached a plateau stage and is now sustained with diminishing return of falling dividends. Another major constraint in the progress of organic farming is the inability of the government to implement policy to promote organic farming. The following are found to be the major problem areas for the growth of organic farming in the country:



The Research Problems, Characteristics and factors.

Bio-fertilizers and bio-pesticides are yet to become popular in the country. There is a dearth of marketing and distribution network for them because the retailers are not agog in dealing with these products as the demand is low. The inconstant supplies and the low level of awareness of the cultivators are the vital problems. The developing countries like India have to design a plethora of national and regional standards in attune with those of the developed countries. The adoption and maintenance of such a regulatory framework and its implementation will be costly.

RESEARCH

The present study proceeds to examine the following research questions:

• How do the environmental settings of the provide bases for evolving varied Organic Farming in different parts of the in any state?

• In what ways do the traditional values and indigenous knowledge of the Farmers contribute towards diversity and sustainability of the organic farming?

• How far and what ways the organic farming in any state is getting modified overtime and changing socio-economic context?

• Is organic agriculture currently prevalent in the state sustainable? If not, what are the probable measures to be adopted to make the Organic Farming economically more viable and ecologically more acceptable?

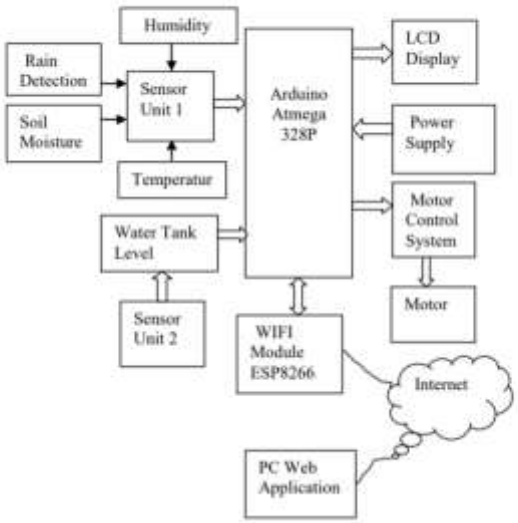
• What kinds of difficulties are encountered by the farmers during their cultivation of crops through Organic Farming?

AIMS AND OBJECTIVES OF THE STUDY

- Every study /research has some specific aim and objectives. The present study has articulated some of the objectives which help to reach the major aim of this study. The objectives are as follows:
- To know the historical backdrop of Organic farming in the any state.
- To assess the geographical background of the area that basically shapes the structure and function of the Organic Farming.
- To understand the role played by Organic farming in the sustainable development of agriculture.
- To analyse the importance of traditional knowledge and understanding of the farmers for sustainable development of the Organic farming in different environmental condition of the any state.
- To examine the spatial and temporal analysis of Organic Farming in the study area.
- To identify the essential problems of Organic Farming. And it also points out remedial measures.

PROPOSED WORK

Block diagram of proposed work:



- **Sensor data acquisition:** -The sensor is interface with Arduino Uno such as DHT11 Temperature, Humidity, Soil moisture and Rain detection sensor is used.
- **Wireless data transmission:** -The data acquired from sensors are transmitted to the web server using wireless transmission (WIFI module ESP8266).
- **Data processing and Decision making:** -The data processing is the task of checking various sensors data received from the field with the already fixedthreshold values. The motor will be switched ON automatically if the soil moisture value falls below the threshold and vice- versa. The farmer can even switch ON the Motor from mobile using mobile application.
- **Automation and irrigation system: -** The irrigation system automated once the control received from the web application or mobile application. The relays are used to pass control form web application to the electrical switches using Arduino microcontroller. The circuits with low power signal can be controlled using relay.
- **Web application: -** The web application will be designed to monitor the field and crops from anywhere using internet connection. To control the Arduino processing IDE is used, the webpage can be communicated using the processing IDE.
- **Mobile Application:** -The mobile application will be developed in android. The mobile application helps to monitor a controlled filed from anywhere.

CONCLUSIONS

The high efficiency of integrated agriculture production systems delivers socio-economic and ecological benefits that benefit farmers as well the whole society.

The sustainable intensification of integrated agriculture production systems requires: a better understanding of the impacts of changes in climate and climate variability on these systems; the generation and sharing of local and global knowledge, experiences and practices; capacity development through research and development, dialogue and dissemination of information; and support and coordination of policies, particularly policies that can provide incentives and create enabling institutions.

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