**Abstract:**

India is a land of different weather conditions and versatile soils. Every year Indian farmers are facing the problem of sudden rain in their areas without any correct weather forecast which leads to damage of the already grown crops. The second major problem pertaining to Indian farmers is the lack of sufficient knowledge about their soil. The soil forecasting of how the soil structure is changing day by day due to different weather condition and other external factors, and which crop will be optimally suited to be grown in such soil are some of the problems common to the farmers. This paper makes an attempt as an assessment in proposing the solution and at the same time develops a prototype of a device using IoT for the use of the farmers on Indian agricultural land. The solution proposed will have a centralized data server to analyze the data and report to the farmer the precautionary steps to be taken in advance for the safety of the crops. The solution proposed will have eco-friendly energy management through the solar plant and wind energy which make the IoT device more portable and at the same time makes implementable in any rural areas of India.

## Introduction

In the year 2014, the National Crime Records Bureau (NCRB) India reported 5,650 farmer suicides in the country. From 2005 there are 1.4 to 1.8 suicide rate been reported in 100,000 total population. This number is huge for the country like India where farming is the major occupation. India is also the big contributor in world food market which makes one to think to combine the available technology for benefits of Indian farmers, and try to control the suicide rate in turn improve the life quality of Indian farmers. Availability of advanced technology and on-going research in the field of agriculture suggested various technology solutions for optimum farming yield along with safety measures required for the safety of crops.

Use of IoT is proposed in

In [1] where the author used sensor network to connect real world object of agriculture. The author has written about decision support system (DSS) and short message service (SMS) based support system for the farmer.

In [2] author has proposed uses of cloud computing, mobile computing and agro cloud back for helping farmers for their crop fields. All through author have suggested the use of mobile app but have not implemented any technique to solve the problem for uneducated farmers.

In [3] author has suggested using Wide Area Network(WAN) based soil temperature and humidity monitoring system which uses ZigBee and GPS technology for solving the agriculture soil problem.

In [4] author has proposed artificial neural networks to predict and provide information on crop cultivated by observing soil properties and atmospheric parameters.

In [5] author has shown how the Representational State Transfer (REST) Application Program Interface (API) and the internet can be used for agriculture monitoring. Decagon 5TE soil sensor soil sensors where used in the paper to abstracting various property of soil.

In [6] the author has talked about use of sensors for weather forecasting, and wildlife management in the agriculture domain.

In [7] author has written about the connected farm concept based on IoT device which helps farms to communicate with nearby farm to exchange information.

In [8] Commonwealth Scientific and Industrial Research Organization (CSIRO)'s scientists have proposed uses of sensor networks on agriculture farm and mentioned about the possible changes that can be done using sensor networks in agriculture development.