**LITERATURE SURVEY**

The agricultural sector is being highly affected by Wireless Sensor Network (WSN) technologies, benefited by the IoT. However, the application of technology like IoT in agriculture could have the greatest impact. The global population is set to touch [9.6 billion by 2050](http://www.computerweekly.com/news/2240239484/IoT-could-be-key-to-farming-says-Beecham-Research). So, to feed this much population, the farming industry must embrace IoT. Against the challenges such as extreme weather conditions and rising climate change, and environmental impact resulting from intensive farming practices, the demand for more food has to be met.

Smart farming based on IoT technologies will enable growers and farmers to reduce waste and enhance productivity ranging from the quantity of fertilizer utilized to the number of journeys the farm vehicles have made. In this a system is built for monitoring the crop field with the help of sensors (light, humidity, temperature, soil moisture, etc.) and automating the irrigation system. In terms of environmental issues, IoT-based smart farming can provide great benefits including more efficient water usage, or optimization of inputs and treatments. The soil moisture probe technology provides complete in-season local agronomy support, and recommendations to optimize water use efficiency. Soil sensors can alert farmers to irregular conditions like high acidity, giving the farmer time to reconcile the issue and produce better crops. DHT11 sensor is used to measure the [**temperature**](http://microcontrollerslab.com/temperature-sensor-using-pic16f877a-microcontroller/) and [**humidity**](http://microcontrollerslab.com/digital-humidity-sensor-using-pic-microcontroller/) of the crop, helps in better analysis and give better suggestion.

IoT agricultural applications are making it possible for loan lenders and farmers to collect meaningful data. Loan lenders must understand the potential of IoT market for agriculture in order to better understand the farm conditions during repayment process.

Agricultural lenders are facing many challenges when evaluating the credit worthiness of loan borrowers. Financial Institutions has to monitor its loan system to mitigate risks. When a farmer comes and asks for the loan the bank should be able to grant loan only to loyal customers and reject for others. Even during the repayment of loan, the bank should be able to know whether the farmer is genuine or not. In order to overcome all these problems we develop a tool that provides the information needed to oversee loan portfolio at any time, identifying potential problems.

The loan process is considered complicated and time consuming. The farmers require crop loans during the particular seasons. If they do not get the credit in time, it will not serve the desired purpose. The delay in processing the loan is a common problem felt by the farmers. Similarly, if the farmers require term loan for buying certain assets, it is also required in time. Otherwise, if the asset is bought after the work has been done, the asset will remain idle till its next use. The farmers also complain about the complications in the loan process. These complications may relate to the procedural complications and behavioural complications.

It is said that getting a loan is difficult but its repayment in time is more difficult. They are expected to repay the loan immediately after the harvest. Sometimes, they do not get fair price after harvest. But due to hard conditions of repayment, they have to sell the crop without any bargain regarding price. It creates a problem in their minds whether to go for such loans or not.

The problem of mounting over dues has become a major cause of concern for the banking institutions. The amount of recoverable loans from the farming sector has been piling up day by day. The interaction of the researcher with branch managers regarding this major issue revealed the following causes for poor recovery of loans:

1. The farming activities are largely dependent on the mercy of Almighty God in our country. Nature plays havoc with the farmers almost every year. Natural calamities like floods or droughts ruin the crops of the farmers and they are left with very little produce. It affects their repaying capacity and as a result, the recovery of loans becomes a tough task.

2. It is very common among the farmers that they use the amount of loan for domestic or leisure purposes. Sometimes, they spend the loan money on social functions, litigation, sickness and other such purposes. It leads to reduction in the revenue and ultimately affects their capacity to repay the loan.

3. Banks are not able to check the proper utilization of loan by the farmer. The farmers are illiterate and ignorant about the financial management practices. They do not know how to make the optimum use of the loan taken. They simply take the loan as their own money and many times use it on wasteful items. They also do not maintain any account of the loan taken by them. Basically, they do not understand the cost of the loaned capital. It results in non-recovery of loans.

4. The main and greatest problem of the banking sector is repayment of loan. Most of the people have developed an attitude of willful default because they feel that the loan taken by them is the money of the government and it is not meant to be repaid. There have been situations when because of political considerations, the respective governments waived off the loans of the farmers. As a result, people have developed the feeling that the governments will again waive off the loans and they simply go on waiting for that time.

5. Due to failure of crops the banks pressure from cultivators to convert crop loans in to term loans the banks operating in a particular area cannot be decided on their own.

To overcome the problems faced by both the banks and the farmer this tool helps in bridging the gap between the agricultural loan lenders and the farmers without any interference of the middle man. This tool helps in finding the trustworthiness of the farmer and helps bank to make correct decisions based on the real time data collected from the sensors.

This tool also helps during repayment of the loan and helps banks to rate the trustworthiness of that farmer and based on that they can waive the loan and the same feedback can be used for the rest loan applications to grant or waive the loan.

## Objectives:

Agricultural Loan Monitoring Tool allows us to monitor climatic conditions for agricultural land and generate the relevant reports. These reports can be used by Bank to Assess, Waive or Grant new Agricultural loans and by farmers for better agricultural output.

The same reports can be used to know if the customer is making proper use of the loan and provide constructive feedback.

### Many loaning organizations and farmers can use this tool for better judgement and improve the crop outcome.

* The Agricultural Loan Monitoring Tool allows banks to test the trustworthiness of the farmers.