**Project Proposal**

**Introduction –**

The most significant cultural practise and labour-intensive duty in everyday operations relate to watering plants. Controlling the amount of water that reaches the plants is extremely important no matter what the weather is like, whether it is too hot and cold or too dry and rainy.

Therefore, using the concept of an autonomous plant watering system that waters plants as needed will be effective. "When and how much to water" is a key component of this endeavour. An automated plant watering system is used to decrease the amount of physical labour required to water plants by people.

During the lockdown period, the majority of households began gardening since they could produce any plants they wanted for daily usage, including fruits, vegetables, and other plants. However, as restrictions are gradually lifted and people can resume their regular lives, they find it harder to maintain their plants' health and viability since they lack the time to water them.

Soil erosion is also one of the problems in degradation of plant life. While watering a plant or a tree, the water content must be accurate.

Water shortage is currently the biggest issue facing the planet, and as agriculture is a labor-intensive industry that uses a lot of water, therefore a system is required to use the water efficiently.

**Problem Description-**

In the course of their daily activities, many people frequently forget to water their plants, making it difficult for them to maintain the health and life of their plants. Farmers also face difficulties managing the watering of plants and maintaining their fields when there is a water shortage.

Many ignore soil erosion causing an exploitation of plants or trees. Most of the farmers use large portions of farming land and it becomes very difficult to reach and track each corner of large lands . Additionally, it might be difficult for farmers to keep their fields in good condition and control plant irrigation when there aren't enough rains or water supplies. This causes crops to be of poor quality, which further causes financial losses.

**Solution-**

Our work's major goal is to create an intelligent, automated method for watering plants.

We think that technology can aid in plant cultivation, both via automation and through digital communications. We believed that it was essential to set up an automated system that will take care of plants while taking into account all the different components of home gardening systems (for systems based on household purposes) as well as larger landscapes (for systems based on agricultural farms) and encourages their healthy growth.

Automated systems require fewer manual steps and are reliable, dependable, and versatile. The extension of things from data given by devices to actual physical goods led to a significant change in the internet of things (IoT) business. We thus decided to automate the yard labour using IoT.With the help of our new technology, gardeners can now keep an eye on critical variables including the state of their plants, the soil's moisture content, the air's humidity, and the local temperature at any time and from any location. "When and how much to water" is a key component of this endeavour. Therefore, the goal of our research is to put into practise a straightforward system that uses autonomous irrigation to water a tiny potted plant or crop with little assistance from humans.

A smart plant watering system idea employing the most recent IoT technology is used to eliminate manual tasks for humans to water plants.

**Implementation-**

We want to create an IoT-based irrigation system utilizing the DHT11 sensor and ESP8266 NodeMCU module. In addition to autonomously watering the plants depending on the soil's moisture content, it will also send data to a server to monitor the soil's health. The System will have a water pump that will be utilized to spray water on the soil based on factors including moisture content, temperature, and humidity.

In order to start watering a plant, this watering system employs sensors to determine when it needs to be watered. Additionally, sensor data will be shown graphically. This system is incredibly simple to set up and can be operated on a computer or smartphone. Small plants or plants that don't require a lot of water are ideal candidates for this method.

This system functions as a smart switching system that monitors soil moisture level and irrigates the plant as needed using sensor technologies, microcontroller, and other electronics. There is a broad range of options for implementing these systems as a long-term solution for many agricultural and medical difficulties, even though the system developed in that method would be the most ideal for home usage as a remedy for certain every day and common challenges.

**Cost/Schedule –**

A smart plant watering system utilises only the necessary quantity of water and requires little to no human involvement. The components are affordable and widely accessible.High cost-efficiency is one of the extra benefits since it lowers costs and overall expenditures because it consumes less water and operates more precisely.

Energy usage is also significantly reduced as a result of the method's planned breaks and shorter equipment running durations, which normally use less energy overall.Additionally, because resources are few and companies must manage costs to some level, it is critical to reduce expenses and save resources. With Smart plant watering system, the cost aspect is taken into account, making it possible to carry out associated tasks successfully while spending less money.

Last but not least, one of the additional benefits is that with improved irrigation efficiency and water management, Labor expenses can be reduced

**Summary –**

This system's rapid responses and user-friendly features will be able to support the socioeconomic development of the nation. It is considerably simpler and less expensive to do the task because of the manner it is planned and carried out.

Due to recent advancements in soil water sensing, which automate irrigation control for vegetable production, this technology is now practicable.

But research demonstrates that different sensor types can operate in all environments without affecting crop yields and can use up to 70% less water than traditional techniques.