SMART DRIP IRRIGATION SYSTEM

A report submitted in partial fulfillment of the Academic requirements for the award of the degree of

Bachelor of Technology

SATHVIK	20H51A62B1
SURISETTY SUSRUTHA	20H51A62B2
KRUTHIKA	20H51A66B1
JASWANTH	20H51A66B2
SHIVAKUMAR GOUD	20H51A0248

UNDER THE COURSE

ENGINEERING EXPLORATION & PRACTICE

CENTRE FOR ENGINEERING EDUCATION RESEARCH

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

(NAAC Accredited with 'A+' Grade & NBA Accredited)

(Approved by AICTE, Permanently Affiliated to JNTU Hyderabad)

KANDLAKOYA, MEDCHAL ROAD, HYDERABAD-501401

2020-21

CENTRE FOR ENGINEERING EDUCATION RESEARCH

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

(NAAC Accredited with 'A+' Grade & NBA Accredited)

(Approved by AICTE, Permanently Affiliated to JNTU Hyderabad)

KANDLAKOYA, MEDCHAL ROAD, HYDERABAD-501401

2020-21

CERTIFICATE

This is to certify that the report entitled "**SMART DRIP IRRIGATION SYSTEM**" is bonafied work done by **SATHVIK (20H51A62B1)**, **SURISETTY SUSRUTHA (20H51A62B2)**, **KRUTHIKA (20H51A66B1)**, **JASWANTH (20H51A66B2)**, **SHIVAKUMAR GOUD (20H51A0248)** of I B. Tech, in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology, submitted to Centre for Engineering Education Research, CMR College of Engineering & Technology, Hyderabad during the Academic Year 2020-21.

(Names of the project coordinators)

1. N.Chandra Shekhar Azad (Assistant Professor)

Mrs. D. Sowjanya
HOD, CEER

EXTERNAL SIGNATURE

DECLARATION

We, the students of I B. Tech of Centre for Engineering Education Research, CMR COLLEGE OF ENGINEERING AND TECHNOLOGY, Kandlakoya, Hyderabad, hereby declare, that under the supervision of our course coordinators, we have independently carried out the project titled “Garbage Disposal Monitoring System” and submitted the report in partial fulfillment of the requirement for the award of Bachelor of Technology in by the Jawaharlal Nehru Technological University, Hyderabad (JNTUH) during the academic year 2020-21

STUDENT NAME	**ROLL NO.**	**SIGNATURE**
SATHVIK	20H51A62A1	
SURISETTY SUSRUTHA	20H51A62B3	
KRUTHIKA	20H51A66A5	
JASWANTH	20H51A66A6	
SHIVAKUMAR GOUD	20H51A0248	

ACKNOWLEDGEMENT

We are obliged and grateful to thank, CMRCET, for its cooperation in all respects during the course.

We would like to thank the Principal of CMRCET, Dr.V.A.Narayana, for his support in the course of this project work.

Finally, we thank all our faculty members and Lab Assistants for their valid support.

We own all our success to our beloved parents, whose vision, love and inspiration has made us reach out for these glories.

ABSTRACT

In this paper, we propose a new framework with the advancement of automation technology, life is getting simpler and easier in all aspects. In today's world Automatic systems are being preferred over manual system. Automatic system is a growing system of everyday object from industrial machine to consumer goods that can complete tasks while you are busy with other activities.

. Today, the farmers are suffering from the lack of rains and scarcity of water. The main objective of this paper is to provide an automatic irrigation system thereby saving time, money & power of the farmer. The traditional farmland irrigation techniques require manual intervention. With the automated technology of irrigation, the human intervention can be minimized. Whenever there is a change in temperature and humidity of the surroundings these sensors sense the change in temperature and humidity and gives an interrupt signal to the micro-controller.

Drip irrigation is the most efficient and appropriate irrigation system. Instead of wetting the whole field surface, water is applied only to the plant root zone.

In providing water to plants according to plant water requirements, drip irrigation systems create no pollution and no runoff and very little evapotranspiration.

TABLE OF CONTENTS

1.INTRODUCTION

In our country Agriculture is major source of food production to the growing demand of human population. Generally farmers visit their agriculture fields periodically to check soil moisture level and based on requirement water is pumped by motors to irrigate respective fields. Farmer need to wait for certain period before switching off motor so that water is allowed to flow in sufficient quantity in respective fields. This irrigation method takes lot of time and effort particularly when a farmer need to irrigate multiple agriculture fields distributed in different geographical areas. Automation in irrigation system makes farmer work much easier. automated irrigation system provides promising solution to farmers where presence of farmer in field is not compulsory.

Include increasing water scarcity, and it's clear why we need a way to increase agricultural productivity and resource efficiency. That's where drip irrigation fits in, changing the economics of global agriculture by allowing farmers to produce more calories per hectare and cubic meter of water.

- Reduce impact of drought and climate change on food production.
- Avoid contamination of ground water and rivers caused by fertilizer leaching.
- Support rural communities, reduce poverty, reduce migration to cities.

Drip irrigation is a type of micro-irrigation system that has the potential to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface. The goal is to place water directly into the root zone and minimize evaporation. It is the most efficient water and nutrient delivery system for growing crops. It delivers water and nutrients directly to the plant's roots zone,
in the right amounts, at the right time, so each plant gets exactly what it needs, when it needs it, to grow optimally.

Drip irrigation system makes the efficient use of water & fertilizers. The concept of this irrigation system is to irrigate only the root zone of the plants. Drip irrigation allows water to drip slowly to the roots of plants. Drip is especially suitable for arid, hot and windy areas. Drip

irrigation system which supply controlled amounts of water to plants. Subsurface application of water to the root zone also has the potential to improve yields by reducing the incidence of diseases.

Drip irrigation systems distribute water through a network of valves, pipes, tubing, and emitters.

Drip irrigation provides slow, even application of low-pressure water to soil and plants using plastic tubing placed in or near the plants' root zone. Drip irrigation can be used for crops with high or low water demands.

It also gives farmers an efficient and simple way to operate their farms.

- Higher consistent quality yields
- Huge water savings: no evaporation, no run off, no waste
- 100% land utilization - drip irrigates uniformly in any topography and soil type
- Energy savings: drip irrigation works on low pressure

- Efficient use of fertilizer and crop protection, with no leaching
- Less dependency on weather, greater stability and lower risks

Why to consider drip irrigation?

Drip irrigation can help you use water efficiently. A well-designed drip irrigation system loses practically no water to runoff, evaporation, or deep percolation in silty soils. Drip irrigation reduces water contact with crop leaves, stems, and fruit. Thus, conditions may be less favorable for disease development. Irrigation scheduling can be managed

that has the potential to save water and nutrients by allowing water to drip slowly to the roots of plants, either from above the soil surface or buried below the surface. The goal is to place water directly into the root zone and minimize evaporation. precisely to meet crop demands, holding the promise of increased yield and quality.

2 LITERATURE REVIEW

In this section, we will study different approaches. For development of automated irrigation system. Soil moisture content is more important parameter as compared to others as it has crucial role in plant growth mechanism and availability of water for irrigation is major concern for the farmers specially the ones who are dependent on rain. Hence water management has high priority while designing automated irrigation system as seen in most of the literature.

EXISTING SOLUTIONS:

There are various irrigation systems. The following are some of the existing solutions:

1. SPRINKLERS IRRIGATION
2. BAMBOO TUBE METHOD
3. IRRIGATION BY LATERAL MOVE
4. SURFACE IRRIGATION

1) SPRINKLERS IRRIGATION

In the sprinkler method of irrigation, water is sprayed into the air and allowed to fall on the ground surface somewhat resembling rainfall. The spray is developed by the flow of water under pressure through small orifices or nozzles. The pressure is usually obtained by pumping. With careful selection of nozzle sizes, operating pressure and sprinkler spacing the amount of irrigation water required to refill the crop root zone can be applied nearly uniform at the rate to suit the infiltration rate of soil.

. If you apply pumping system in which you make use of pipes to distribute water with the help of spray heads which moisten your whole soil surface, then this system is known as Spray or Sprinkler system.

- Lessens conveyance loss.
- Decreases soil compaction.
- Offers frost safety and supports in the modification of microclimate.

Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground. The pump supply system, sprinklers and operating conditions must be designed to enable a uniform application of water.

Components of Sprinkler System

- Pump unit
- Mainline and sometimes submain lines
- Laterals
- Sprinklers

The pump unit is usually a centrifugal pump which takes water from the source and provides adequate pressure for delivery into the pipe syst.

2) BAMBOO DRIP IRRIGATION METHOD

The bamboo drip irrigation system is normally used to irrigate the betel leaf or black pepper crops planted in arecanut orchards or in mixed orchards. Bamboo pipes are used to divert perennial springs on the hilltops to the lower reaches by gravity. The channel sections, made of bamboo, divert and convey water to the plot site where it is distributed without leakage into branches, again made and laid out with different forms of bamboo pipes. Manipulating the

intake pipe positions also controls the flow of water into the lateral pipes. Reduced channel sections and diversion units are used at the last stage of water application. The last channel section enables the water to be dropped near the roots of the plant.

How does a bamboo drip irrigation system work?

Bamboos of varying diameters are used to build the channels, support structures, diversion pipes and strips Channels are held above the ground by bamboo or wooden Y shaped sticks. One stretch of channel is lashed to another by thin bamboo strips.

Indigenous tools like a dao, a type of local axe, and chisels of various shapes and design are used to build the bamboo network.

Two laborers can construct a network covering 1 hectare of land in 15 days .

They are built with such skill that water wastage by leakage is minimal.

The construction is based on a simple rule of thumb — the ratio of diameter of primary channel to tertiary channel determines the quantity of water which will reach the trees.

The bamboo drip irrigation system is based on gravity and the steep slopes facilitate in implementing it.

(1). Water from an uphill source is tapped and brought to the plantation by a main bamboo channel. Usually these water sources are far off from the plantations and the

main bamboo channel runs hundreds of meters — in some cases even few kilometers. The water is then regulated through a complex bamboo network of secondary and tertiary channels to all the parts and corners of a plantation, right up to the bottom of the hill.

These bamboo networks usually have 4-5 diversion stages before water is delivered at base of the plant (1, 2). 18-20 liters per minute of water from the main channel gets reduced to 10-80 drops per minute at end of the network , After this long journey, the water trickles or drips drop by drop at the base of the plant. Sometimes water is diverted to distant houses for domestic use.

- Bamboo drip irrigation system is 200 year old system of tapping stream and water by using bamboo pipe
- Bamboo pipes are used to divert perennial springs on the hilltops to the lower reaches by gravity
- The channel sections, made of bamboo, divert water to the plant site where it is distributed into branches
- 18-20 litres of water enters the bamboo pipe system, get transported over hundreds of metres and finally reduces to 20-80 drops per minute at the site of the plant.
- The flow of water into the pipes is controlled by manipulating thepipe positions.
- It doesn't required any fuel or power for its working.
- Bamboo is easily available for free or at a low cost so it is easily implementing in that reasons without any problem
- This is said to be economical and sustainable irrigation

3) LATERAL MOVE IRRIGATION

To assess the performance of lateral or linear move irrigation system, it is necessary to measure the pressure at various points in the system, its operating speed and the output of the emitters using catchcans. To do this, work though the following procedure.

To measure sprinkler coverage:

- A shovel to smooth catchcan area, and where necessary for partially burying
- the cans
- A measuring cylinder or jug with graduations in millilitres
- A 30-metre measuring tape; and possibly a short rule
- Pegs or markers
- A calculator, a pen and evaluation sheets (you may need extra copies of the
- data sheets)
- Manufacturer's sprinkler performance charts

To measure flow:

- A container of known volume eg. 10 L bucket
- Stop watch

To measure pressure:

- An accurate pressure gauge with an appropriate scale so it works mid-range at your normal pressures (say 0 to 400 kPa) to 1000 kPa
- Tees and fittings to install above pressure regulators (eg. Figure 1), sufficient for several emitters

Evaluation method

To assess the performance of lateral or linear move irrigation system, it is necessary to measure the pressure at various points in the system, its operating speed and the output of the emitters using catchcans. To do this, work though the following procedure.

1. Record wind speed and direction (see Table 1). Field tests are ideally done in zero wind conditions and should not be done if the wind is stronger than a light breeze.

2. Fill out the first sections of the centre pivot data sheet with details about the crop, soils and the centre pivot. Measure the length of each span. Water output measurement

3. Choose a suitable location for the test so that catchcans may be placed across the pathway of the boom or linear move. If possible, the location should be flat and level, and far enough ahead of the boom so that no water enters the catchcans before they are all set up.

4. Ideally, two rows of catch cans, with rows no more than 50m apart, should be used to check variation along the direction of travel. • Set out the catchcans no more than. 5 metres apart. (For greater accuracy, use International Standard ISO 11545 maximum of 3m apart.)

5. Ensure that the cans are in a straight line parallel to the boom and that none will be displaced as the irrigator moves past. • Add at least two extra containers on each side to allow for changes in wind speed or direction. • If rain is likely, place another can away from the boom to record rain during the test. Any rain must be deducted from the amount caught in each catchcan.

6. When the system is operating, measure the length of the wetted width from the front to the rear of the boom. Placing a peg (or marker) at the limits of throw, then measuring the distance between the pegs after the machine has passed is the simplest way.

7. When the irrigator has completely passed over all of the catchcans, measure and record the volumes in each container. Each volume MUST be written in the correct space on the field record sheet. If there is no catch can or no reading at a position, leave it blank.

8. Spreadsheet calculators for converting catch can volume to depth, calculating average application, uniformity, etc. may be available from your irrigation advisor or agency. Measuring pressure and flow

. Record the make, model and nozzle size or colour of the emitters.

10.Attach tees and fittings (Figure 1) above the pressure regulator and emitter at selected emitters for measuring the pressure. Ideally you would select a known emitter from each span, for example the 3rd last emitter of each span. As a minimum you could select, at least one on the first span, one on the last span and one in between.

11. When the system is operating, record the pressure of the selected emitters using the pressure gauge. If a gauge is fitted, take a reading at the cart too.

12. When the system is operating, measure the flow rate by holding the large container of known volume under one emitter and timing how long it takes to fill. Record measurements from at least one emitter per span and note the span and emitter position numbers.

4) SURFACE IRRIGATION

Surface irrigation is where water is applied and distributed over the soil surface by gravity. It is by far the most common form of irrigation throughout the world and has been practiced in many areas virtually unchanged for thousands of years.

Surface irrigation is often referred to as flood irrigation, implying that the water distribution is uncontrolled and therefore, inherently inefficient. In reality, some of the irrigation practices grouped under this name involve a significant degree of management (for example surge irrigation). Surface irrigation comes in three major types; level basin, furrow and border strip.

The process of surface irrigation can be described using four phases. As water is applied to the top end of the field it will flow or advance over the field length.

The advance phase refers to that length of time as water is applied to the top end of the field and flows or advances over the field length.

After the water reaches the end of the field it will either run-off or start to pond. The period of time between the end of the advance phase and the shut-off of the inflow is termed the wetting, ponding or storage phase.

As the inflow ceases the water will continue to runoff and infiltrate until the entire field is drained. The depletion phase is that short period of time after cut-off when the length of the field is still submerged. The recession phase describes the time period while the water front is retreating towards the downstream end of the field. The depth of water applied to any point in the field is a function of the opportunity time, the length of time for which water is present on the soil surface.

Types of Surface irrigation

- Drain back Level Basins
- Furrow irrigation
- Surge irrigation
- Bay/border strip irrigation

DRAWBACKS:

- Automated agriculture irrigation system is not yet implemented in this type of crops like red gram
- Even we require very less amount of water when it is manually operated it consumes lot of water.
- The present irrigation system, which is not automated electricity would be wasted.

3.PROBLEM DEFINITION

3.1 PROBLEM STATEMENT:

The problem statement is that **"**A farmer in nearby Hyderabad has one-acre agricultural land. He needs the support to cultivate his land. Due to lack of manpower and water resources , he needs an effective system for irrigation"**. "SMART DRIP IRRIGATION SYSTEM"**

3.2 OBJECTIVE:

The key objective of our project is

- smart irrigation system to provide irrigation system which is automatic for the plants which help in saving water, money and reduces the man power. Manual power should not be used even for drawing the water.
- The project should save time for the farmer so that he can invest his time in other works.
- The project so designed should neither drain the crop nor over irrigate the crop.
- Consumption of electricity should be minimized.
- This system is intended to help farmers to make more efficient use of precious water while avoiding dehydration of crops.

PROPOSED SOLUTION:

The Proposed solution overcomes the mentioned drawbacks of the existing solutions which can reduce the man power, much maintenance is not required,no difficulty during crop rotation.

The above existing solutions are manual based system, that is it involves man power to work in fields. To solve this issue, we are adding an additional upgrade to the proposed solution where the soil moisture sensor is kept for detecting the wetting nature of the land. crops are irrigated immediately when soil moisture drops below threshold. Even small particles in the water can cause drip emitters to become clogged. So,adding a filter to the system is necessary In this method filers are needed to avoid the health hazards.

3.3 REQUIREMENT ANALYSIS:

This part of the project gives a crucial explanation about the components used in the project. After the detailed analysis of our project here are the components used in the project.

1) ARDUINO:

This is the heart of the project everything that has to implement in the project should start accessing from here. Arduino takes the analog signal from sensor or potentiometer and then gives the voltage to motor and led to start pulling water and glow rh intern stimulates servo motor to rotate about 90 degrees.

2.RELAY

Relay is an electromechanical switch which uses electromagnetism from small current or voltage to switch higher current or voltage for different appliances. When a relay is in Normally Open (NO) contact, there is actually an open circuit until the relay is energized.

When the relay operates or releases, the contact that closes the circuit operates before the contact that opens the circuit releases. Thus both contact are closed momentarily at the same Time.

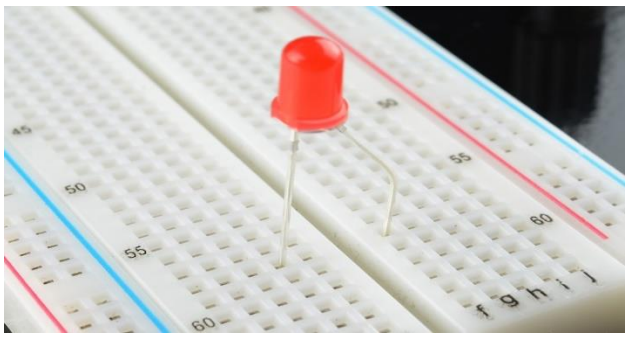
3.DRIP TUBE :

The drip irrigation tube is arranged along the plant row, and then one end is connected with the branch pipe.

It directs the water from the water supply to the drip irrigation area.

4. LIGHT EMITTING DIODE (LED):

A light-emitting diode (LED) is a two-lead semiconductor light source. It is a pn junction diode that emits light when activated. When a suitable voltage is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons. This effect is called electroluminescence, and the colour of light (corresponding to the energy of the photon) is determined by the energy band gap of the semiconductor. LEDs are typically small (less than 1 mm2) and integrated optical components may be used to shape the radiation pattern.



5.RESISTORS :

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads for generators. Fixed

resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity

6.SOIL MOISTURE SENSOR :

The soil moisture sensor works on electrical resistivity. As the moisture content of the soil increases, the electrical resistivity of the soil decreases. The value of resistivity changes in to volumetric water content of soil. The sensor sends command to irrigation controller at 1 hour. Soil moisture measures sensor volumetric water content in soil. Soil moisture sensor is a novel device which senses the moisture content in the soil, and with suitable mechanism allows water to be irrigated depending on the moisture content of the soil. This allows flow of water or stoppage of water to the plants by using an automated irrigation system

7.WATER PUMP

the water under pressure through pipes to the irrigation system. Two or three different sized turbine pumps are often placed side-by-side to handle different flow combinations.

8.JUMPER WIRES:

Jumper wires are extremely handy components to have on hand, especially when prototyping. Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering.

Jumper wires typically come in three versions: male-to-male, male-to-female and female-to-female. The difference between each is in the end point of the wire. Male ends have a pin protruding and can plug into things, while female ends do not and are used to plug things into.

9.ADAPTOR :

An adapter is a physical device that allows one hardware or electronic interface to be adapted (accommodated without loss of function) to another hardware or electronic interface. In a computer, an adapter is often built into a card that can be inserted into a slot on the computer's motherboard.

S.NO:	NAME OF COMPONENTS
1.	Arduino UNO
2.	Soil Moisture sensor
3.	Water pump
4.	Jumper Wires
5.	Adaptor
6.	Relay
7.	led
8.	Power Supply
9.	Drip Tube
10.	MH sensor
11.	LCD display
12.	Motor

3.4 METHODOLOGY:

The proposed solution overcomes the existing solutions which can reduce the man power. The Traditional irrigation technique has been replaced with automated technique. A smart irrigation system, contrary to a traditional irrigation method, regulates supplied water according to the needs of the fields and crops. Due to installation of filters good purity of water is supplied to the crops.

The smart irrigation controllers include soil moisture sensor controllers. Instead of using weather data, soil moisture sensor controllers utilize a soil moisture sensor placed below ground in the root zone of cultivating land to determine water need.

The moisture content in the soil, and with suitable mechanism allows water to be irrigated depending on the moisture content of the soil. This allows flow of water or stoppage of water to the plants by using an automated irrigation system.

The moisture sensor will be used to measure the water content of the soil. The raw data collected from the sensors will be used to determine if the soil is dry.

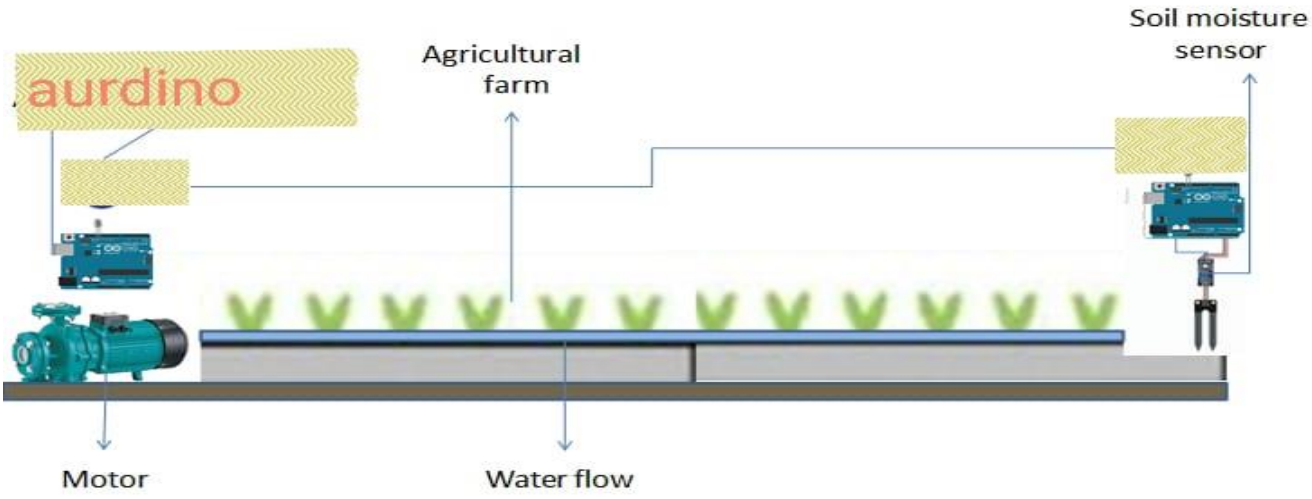
4.IMPLEMENTATION

There are some challenges to be faced in the process of "SMART DRIP IRRIGATION SYSTEM". Firstly, the detection of minute particles, reducing of man power, determining the moisture content in the soil, Therefore, crops are irrigated immediately when soil moisture drops below threshold.

4.1 CONCEPTUAL DESIGN:

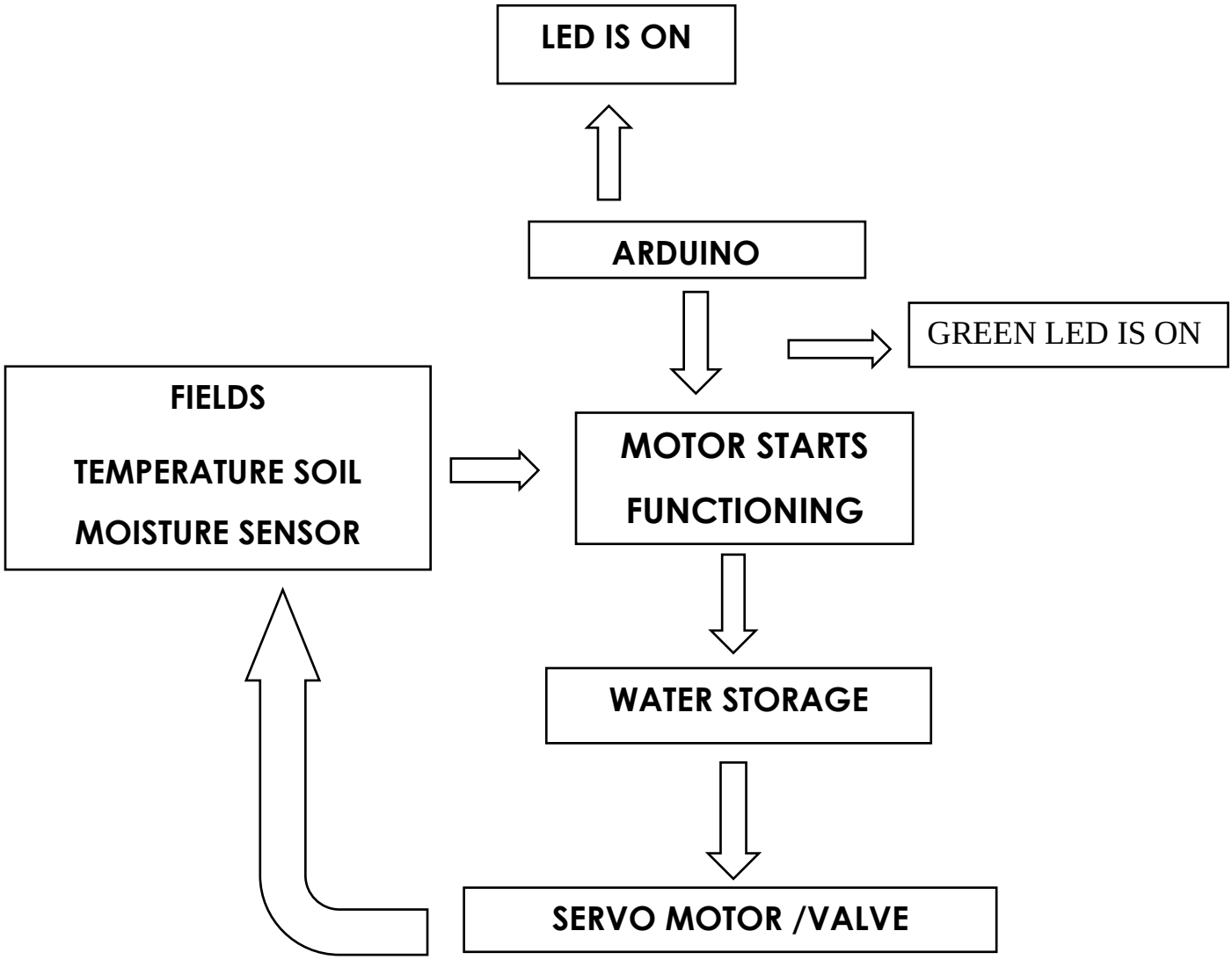
Our project Automatic irrigation system is designed by keeping in mind that the manual work in irrigation must be automated as much as possible and it should be available with cheap cost too.

So, the model uses Arduino-UNO, the pipes are laid across the lanes of the farms. The motor drives the water to the pipes, but there will be a servo motor in between them with is automated by Arduino-UNO. Arduino-UNO which gets signals from the soil-moister sensor on which will be placed on the other end of the lane if the soil moister has met its quality the soil moister send the signal to the Arduino-UNO and the Arduino-UNO turns of the servo motor.

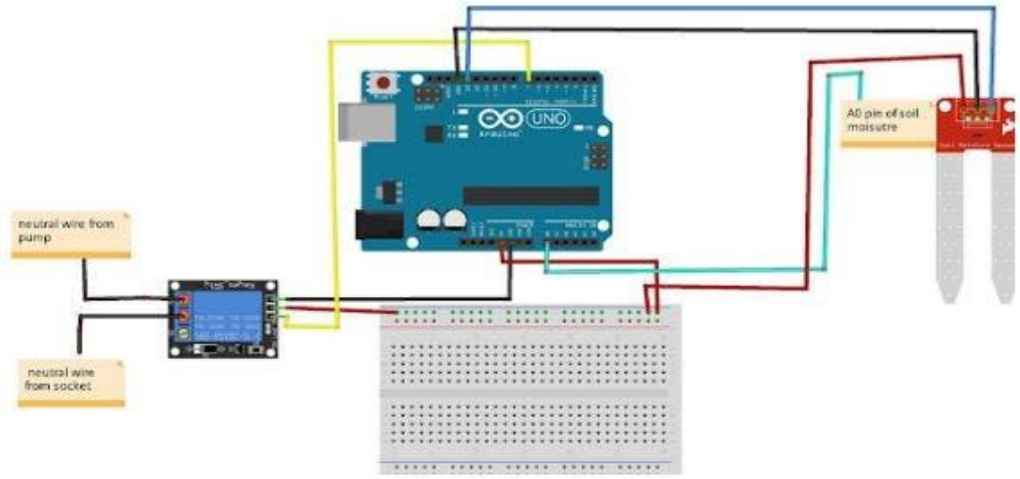


4.2 : Block Diagram:

This is the block diagram of our automatic irrigation system project



4.3 : DESIGN DESCRIPTION:

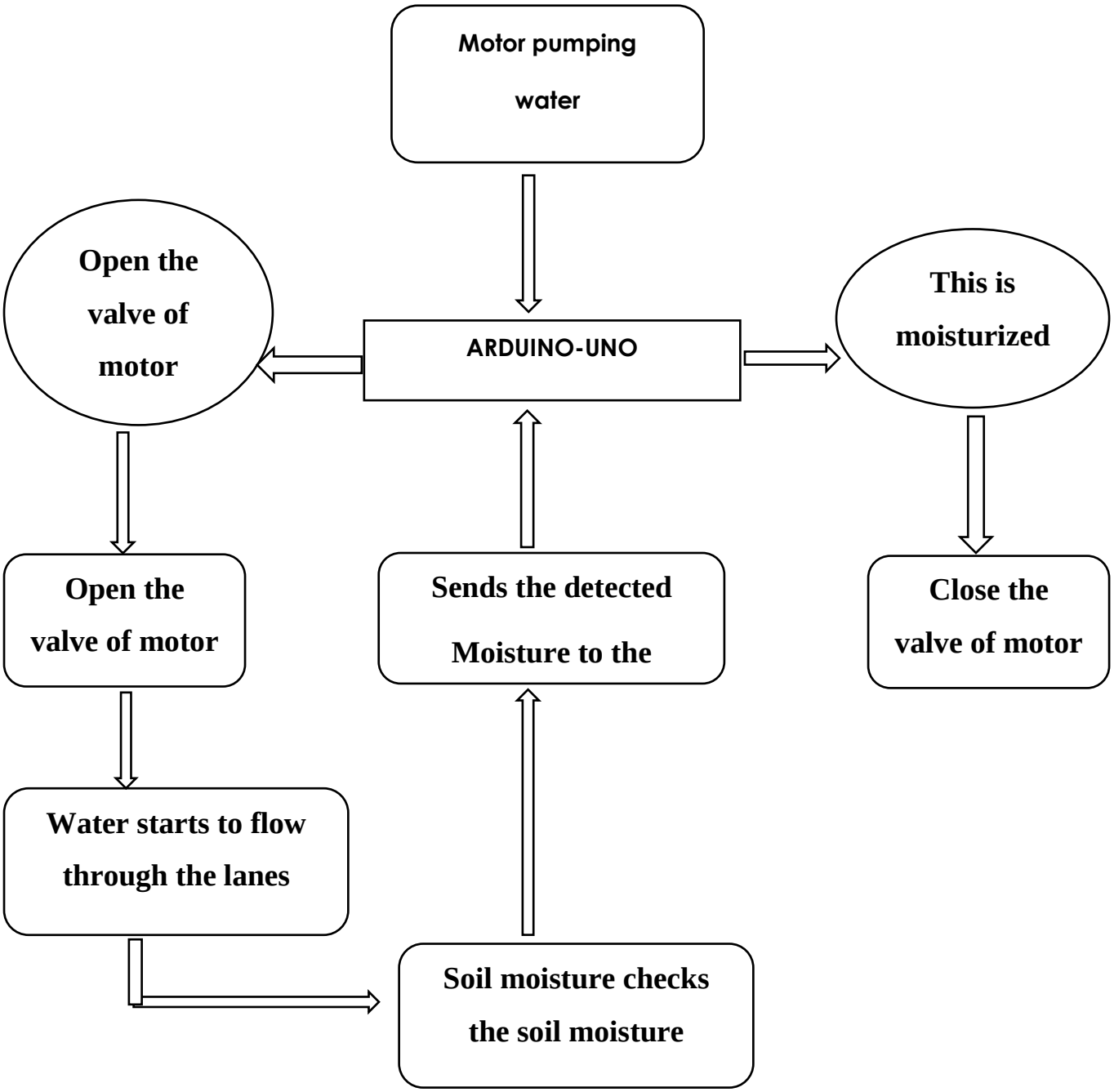


Our aim is to implement the smart drip irrigation system .The smart drip irrigation includes

Arduino, relay, power supply , MH sensor, motor, Soil Moisture sensor ,Water pump,Jumper Wires, Adaptor led ,drip tube, lcd display, water tank.

The smart irrigation controllers includes soil moisture sensor controllers. Instead of using weather data, soil moisture sensor controllers utilize a soil moisture sensor placed below ground in the root zone of cultivating land to determine water need. It is used to detect whether the soil is wet or dry according to the moisture nature it will allows the water through drip line pipes . In lcd display it shows the display of the moisture is present in it or not. Jumper wires are used to give connections to the equipment. From the water tank the water is flown with a particular pressure from drip pipes to the field. To all the drip pipes it contains a particular diameter holes so that the water will be flown uniformly into the fields.

4.4 : FLOWCHART:



5 WORKING PRINCIPLE

The smart irrigation controllers includes soil moisture sensor controllers soil moisture controllers,Arduino,MH sensor, Relay,Drip Tube, Water storage tank, Jumper wires,adaptor,resistor,led,lcd display.

- Instead of using weather data, soil moisture sensor controllers utilize a soil moisture sensor placed below ground in the root zone of cultivating land to determine water need. It is used to detect whether the soil is wet or dry according to the moisture nature it will allows the water through drip line pipes .
- In lcd display it shows the display of the moisture is present in it or not.
- Jumper wires are used to give connections to the equipment.
- From the water tank the water is flown with a particular pressure from drip pipes to the field. To all the drip pipes it contains a particular diameter holes so that the water will be flown uniformly into the fields.
- . Higher currents and high voltages in the system is controlled from the relay.
- Adaptor is to connect from Arduino to the system.
- For the flow of current resistor is current. The pressure is controlled through the pressure pumps.
- Finally the water with particular pressure is flown into the fields..

6.RESULTS AND DISCUSSION

This Proposed system can help many communities and its citizens to keep their surroundings garbage free. Reduction of Illegal dumping and littering activities can be done by this proposed system. In this paper we have provided a solution for smart drip irrigation system .Smart drip irrigation reduces the manual work. And it will reduces the 70./. of the waste wastage. So it will greatly saving water and energy. The aim of the project is to develop the awareness for drip or any other irrigation system to develop the agriculture. y.Analyzing the weather condition motor will automatically maintain water supply making it possible to maintain greenery without human intervention.

ADVANTAGES:

- smart irrigation system is that precision watering in smart irrigation also deals with efficiencies in the delivery of the water.

Smart irrigation system advantages

There are some advantages for this system as bellow:

Prevents Disease and Weeds

Specialized drip irrigation systems direct water specifically to each plant's root ball, rather than sprinkling the entire garden like a typical rainstorm. As a result, surrounding weed seeds cannot germinate, so you'll have less weeding to do. Water at the roots also prevents leaf diseases caused by standing droplets on the foliage. Because the water does not strike the leaves or flowers, blight diseases have no chance of proliferating.

Conserves Water and Time

Hand watering with a hose or watering can takes substantial time and early morning and evening watering rituals take away from family and work. Both drip and sprinkler irrigation systems have timers that can be present for daily or weekly watering so you do not need to monitor the watering because the timer shuts the water off when it has finished. Your water bill should be lower if the irrigation system is effective.

Preserves Soil Structure and Nutrients

Watering with a wide open garden hose may allow too much water to seep into the soil. As a result, nutrients leach out with the water runoff, leaving the plants with fewer nutrients available. The soil may also become compacted when you water with a hose. Plants may show signs of withering or root disease with suffocating, compacted soil. Using either drip or sprinkler irrigation produces smaller droplets, helping to preserve nutrients and reducing soil compaction.

- **This system will be installed under the ground**

Since this system will be installed under the ground so there are no unsightly hoses stretched across the land. Sprinkler heads up in case of water need and then set beck when irrigating is done. Drip irrigation system even is hidden from the view.

- **It is a drip type**

Smart irrigation system works as a drip system. It has a soil moisture sensor and is a good replacement for traditional watering methods. It is the best solution to reduce water waste.

- Easy to access
- Monitoring fields automatically
- High yielding

DISADVANTAGES:

Smart irrigation system disadvantages:

- smart watering system is a bit expensive. Depending on the size of your property, you will need more systems. Of course saving on water bills will lead to less cost.
- If you want to use this system for lawn watering, it's better to fix it under the ground before planting. Because some parts of the lawn will be harm because of holing.
- Cost
- Reliability
- Increased channel maintenance

7.FUTURE SCOPE:

systemic innovations rather than innovations in the way drip irrigation is done will be the most realizable innovations and the most impactful:

- Innovation in types of crops
- Mobile (for marketplace prices)
- Crop Insurance (for bad weather/natural disaster--called micro-insurance)
- Better fertilizer and/or better use of fertilizer
- Better use of self-help groups

7.1 REFERENCE

- [https://create.arduino.cc/projecthub/electronicprojects/smart-irrigation-system-using-arduino-uno-afcb31
- https://en.wikipedia.org/wiki/Irrigation
- https://www.elprocus.com/microcontroller-based-automatic-irrigation-system/
- https://wiki.eprolabs.com/index.php?title=Moisture_Sensor
- https://www.electronicwings.com/sensors-modules/bluetooth-module-hc-05-

7.2 SOURCE CODE :

```
#include <LiquidCrystal.h>

#include <stdio.h>

#include <Wire.h>

//LiquidCrystal lcd(6, 7, 5, 4, 3, 2);

//rs,en,d4,d5,d6,d7

LiquidCrystal lcd(13, 12, 11, 10, 9, 8);

 unsigned char rcv,count,gchr,gchr1,robos='s';

 //char pastnumber[11]="";

String inputString = "";         // a string to hold incoming data

boolean stringComplete = false;  // whether the string is complete
```

```
int sti=0;
int mos    = 3;
int relay  = 2;
int buzzer = 4;
int val1 = 0,val2 = 0;
unsigned char rfidst='x';
unsigned char sts1=0,sts2=0,sts3=0;
unsigned int pr1=0,pr2=0,pr3=0,total=0;
void okcheck()
{
  unsigned char rcr;
  do{
      rcr = Serial.read();
    }while(rcr != 'K');
}
void beep()
{
  digitalWrite(buzzer, LOW);delay(2000);digitalWrite(buzzer, HIGH);
}
void setup()
{
  // initialize serial:
  Serial.begin(9600);serialEvent();
  mySerial.begin(9600);
  pinMode(mos, INPUT);
```

```
  pinMode(relay, OUTPUT);
  pinMode(buzzer, OUTPUT);
  digitalWrite(buzzer, HIGH);
  digitalWrite(relay, LOW);
  lcd.begin(16, 2);
  lcd.print(" Welcome ");
  delay(1500);
    delay(1000);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Mos:");  //4,0
  lcd.setCursor(0, 1);
  lcd.print("Motor:");//6,1
}
//26009F6269B2
//26009F646FB2
//26009F52769D
void loop()
{
  if(digitalRead(mos) == LOW)
    {
      lcd.setCursor(4,0);lcd.print("Wet ");
      lcd.setCursor(6,1);lcd.print("OFF  ");
      digitalWrite(relay, LOW);
     while(digitalRead(mos) == LOW);
```

```
    }
  if(digitalRead(mos) == HIGH)
    {
      lcd.setCursor(4,0);lcd.print("Dry ");
      lcd.setCursor(6,1);lcd.print("ON  ");
      digitalWrite(relay, HIGH);
     while(digitalRead(mos) == HIGH);
    }
  delay(100);
}
void RecieveData()
{
if(Serial.available() > 0)
  {
   data_temp = Serial.read();
   RFID_data[read_count] = data_temp;
   read_count++;
  }
}
int readSerial(char result[])
{
  int i = 0;
  while (1)
  {
    while (Serial.available() > 0)
```

```
    {
   char inChar = Serial.read();
    if (inChar == '\n')
         {
   result[i] = '\0';
  Serial.flush();
   return 0;
         }
       if (inChar != '\r')
         {
          result[i] = inChar;
          i++;
         }
    }
  }
}
void converts(unsigned int value)
{
  unsigned int a,b,c,d,e,f,g,h;
      a=value/10000;
```

```
    b=value%10000;
    c=b/1000;
    d=b%1000;
    e=d/100;
    f=d%100;
    g=f/10;
    h=f%10;
    a=a|0x30;
    c=c|0x30;
    e=e|0x30;
    g=g|0x30;
    h=h|0x30;
  Serial.write(a);
  Serial.write(c);
  Serial.write(e);
  Serial.write(g);
  Serial.write(h);
}
void convertl(unsigned int value)
```

```
{
  unsigned int a,b,c,d,e,f,g,h;
     a=value/10000;
     b=value%10000;
     c=b/1000;
     d=b%1000;
     e=d/100;
     f=d%100;
     g=f/10;
     h=f%10;
     a=a|0x30;
     c=c|0x30;
     e=e|0x30;
     g=g|0x30;
     h=h|0x30;
   //lcd.write(a);
   lcd.write(c);
   lcd.write(e);
   lcd.write(g);
```

```
   lcd.write(h);

}

void serialEvent()

{

  while (Serial.available())

        {

         char inChar = (char)Serial.read();

              inputString += inChar;

              sti++;

          if(sti == 12)

            {sti=0;

              stringComplete = true;

            }

        }

}
```