

CENTRALIZE COMPUTER CONTROL NUTRIENT FEEDER SYSTEM

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Abstract— Today the Indian farming product are less because the no monsoon and no management in water. The farmer can not purchase or take proper fertilizer so the Indian farming product are less. When the farmer are take care of product but farmer is give more or less fertilizer to crop so it is effect to crop. So we are make project. In our project to manage the water and manage the fertilizer i.e solution. In project to control the fertilizer and water in computer base, So the farmer warring about the crop and water. Our project is computer base so the farmer is control the fertilizer in anywhere in world so the project is web base. So the farmer is control the farm anywhere and increase the quality and quantity of product or crop or vegetable.

Keywords: Nutrients, fertilizer, solenoid valves, venturimeter.

I. INTRODUCTION

Today the Indian farming product are less because the no monsoon and no management in water. The farmer can not purchase or take proper fertilizer so the Indian farming product are less. When the farmer are take care of product but farmer is give more or less fertilizer to crop so it is effect to crop. So we are make project. So our project to manage the fertilizer and manage the water. When farmer is give the fertilizer to crop it is over flow or less to particular farm. So our project is manage the fertilizer the fertilizer is manage by the solenoid valves. The valves is open

automatically because is computer base project. The farmer is set the particular time according to time the solenoid valves is open. And according to solution or fertilizer are drop to mixing tank. The mixing tank is mixing the solution and through to the venturimeter. The venturimeter is absorb the solution and through to the irrigation. Our project is computer base so the farmer is control the farm anywhere. In project is avoid the miss used of fertilizer. The delivery of fertilizer using irrigation water provides sufficient nutrients for crop growth. It also senses the water level of the tank and helps to avoid over flowing.

II. MATH

In project some mathematical formula is used

$$\Delta C = a\Delta(EC) \text{-----}(1)$$

where a is a factor depending on the composition of the particular solution. nutrient solution preparation, addition of stock solutions increases the electrical conductivity by;

$$\Delta EC = ECd - ECw \text{-----}(2)$$

ECd is nothing but the dilution of the particular solution. and the ECw is volume of the water means how many water is required to particular crop or farm.

$$\Delta C = Ai \text{-----}(3)$$

The Ai is nothing but the ratio of the stock solution by adding equations (2) and (3) in equation (1);

$$ECd = Ai/a + ECw \text{-----}(4)$$

The a is nothing but the composition of particular solution. the A_i is nothing but the ratio of the stock solution and the EC_w is volume of the water means how many water is required to particular crop. it is calculated by EC_d . the EC_d is depend upon particular time.

$$T = Vn / f \text{-----}(5)$$

where f is the injection rate of the stock solution in l/s means how many water are drop in per second. the Vn is nothing but the volume of the water.

III. UNITS

In project the meq/l unit are used. The meq/l means miliequivalent solution per liter

IV. SYSTEM ARCHITECTURE

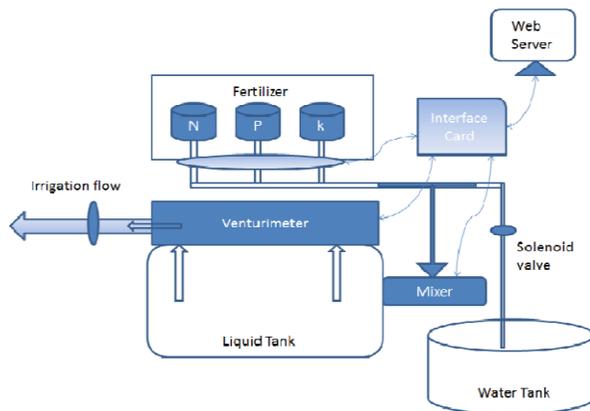


Figure 1: System Block Diagram

Key Modules:

1. Server system
2. Interface card
3. NPK control
4. Solenoid Valves
5. Other hardware part

System server:

Fertigation and irrigation is important part of any crop. So its management is challengeable to the farmer. Now days this system is access on that particular plot. Using that system we can access any location. It is very important to increase productivity. Using web base system farmer perform that activity with that time period. So accuracy is maintained.

Interface Card: Interface card is use to interfacing between hardware and software. It is important to control that hardware through software command. It consist of following elements:

Resistor: Resistor is type of material which oppose the flow of current. The material like plastic, glass, wood is a material is a bad conductor or insulator which oppose the flow of current. It is non-polar electronic component which have non-positive and negative side. There are two types of resistor linear and nonlinear resistor. Fixed type and variable type include in linear type, the fixed type resistor have constant value and variable type has varying value with respect of arrangement of system.

Transistor: Transistor is Transfer and Resistor. Transistor is operated both in forward and reverse biasing. The conduction in a bipolar junction transistor takes place due to both electrons and holes. The semiconductor device like a diode cannot amplify a signal, therefore its application area is limited. A next logical step in the development of semiconductor devices after diode is a bipolar junction transistor.

Diode: A diode means a device with two elements namely anode and cathode. since a p-n junction itself is a two element device it becomes the most basic electronic device that is the diode. It is a polar component i.e. both side indicate positive and negative side. A p-type and n-type semiconductor joined together with the help of special fabrication technique to form a p-n junction. Diode operate both in the forward and reverse biasing with respect to the flow of current.

Relay: Relay is used as switching purpose for solenoid valves. When circuit operate in forward biasing switching is done at same time and when operate in reverse biasing switching is not done at same time. 25-pin LPT port: For provide supply to the circuit we use 25-pin LPT port as supply provider.

Connection Wires: For connecting different electronic component we use connection wires.

NPK control:

NPK is nothing but the Nitrogen, phosphorous and potassium respectively. It is important to overall plant health. This is overall control by the specific coding.

Solenoid valve:

These types of valves are control by the some electrical signal. This is overall control by the specific coding and the hardware part which is including the some register, diode, transistor and relay.

Other Hardware part:

The hardware part like mixer, venturimeter and tank is use for the actual implementation of the system to any part. It is control by the coding.

v. CIRCUIT DETAILS

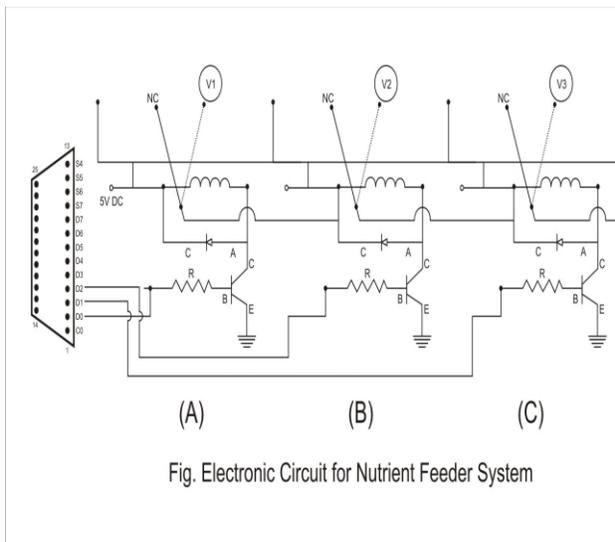


Fig. Electronic Circuit for Nutrient Feeder System

In circuit diagram the Resistor, Transistor, Diode, Relay this electronic component are used. In circuit diagram the 25 pin LPT port are used. The D0-D7 pin are used to trigger the circuit i.e V1, V2, V3 etc. The Resistor are connect to the transistor in Base. the E is EMITTER that connect to ground and COLLECTOR is connect to Diode. the Diode is connect to Relay. When trigger is give to Resistor i.e 5v that time the Relay is active when relay is active the Solenoid valve is open. this is working of circuit V1. It is similler to the V2, V3.

CONCLUSION

We conclude results prove that the system of centralize computer control nutrient feeder system is best System to increase the quantity and quality of any time of product. Using that system we increase the farming position in the world.

APPENDIX

GDP: Gross Domestic Product.

CFC: Computer Fertigation Controller.

Macro/Micro Fertigation: All Kind of Concentrate solution liquids. [Nitrogen, Phosphorus, potassium etc.]

Electrical Conductivity (EC): the design provides control of fertilizer mixing process using precise proportional pump injector flow rate with control time based injection at predecided electrical conductivity (EC) value followed by plant nutrient uptake rate on time-based irrigation system.

Substrates: This is mixture of liquids.

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