Journal of Contemporary Issues in Business and Government Vol. 28, No. 04, 2022
https://cibgp.com/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.181

SPRINKLER WATERING SYSTEM

[1]G.KARTHIK REDDY, [2]P.MAHESH BABU, [3]K.RAVI KIRAN,[4]IRFAN SHAIK

[1] Asst. Professor, ECE Department, CMR College of Engineering & Technology

[2] Asst. Professor, MECH Department, CMR College of Engineering & Technology

[3] Asst. Professor, ECEDepartment,CMR College of Engineering & Technology

[4]B-TECH,Dept.of EEE, CMR COLLEGE OF ENGINEERING & TECHNOLOGY

Abstract

Irrigation is the basic need for the growth of the crops. The crops on one side are very fragile in nature, which can be easily taken care by providing exactly right amount of water for their growth. If the water is applied in abundant quantity then it will effect directly to the crop yield. And on the other side the weather of our country is not supporting in providing right amount of water to the crops as and when required due to the unpredictable nature of the climate change. In order to overcome the above situation we design an system named **"SPRINKLER WATERING SYSTEM"** which is useful for farming. By this we can reduce the watering cost to the farmers, maintenance cost. We can easily water the field each and every end. There will be some fields at higher areas at which it is difficult to water with the pipeline system. In that areas this Sprinkler Watering System is the best proposed solution to water the field. By this we can change the irrigation acre age (area of land which used for agriculture). Comparative irrigation crops yields, Labour savings, Production costs. Even can be used for spraying peticides.It will definitely reduce the capital cost, maintenance cost with better efficiency.The sprinkler watering system is better investment in long run as compared to surface methods. As sprinkler irrigation proved to be better in uniform distribution of water, uniform application of fertilizers and water saving especially in water scarcity. With this it is easy to irrigate the field at each and every end by rotating the sprinkler itself.

1. INTRODUCTION

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. Sprinkler irrigation is suitable for most row, field and tree crops and water can be sprayed over or under the crop canopy. However, large sprinklers are not recommended for irrigation of delicate

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crops such as lettuce because the large water drops produced by the sprinklers may damage the crop. Sprinkler irrigation is adaptable to any farmable slope, whether uniform or undulating. The lateral pipes supplying water to the sprinklers should always be laid out along the land contour whenever possible. This will minimize the pressure changes at the sprinklers and provide a uniform irrigation. An **irrigation sprinkler** is a device used to irrigate (water) agricultural crops, lawns, landscapes, golf courses, and other areas. They are also used for cooling and for the control of airborne dust Sprinkler irrigation is the method of applying water in a controlled manner in way similar to rainfall. The water is distributed through a network that may consist of pumps, valves, pipes, and sprinklers. Irrigation sprinklers can be used for residential, industrial, and agricultural usage. It is useful on uneven land where sufficient water is not available as well as on sandy soil. The perpendicular pipes, having rotating nozzles on top, are joined to the main pipeline at regular intervals. When water is pressurized through the main pipe it escapes from the rotating nozzles. It gets sprinkled on the crop. In sprinkler or overhead irrigation, water is piped to one more central locations within the field and distributed by overhead high pressure sprinklers or guns.

2. RELATED WORK

Automatic irrigation systems are convenient, especially for those who travel. The main disadvantage is that, initially, they cost more than the alternative. But, if installed and programmed properly, a lawn irrigation system can save you money in the long term and help you conserve water. If your lawn or flower die they need to be replaced, and that can be expensive; if automation can save you this expense, it will be worth the investment. The pros of having sprinklers installed can go beyond saving money on replacing flowers. Watering with a hose or with an oscillator wastes water. Neither method targets plant roots with any significant degree of precision. Automatic irrigation systems can be programmed to discharge more precise amounts of water in a targeted area, which promotes water conservation. Whether you use spray head sprinklers or rotor head sprinklers for a particular area in your lawn irrigation does matter, because of the difference in application rates. Above all, be consistent in the types of sprinklers you use (that is, spray head or

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rotor head) within specific areas. Mixing head-types within the same area leads to over irrigation of some parts of your lawn just to get adequate amounts of irrigation to other parts. The goal of lawn irrigation is to target water distribution as precisely as the system allows. Instead of watering a lawn, your concern is watering a vegetable garden, or some other type of planting bed, your needs will be best served by installing a drip irrigation system. Such a system is more efficient in these cases than other watering methods because it allows you to target the root zones of the plants themselves, rather than arbitrarily spraying water around. Sure, you can stand there with a garden hose and water each individual plant, but that is not a very efficient use of your time.

3. IMPLEMENTATION

For Watering the fields, there are wide variety of devices available in the market. But the existing devices have few backdrops like high capital cost, high maintenance cost & they cannot give better efficiency, so our aim is to build a device which can overcome all the problems, and can work efficiently. The main objective of our project is to reduce the capital cost to the farmer and to build a device which can overcome the problems in the existing models and the device should work with lowmaintenance cost, should give better and efficient output.

Components Required

1. AC MOTOR
2. IRON BARS (circular rod & stand)
3. SPRINKLER
4. WHEELS
5. WATER PIPE
6. WATER MOTOR
7. PULLEY
8. ADJUSTABLE ROD

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. Sprinkler irrigation is suited for most row, field and tree crops and water can be sprayed over or under the crop canopy. However, large sprinklers are not recommended for irrigation of delicate crops such as lettuce because the large water drops produced by the sprinklers may damage the crop. Sprinklers are best suited to sandy soils with high infiltration

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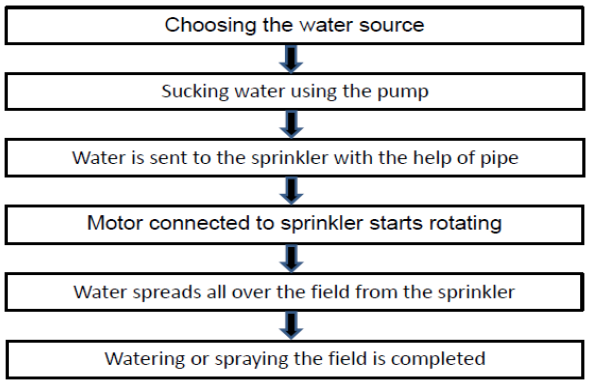
rates although they are adaptable to most soils. The average application rate from the sprinklers is always chosen to be less than the basic infiltration rate of the soil so that surface ponding and runoff can be avoided. Sprinklers are not suitable for soils which easily form a crust. If sprinkler irrigation is the only method available, then light fine sprays should be used. The larger sprinklers producing larger water droplets are to be avoided.

A good clean supply of water, free of suspended sediments, is required to avoid problems of sprinkler nozzle blockage and spoiling the crop by coating it with sediment

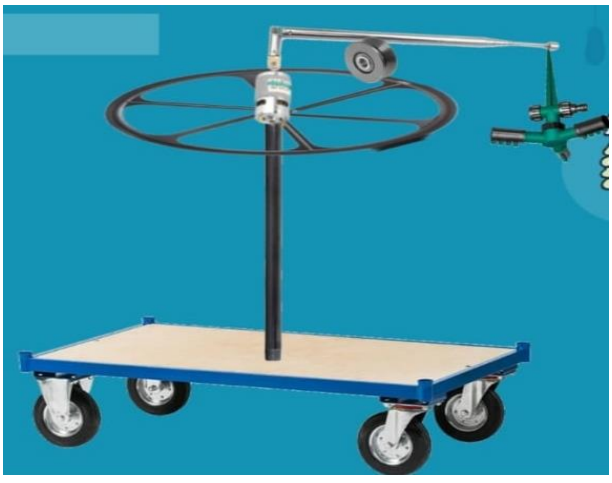


Block Diagram

4. EXPERIMENTAL RESULTS

Sprinkler irrigation System is a system of watering your farm which works like normal rainfall. Water flow passes around through a system of pipes mainly by pumping. It is then separated through sprinklers so that it splits up into tiny water drops that fall to the ground. Spray heads at the terminals distribute the water over the entire soil surface. Sprinklers are suitable for application and usage in all types of gardens, landscaping, fields as they provide appropriate coverage for small to large blocks of land. The Sprinklers are adaptable and suitable for use on nearly all types of irrigable soils as they are available in a wide range of discharge capacities. However, Sprinkler Systems can quickly clog due to sediments or rains, and large Systems incur high capital investment costs. Before installing any sprinkler watering system in your crop or garden, you should first understand the benefits that you will gain out of it. You can create an optimum solution by going with what suits your space and what you want to achieve. Here are some of the significant advantages of installing this system on your farm.

Prototype



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5. CONCLUSION

Considerable progress has been made in the development of irrigation scheduling methods and there is a gradual increase in the adoption of irrigation scheduling tools by farmers. The technology level of the farm will determine the choice of the irrigation scheduling method. Industry farms and farms with high value cash crops are more likely to adopt and invest in sophisticated scheduling methods. The support and collaboration of the expert irrigation adviser will determine the rate of success in the adoption of the irrigation scheduling technology. Specific recommendations concerning the use and further development of the various irrigation scheduling techniques were made. The importance of the on-farm irrigation system in irrigation scheduling is highlighted in this theme as it determines the critical question of how and how much water is applied to the crop and concerns two related disciplines: irrigation engineering and agronomy. The limited number of researches devoted to this theme may possibly be an indication of the underestimation of its relevance to irrigation scheduling and the important role it plays in reducing water losses and improving yield. The thematic paper elaborates extensively on the concepts of the field irrigation methods and their relevance to irrigation scheduling. The factors determining the performance of surface irrigation, sprinkler and trickle irrigation, are developed in terms of the performance indicators and the environmental and economic aspects.

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