AUTOMATIC RAIN PROTECTION FOR CROPS

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Abstract

Agriculture is a backbone of our country. About 70% of our country's revenue comes from agriculture. But during heavy rain falls, the farmers face lot of problems because there cultivated crops get washed off or destroyed. So, in order to avoid this problem this project is designed which helps if protecting the crops from heavy rainfall and saving. In this system an automatic roof is inculcated which works by taking the signals from the rain sensors and covers the whole crop to protect it from heavy rains.Whenever there is rainfall the rain sensor gets activated. The rainfall is sensed by the rain sensor. Whenever there is rain, the rain sensor is "ON" and when the water falls on beyond the normal level then rain sensor is "ON". If both the sensors are "ON" then this information is sent to the controller. then the controller indicates the DC motor to run which opens the roof automatically to close the field using a polythene sheet. If there is any problem in opening of the roof, then this is performed manually by the farmers.

1. INTRODUCTION

The aim of the project is to design an automotive rain operated roof to protect the field crops from rain.As human beings we cannot control the natural phenomenon such as rain, humidity, high temperature, etc. Some of the measures are taken against this environmental hazard but they are performed manually. In the Current system there is no protection for crops against natural disasters such as Floods, Rains and as well as from over Sun heat. Which are in turn Reduces the plant growth in turn reduces yield. In this project we are proposing the system which prevents the spoilage of crops due to heavy rains. This is achieved with embedded system design using sensors. Here comes the need of automation. Automation greatly decreases the need for human sensory and mental requirements as well. An automation system consisting of a connection between hardware and software has freed the individuals from their day-to-day chores. In this project we try to establish

new intelligent system which helps to protect the crops against environmental impact like rain.The main controlling part of the project is Arduino controller. Rain sensor, DC motors along with motor driver are interfaced to the Arduino. When the Rain falls on sensor it will detect and process this signal to the Arduino then Arduino cover the roof on crops with the help of dc motors.

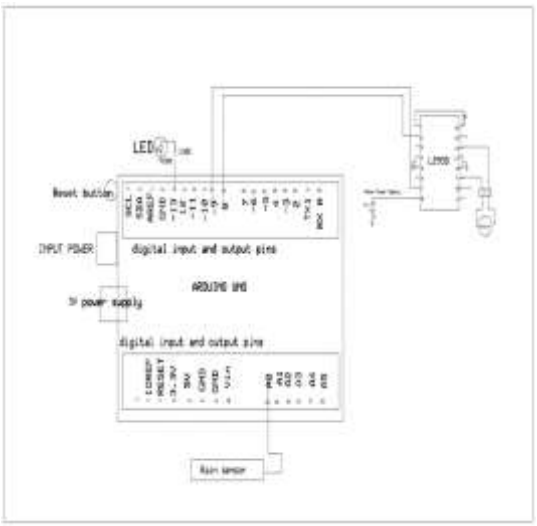
2. RELATED WORK

Survey played a very vital role in this project, we analyzed the existing products for protection of crops during rain, there were many demerits which we noticed during the survey, some of them are the existing products are to be operated manually, and if in case there's no one in the fields to operate the crops would got wet and the system would be of no use, So, we chose to do automatic system which doesn't require any manual operation, which has rain sensors which get activated during anytime of the day or night. Farmers are backbone of India and they suffer many hurdles while growing crops. In post-harvesting steps, drying crops plays a major role in grain production. About 70% of the threshed grains are sun-dried in many regions. During sudden rains farmers face difficulty to cover the threshed grains and some of them die because of thunderstorm/lighting with these older methods. The unseasonal rainfall impacts the horticultural and agricultural crops at different stages such as flowering, fruit ripening, pre and post harvesting. Quality losses occurs due to infestation resulting in increasing moisture, free fatty acid levels, decrease in pH and protein content, that quality losses affect the economic value of the food grains by giving low selling prices to farmers. The losses in post-harvest are at 10% of the total Share.

3. IMPLEMENTATION

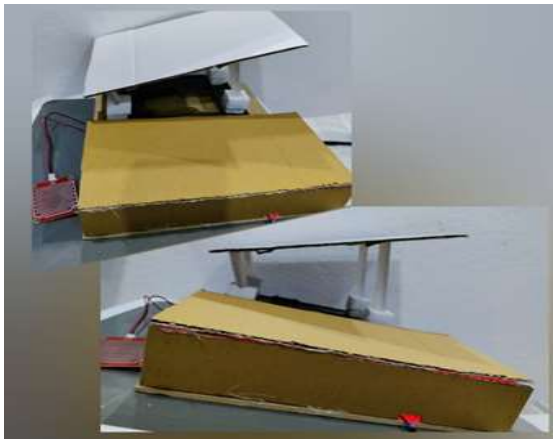
The model/design should be feasible cost.It should be operated automatic without human involvement.The sensor used here should detect fast.The design should be used for multipurpose.It should be of easy maintenance.The main object of this design is to help the farmers from sudden rain.It should open the cover in a few minutes to cover entire space.Automatic rain shed works using Arduino uno, rain sensor module and dc motors.It used for protection of harvested crops and it used for automatic protection cover When rain falls on the sensing pad it opens the cover with series of exposed copper traces together act as variable resistor and its resistance varies according to the amount of water or its surface.When rain sensor senses the water, it sends message to the Arduino that rain is coming Arduino immediately makes the motor to

run & opens the cover.Automatic rain shed is used to protect the crop field from rains. When the water droplet falls on the rain sensor the shed opens whereas when the rain stops falling and the rain shed closes. It is very helpful for farmers because many of the farmers will lose their fields due to rains.Though the reduction of rainfall activity during the entire summer monsoon season leads to reduction in crop yields, the occurrence of prolonged rainfall breaks also causes adverse effect on the crop growth resulting in reduced crop yields. Agriculture is the backbone of India's economy. As the adverse rainfall damages the crop which causes effect on agriculture. A system is to be created which is like an automatic rain shed for protecting crops.The aim of this project is to create an automatic rain shed for crops. So, we have created a system which could sense the rain droplets and which can be helpful to cover the crop from rains. An algorithm is implemented to solve the problem of rain control.The aim of the project is to design an automotive rain operated roof to protect the field crops from rain.As human beings we cannot control the natural phenomenon such as rain, humidity, high temperature, etc. Some of the measures are taken against this environmental hazard but they are performed manually.



4. EXPERIMENTAL RESULTS

The conceptual design of our project is simple. As mentioned in the methodology, it completely works on Arduino & rain sensor. Arduino and rain sensor plays an important role. We also have dc motor which are controlled by Arduino which it rotates forward and backward based on the Arduino instructions. Automatic rain shed is used to protect the crop field from rains. When the water droplet falls on the rain sensor the shed opens whereas when the rain stops falling and the rain shed closes.



5. CONCLUSION

So, this project has concluded with creation of automatic rain shed which protects crops from rains. This system has been created with less human intervention.

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