Maize dryer by using Arduino

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Abstract. Wet seeds are not suitable to make the maize flour directly, so farmers need to dry the seed under sunlight for few days. Nowadays farmers are facing many problems to dry the seeds in this weather conditions. The main aim of our project is to dry the maize seeds within in the less time. In our project, initially a bunch of maize grains are collected and the weight of grains is measured using load cell and that value display in LCD. Now the signals are sent to Arduino which is used as a controller. We need to dry the grains to remove the moisture content in the grains using drying mechanism (dryer). After drying the grains are collected into the container.

1. Introduction
Corn is a cereal grain of food crops. This food is used for both human beings and animals. The corn contains moisture about 25%-30%, this moisture percentage is a friendly atmosphere. For the growth of insects and fungus this causes damage in crops. But we need to store the crop for safe year, so to solve this problem expose to air of the corn. Due to expose the corn to air the moisture percentage must be reduced to about 11%-12%.

Once the corn crop is mature it is separated from the field and to store the crop we manage the temperature to reduce the moisture content .if the moisture percentage is not reduced then the Former loses the market value.

The formers maintain the corn crop quality after harvesting them drying the crop in a few degrees of ambient temperature. In this paper the dryers are used to reduce moisture level and increase the market value.

2. Proposed System
The main aim of our project is to dry the maize grains within in the less time. Initially a bunch of maize grains are collected and the weight of the grains is measured using weight sensor (load cell). Now the signals are sent to the Arduino which is used as a controller [8, 9, and 10].

We need to dry the grains to remove the moisture content in the grains using any drying mechanism (heat blower, hair dryer or hand dryer). Based on the weight of the seeds we need to adjust the temperature of the dryer. After grains are dried we need to collect the grains in the container.

3. Block Diagram Of Implemented Module
The main aim of the proposed system is to design cost effective, great flexibility by connecting all modules to system. by using this method the formers can easily drying their grains then they can reach the market values.

![Block diagram of the proposed system](image)

**Figure 1: The proposed system block diagram**

Block diagram consist of Load cell, Arduino UNO, Relay, Dryer, LCD.
- Load cell is used to measure the weight of the seeds.
- Arduino uno is used as a micro controller.
- LCD is used to display the values.
- Relay is used as switch.
- Dryer is used to dry the seeds

**4. Working of flowchart**

Initially load cell is used to measure the weight of the grains. There will be a certain threshold value for dry grains. If the weight of grains does not possess the exact threshold weight then it shows weight is greater than the required value. Here weight acts as a decision box. If the weight is greater than required threshold value it moves relay, here relay makes one of the drying mechanism. Grains are dried up to certain time. After the drying mechanism the seeds are collected in container. If the weight of grains is of same or less than threshold value, the decision box indicates no. Then grains directly collected into container.
5. Experimental results
When grains are placed on the load cell, the load cell measures the weight of the seeds and value is displayed on the LCD. Once the weight is measured, the relay will turn on the dryer. After the dryer gets off, the grains are collected in the container.

6. Conclusion
The corn crop moisture is high for storage, so that why the corn is dried as early as possible. But the drying process cost is high due to labor, electricity, and fuel. So to minimize the drying cost, we developed this dryer. After drying, the grains are collected in the container. But the grain samples are not tested with hands. This makes the grains to add moisture and also we stop the grains to be exposed to air. Then the moisture content in the grains should be constant. After this process, the grains are stored in the godowns.

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