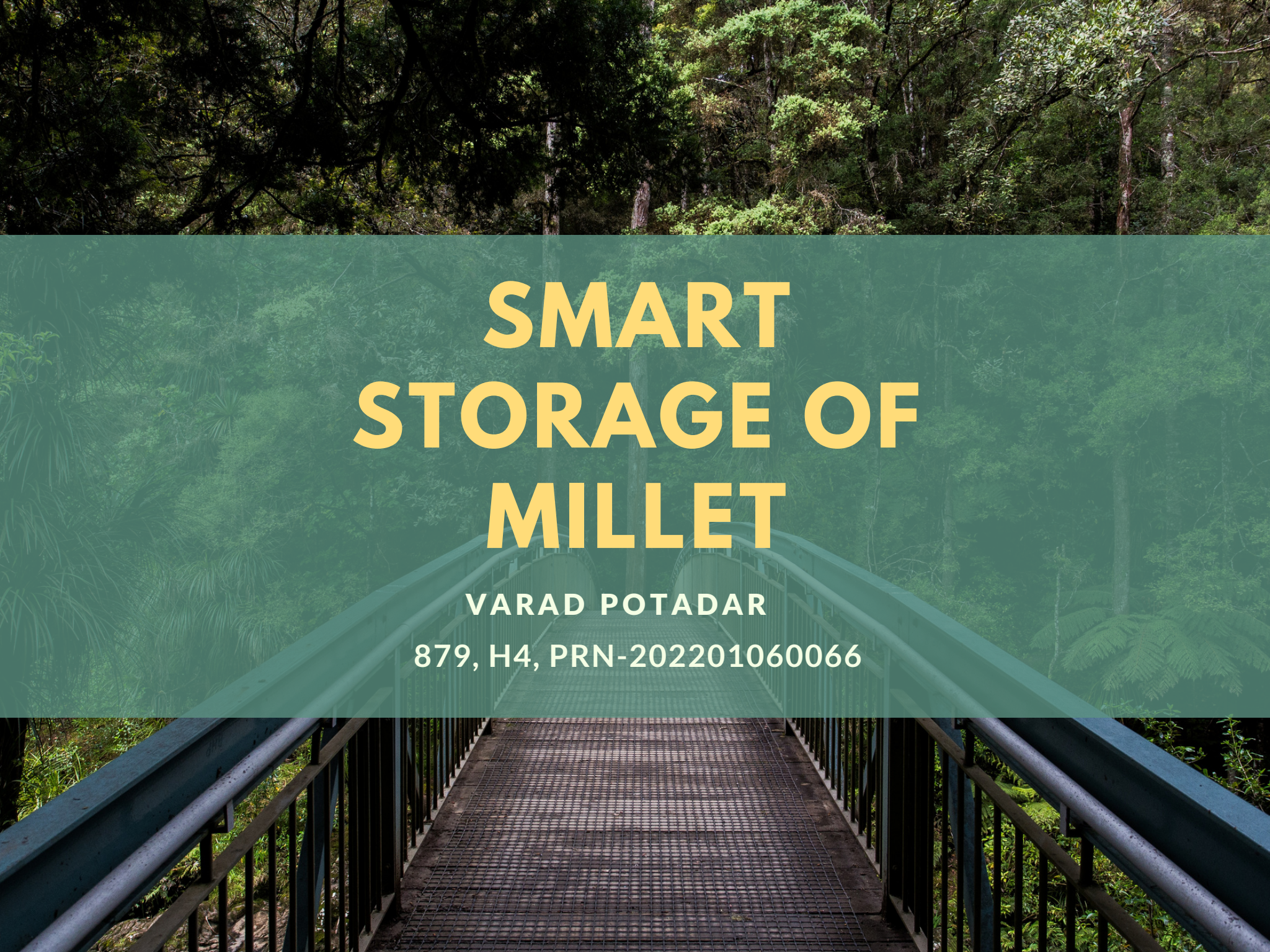

SMART STORAGE OF MILLET

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PROBLEM

How technology can be used for storage of food grains of Millet?

INTRODUCTION

In the realm of food security and sustainable agriculture, the storage of food grains plays a vital role. Millets, being a staple crop in many regions, require efficient storage methods to maintain their quality and prevent spoilage. Technology has emerged as a powerful tool in addressing these challenges and optimizing the storage of millet grains. With advancements in various technologies, such as intelligent sensors, data analytics, and climate-controlled environments, it is now possible to create innovative solutions that enhance the shelf life and nutritional value of millet grains.

NEED FOR SOLUTION

Technology plays a crucial role in the storage of food grains, including millet, and its importance cannot be overstated. Traditional methods of millet storage have often been plagued by challenges such as spoilage, pest infestation, and quality degradation, leading to significant post-harvest losses. However, the integration of technology into millet storage brings about numerous benefits and addresses these challenges effectively.

SOLUTON

We are integrating the Internet of Things with smart sensors to improve the efficiency of food preservation in the warehouse. (Ms. Manisha gaur, 2016) Environmental factors like temperature, moisture content, humidity, and light influence the storage of food grains. Also, factors like time and purpose of storage; type of storage; preventive insecticide treatments, and storage practices account for the food storage losses. During storage, both qualitative and quantitative losses occur due to insect pests, mold growth, rodents, rats, fungi, micro-organisms, and subsequent production of mycotoxins in storage

MATERIALS

1) DHT11 Temperature And Humidity Sensor: This DHT11 Temperature and humidity sensor give out digital signal output and are a peripheral integrated with a high-performance 8-bit microcontroller. It also exhibits high reliability and long-term stability. It showcases excellent quality, fast response, anti-interference ability, and high performance It is extremely accurate with high calibration features

2) Moisture Probe: Moisture is defined as the measure of water content in the material. It uses capacitance to measure dielectric permittivity Dielectric permittivity is the function of water. The probe sends a voltage proportional to the dielectric permittivity and hence the moisture content is measure.

3)Particle Photon IOT Hardware Particle photon lol hardware is a complete solution to development with powered ARM Cortex M3 microcontroller.

4) DC Boost Converter. It is the simplest type of switch-mode converter, It takes an input voltage to boost and increase it further.

5)Cortex MD Processor, It is the entry-level 32-bit ARM cortex processor crafted for a broad range of embedded applications

6)Ultrasonic HC-SRO4 Sensor: This sensor is featured with an ultrasonic transmitter and receiver.

7) Relay Switches: These switches are used to control both AC and DC appliances Primarily used in the case of high voltage currents of the AC/DC power supply
8) LCD 16x2 LCD screen is used which is an alphanumeric display that can show up to 32 characters on a single screen.

PROCEDURE

1) Step 1: When the device is ON, the control unit initially enables the entire system.

2) Step 2 After the system is enabled, the SoC initializes the sensors, electromechanical devices, and handshakes with the cloud for a secure connection

3) Step 3. In the whole process, the readings from the sensors are first taken and send to the cloud remote access.

4) Step 4: Additionally, for controlling the ambiance inside the bin, the temperature, humidity, and moisture values are compared with the predefined sets If the ambiance requires the heater to be ON, the SoC turns on the coil heater

POSSIBLE EFFECTIVENESS OF SOLUTION

1. Controlled Atmosphere storage
2. Moist control
3. Pest management
4. Quality monitoring
5. Data-driven approaches

CONCLUSION

THE STORAGE OF MILLET GRAINS IS A CRITICAL ASPECT OF ENSURING FOOD SECURITY, REDUCING POST-HARVEST LOSSES, AND PROMOTING SUSTAINABLE AGRICULTURAL PRACTICES. EMBRACING TECHNOLOGY IN THE STORAGE PROCESS OFFERS NUMEROUS BENEFITS, INCLUDING ENHANCED MONITORING, MODIFIED ATMOSPHERIC STORAGE, SOLAR DRYING, IMPROVED STORAGE STRUCTURES, AND DATA-DRIVEN DECISION-MAKING. BY HARNESSING THESE TECHNOLOGICAL ADVANCEMENTS, WE CAN MITIGATE POST-HARVEST LOSSES, IMPROVE GRAIN QUALITY, AND CONTRIBUTE TO THE LONG-TERM SUSTAINABILITY OF MILLET FARMING, ULTIMATELY FOSTERING FOOD SECURITY AND ECONOMIC PROSPERITY.

THANK YOU!

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