FARM AUTOMATION
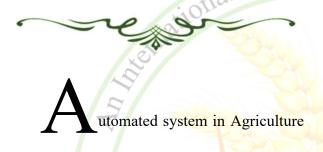
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Automated system in Agriculture is a combination of both software and hardware which is designed and programmed to work automatically without the need of any human operator or worker to provide inputs and instructions for each operation or agricultural activities. Farm Automation or smart farming is a variety of technological interventions and innovations to optimize the food production process and improve the quality by using the computer-controlled techniques. Automated System allow us to monitor the processes in the real time and problem identification. But in case of manual system, it is not possible to coordinate all the operation together. When we use the Automation process in the Farm Practices or the agricultural activities, it is regarded as Farm Automation. Thus, Farm Automation is defined as the utilization of different technological innovations to upgrade and automate the farming practices. As, the traditional farming practices involves large number of workers and time consuming in nature, this farm automation plays a huge role in acquiring more time and resources to redirect their properties. The development and adaptation of various drones and robotics technology have helped farmers to tackle the rigorous nature of their profession with greater ease. Some Examples of Farm Automation device or techniques are given below-

Robotics application in Planting

Planting crops across large area usually takes several hours of hard labour. This task can also be executed with the help of robots and drones that are capable of planting and other application. Drone Seed, for example, is a planting drone that's used to help reforest large spaces that have been affected by forest fires. This drone is capable of locating and targeting the precise areas on the ground that are ideal for seeding. They then use compressed air to shoot the seeds onto the ground without allowing them to scatter because of the wind.

Drones for Irrigation

The irrigation of fruits and vegetables in the field is an important step to ensure the health and wellbeing of the produce across their various cycles. Irrigation requirement for agricultural crop is very high, although irrigation is a technique that's been in practice for several decades now, the technologies related to irrigation have stagnated, due to various reasons This is why drones are being sought after to help reduce the burdens of irrigation for farmers. Drones such as the Agras MG-1 are capable of carrying 10 litres of liquid in a single fill and they can cover over 6,000 square meters

of farmland in just under 10 minutes. Such drones are capable of understanding and adapting to the various specifics of a farm such as altitude, types of plants being grown, and even the weather conditions. When combined with monitoring technology, these drones can identify specific sections of the farm that require greater attention and match these needs with immense ease

Advantages in Farm Automation

1. To meet the growing needs of farmers- The current traditional farming practices will not be able to meet the agricultural need. By using the farm automation and smart agricultural farming technology, it is possible to maximise the potentials of farmlands, minimise the stress on farmers. Over the time, the automation in farming will be able to match the needs of our population.

2. To solve the labour shortage issues- As we know the agricultural practices are labour-intensive in nature. Due to the shortage of labour worldwide, it badly affects the agricultural practices. In most of the areas, agriculture practices are not followed due to the severe shortage of labour. Robots and drones can be used to tackle these issues by the means of automation.

3. To create an Eco-friendly environment- Due to the higher use of chemicals and cutting down the trees in forest, which have a negative impact on our environment. In case of smart farming techniques, the main aim is to maximize the utility of space and improvement of

existing processes to protect the environment.

Challenges of Farm Automation-

The drone technology and robotics application are the new inventions which is being adopted for agriculture. These techniques also involve very high initial investment costs, so most of the farmers are not able to afford such costly technologies.