

Smart Farming in IOT

"Smart farming" is an emerging concept that refers to managing farms using technologies like IoT, robotics, drones and AI to increase the quantity and quality of products while optimizing the human labor required by production.

IoT and Climate

For a successful **smart farming** practice, you must have proper knowledge about the climatic conditions. IoT comes to the rescue in this field too. Advanced sensors are placed inside and outside the fields. And using IoT solutions, you can track real-time weather conditions, like humidity, temperature, rainfall, etc.

The sensors collect data from the surroundings and calculate the weather parameters. Now, utilizing this data, you can decide the farming methodologies.

Thus, it will help to increase your productivity and benefits.

Let us see some use cases

IoT-Based Climate Predictor

The growth of healthy crops is widely determined by the climatic conditions prevailing at a particular place and time. But often, our assumptions about nature can go wrong. So most agricultural research houses make use of IoT-enabled climate monitors. These are nothing but sensors that can alert or inform you about the current and expected weather conditions.

Green IQ

GreenIQ an IoT-based device used for greenhouse monitoring. The device makes use of smart sensors that detect the water and light requirements in the field. The gadget triggers connected water sprinklers and turns on the lights to let the crops get the ideal conditions for their growth.

Field Data Collectors

The soil and its associated conditions are quite essential to boost crop growth. The use of specific sensors placed on the land allows the direct collection of data from the soil. Moisture content, humous amount, kind of creatures present in the soil – all play a vital role.

The device will suggest the type of crop suitable for the soil type. Also, it indicates the modifications needed to make the soil more fertile.

Precision Farming

Precision farming, or precision agriculture, is an umbrella concept for IoT-based approaches that make farming more controlled and accurate. In simple words, plants and cattle get precisely the treatment they need, determined by machines with superhuman accuracy. The biggest difference from the classical approach is that precision farming allows decisions to be made per square meter or even per plant/animal rather than for a field.

By precisely measuring variations within a field, farmers can boost the

effectiveness of pesticides and fertilizers, or use them selectively

Crop management

One more type of IoT product in agriculture and another element of precision farming are crop management devices. Just like weather stations, they should be placed in the field to collect data specific to crop farming; from temperature and precipitation to leaf water potential and overall crop health. Thus, you can monitor your crop growth and any anomalies to effectively prevent any diseases or infestations that can harm your yield. Arable and Semios can serve as good representations of how this use case can be applied in real life.

Livestock Monitoring

Farmers not only own their own fields but also bunches of livestock that are equally important for them. Livestock tracking IoT applications help keep an eye virtually on the livestock. The data of their count, age, and feeding intervals, all are stored in the device.



Benefits of IoT Applications in Agriculture

Several benefits arise from the application of IoT in Agriculture. IoT application leads to **Increase production in crops and livestock** through creating the right environment, monitoring and controlling different aspects. Secondly, IoT helps in **reducing the cost of production**, especially in largescale farming. The IoT devices **reduce the need for human interventions**, thus reducing the number of employees on a farm. Additionally, the IoT application **reduces the wastage of resources** such as water, fertilizers, and machine spare parts. They ensure only the right amounts of water and minerals are added to the soil. Sensors on vehicles and agricultural machines aid in predictive maintenance to ensure timely repairs and only the faulty parts are replaced. Lastly, the application of IoT **improves overall farm operational efficiencies** by providing data that allows every process to run optimally.

Conclusion:

By using this system farmers can effectively produce more yield and can save water from wastage. With help of weather forecast service farmer can water their land as per weather. Farmer can also turn ON/OFF motor whenever required based on the water content in soil.

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