

SMART FARMING FOR IMPROVING AGRICULTURAL MANAGEMENT

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INTRODUCTION:

Smart farming is a management concept that focuses on providing the infrastructure for the agricultural industry to use advanced technology – such as big data, the cloud, and the internet of things (IoT) – to track, monitor, automate, and analyze operations. Smart farming, often known as precision agriculture, is controlled by software and monitored by sensors. Smart farming is becoming more important as the world's population grows, as does the desire for higher agricultural yields, the need to conserve natural resources, the increased usage and sophistication of information and communication technology, and the growing need for climate-smart agriculture.

SMART FARMING THE FUTURE OF AGRICULTURE

Smart farming and internet of things (IoT) driven agriculture are setting the framework for a "third green revolution," which refers to the use of information and communication technology (ICT) in tandem. Precision equipment, internet of things (IoT) sensors and actuators, geo-positioning systems, unmanned aerial vehicles (UAVs), and robots are all examples of this.

IoT technology aids in the better control of agricultural processes, lowering production risks and improving the ability to predict

production outcomes, allowing farmers to better plan and distribute their products. Farmers can save time and money by having data on exact batches of crops and the number of crops to harvest.

NEW TECHNOLOGIES FOR SMART AGRICULTURE

The following are some of the most prominent technologies that are revolutionizing agriculture now and will define its future:

Drones

Drones make farm supervision easier by covering hundreds of acres in a single flight, gathering multispectral images and a wealth of information about the state of the land, irrigation needs, crop growth, pathogen presence, and, in the case of cattle, the number of animals, their weight, and possible anomalies such as lameness or unusual movements, thanks to infrared technology.

Internet of Things (IoT)

The Internet of Things (IoT) allows for better farm monitoring, mostly through smart sensors that can measure everything from sun radiation to leaf moisture and stem diameter, or the temperature of each animal in the case of cattle, making all kinds of management decisions easier. The Internet of Things (IoT) allows for better farm monitoring, mostly through smart sensors that can measure everything from sun radiation to leaf moisture and stem diameter, or the temperature of each animal in the case of cattle, making all kinds of management decisions easier.



Big data

Farmers can handle all of the data collected from drones, the Internet of Things, and other measuring instruments, and integrate it with previous farm data and weather data to optimize all stages of the production process, thanks to big data's ability to analyze large amounts of data.

Block chain

Block chain allows for the tracking of crops and cattle from the time they are planted until they are delivered to suppliers, boosting the supply chain's traceability, for example. If an imported vegetable poisons consumers, the source of the epidemic may be easily tracked and only the affected goods eliminated, rather than blocking vegetable imports from the entire country of origin.

Artificial intelligence

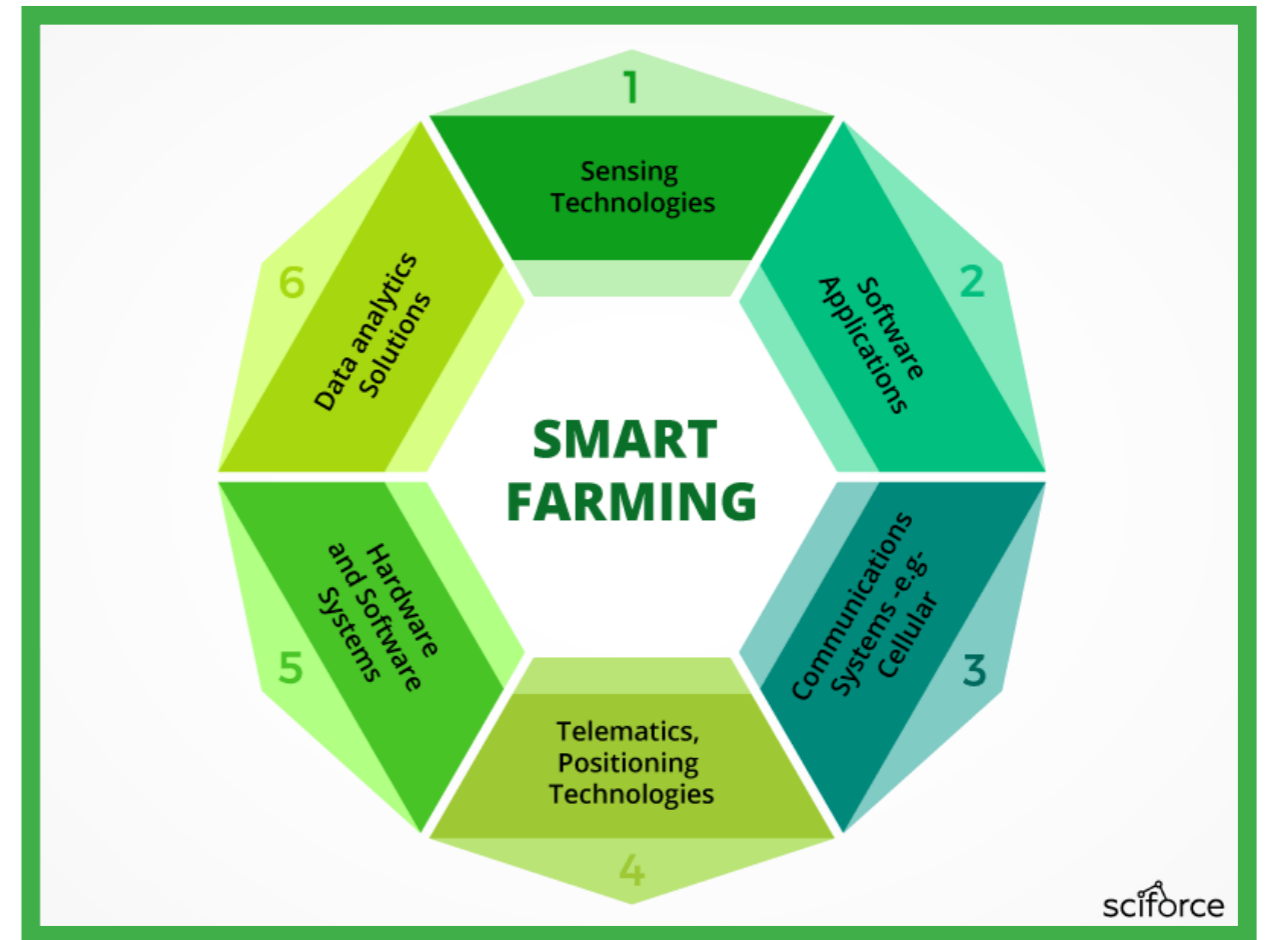
Artificial intelligence and robotics are mostly employed in agriculture to analyze field photographs and administer fertilizers and insecticides with surgical accuracy, as well as to control weeds. On a farm, for example, microphones can be used to detect shrieking piglets being squashed by their mother, and a vibration can be given to her via a sensor to urge her to get up.

BENEFITS OF SMART FARMING

Precision agriculture reduces total costs by making farming more connected and intelligent, while also improving product quality and quantity, agricultural sustainability, and consumer experience. Increased production control leads to improved cost management and waste reduction. The ability to track down irregularities in crop growth or livestock health, for example, reduces the risk of yield loss. Automation also improves productivity. Multiple processes can be enabled at the same time using smart devices, and automated services improve product quality and volume by better regulating manufacturing operations.

Smart agricultural technologies also allow for

meticulous demand forecasting and timely delivery of goods to market, reducing waste. Precision agriculture focuses on controlling land supply and focusing on the proper growing characteristics – such as moisture, fertiliser, or material content – to give output for the right crop that is in demand, based on its condition. The types of precision farming systems that are implemented are determined by the software that is used to manage the business. Control systems control sensor input, as well as the automation of machines and equipment for responding to developing difficulties and production assistance, as well as supplying distant information for supply and decision support.



SMART AND PRECISION FARMING: FUTURE OF AGRICULTURE

Smart farming is the application of new technology in agriculture and cattle production that emerged at the start of the Fourth Industrial Revolution to boost production quantity and quality while maximizing resource efficiency and minimizing environmental effect. In addition, the application of technology in agriculture and cattle production will help to increase global food security.

CONCLUSION

Smart farming decreases the environmental impact of agriculture. In precision agriculture systems, reduced or site-specific application of inputs such as fertilizers and pesticides will reduce leaching issues and greenhouse gas emissions. With today's technology, it's possible to set up a sensor network that allows for near-constant farm monitoring. Similarly, with today's ICT, theoretical and practical frameworks for connecting the conditions of plants, animals, and soils with the needs for production inputs like water, fertilizer, and pharmaceuticals are within reach. Agriculture can be more profitable for farmers if they use smart agricultural techniques. Farmers will save money and effort by reducing resource inputs, and hazards will be reduced by increasing the dependability of spatially explicit data.