

Commentary

New Agricultural Innovations to Improve Productivity

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In the United States and other countries, agriculture is currently undergoing fast development. An industrialization of agriculture and the idea that farms are turning into businesses are the results of trade globalization, biotechnology advancements and engineering achievements like the leveling of land using advanced laser equipment. These modifications have an impact on the number and size of farms as well as the equipment employed on farms.

In the United States, farming has been valued highly since colonial times. The continent was uninhabited, and the newcomers' main line of work was farming. The colonial lifestyle and agriculture were heavily influenced by English traditions. The new immigrants introduced ideas of private property, a market economy, and farming implements including ploughs, hoes, and harvesters. The nineteenth century saw the height of "agrarianism's" fervent belief. Farmers were viewed as the most virtuous and patriotic workers and the most genuine and valuable professions. Many family farms still follow old traditions in their way of life. Production requirements, weather, and economic considerations steer the farm operator's daily schedule. The involvement of the family is crucial for maintaining stability. However, the number of farms has significantly decreased during the previous 150 years. This decreasing number of farms and farmers has boosted productivity, meeting the demands of a growing population for food and fiber while also producing a substantial surplus for export.

The modern farms and agricultural enterprises operate differs greatly from how they did a few decades ago, largely due to technological developments in the form of sensors, machinery, devices and information technology. Businesses can become more successful, productive and safe due to these precision agriculture techniques.

1.1. New Agriculture Technologies

Modern farmers have shown a readiness to adopt new innovations and practices when innovators produce results and there is a significant desire for creative agricultural technology.

1.2. Water and Soil Sensors

The technology with the most immediate impact might be soil and water sensors. These sensors are cost-effective, dependable, and discreet. Because these sensors can detect moisture and nitrogen levels, the farm might use this information to choose when to water and fertilize instead of adhering to a predetermined schedule. By conserving water, reducing erosion, and reducing the quantity of fertilizer in adjacent rivers and lakes, the farm is able to use its resources more efficiently and at a lower cost.



1.3. Weather Monitoring

Computerized weather modeling is actually getting more and more advanced. Farmers can access these services using mobile apps that work on almost any consumer smartphone as well as through specialized onboard and handheld agricultural devices. This method can provide farmers adequate advance notice of hail, frost, and other weather conditions so they can take precautions to protect the crops or at the very least drastically cut losses.

1.4. Omnipresent Automation

The term “pervasive automation” is used frequently in the agriculture technology sector to describe any technology that lessens operator burden. Examples include hyper-precision navigation systems like RTK that create the best planting and fertilization paths, autonomous vehicles controlled by robotics or remotely through terminals. Balers, combines, tractors, and other farming equipment will be able to communicate and even work in a plug and play fashion as the majority of equipment has already adopted the ISOBUS standard.

1.5. Technology Using Mini Chromosomes

A mini chromosome is a tiny structure inside a cell that contains a lot of information but very little genetic material. Using mini chromosomes, agricultural geneticists can give a plant dozens, if not hundreds, of extra traits. These traits, like as nitrogen uptake and drought resistance, can be quite complex. Mini chromosomal technology is particularly exciting because the native chromosomes of a plant are not altered in any manner.

1.6. Vertical Farming

Vertical farming, a branch of urban agriculture is the process of growing food in layers that are placed vertically. This has a lot of benefits. The ability to grow in urban settings, which enables fresher foods to be made more quickly and inexpensively available, is perhaps the most noticeable vertical farming won't be restricted to merely urban settings. Farmers all around the world can use it to better utilize their land and to develop crops that would not be possible there otherwise.

Technology is transforming almost every aspect of modern life and farming is no exception. In the coming decades, agriculture technology will become increasingly computerized.