

TECHNOLOGY WITH AGRICULTURE: INNOVATION AND PRODUCTION

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Today's agriculture faces many obstacles viz., lack of land available for agricultural use, insufficient supply of water, climate change and overcrowding put the overall sustainability of agricultural production at risk. Farmers are forced to increase crop productivity per field unit with the goal, to provide enough food for the increasing population. New technologies bring transformative innovations not only to agriculture, but also revolutionize the way farmers work. Modern farm management depends on various factors including sensing techniques, farm machinery, improved seeds and farm software, which allow complete farm production to be monitored from one central location. Modern technology enables farmers to obtain accurate crop, soil, climate and environmental information.

In modern agriculture, sensors are essential resources. They are either used to monitor the application of variable rates in real-time or to produce field maps with GPS of special soil characteristics. Based on variations in soil features affecting the yield, sensors can measure:

- Bulk density
- Soil moisture
- Soil pH
- Soil organic matter
- Soil texture
- Available nitrogen, phosphorus and potassium
- Cation exchange capacity (CAC)
- Soil compaction
- Pest detection
- Depth of plant roots

There are basically two main sensors available for the farmers to determine the soil properties. These are:

a. On-the-go sensors

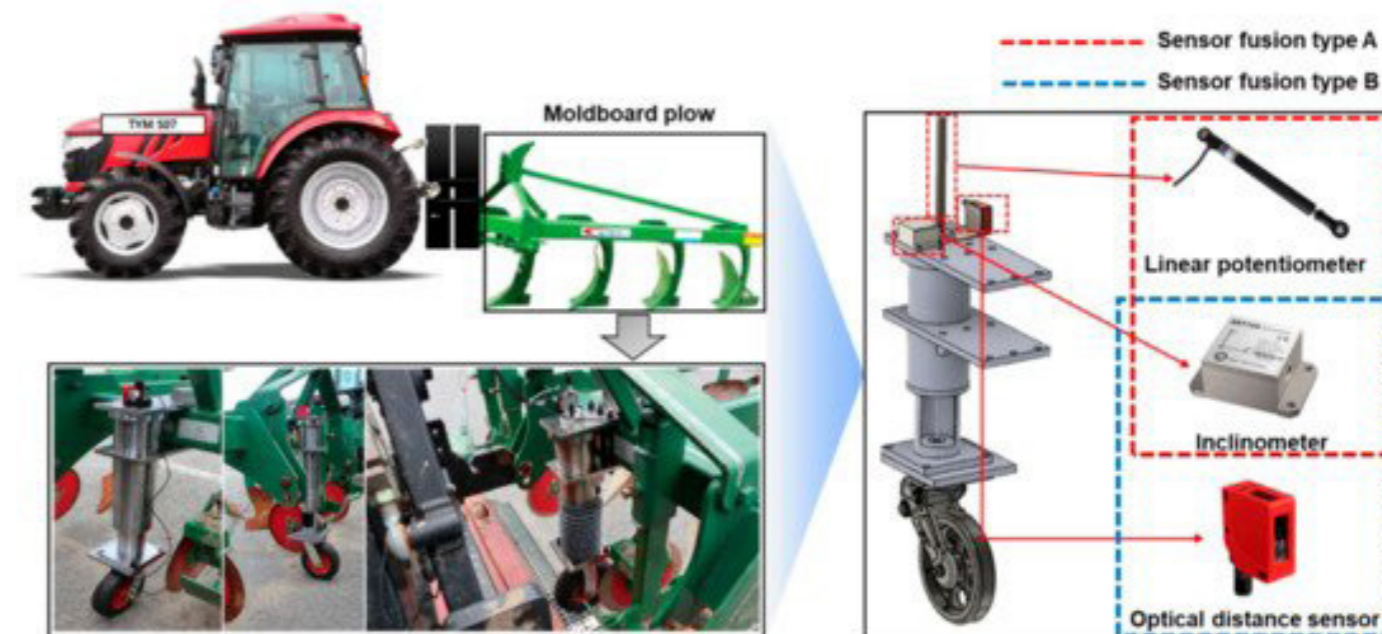
These sensors are fitted to a tractor or to its implement that measures different soil properties with or without entering the ground.

b. Real-time sensors

They are attached to a tractor or to its implement that record the actual changes in the soil, such as available nitrogen content or weed infestation. These sensors are used for variable-rate application where pesticides, fertilizers, and seeds are applied to measured soil's or crop's characteristics accordingly.



Technology takes over the agriculture sector ever more. Farmers are no longer dumb; they are technologically trained and proud to be working in the eradication



of world hunger. Be one of them by using modern agricultural technology to reduce hunger.

Agriculture in the previous decades has grown innovatively and inspiringly. In our times, joint efforts changed the direction of farming with a new approach to growing farming production. Modern agriculture is what distinguishes human efforts to produce the highest yield. The great use of technology and ergonomic creative ideas combined made it possible to introduce new farming implements in India. Over time, recent technical advances and awareness have contributed to time and money savings in agriculture.

Here is the list of technological practices that made agriculture possible in unthinkable ways-

Improved Irrigation:

The days when agriculture relied on natural rain have gone. The new and improved forms of irrigation, artificial rains, have made their impact these days. Some are: drip irrigation, centre pivot, sprinkler system, textile surface irrigation and lateral irrigation. Further reforms in the new age of irrigating crops in India are the construction of farm pools (the storing water). Therefore, agriculture has become a completely new entity. Whether it is irrigating land with ergonomic techniques of implementation or improving prediction, modern agriculture in this region has definitely surpassed conventional methods.

Rise of smart and custom made machines:

It was just beginning with tractors and tillers. Nowadays, haulers, threshers, drones and so on have shaped the image of Indian agriculture. In the second stage of the revolution the agro machinery manufacturers prioritized the design of tailor-made machining devices. Rotary ploughs and pulverizers, for example, are used in tillage. This eliminates the complexity of laborious and laborious work in

minimum time. Threshers were commonly used for harvesting. In such a creative and perfect fashion, the decreased human effort paved the way permanently for machines in agriculture. In terms of agricultural productivity and output, India has thus become an advanced nation.

THE 'IT' AGRICULTURE:

Agriculture was a major step for mankind with the advent of GNSS and GPS. This allowed the use of technology to revolutionize the whole scenario. Being the successor as the next phase of agri-revolution i.e. Green Revolution, it became possible to gauge the growth on geometrical scale. Precision agriculture makes this activity a key element in human success with its use of data for precise farming, land data and topographical aspects. The most favorable conditions for a crop to grow have been easily predicted. Creating a detailed record on the farm to promote the greater traceability of the crops, IT was a boon. In the arena of Indian agriculture there were changes in decision making and improved marketing aspects, precision or smart agriculture. It opened new doors to fill the void between people's needs. This practice allowed crop needs to be tracked, competitiveness improved and agricultural footprints reduced. To put it clearly, it was possible when huge data met agriculture. This practice was first used by researchers as part of their farming experiments. Apart from research programmes, it is increasingly gaining significance because the cost drops.

These are some of the activities that have made India so strong in terms of agriculture system. Modern farming has made its presence apparent, whether it is technology, smart machinery or innovation. These have changed India's way of doing agriculture.