

AG 101

Innovations That Transformed Agriculture

— By Mark Moore

From developing tools to work the land to advancing animal and plant breeding practices, transporting crops across the globe and more, agriculture has been at the forefront of innovation. Dive into these noteworthy innovations that, in some cases, continue to impact the industry today.





GREEN REVOLUTION

Pioneered by leaders such as Norman Borlaug, this period of the mid-20th century included the development of new crop varieties, as well as the use of chemical fertilizers, pesticides and targeted irrigation. This period resulted in increased food production and economic growth.



MECHANIZED FARMING

The advent of engine-powered tractors at the turn of the century brought transformational efficiency to farms. Machines replaced human and animal labor, and more acres were worked in a day. As farm implements also advanced, including plows, sprayers and harvesters, farming practices became even more productive.

SELECTIVE BREEDING

Humans have been selecting and breeding plants based on desirable traits for thousands of years — first to make wild plants more uniform, then to increase crop production. Consider how different the first corn plants looked and produced compared to what we see today. Researchers still use selective breeding to strengthen desired traits and increase yields.



SYNTHETIC FERTILIZERS

This development of man-made chemical compounds allowed farmers to more precisely target their crop's nutritional needs, leading to an increase in yields.

TRANSPORTATION

Agriculture needs reliable transportation to move products from the field to the end user. Although canals and railroads are important, the Mississippi River's 29 locks and dams, which were built in the 1930s, continue to provide a consistent method of moving vast amounts of crops to markets across the globe.

PRECISION AGRICULTURE

Today, farmers use advanced technology to precisely gather and interpret farm information, such as equipment performance, crop yields, water and nutrient needs. Armed with this information, farmers can monitor machinery, plant with increased precision, apply crop nutrients where they are needed and analyze data to make informed decisions.

BIOTECHNOLOGY

This science uses biological systems to create technologies, such as pharmaceuticals, biofuels and plant modifications, that improve performance for animals, crops and humans.

ARTIFICIAL INTELLIGENCE

The ability for computer systems to perform tasks that typically require human intelligence has made aspects of farming much more efficient. Among other things, farmers can research quickly and precisely, make informed decisions easily and, in some cases, develop new products and findings.

