

# Technological innovations that revolutionized agriculture history essay

[History](#), [Revolution](#)



It is said that after reading the book “ On the Origin of Species,” Herbert Spencer was credited with the phrase “ Survival of the Fittest.” If we look back to the start of the agricultural revolution, one can link their needs to “ Survival of the fittest.” People needed to change their lives dramatically to live a life of comfort and most importantly to live a life of stability. In order to achieve this lifestyle, people needed to master the different sectors that came along with agriculture. These included the tools they used, the different agricultural practices needed to suffice the family or community, and lastly the scientific discoveries that led to many other valuable innovations.

First subject of focus is the tools that were used during the settlement in the United States. During that time, tobacco was flourishing but farmers were beginning to crop different vegetation either brought from Europe or crops native to America, such as corn. From the beginning, English settlers along the coast wanted a product to sell back to Britain. At first, they were exporting furs and domestic vegetation, but the first colonist in Virginia found a money making crop that they can sell: Tobacco. Because of the high demand of tobacco, farmers bought and traded for many items including their tools. According to Conkin, “ Historically, the most basic agricultural tool was the plow. Before plows, the ground had to be prepared by sticks, hoes, or spades. The predecessors of modern plows go back to ancient Egypt and Mesopotamia. The curved trunk of a small tree made up the beam, pulled by oxen, and either a sharp curve in the beam or a second strip of wood tied to the beam was sharpened at the end and used to make a furrow in the ground (pg. 5).” By the 1700’s, the English had developed many plow

designs which involved wooden moldboards that forced the soil to turn over. Conkin states, " But after the American Revolution, new designs appeared almost every year. Thomas Jefferson invented a new moldboard and proposed to replace his wooden model with one made of cast iron (pg. 17)." In 1837, John Deere developed and marketed the first self polishing cast steel plow which revolutionized the cutting capabilities which gave rise to the " Grasshopper" plows. These machines were made to cut into rough land without breaking or sticking to the soil. From the single plow gave rise to the machines that have two or more plows fastened to them which reduced man labor. These machines were first cattle and horse powered and later were powered by steam engines.

It was evident that the production of new plowing systems meant agriculture was steadily increasing which led farmers to other implements. Grain use was also increasing, so the threshing machine was invented in 1784. This machine was used to separate the grain from the stalks or husks. According to Danhof, " This process was critical to the agricultural growth because it reduced labor by almost two thirds. Prior to this machine, grain was separated by hand which took about one quarter of agricultural labor (pg. 223.)" Early threshing machines were hand fed and required horses to power the machine by walking in circles to start the separating process. These two tools of early agriculture not only increased production, but substantially reduced labor which developed a new style of agriculture production.

The second topic of focus is the agricultural practices farmers implemented to their every day routines to increase quality and quantity. Crop rotation

was a practice that was brought to the new world by the settlers. This is the application of growing different crops in the same area but in different seasons beneficial to the crops. Danhof states, " The most important aspect of crop rotation was that it meant continuous production (pg. 67)." This was crucial component for the new settlers because production was soon going to be at an all time high due to war. Another key benefit to crop rotation was the nutrients added to the soil. Legumes, known to have nitrogen-fixing bacteria, were rotated with cereal crops that require those nitrates to create an everlasting supply without any delay. It also took care of the pest problem the farmers had with that specific crop. For example, if a farmer rotated maize with soybean, then those pests familiar to maize would no longer be in existence and vice versa.

Crop rotation led to a different sector of business which was fertilizer. Cochrane explains, " But some other technological developments of consequence were occurring too. The use of commercial fertilizers, liming material, and animal manures increased slowly but steadily during this period." He goes on to say that nitrogen fertilizer doubles from 1910 to 1920 and then doubled from 1920 to 1930. One can see the correlation between crop rotation and fertilizer. When these two practices were implemented to everyday farming, productivity of their land started to increase.

Finally, the last topic is the scientific discoveries that revolutionized agriculture. One scientific discovery is the art of plant breeding. During the beginning of Agriculture, people produced their food naturally meaning they found seeds from their surroundings and grew them which eventually

became domesticated crops. The same can be said for the animals too. Referring back to the "Survival of the Fittest," people started to select the better plants that grew faster and better animals that breed faster. If one were to analyze this situation more in depth, they would realize that these people were unwittingly improving food crops and livestock for their community. According to nature.com, "Over thousands of years farmers selected for desirable traits in crops, and thus improved the plants for agricultural purposes." In traditional plant breeding, people selected plants with the desirable characteristics by combining the qualities of a closely related plant with strong assets. Some of these features include pest control, disease, and tolerance to climatic conditions. The conclusion of this process will be a desired attribute in a different plant. In many cases, cross breeding was ineffective because of the lack of knowledge and uncontrolled environment. Although the success rate of discovery was low at first, it has now set the trend in modern agriculture. Many of the good we consume have gone through a cross breeding process.

In conclusion, the tools, the practices, and scientific discoveries in agriculture have paved the way in making the United States a super power in the world. The tools set forth a trend which accumulated into more work with less man power but more production. The series of inventions from the plow tool starting with hand operated to machine illustrates the agricultural revolution within a short time period. The agricultural practices, in this case crop rotation, helped farmers with production without a need to stop. This advancement was critical when the government needed more production

from the farmers. Lastly, the scientific discoveries cross breeding, implemented how one plant can breed to a similar plant to create a different variety which is genetically superior and more resistant to pests, disease, and climate change. These three components were critical in the agricultural revolution which allowed farmers to meet the demand of a growing world population.