America’s “First Farmer”

The Farming Practices of

George Washington

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Today when we think of George Washington we remember him as the Commander in Chief of the Continental Army or as the first President of the United States, but if you could go back in time, and ask the man himself it is my argument that Washington would much rather be remembered as a farmer. Washington the farmer is a neglected side of this extraordinary man, and it was perhaps his true passion. At his home, Mount Vernon, one can see how important farming truly was to Washington. If you were to look in the large dining room of the mansion, a room Washington designed completely himself, you see in the molding of the ceiling not scenes depicting military victory, but a sickle intertwined with a bundle of wheat and farming tools such as shovels, scythes, and flails. Also, in the same room the fireplace depicts scenes of what a person would see if they visited Mount Vernon during Washington’s lifetime: slaves plowing with horses, and animals running around while women and children carry out their daily chores.

This past summer I had the privilege of working at Mount Vernon as an intern at the Pioneer Farm Site. My job was to inform visitors about Washington the farmer, and how important his techniques and ideas were to American agriculture. Out side of my job responsibilities I researched specific farming machines used by Washington in his writings, including his own books that have been recovered. I also was able to follow in Washington’s footsteps visiting places such as Valley Forge, Philadelphia, and Williamsburg where his legacy was built. What sticks out the most to me, from my time as an intern, was the importance Washington placed on farming.

Washington believed that farming should be at the core of beliefs in the new country he helped create. His passion for farming can be summed up in a quote from a
letter he wrote to Theodorick Bland in 1786, when Washington states that farming is “of infinite importance to the country, and that is the source of American wealth and happiness.” With this idea Washington led by example. He had read books on new husbandry from farming experts such Jethro Tull, Arthur Young, and John Beale Bordley, and along with his own inventiveness and creativity, formed an agricultural practice that would resonate throughout the rest of the nation. Some of the techniques and ideas he helped refine were the implementation of a diverse crop rotation scheme, a shift from tobacco to wheat as a major cash crop, the Evans automated milling system to create flour, and the use of farming machinery to improve soil and crop production. These ideas would be adopted by many farmers across America as the nation grew and time passed.

In total Washington owned 8,000 acres of land, 3,000 were split up amongst 5 farms: the Mansion house farm, Union Farm, Dogue Run Farm, Muddy Hole Farm, and River Farm. These farms were where Washington tested his ideas and tried to find what improved his soil and crop yields. One of the practices Washington tinkered with was crop rotation. The typical Virginian farmer at the time was on a 3-field rotation: a cash crop (which was typically tobacco), their food crop (which was usually corn), and a field that would lay fallow so that the soil could replenish. Washington researched the idea of crop rotation before coming up with his own plan. He read and took notes from the book \textit{The Gentlemen Farmer}, by British agriculturist Henry Home, and read Maryland farmer John Beale Bordley’s book, \textit{Essays and Notes on Husbandry} that outlined an 8-year crop rotation, and is considered one of the first published accounts of scientific agriculture in America. From his research, Washington devised a seven-year crop rotation that allowed
him to grow his cash crop, which at the time of this table was wheat, in two different fields, and also incorporated grasses and clover on a three-year cycle in order to put nutrients back in the ground, while serving as pastureland to fatten his livestock.

Washington experimented with the use of fertilizer in his fields as well. Washington got the idea to use fertilizers by reading the works of Jethro Tull, and his “tiny mouth” theory. Tull believed that plants had tiny mouths on their roots which ate food in the soil, and that these mouths could eat more when in loose soil and by using fertilizer a farmer could loosen the soil to allow these mouths to consume more.

Washington used a variety of fertilizers such as animal manure, which he held in a dung repository. Built in 1787, Washington’s dung repository is believed to be the earliest example of a structure with this purpose in the country.iii By having a repository, Washington could mix manure with other organic matter and would cure over time so that it would be used as fertilizeriv. He also used buckwheat, which was incorporated into his crop rotation scheme and could be plowed into the ground to fertilize soil. Other fertilizers Washington used were mud from a creek that ran through his property, marl (which is a chalky clay that contained lime), and even things out of the ordinary such as Plaster of Paris (that contains gypsum that will loosen heavy soil), and fish heads that provided nutrients for the soil as they decomposed.v All of these things Washington used to put nutrients back into the soil, and would eventually help him produce a successful crop yield.

Washington also implemented a variety of farming machines to improve his soil and crop yields. He used a drill plow that would plow the land and create holes at regular intervals. As the plow went over those holes it would drop seeds, and plow the seeds
under the ground enabling them to grow. Washington used the drill plow mostly to plant wheat, and corn. In his corn fields using the drill plow helped Washington to implement another technique: intercropping. By using the drill plow in the corn field Washington was able to plant corn and other crops, such as cabbage, potatoes, and peas, in-between the corn to increase efficiency and diversify the number of crops he was growing which translated into more money when harvest time came around. Another plow Washington used was the Rotherham plow. He ordered a Rotherham in 1765 especially from England for use on his plantation. The plow which dates back to the 1730’s in Rotherham, Yorkshire, England, caught Washington’s eye, because it had a lighter frame and a better moldboard compared to other plows of the day. According to the reports the Rotherham with “only one man and two horses, will perform, even in stiff land, as much as two men and six horses can do in moderately light soil with any of the wheeled ploughs generally used.” Even with the passage of time, and new technology, the Rotherham was always Washington’s favorite.

Washington used machines not only for plowing and planting, but also for preparing the soil before planting would take place. He used a spiky roller that would break up soil and prepare it for sewing. This massive machine that weighed anywhere from 1,100 pounds to one ton was made out of a large wooden cylinder that contained 3 to 6 inch metal spikes burned into the wood. As it was pulled over the land it would break up clumpy, burnt, or stiff soil. Washington was very fond of this machine and he reported in 1797 to William Strickland that, “Rollers have been in the constant use of many years….and I find considerable benefit in passing them over my Winter grain in the
Spring, as soon as the ground will admit a hoof on it.”

For Washington the Spiky Roller seems to have been his “go-to” machine for soil preparation.

All these techniques were perfected over time, and they came out of necessity.

When Washington first inherited Mount Vernon in the 1750’s and embarked on his pursuit of being a gentleman farmer he wasn’t initially successful. Yes, the soil he had for farming wasn’t very good, but his initial failure at farming was from a combination of bad soil and the types of crops he was growing. Washington had grown three major crops in his lifetime: tobacco, wheat, and corn. His first major crop, with which he had the least success, was tobacco. Virginia tobacco was in high demand in England, and Washington dived into tobacco farming in order to capitalize on the demand. Growing tobacco provided only hardships, and problems. Two problems he encountered were that tobacco grows on an 18 month cycle, and it was a very labor intensive crop. Growing tobacco in Washington’s time required a lot of attention and care. For example, tobacco plants want to grow tall, but to get the long leaves that were profitable a person had to keep the plants at a certain height by cutting off the tops of the plant, and constantly monitoring their height. Also, by hand each leaf had to be meticulously inspected for “tobacco worms” that would eat the leaves and ruin the crop. With one slave typically being responsible for the care of about 300 tobacco plants, long hours were spent working in the fields. So Washington’s slave workforce was exhausted by constantly having to care for his tobacco crop. Another problem Washington encountered was the tobacco inspection acts, passed in the 1740’s in which tobacco had to meet government set standards before it could be exported to England for sale. Washington’s biggest problem with growing tobacco, though, was money. In a letter from 1765 he noted that he received a net profit of 5
pounds, 17 shilling, 6 pence per hogshead of tobacco he had sold.\textsuperscript{ix} There was a large gap between his profits, and the tobacco farmers in the surrounding area, who were receiving anywhere from 12 to 18 pounds per hogshead. Washington could not figure out why he wasn’t making as much money as everyone else, and by 1765 it started to affect his estate greatly, because by that time Washington was in debt, and he needed to make money.

He decided to go in a completely new direction by switching his cash crop from tobacco to wheat. Washington had other reasons for switching to wheat than financial loss from growing tobacco. With the passage of the Stamp Act (1764) and the Sugar Act (1765) without the consultation of the colonies Washington felt that the colonies needed to get away from British dominance of colonial business.\textsuperscript{x} Tobacco, being one of the markets that the British had full control over, cause Washington to switch to wheat, and it became extremely important in Washington’s life. He was able to turn his wheat into flour and sell it not just to England, as he was doing with tobacco, but throughout the colonies, and even to other parts of the world. More importantly it allows Washington to become more self-sufficient. He is no longer at the mercy of government officials and English merchants that would have the fate of his profits in their hands. It allowed him to diversify his crops, and enter into other business markets. For example, some slaves that would have been tending to tobacco now established a small cloth manufacturing business at Mount Vernon. In 1768 this business produced 815 yards of linen and 1,355 yards of woolen linsey and cotton.\textsuperscript{xi} This was important because slaves were making clothing for themselves; which reduced Washington’s heavy alliance on imported clothing from Britain while making turning a profit by selling what was left over. Other businesses such as Milling, Distilling, and Fishing that Washington enters into, and
eventually becomes successful in, all stem from this switch to wheat farming and illustrate a growing independence from English control.

When he made the switch to wheat Washington believed that what became the United States would be his own words, “a storehouse and granary to the world.” The process of turning his wheat into flour shows Washington’s inventiveness and ability to get as much as he could out of what he had around him. After it had been harvested and bundled, slaves would separate the wheat from the straw and the chaff by using a process called flailing. Using the tool, that had been used since the medieval period, required a person to work all day grasping the long handle and swinging it in a manner so that the short end would land on top of the bundle breaking the grain away from the straw. After hours of flailing they would not separate the grain completely; so slaves would have to use a riddle and a winnowing basket. After removing the straw they would gather what would be a mixture of grain and chaff into the riddle and shake it so that grain and some chaff would fall through the riddle into the winnowing basket. Then they would throw the grain into the air hoping the wind would blow the chaff away as the grain would fall back into the winnowing basket. This method was extremely tedious work. Slaves would have to do this process for weeks to separate all of the grain from Washington’s large wheat crop. Also, no matter how hard Washington’s slaves tried it is very unlikely that they were able to produce pure grain, and chaff and dirt would be mixed into the barrels when they were sent off to be turned into flour.

Another method Washington employed was a process called treading. In this process wheat was laid out in a circle so that horses could trot on top of the wheat and the weight of their hooves would break the grain away from the straw and the chaff. This
idea was better than the idea of use a flail, because it allowed Washington to have his slaves concentrate on other jobs while the horses did the work. Also, he was able to have the grain separated quicker then by having his slaves flail the wheat. Even though this was an improvement, this process also had some major drawbacks. The biggest problem was that by using the horses’ hooves the grain would sometimes be driven down into the ground where it could not be collected, resulting in a loss of grain and ultimately a loss of profits. Also, the wheat would be covered in dirt, mud, and everything else that would be on the ground or on the horses’ hooves, which created a longer cleaning process. Weather also hampered the treading process as well. If it was a rainy or windy day treading would have been impossible to successfully accomplish, and the wheat before it was treaded had no cover from the elements which could lead to the destruction of the crop.

After seeing the ineffectiveness of using a flail and horse treading, Washington tried to think of a way to improve his techniques. In 1792 he had designed a 16-sided barn that would be used for the treading of wheat. This in itself is amazing, because he designed the entire structure himself down to every last measurement and specification while serving as the 1st President of the United States. That, above all other things, truly shows how much Washington loved farming. While he was in Philadelphia serving as the 1st President of a brand new country in a new form of government Washington found time to devote to farming and the creation of this barn. He was very precise in planning the barn as well. For example, from Philadelphia he had calculated that the overseers during construction would need 30,820 bricks for the bottom level, and when construction was finished in 1794 no extra bricks had to be added to Washington’s original plans.\textsuperscript{xv} There were many advantages to Washington’s barn. It kept the wheat
away from the weather as well as created a better, cleaner, product by having the process done indoors. Also, Washington’s design kept the wheat safe from theft, which was another problem he faced with other techniques. The bottom level of the barn was made from bricks, had barred windows, a large wooden door, and according to Washington himself “A good lock upon the lower door.” At the time the barn was considered a milestone in American agriculture; a vast improvement of techniques of the time as well as a precursor to McCormick’s reapers and modern day combine. However, Washington’s barn never caught on; he was the only person in history to ever build a 16-sided threshing barn mostly because he had the money, resources, and large harvest that would merit such a large structure. The barn proved to be extremely strong and stood until 1870 when it was torn down after many years of non use with the adoption of new wheat threshing machines. The reconstructed barn at Mount Vernon today is an exact replica of the original constructed from Washington’s original plans, and built using 18th century building techniques.

The barn worked by first storing 4 to 6 acres of harvested wheat in the middle section. Then that wheat was laid out along the outer ring of the upper section of the barn. Teams of horses or mules were brought up a ramp and into the barn and made to trot along the outer ring, which explains why Washington designed the barn with 16 sides, because Washington believed that 16 sides was the closest you get to making a circle without having to bend the wood, which would require much more work. He wanted a circle so that the horses could be kept in a constant trot and wouldn’t have to slow down to turn or get stuck in a corner. Their trotting would break the grains away from straw and the chaff and the grains would fall to the bottom level through 1 and half inch gaps in the
floor. This barn was extremely successful, and so much more efficient than his other technique that it doubled his wheat yield. The grain would fall through the gaps down to the second level of the barn where it would fall onto a wooden floor where it could be scooped up with a shovel. But it wouldn’t be the only thing that fell through so Washington’s slaves put what fell through the cracks into a Dutch fan (or a Wheat Fan). The fan worked by putting what was collected into the top of the fan as someone turned the crank. The fan inside would spin and the grain, being heavy enough, would fall through to the bottom of the fan where it was collected and everything else would blow out the open end, leaving a nice clean grain that would be put into barrels and bags. Those barrels and bags would be sent to a Gristmill that Washington had reconstructed in 1771 after the mill built by his father, Augustine, in the 1730’s fell into disrepair.

In 1791, Washington installed the Oliver Evans system which made the milling process completely automated and reduced the number of workers. The system used a series of wooden gears, leather straps, and grain elevators powered by a water wheel to make the operation faster and more efficient. Washington appears to have been the 3rd person in America to have purchased the patents and installed the Evans system in his gristmill. This system would later revolutionize the milling process and be installed in various mills throughout the country. Today the reconstructed Evans milling system at Washington’s Gristmill is the only complete, operational Evans system left in the world.

The system started by pouring the grain into a hole in the 2nd floor and a grain elevator would carry it up to storage bins on the 4th floor. The grain would then fall into a Rolling Screen which as it would spin would separate grain from any wastes, much like
the purpose of a Dutch Fan. After going through the rolling screen the grain would fall into the mill stones where it would be ground into flour. Washington had two separate sets of millstones in which he created wheat, one set with stones made locally, and the other set with stones especially ordered from France. The latter set was ordered from France, because the stone which was found in the colonies was not strong enough to grind the wheat into super fine flour, which being a higher grade than the flour Washington was previously selling, could be sold at a higher price. After being ground into flour it would descend into the basement, and would then, through grain elevators, be sent back up to the fourth floor into a mechanism called a “hopper boy” which would spread the flour out on the floor where it would cool. It is called a hopper boy, because before this mechanism was installed a literal “hopper boy” would rake the flour out along the floor to cool. Once cooled, the flour would fall through a hole in the floor into the bolter, which spun to separate the flour into 3 different grades: superfine, fine, and bran. Once separated the flour would fall into corresponding barrels, and would be ready for sale. Washington, by being able to create superfine flour could sell that flour all over the world. His superfine flour would reach places all up and down the east coast and as far away as Spain, Portugal, and the West Indies.

Washington’s third main crop was corn. Corn was used as the main food crop for the slaves at Mount Vernon. Along with 4-6 ounces of fish, slaves would receive about a quart of dried kernels that they would crack and turn into cornmeal. Washington late in his life decided to take corn and turn it into a cash crop along with his wheat on the advice of his newly hired overseer, James Anderson. The Scots-Irish immigrant convinced Washington that with a large supply of corn, wheat, and barley as well as a
water source from the Gristmill’s millrace that it would be a great opportunity to enter into distilling. The distillery, finished in 1797, was another extremely successful business venture for Washington. Today at Mount Vernon, archeologists are currently reconstructing Washington’s distillery after years of excavation, and it should be operational by April of this year.\textsuperscript{xxi} The main product he sold from the distillery was whiskey, but he also sold rum and livestock fed on the mash left over from the distilling process.\textsuperscript{xxii} Washington’s whiskey, which was sold locally, was distilled twice making it 60 to 80\% alcohol and providing a strong kick. Washington died before he could fully reap the benefits of his distillery. In 1799, the year of his death, Washington had produced 11,000 gallons of whiskey. His whiskey netted $12,000 in profits that year, which was the most money Mount Vernon made in Washington’s life time. Also, that total made George Washington the largest distiller in the entire nation.\textsuperscript{xxiii} In all, Washington’s farming business was very successful for him and his heirs. In his 1799 will, Washington estimated his worth at $530,000 which was mostly due to his farming techniques, innovative structures, and risk taking endeavors.\textsuperscript{xxiv} This net worth would be equivalent to over $6 billion dollars today, and it could be argued that Washington is the richest man in American History.\textsuperscript{xxv}

Another important part of Washington’s farming was his use of animals. Mount Vernon had many different types of animals all of which had a specific purpose. Washington had 600-1,000 sheep for wool, mutton, and for fertilizing his fallow fields.\textsuperscript{xxvi} He had cattle for milk, and meat, as well as oxen that he used for draft work. He allowed hogs to run wild around the estate, and would round them up when the family was in need of food, which was particularly important to Martha Washington who prided
herself on serving the best ham in Virginia. Of course, Washington had horses that he had used for travel, hunting, and at time for draft work, and he had also used donkeys for draft work as well.

Historically, though, Washington is best known as “the Father of the American Mule.” He was the first person to introduce mules into America. Washington received a mammoth jack, the largest breed of donkey, from the King of Spain and gave it the name “Royal Gift” in 1785 and bred him with his best mares. Washington had found that mules were less expensive to keep, worked harder, ate less, and were smarter than horses. From that point Washington fell in love with mules. Records show in 1785 Mount Vernon had 130 horses and 0 mules; 14 years later however mules were in great use and surpassed the number of horses by 58 to 25. He also spread his stud donkeys all over the country to breed, and many people thought it was an honor that their horses had bred with George Washington’s jackasses.

None of Washington’s success in farming would have been made possible without the work of slaves. Being a large land owner he needed a large workforce in order to keep his plantation up in running. In 1799 Washington compiled a list of his slaves, and the number totaled 316; 123 of those slaves belonged to Washington himself, 153 slaves belonged to the dour estate, the estate left to Martha Washington from her 1st husband, and 40 slaves that Washington had borrowed from neighboring farmers. Washington believed slavery was an evil institution, but like many of his contemporaries a “necessary evil.” Evidence of Washington’s realization that slavery was wrong was the fact that from around the time of the start of the Revolution until his death he had refused to buy or sell any of his slaves. The only recorded time Washington got rid of a slave
after the Revolution was an episode in which Washington banished a male slave from the estate after beating his wife.\textsuperscript{xxxi} By never buying or selling slaves after the Revolution Washington became very frustrated by the number of slaves who were no longer useful. At the time of his death almost half of his slaves were either too old or too young to work, but no matter how frustrating, he made a promise to himself to respect the men and women that were working for him. Also, Washington stated that all of the slaves he owned be freed upon his death, and that the rest of the slaves on the estate be granted freedom after the death of Martha Washington.

As a slave owner Washington ran Mount Vernon very much like he ran his army; everyone had a role and a job to complete, and Washington made sure that the work was done. He was a very hands-on manager and he had a daily routine of riding around the plantation every single day to check on the work being done. At times Washington even got his own hands dirty. In one incident a slave with a broken arm had told Washington that he was unable to work, and in response Washington dismounted from his horse and showed the man how to rake using one arm.\textsuperscript{xxxii} The slaves didn’t care for Washington the overseer because he was a stickler for detail and had a very bad temper, but his slaves greatly admired Washington the man. They admired him because Washington was very paternalistic and everyone at Mount Vernon was part of a large extended family, and he was considerate of his slaves. An example of this was that on Sundays Washington would have dinner served early in the mansion so that the slaves could have the afternoon and evening to be with their families. Some of these slaves showed their appreciation after Washington had died. When he died in 1799 Washington was buried in a family vault that had fallen into disrepair while he was still alive. In his will he called for a new tomb
to be constructed on a site he had picked out himself. When the new tomb was being constructed former slaves that had been freed at the time of his death returned to Mount Vernon and the place where they were in bondage to landscape and assist in the construction of the tomb and in their own words “to do what they needed to do for the General.”

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Mary Thompson

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