Years of Haymaking in Pennsylvania, 1640–1940:
From Seed to Feed

Introduction

Although many sources of information were used for much of the early history of grassland farming and haymaking in Pennsylvania, I have referred mainly to two extremely well-documented volumes written by S. W. Fletcher, dean emeritus of The Pennsylvania State University School of Agriculture, and published in the 1950s by the Pennsylvania Historical and Museum Commission:

- Volume 1: Pennsylvania Agriculture and Country Life, 1640–1840
- Volume 2: Pennsylvania Agriculture and Country Life, 1840–1940

In his introduction to volume 1, Dr. Fletcher wrote as follows:

"During most of the two-century period (1640–1840) Pennsylvania led the other colonies and states in the production of food. It was the "bread basket of the nation." Here was laid the foundation of much that is significant in America's agriculture. Farmers dominated the economic and political life of the province and state, partly because of their numerical preponderance. This was made possible not only by fertile soils and efficient farming but also by the substantial character of those who lived on the land.

The complete story of hay production, mechanization, and utilization during the 300-year period involves the agronomist, the agricultural engineer, and the animal scientist along with the farmer on the land and the many, many private inventors. For without the animal there would be no need for hay.

The year 1940 was a natural time to conclude this historical review sponsored by the Pasto Agricultural Museum, for as quoted in our museum guidebook, "Visitors to the Pasto Museum journey back to a time when farmers used muscle power, both human and animal, to produce food and fiber for a growing nation, all items are B.C. and B.E.—before computers, before electricity, and before engines."

To be sure, many of the major advances in hay production, mechanization, and utilization have occurred after 1940. But that's another story for another time.

We hope you enjoy your trip back in time both at our exhibit in the museum and at the field demonstrations involving haymaking tools and machines of the 1880s and early 1900s.

—Dr. John E. Baylor, professor emeritus of agronomy (forages), Penn State, and chair, 2006 Hay Exhibit Committee, Pasto Agricultural Museum

Hay—What Is It?

- Hay consists of the entire aboveground growth of forage plants—sometimes including seeds of grasses and legumes—that is harvested, dried, and used for animal feed.
- Poor-quality hay is sometimes referred to as "roughage" or "fodder."
- For centuries hay was the only form in which forage could be preserved and stored for feed for livestock. There are numerous biblical references to "hay" or "fodder," and in older times without hay there would have been no form of stored forage to feed livestock (cattle, sheep, horses, etc.) during periods of severe winter weather or drought.
- Economically, in Pennsylvania hay is big business. For example, as livestock numbers increased, production of hay increased. Between 1840 and 1940, hay acreage tripled and was produced on more than 90 percent of Pennsylvania farms. Only once in the half century from 1880 to 1930 was the value of the hay crop exceeded by that of any other crop.
- With that background here is a brief rundown of the hay timeline for Pennsylvania for the 300-year period from 1640 to 1940.
Hay Time Line for Pennsylvania, 1640–1940

1640–Early 1700s
- Early pioneers had few hay-consuming livestock, and cattle of colonial days were said to be small, scrawny, and unproductive. Most cleared land was cropped with grain—mostly wheat—for human consumption. The few animals foraged in the woods on native grasses and browse.
- Swamps and marches yielded coarse hay (native wild grasses). After 1800: Hay acreage increased rapidly. By 1840
- In cleared areas (mainly areas burned-over by Indians to attract wildlife) native grasses were abundant and good for pasture and haymaking. Seeds of grasses brought from Europe were rarely sown.
- First seedings of mixed English grasses were mostly on unplowed land broadcast by hand or mixed with manure applied to open areas.
- First introduced species for hay and pasture (late 1600s and early 1700s) were red clover, white clover, and timothy.
- Hay tools consisted of sickle, scythe, wooden rake, and fork.
- The famous Lancaster County Conestoga Wagon was introduced around 1750.

1700–1750
- Timothy and red clover became dominant hay species. By 1790 "more than one-half of the arable land was devoted to pasture and hay, sown every third year with red clover and timothy seed."
- Orchardgrass, bluegrass, and perennial ryegrass were grown for first time in Pennsylvania.
- Alfalfa (lucerne) introduced by gentlemen farmers, but unsuccessfully; probably due to soil acidity, lack of inoculation, and low soil fertility.
- Little improvement in breeding and feeding of cattle (mainly meat) until after 1790. Dairy farming before 1800 was mainly for family consumption, not an organized industry.
- Marked increase in hay production beginning about 1790, along with increased beef production for the Philadelphia market. Beef cattle mainly finished on the "most luxuriant hay."
- Before 1790 iron was scarce and costly. Many farm implements, including plows, harrows, forks, and shovels, were made mostly of wood. "Untill about 1790 plows used by Pennsylvannia farmers were little better than those used by their ancestors in Europe and Asia many years earlier."
- 1790s: New breakthroughs in plow design, including moldboard shape and cast iron moldboard, among others. In 1798 Thomas Jefferson designed and introduced a lightweight plow with a curved metal shield moldboard, the "moldboard of least resistance."

1800–1840
- Golden age of the drover: Driving beef cattle from western Pennsylvania and eastern Ohio to the Philadelphia market.
- Early 1800s: Birth of the dairy industry! By 1830 dairying became more profitable than beef production, followed by major improvements in cattle breeding. Initially, dairy products marketed were mainly butter and cheese. The fluid milk industry was born between 1840 and 1910.
- Around 1819: Jethro Wood's cast iron plow was patented with replaceable parts for those most exposed to wear. Considered a major advance, but farmers were still skeptical of metal moldboards.
- 1820: First mowing machine introduced, but it was not successful. First horse-drawn wooden rake introduced.
- 1835–1840: Horse-drawn, wooden-tooth hay rakes or “flip overs” became popular.

Mechanical Revolution on the Farm, 1840–1910
In 1840 haying was considered one of the most onerous jobs on the farm. While some advances in mechanical haymaking had been made prior to 1840, most seedings of hay species were still made by hand in the 1840s and grass was still cut mainly with the scythe and raked with a handheld wooden rake. The 70-year period from about 1840 to 1910 was the animal-power period in which most of the work on the farm that had been done by human labor before the 1840s was now done with the ox and horse. Advances in haymaking tools between 1840 and 1910 came rapidly and included the following:
- 1840–1860: Steel-toothed dump rake introduced along with improved seeding tools.
- 1845: Marketing hay into Philadelphia and other urban areas for horses used for transportation in the city grew in importance. Successful attempts to compress hay for transporting were made.
- Early 1800s: Cast iron plow (moldboard, share, and landside cast in one piece) was patented. Farmers were skeptical because of high cost and because they believed "iron poisoned the soil and encouraged the growth of weeds."
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1910–1940
- 1900–1940: Alfalfa acreage in the state increased from 52 acres in 1900 to over 250,000 acres in 1940.
- 1925: Electricity for home use became available on some farms. However, electricity on the farm did not become widely available until after 1930.
- 1930: Supplemental air-drying of hay was attempted. Hay dehydration was introduced.
- 1932: Mower-crusher was developed experimentally to speed up field curing of alfalfa hay.
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- 1935: Hay crop silage, especially for first cutting, gained interest.
- 1937: First automatic field string baler was introduced.
- 1940: Nearly two-thirds of Pennsylvania had electricity.