



Giving old barns new life

University of Wisconsin-Extension
 State Historical Society of Wisconsin
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Wisconsin's changing farmsteads

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Profound changes are occurring in Wisconsin's agriculture that affect how people live and work in the country. Many farmstead buildings, built for a particular purpose, have seen that purpose vanish, yet these buildings form part of the character of Wisconsin. This publication is the second in a series about historic barns and farmstead buildings, and why it is important that they be saved for future generations. The first two publications focus on the history of barns and farmstead buildings in Wisconsin, basic styles of barns, the history of silos and other farmstead structures, farm buildings built by various ethnic groups, and the natural beauty associated with barns. Future publications will cover a number of topics relating to the restoration and maintenance of historic farmstead buildings.

Beginnings

Wisconsin's farmsteads have changed greatly in the past 130 years, especially in the past half century. The reasons for this are tied to the region's climate, vegetation and geology, and particularly to changes in agriculture.

Wisconsin's climate defines its agriculture and thus its farm buildings. In many parts of the state frost is not unusual in late May, with killing frosts coming again in mid- to late September. Thus crops with long growing seasons are excluded. Corn for grain, which requires a 100-day or longer growing season, is often a questionable crop in north central Wisconsin and impossible in the far north. Corn for silage, harvested earlier than grain corn, is grown in all but a few areas of the state. Forage crops such as alfalfa and clovers, and a host of vegetable crops such as green beans, peas, sweet corn, cucumbers, carrots, lettuce and cabbage also do well in the central and southern regions of the state.

Rainfall is usually ample, upwards of 30 inches per year on average, and with cool temperatures, grass and forage crops do especially well. Without a doubt, though, it is winter that defines Wisconsin, gives it its character, influences its people and above all, explains its agriculture and farm buildings. It is not uncommon for temperatures in the northern half of the state to dip below minus 30 and even beyond minus 40. Winter temperatures are more moderate in southern Wisconsin and those counties closest to lakes Michigan and Superior.



Farmstead with gable-roofed bank barn and tobacco shed (above barn), Vernon County. This farm was first settled by a Norwegian immigrant in the 1840s and is still in the same family.

Snowfall, too, influences farming. In most years, snow arrives by mid-November and remains until March, especially in central and northern Wisconsin. The capacity to withstand heavy snow loads is built into the design of all Wisconsin buildings, especially the agricultural structures. The placement of farm buildings in the farmstead may also be influenced by winter as well as many other factors including topography and orientation to the sun.

The vegetation the early settlers found in Wisconsin influenced the type of farming they pursued, as well as the buildings they constructed. In southern Wisconsin, and to some extent in the central region, early settlers found vast prairies with small forested areas. The trees were mostly hardwoods, burr oak, white oak, black oak and hickory. To the north, the prairies gave way to thousands upon thousands of acres of pine forests that stretched as far as the eye could see. In the early settlement years, farming remained in the southern and central sections of the state. Farmers did not move into the northern regions until after the lumber men with ax and cross-cut saw marched across the north, clear-cutting the forests and floating the great pine logs down the rivers to the saw mills.

The vast amount of both hardwoods and softwoods in Wisconsin provided easily accessible and relatively inexpensive lumber for building nearly any kind of structure from a barn that required 12-inch by 12-inch timbers to a chicken house where rough-sawed two-by-fours would suffice.

The great glaciers that moved across much of Wisconsin thousands of years ago left in their wake land strewn with field stones and boulders. The glaciers influenced the soil types which in turn dictated what crops could be grown. They also provided natural building materials such as field stones for barn walls, silos, and in some instances, entire buildings, plus clay and mineral deposits for producing bricks. In non-glaciated areas of the state, rock outcroppings were often near the surface, providing quarried rock for building walls and entire buildings.

Farm buildings reflected the agricultural interests and abilities of those who settled the land. The vast majority of the people who came to Wisconsin came to farm. This trend began in the 1840s, peaked in the 1850s and continued beyond the Civil War.

The first farmers came to Wisconsin in the late 1830s and 1840s, from New England, Vermont, New Hampshire and upper New York state. They did not come as subsistence farmers, as some would believe, but as agriculturists who wanted to do well on these new western lands. Upon their arrival, and after clearing some land, they planted wheat. By 1862, in the midst of the Civil War, Wisconsin had become a major producer of wheat and flour.

Not long after the arrival of the Yankees, as these New Englanders and New Yorkers were called, European immigrants began arriving. Germans and Norwegians, Swedes and Belgians, Danes and Irish, Dutch, Bohemians and Luxembourgers, Swiss and Welsh. First a trickle and then a flood. By the early 1900s, some 50 different ethnic groups had settled Wisconsin, most of them to farm.¹ At least a dozen ethnic groups built farm buildings that were similar to what they knew in their home countries such as saunas, hay barns, half-timber buildings and bank barns.



Farmstead with various wooden out buildings, plus a windmill used to pump water before electricity came to the rural areas, Waupaca County.



A changing agriculture

Agriculture has changed dramatically since Yankee and immigrant farmers hitched oxen to breaking plows and began turning over the vast grasslands of southern Wisconsin.

The early farmsteads, often log buildings, consisted of a house, a small barn, a granary, a modest chicken house and sometimes a hog shelter. Of course there was also always a privy located close, but not too close, to the back door of the dwelling. The barn often had a lean-to attached on one or both sides to provide shelter for milk cows.

Many wheat farmers did well, and they soon advanced from log buildings to those constructed of sawed lumber. A new house appeared, a more substantial barn, and perhaps an ice house, a smokehouse, a summer kitchen, a well house, a larger chicken house, a carriage house for the buggy and wagon and a granary to store grain for the horses and for sale.

Advancing from log barns, many settlers built small, one-story frame threshing barns. Some of these were called three-bay barns as they were divided into three sections with a driveway through the barn.

These barns did not house animals but were used for threshing and storing grain. Grain harvesting was hand work. The wheat was cut with a cradle (a special kind of scythe), and then hauled to the barn where it was threshed on the driveway or threshing floor of the building. The actual threshing was done by driving horses or oxen over the grain which removed the kernels from the wheat. Sometimes the wheat was threshed with a flail, a stick to which a leather thong and another smaller stick were attached.

The mechanical reaper was invented by Cyrus Hall McCormick in 1835, the threshing machine was invented in 1837, and the grain drill in 1841. With these three inventions, wheat could be planted, harvested and threshed more easily, thus making the threshing barn obsolete as a place for storing and threshing wheat. By the middle 1800s many of these early structures became horse barns, and later dairy barns. Some of them were physically lifted up and a second story was added underneath to house cattle.

As the years passed, the farmstead became a collection of buildings, with the barn usually the largest, though it was still small when compared to the dairy barns that would appear several years later. The buildings were often arranged in a loose cluster around an

open area called the dooryard, which connected to a road that ran by the farm. Visitors to the farm stopped their teams in the dooryard and had easy access to the dwelling through the kitchen door, which was always the portal of entry for farm people. To this day, many farmers never use the front doors of their houses and can easily identify city people as those who walk to the front door.

Farmsteads were laid out following several general principles. Where the land was rolling or hilly, the farmer took the the lay of the land into consideration, especially if he wanted to build a bank barn requiring a hillside. Where the terrain was relatively flat, roads followed the survey lines and farmsteads were laid out straight with the roads and, as some old farmers would say, "straight with the world." Farmstead buildings were located for ease in doing chores. The chicken house, and the horse stable were often close to the house. The corn crib was near the hog house. Prevailing winds were also considered. No one wanted to live in a house downwind from the pig pen.

By the late 1860s, a major shift began occurring in Wisconsin agriculture. Growing wheat, for years a reliable crop, was no longer dependable. Crop yields dropped as farmers planted wheat crop after wheat crop on the same land, not realizing that wheat, like any crop, eventually uses up the soil's nutrients. Modern day information about fertilization was not yet commonly known. With repeated cropping and with vast acres of a single crop, disease potential became great. Rust developed in many wheat fields, devastating yields.

Insects, too, presented major challenges to the crop. The chinch bug, a grayish-black insect with a light "X" on its back decimated acres of wheat. With its mosquito-like beak, it drilled into the wheat stalks and sucked out the life-giving juices, and the wheat wilted and died.



Early log barn, Door County. Most of the settlers coming to Wisconsin first built log buildings.

With three strikes against them—reduced fertility, disease and insect pests—many wheat farmers began looking for alternatives. Some moved further west and continued wheat farming in the Dakotas, Kansas and Nebraska, but many stayed in Wisconsin. During these years of searching for a profitable way to farm, farmers in central Wisconsin, many of Polish descent, began growing potatoes. Potato cellars, small, two-story buildings with most of the first story underground, appeared in these central Wisconsin farmsteads or nearby fields. When the potatoes were harvested in the fall, they were stored in the potato cellar with the farmer hoping that prices would rise later in the winter when he hauled the crop to market.



Early potato cellar. Potatoes were stored in the lower portion of the building.

Further south, and in the southwest, many farmers, especially those of Norwegian descent, began growing tobacco for supplemental income in Dane, Rock, Vernon and Crawford counties. In these farmsteads, long, relatively narrow drying sheds for tobacco appeared. A characteristic of many tobacco sheds is that every other board on the side walls can be opened, allowing breezes to flow through the building and dry the crop.

Sheep raising became popular in some of the southern counties with good prices for wool assured during the Civil War. But by the middle 1870s, wool prices dropped and sheep producers became discouraged.

Hops growing began in Wisconsin starting in 1852 and continued to boom in the middle 1860s. Sauk County was the center of the activity, as some growers became millionaires, literally overnight. Hop houses, often square, two-story buildings with a cupola on top were found in farmsteads in this region. The hop house was used for drying hop cones after they were harvested. The hops market crashed in 1867 and never regained its former importance.

A few farmers, especially those who had roots in upper New York state where dairy farming had been important, began looking at the dairy cow in a new light. Dairy farming not only required equipment that many farmers did not have, it required a way of life different from that of the wheat farmer. The dairy cow is a demanding animal. It wants to be milked twice a day, everyday. Likewise, it wants daily feeding.



Tobacco shed, Dane County. When wheat growing was no longer profitable for Wisconsin farmers, many turned to other pursuits, including growing tobacco.



W. D. Hoard came to Wisconsin in 1857 from New York State and became one of the early dairy leaders. He was editor of the *Jefferson County Union* in which he wrote about the virtues of dairy farming. In 1889, the University of Wisconsin's College of Agriculture was created and immediately became interested in dairy agriculture and the challenges dairy farmers faced. William A. Henry, the first Dean of the College of Agriculture, became an outspoken promoter of the new industry. Hiram Smith, a Sheboygan dairyman appointed to the Board of Regents in 1878, also became a strong advocate for Wisconsin's fledgling dairy industry.

The word was getting out. Wisconsin farmers began switching to milk cows. By 1885, Wisconsin had become a dairy state. But it didn't happen overnight. The transition from the time when wheat was king, to the time when the dairy cow became queen took 25 years.

Making the switch from crop farming to dairy farming was not an easy decision. Dairy farming required a substantial initial investment in cows and in shelter for them. Thus appeared the dairy barn that became the most central building in the entire farmstead, as is true to this day. Farmers spent upwards of two or three thousand dollars for their barns, a considerable investment for the day.

Once a farmer decided to go into dairy farming, he made a long-term decision. He often decided for his children and grandchildren, as evidenced by the quality and sturdiness of the dairy barn's construction. These early barns were built to survive for generations.

Something else happened, too, when farmers switched from wheat growing to dairy farming. Many accepted the idea of diversified farming, which meant not putting all of your farming eggs in one basket. From the time that dairy farming became popular in Wisconsin—the late 1800s to the early 1900s—almost every farmer raised not only a dairy herd, but also pigs, a small flock of chickens and maybe a few sheep. Many farmers also raised crops such as tobacco, hops, potatoes or orchard fruits. Some also had a few head of beef cattle, but these were kept mostly to provide meat for the farmer's table.

Many farmers saw pigs as “mortgage lifters.” This was particularly true when the price of pork was relatively high. Because the size of the swine herd could be increased much more quickly than the dairy herd, hog numbers fluctuated wildly with pork prices. Some years farmers made money from pigs; other years the price for hogs didn't cover feed costs. Nonetheless, the dairy herd provided a more stable income.

As agricultural methods changed, the farmstead changed. Diversified farming required an array of farm buildings: a barn for the dairy herd and hay storage, a tobacco drying barn or a potato cellar, a brooder house to raise young chicks to maturity, a hen house to house the poultry flock, a hog house for the pigs, a granary to store harvested grain and a corn crib for cob corn storage.

New buildings were added and old ones removed. When tractors became available, the horse stable was used for other purposes. New storage buildings proved necessary for the tractor and its equipment. With the hay bailer came new types of hay storage buildings, and old barns that formerly stored loose hay were modified somewhat to accommodate bales. With research on corn and grass silage, new kinds of silos appeared. When electricity came to the farm, ice houses, well houses and privies began disappearing.

With modern-day corn combines, the need for crib corn storage has declined and large metal storage units with crop drying capabilities have emerged. Each change in farming called for new types of buildings.



Turn of the century dairy barn, College of Agricultural and Life Sciences, University of Wisconsin-Madison.

By the 1960s another change in agriculture began occurring in Wisconsin. Dairy farmers either expanded their operations or they quit milking cows, took up other agricultural pursuits, or sold their farms. Sometimes farms were consolidated with the result that the buildings on one of the properties became vacant or fell into disrepair.

Many dairy farmers increased the sizes of their dairy herds, enlarged their old dairy barns, built new, often single-story dairy barns, and sometimes both remodeled old barns and attached new additions. Traveling around Wisconsin, it is not uncommon to see an older, gable or gambrel-roof wooden barn with a single-story metal addition.

As dairy herds expanded, dairy farmers' interest in diversified farming declined. They sold the pigs, kept only a few chickens, and concentrated on raising crops to feed their larger dairy herds. Some crops requiring considerable hand labor such as tobacco and cucumbers remained popular in those areas where they grew well. Income from tobacco and "cukes" provided tuition money for many college-bound farm youngsters.

Some farmers left dairying to grow corn or soybeans. Wisconsin became the nation's leading producer of sweet corn, snap beans and peas for

processing. Many central Wisconsin farmers, particularly those on the flat, sandy soils of Adams, Waushara and Portage counties, bought out their neighbors and began growing hundreds of acres of irrigated potatoes. When farmers sold their cows, they kept the old dairy barns to use for other purposes or let them fall into decay and, finally, disappear. Dairy farming became a memory for these crop farmers. New farm buildings, generally steel on a pole framework, were constructed to house equipment, and in some instances to store the crops. The modern day potato storage buildings, for instance, bear slight resemblance to their historical cousins, the little two-story cellars where potatoes were stored in the mostly below-ground part of the building.

For those who turned to raising corn and soybeans, few farm buildings were needed, only those for the storage of large machinery, fertilizer and seeds, and in some cases the crop. In many instances the corn or soybean crop was hauled directly from field to grain elevator, requiring no on-farm storage.

In a few cases, farmers switched from dairy farming to raising beef cattle, broilers, turkeys or hogs in large numbers. Here the old dairy barn was often remodeled for the new agricultural use.

The number of Wisconsin farms has decreased each year since the 1930s, and farm size has increased. Wisconsin farms numbered about 78,000 in 1994 compared to 138,000 in 1960, and nearly 200,000 in 1935. Average farm size in 1935 was 117.4 acres; in 1994 it was 217 acres.² The number of dairy farms and dairy cows has plummeted, especially in recent years. In 1960, there were 105,000 dairy farms and 2.1 million cows in Wisconsin. In 1995 there were 29,000 dairy farms and about 1.5 million cows.³

Even with these changes in dairy farming, Wisconsin continued as the nation's leader in producing several dairy products, especially cheese. California passed Wisconsin recently in the overall production of fluid milk.

There were other shifts. With the vast changes in Wisconsin agriculture, fewer people lived on the land. In 1850, 90 percent of Wisconsin's population lived on farms. By 1930, 50 percent of Wisconsin's population lived on farms; by 1993 the number fell to 1.6 percent.⁴

In some ways, Wisconsin agriculture is returning to where it was when the first settlers arrived and began growing wheat, except that now the major crops are corn, soybeans, potatoes and canning crops. Dairy farming continues as a major agricultural pursuit in Wisconsin, but it is a very different kind of dairying than that experienced by the first dairy farmers who built the old barns.

Many modern day dairy herds include several hundred cows. The newest innovation for housing them is a greenhouse, identical to what one sees at a plant nursery. The plastic covered greenhouse is far less expensive to erect than a more permanent barn. In fact, one of the selling features of the greenhouse barn is that it can be dismantled quickly when the dairy farmer moves on to some other enterprise. Another common dairy barn is one constructed of steel and pole.



Farmstead with older wooden barn and a newer metal one, plus silos of various older and newer silos, Sauk County.

Historic barns

The old barns are one way to trace the changes in agriculture. The historic dairy barns were not all of the same type, which is obvious to anyone driving around the state. The three most common types are: 1) the three-bay barn; 2) the bank barn; and 3) the two-story barn without a threshing floor. All three can be found in Wisconsin today.

The three-bay barn

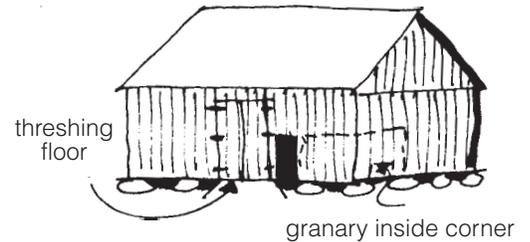
The idea for the three-bay barn came to this country from Europe. This barn was widely constructed in the eastern United States, and when New England settlers of British ancestry moved to Wisconsin, they brought their knowledge of the three-bay barn with them. Initially, the barn was used almost entirely as a place to thresh and store grain.

The three-bay barn is a single-level, rectangular structure divided into three sections; each section is called a bay. Large double doors are found on each of the long sides of the barn. On the middle bay, or threshing floor, grain was threshed with a flail. A flail is a hand threshing implement with a wooden handle to which a short, free-swinging stick is attached. When the threshing was finished, the large doors were opened so the breeze could blow away the chaff, leaving the grain behind. The other two bays were used for storing bundles of wheat before they were threshed.

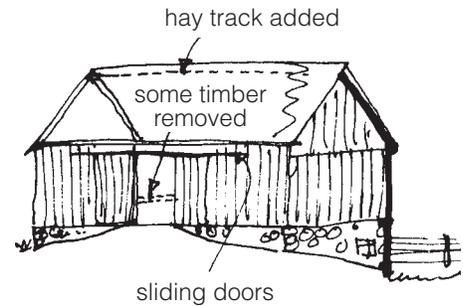
As Wisconsin moved from wheat farming to dairy farming, many three-bay barns were modified by constructing a stable in one or both of the bays on either side of the threshing floor. The stable was about eight feet high, leaving considerable area above the stable area to store hay. A more frequent adaptation was to actually raise the old grain barn and build a stone ground level underneath.

Those farmers who originally built a barn to house dairy cattle looked to a different kind of structure than the little three-bay barn. The bank barn was the answer for many farmers.

Threshing barn



Hay and dairy barn



A grain storage and threshing barn could be transformed into a hay and dairy barn by jacking it up and building a stone ground level underneath.



Three-bay threshing barn, Waushara County. Many of these were built during Wisconsin's wheat growing days and later converted to housing for dairy cattle.



Bank barn with gable roof, and wooden cupola, Dane County. Cupulas, the early ones wooden, and later ones made of metal, were ventilators. They also were often painted in attractive ways.



Late 1800s, gable-roofed bank barn, Dane County.



Detail of a ramp for a bank barn. When a convenient hillside was not available a ramp was constructed to provide access to the second floor of the barn.

The bank barn

One can find bank barns in all regions of Wisconsin and in many other parts of the country as well. The bank barn, a two-story structure, can be 30 or more feet tall, 30 or more feet wide, and 60 or more feet long. Cattle are housed on the ground level, sometimes called the stable or basement, even though it is often exposed on three sides. Hay is stored in the barn's second floor. Sometimes a granary is also found on the second floor, where oats are stored, and in some older barns, one occasionally finds a silo. In the older barns, the walls of the first floor were constructed of field stone (in the glaciated regions of Wisconsin) or of quarried rock (in the non-glaciated regions, primarily western and southwestern Wisconsin). Most barns built after 1930 had poured concrete or concrete block walls.

The upper part of the barn was usually constructed entirely of wood and sat on the basement level, or stable part of the barn. Some barns were built of stone and mortar. The bank barn was sometimes built on the side of a hill, or if on flat ground, an earthen ramp was constructed to the upper level. A farmer could drive directly onto the second floor of the barn with a wagon load of hay to the threshing floor, named after the threshing floor of the old threshing barn. Depending on the length of the barn, there could be one, two or rarely three threshing floors (later merely called barn floors). Each threshing floor had a double set of doors reaching from the floor to the eaves, often 12 to 16 feet.

The threshing or barn floor was the heart of the barn, the area where hay was unloaded and pitched or dropped into the haymows on either side.

Two-story barns without threshing floors

Throughout Wisconsin the traveler can find two-story barns without threshing floors. These are similar to bank barns in that cattle are housed on the first floor and hay is stored in the vast second floor, but the two-story barn does not have a threshing floor.

The second-story barn without a threshing floor did not appear until after 1867, when William Loudon, a 26-year-old inventor from Fairfield, Iowa, invented a hay fork and track fixed to the roof rafters of a barn. During the mid-1860s a more primitive hay fork had been used which allowed farmers to drag hay off their hay wagons and up into the haymows. But there was no track to convey the hay once it was lifted off the wagon.

With Loudon's hay fork, a farmer could drive to the outside end of a two-story barn and push either a grappling fork or a harpoon fork into the load of hay and haul an ample amount to the gable end of the barn, through the door to the track, and then to anywhere in the mows. All of this was accomplished with a system of ropes and pulleys. Many of the longer two-story barns of this type had entry doors at both gable ends so hay could be hauled into the barn from both ends.

Loudon's hay fork and carrier allowed farmers to build higher and longer barns that had no threshing floors. However, the barns had to be free of crossbeams to allow the hay to freely move along the track once it entered the barn. This led to a different framing system and the gambrel roof.



A manure carrier track, an early mechanical convenience for dairy farmers.



Roof extension on barn to accommodate a hay fork that operated with a system of ropes and pulleys allowing the farmer to lift loose hay into the haymow without driving into the barn.



Gambrel-roofed barn, fieldstone wall, Price County. The barn continues to house dairy cattle.



Round barn, converted from a dairy barn to use for an apple orchard, Green County.



Octagonal barn. One of only a handful left standing in Wisconsin, Ozaukee County.



Twenty-sided barn, Columbia County.

Centric barns

While less common than the three types of barns discussed earlier, round barns may be the most recognizable. Some of the earliest and finest round barns were built by the Shakers. In 1826 they built a round stone barn at Hancock, Massachusetts measuring 270 feet around with walls 21 feet high.

Round barns were not unusual in Wisconsin. Nearly every county in the state had at least one. Vernon County, in western Wisconsin, claims to have the most round barns of any county in the country. Fulton County, Indiana had made the claim earlier, but Vernon County barn buffs discovered 16 round barns tucked in the valleys and along the ridges of this picturesque county located south of La Crosse. Fulton County could claim only nine round barns.

During the early 1900s, some colleges of agriculture and particularly the University of Illinois promoted the round barn as one of the most efficient types of barns. Round barns require less building material to encompass the same amount of space as the other barn shapes. Octagonal barn builders followed the same reasoning; however octagonal and other multiple-sided barns were somewhat easier to construct because there was a series of straight sides rather than a continuous circle. Bending barn boards to fit horizontally on a round barn was a challenge because the boards continually wanted to pop loose. Some barn builders came as close as they could to a round barn by maintaining several straight sides. The Nashold 20-sided barn located near Fall River in Columbia County is an example; another is a 13-sided barn in Sheboygan County.



Development of silos

After the dairy barn, the silo is probably the next most visible feature in most Wisconsin farmsteads. Wisconsin is the leading state in the nation for the number of tons of corn for silage (8.6 million tons in 1993) plus millions of tons of forage that are made into silage.⁵

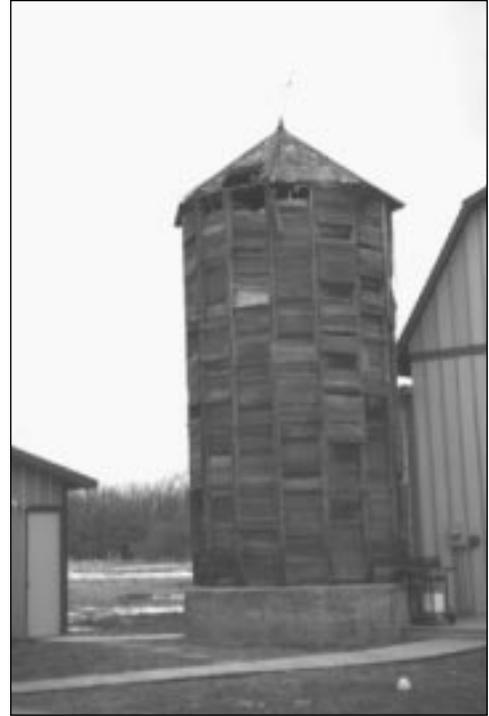
Unlike barns, where settlers brought ideas about how to build them from Europe and New England to Wisconsin in the middle 1800s, silos were a more recent innovation. The first silos in Wisconsin didn't appear until the late 1880s. The idea for a silo came from France and Germany where farmers used them starting about 1845.

These early European silos were pits in the ground where chopped corn plants were placed. The pit was covered with dirt and the chopped corn was allowed to ferment. To make the pits more permanent, they were sometimes lined with masonry.⁶

The early silos in this country were also pits. One of the earliest recorded silos in the Midwest was built by an Illinois farmer in 1873. The structure was 10 feet wide, 16 feet long and 24 feet deep (eight feet underground). It bore no resemblance to today's cylindrical silos scattered across Wisconsin like so many farmstead exclamation points. A Fort Atkinson, Wisconsin farmer built a trench silo in 1877 which was six feet deep, six feet wide and 30 feet long.⁷

Farmers had problems with these pit silos: spoilage was considerable, freezing was a problem in winter, and forking out the silage from eight or ten feet below ground was a difficult task. On top of the horizontal pits, farmers placed boards so that more of the silo could be above ground. This solved the problem of pitching silage over their heads, but increased problems with spoilage and freezing. Someone, with a stroke of creativity, decided to stand the silo on end, board up all four sides and keep a modest pit under the structure. So silos moved from horizontal, mostly underground, to vertical, mostly above-ground structures. They were square towers, 20 or so feet tall with six- to eight-foot, or sometimes even deeper pits beneath.

Farmers immediately discovered that although they had solved a major problem—it was far easier to pitch silage down from 20 feet than up eight feet—the silage continued to spoil in the corners of the structure. To solve that problem, farmers placed boards across the corners so the inside of the silo became octagonal. Because air remained in the corners of the silo, there was still spoilage, but not as much as with the square silo. Another problem was filling upright silos. The challenge was pitching the cut corn fodder into the silo. Some farmers forked the fodder to a platform, and then from the platform over the top edge of the silo.



Multi-sided wooden silo, Green County. This style of silo preceded those that were constructed as true cylinders.



Round, field stone silo, Waukesha County. These generally preceded silos constructed of wood staves.

A completely cylindrical silo appeared next. Some of the earliest ones were constructed entirely of field stones, especially in glaciated areas of Wisconsin. Because of the pressure that developed during fermentation, the field stone walls on these early silos were up to two feet thick, particularly near the bottom. Some even earlier field stone silos were constructed in the shape of a square.

The University of Wisconsin College of Agriculture had been researching silos since the early 1880s, starting with pit silos of various sizes. Professor F. H. King conducted many silo experiments, including the development of a cylindrical wooden silo. The silo was constructed of vertical studs with a thin thickness of wood bent around the vertical studs on the outside, and two or three thicknesses on the inside with tar paper placed between them.⁸ With the cylindrical, upright silo there was no spoilage in the corners. But the King silo was not the easiest to construct as it required

bending wood—a problem identical to that of constructing a round barn with horizontal siding.

The next silo that emerged was known as the wood stave silo and it became extremely popular in Wisconsin and other states where silage was an important feed. The wood stave silo was constructed of two-by-six tongued-and-grooved redwood or cypress staves held together by steel rod hoops. The steel rods were joined at the ends with iron lugs and nuts so they could be adjusted.

The advantages of the wood stave silo were several: It could be erected in a day or two, the cost was moderate, and it had all the other attributes of a cylindrical structure.



Square, field stone silo, Kewaunee County. One of the first upright silos in the state.



Barn with lean-to attachment plus short wood stave silo, Portage County.



Wood stave silo. Thousands of these were constructed in Wisconsin, but few remain, having been replaced by concrete stave, poured concrete and steel structures.

By the early 1900s, concrete became popular for farm buildings, including barn walls and silos. The first poured concrete silos in Wisconsin appeared during these years (some modern silos are still constructed of poured concrete). The University of Wisconsin College of Agriculture advocated poured concrete silos and made steel forms available to do-it-yourself farmers. There were other variations as well. Concrete blocks and later concrete staves were the material of choice for silos. The earliest known concrete stave silo was erected in Michigan in 1904. The concrete staves were two inches thick, ten inches wide and 28 inches long with interlocking joints. The concrete stave silo became exceedingly popular in Wisconsin, soon replacing the wooden version. Thousands of concrete stave silos can still be found throughout the corn and forage growing areas of the state.

Now and again one spots a brick silo. Perhaps a little more numerous are the hollow-tile or vitrified tile silos. The first ones were developed at the Iowa Experiment Station in 1908. The hollow clay-tile blocks are four by six inches thick, with reinforcing steel wire embedded in the mortar joints. The dead air spaces in the tiles were supposed to make the silo frost resistant.

In the late 1940s a new, revolutionary silo began appearing. The A. O. Smith Company of Milwaukee, manufacturer of glass-lined water heaters and beer vats, began making steel, glass-lined silos—Harvestores, the company called them. This first glass-lined silo was, in reality, a beer storage vat stood on end. Although they were considerably more expensive than the popular concrete stave silos, the blue silos began dotting the upper Midwest, especially in Wisconsin. The glass lining prevented freezing and rusting, and the structure was airtight, which eliminated spoilage. Unlike all other silos, the Harvestore unloaded from the bottom, with a specially designed silo



Concrete stave silo. University of Wisconsin–Madison campus.



Brick silo, Waupaca County.



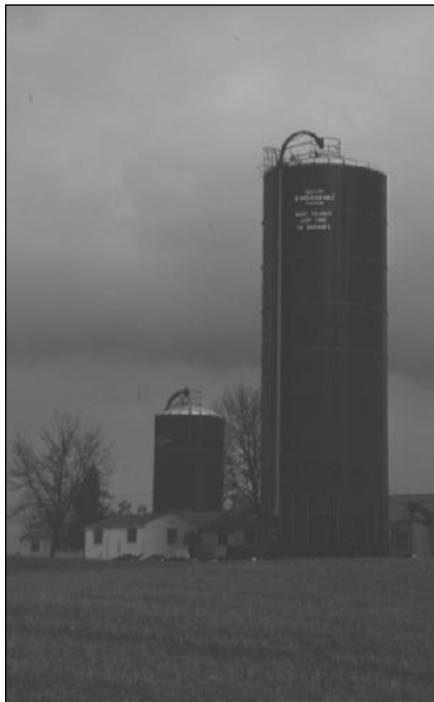
Steel silo, Iowa County. Silage freezing was a serious problem with this type of silo.



Glazed tile silo, Dane County.

unloader. As the silage was fed, a large plastic bag at the top of the silo took up the space where the silage had been, to keep out air. The Harvestore silos tended to be found in the more prosperous dairy areas of the state.

To complete the silo story, today we see many farmers returning to a pit silo with concrete sides and floor. The structure is built large enough so the silage can be removed with a tractor and a front end loader. Another kind of silo is a long white plastic tube that lies horizontally on the ground. The tubes are about four feet in diameter and some appear to be 50 or more feet long. Some farmers erect a movable feeding rack so that cattle can eat from the end of the silo. The rack is moved as the silage is consumed. When the silo is empty, the plastic cover is discarded.



Glass-lined, Harvestore silo, Jefferson County.

What we can learn from old farm buildings

Like everything in our society, farming is changing rapidly. Barns that once sheltered a couple of dozen milk cows, may now, with additions, house up to 100 or more cows. Or they may have been converted to storage, antique stores, conference centers, homes or dozens of other uses. Too often they merely stand empty, visible reminders of an earlier day. Little, slat-sided corncribs, smaller at the bottom and wider at the top, designed to hold ear corn, have been replaced with round metal corn bins. Two-story granaries, sometimes with corn cribs attached on one or both sides, have been replaced with metal storage buildings that hold thousands of bushels compared to the few hundred that were stored in the old granaries. Smokehouses, summer kitchens, hop houses, well houses, ice and chicken houses have been torn down, or are used for other purposes. Some of the more specialized buildings, such as tobacco sheds continue to be used to store and cure tobacco. The early potato cellars have mostly been abandoned, too small to store today's potato harvests. The early

wooden silos, some as small as ten or twelve feet in diameter and 20 feet tall, stand alongside monster silos three times as tall.

Why keep the old farm buildings? The reasons are many, but one important reason is to remind us of our agricultural history. Even though most people today live in urban areas, their parents or grandparents may have been born on farms. Looking at an old barn, we may be able to understand something about what early dairy farming was like in Wisconsin, when farmers shifted from growing wheat to milking cows. We can envision what hay-making was like. We can picture steel-wheeled wagons loaded high with sweet smelling clover, timothy and alfalfa creaking up the barn's ramp, the team of Belgian horses straining in their harnesses and the smell of freshly made hay mixing with the pungent smell of horse sweat. We can see in our minds the hay fork thrust into the load of hay and pulled up into the mows where it lands with a swish, the steamy, often 100-degree air filled with hay leaves. The farmer or his son or daughter, equipped with a three-tined fork, pulls and pushes the loose hay into the far corners of the gambrel-roofed barn, to be forked out again in winter, to the hungry cows stabled below.



Deserted farmstead, Portage County. With no maintenance, these buildings will soon collapse.



We can picture a few years later, a hay baler, thumping its way around the field, and the farmer stacking the square bales on a rubber-wheeled wagon pulled by a John Deere B, a Farmall H, an Allis Chalmers or a Ford 8N tractor.

Now the bales are placed on an elevator that transports them to the hay mows where loose hay was once stored. The hayfork and the hayfork ropes have become history, but they remind us of an earlier time, when creative farm kids practiced circus tricks in the early summer when the barn was empty.

For each of the buildings in the farmstead, a similar history can be drawn. With the granary, we can think about grain binders and grain shocks, about threshing machines and threshing crews. And then, with the coming of the combine, the threshing machine disappeared as did the grain binder. But the grain continued to be harvested—more of it, faster, with less labor, and with a larger granary required.

The little corn cribs became nostalgic structures for many older farmers who remember, as children, picking corn by hand, and husking it on the threshing floor before shoveling it into the corn crib. And then came the corn binder and shocks of drying corn marching across Wisconsin's corn fields in rows like so many teepees. Corn shredders were a part of this picture, like the threshing machine, that moved from farm to farm in October, during the warm sunny days, and the cold raw ones, too, for the corn had to come out of the fields before first snow. Wagon load after wagon load of freshly husked corn was shoveled into the corn cribs, until the harvesting was completed. As the combine replaced the threshing machine, the corn picker, and later the corn combine, replaced the corn binder and shredder. And the old wooden slat-sided corn cribs were just too small to handle a crop that now came in with more than 100 bushels per acre with the new hybrid corn varieties.

Farmsteads are historical places, particularly for those who have maintained the old buildings and found new uses for them. We can recount our history as agricultural people by visiting them, looking at them, understanding how they were used. It is thus vital that these old buildings be preserved.

Someone once said, to know where we are going as a people, we should know where we've been. Our rural buildings are tangible reminders of our past and create an interesting source of enjoyment for urban dwellers and visitors from non-agricultural states.



Early corn crib, Sauk County.



Only the shell of this old barn remains. The barn boards have been removed and the rest forgotten, Sauk County.



A southwestern Wisconsin farmstead, Iowa County.

Further reading

Arthur, Eric and Dudley Witney. *The Barn: A Vanishing Landmark in North America*. Greenwich, CT: New York Graphic Society Ltd., 1972.

Auer, Michael J. *The Preservation of Historic Barns: 20 Preservation Briefs*. Washington, DC: National Park Service, 1989.

Carter, Deane G. *Farm Buildings*. New York: John Wiley & Sons, 1922, 1928, 1941, 1954.

Clark, James I. *Wisconsin Agriculture: The Rise of the Dairy Cow*. Madison, WI: State Historical Society of Wisconsin, 1956.

Foster, W. A. and Deane G. Carter. *Farm Buildings*. (2nd ed.) New York: John Wiley & Sons, 1928.

Halstad, Byron D. *Barn Plans and Outbuildings*. New York: Orange Judd Company, 1893.

Harris, Bill. *Barns of America*. New York: Crescent Books, 1991.

Hart, John Fraser. *The Look of The Land*. Englewood Cliffs, NJ: Prentice Hall, 1975.

Humstone, Mary. *Barn Again! A Guide to Rehabilitation of Older Farm Buildings*. Des Moines, IA: Meredith Corporation and the National Trust for Historic Preservation, 1988.

Johnson, Dexter W. *Using Old Farm Buildings*. National Trust for Historic Preservation. Washington, DC, National Park Service, Information Series, No. 46. 1989.

Noble, Allen G. and Wilhelm, Hubert G. H. (eds.) *Barns of the Midwest*. Athens, Ohio: Ohio University Press, 1995.

Schuler, Stanley. *American Barns, In a Class by Themselves*. Exton, PA: Schiffer Publishing, 1984.

Sloane, Eric. *An Age of Barns*. New York: Funk & Wagnalls, 1967.

Notes

- ¹ See Robert C. Nesbit. *The History of Wisconsin, Vol. III, Urbanization & Industrialization, 1873-1893*. Madison, WI: State Historical Society of Wisconsin, 1985, pp. 262-305 for a discussion of ethnic settlement patterns in the state.
- ² *State of Wisconsin Blue Book*, 1995-1996. Madison, WI: Department of Administration, 1995, p. 602, and Wisconsin Department of Administration, Demographic Service Center, March 1994.
- ³ *Ibid.*
- ⁴ *State of Wisconsin Blue Book*, 1995-1996, pp.601-602.
- ⁵ *Ibid.*
- ⁶ M. L. King. *Silos: Construction and Service*. St. Paul, MN: Webb Publishing Co., 1913, p. 7.
- ⁷ Jerry Apps. *Barns of Wisconsin*. Madison, WI: Wisconsin Trails, (2nd ed.) 1995, pp. 108-109.
- ⁸ *Silos: Construction and Service*, 1913, p. 24.

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