HOOSIER BARN CHRONICLE

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Silos—Icons of Agriculture

The word silo, which comes from the French, translates as an underground granary, a pit, or tank. The word ensilage, also from the French, but less familiar to us, actually means putting into a silo or pit. In the U.S. we use ensilage and silage interchangeably when referring to preserved green fodder, typically cornstalks and leaves, or green hay, that we store in silos and use as winter feed for farm animals—cattle, most frequently.

Silage is usually fed to animals in combination with grain and dry hay, silage making up about 40% of the total. The advantage of feeding silage, especially in regions with winter climates, derives from its higher nutrient content. Adding silage to the winter diet hastens the fattening and improves the quality of beef cattle. Perhaps most important, dairy cattle remain fresh throughout the year when fed silage. Without silage, their milk production cycle begins in the spring and ends in the fall—the period when green pastures are available. It is no coincidence that the increase in silage production and the growth of the dairy industry intertwine.

Photo: Kelly Whiteman-Sbnipe

Once green fodder is harvested it is usually left in the field to reduce moisture before it is shredded or ground. Shredding reduces air pockets once the silage is loaded into the silo. The key to effectively preserving silage throughout the winter months is to deny its exposure to oxygen, because oxygen accelerates the fermentation process and eventually leads to decay and spoilage. Once loaded, silage is compressed (either mechanically or under its own weight) in order to eliminate as much air as possible, and although a limited fermentation takes place, an airtight silo will prevent spoilage.

The processing and storage of silage requires an understanding of, and ability to control the fermentation process, and the physical development of the silo reflects advances in that understanding and improved applications of new materials to construct airtight and moisture proof silos.

As implied above, the earliest silos were underground pits that were filled with course silage, trampled to drive out the air, and covered with straw and earth weighted down with stones or logs. Pit storage protected crops from freezing, and was similar to techniques used for storing root crops in underground pits or cellars—practices as old as agriculture itself. Such practices are documented in Europe in the late 1700's, where brown hay and green sour grass were fed. Indeed, techniques for storing green fodder were familiar to the early Greeks, Romans, and Native Americans. However, silage stored this way was subject to spoilage wherever exposure to air or water occurred, and could be laborious to retrieve.

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Moreover, methods that may have been suitable for low volume storage were inadequate to meet the coming demand for increased tonnage.

Further advancement in storage methods doesn't come until the mid 19th century, as a result of experimentation in Germany and France, which perhaps explains our adoption of French terminology. New designs at this time intended to improve pit storage, but also included proposals for covered mounds and tanks above ground. To reduce labor and facilitate feeding, stone lined pits are located below the floors of barns, adjacent to stock, and covered with weighted boards. Another solution is to construct low stone cylinders that are partially buried below ground within the barn or immediately adjacent. Examples of these have been found in New England as well. However, retrieving the silage from below ground is labor intensive, and infiltration of ground water is a constant threat. The trench silo, a form of open pit silo covered with plastic sheets weighed down with old tires, is still used to store hay silage in the plains states, but above ground solutions, called upright or tower silos, predominate.

The silo first appears on the American agricultural landscape in the 1870's, in response to advances in the understanding of how to preserve and store silage. From 1874 in Illinois, silo use jumps to the northeastern seaboard and upper New York State (home to the dairy industry at that time), and gradually spreads back into the Midwest over the next two decades. This period witnesses the transition from pit silos in the late 1870's, to rectangular wooden tower silos in the late 1880's, to circular structures in the late 1890's, first from wood, and after 1906, from concrete. By the turn of the twentieth century silo design has vastly improved, and the use of silos to store processed green silage becomes common in Indiana (first silo in 1884) and neighboring states.

There are early (1880's) examples of circular stone silos in both the East and Midwest. Construction materials limited their height, and often half or more of their volume was below ground, so they represent a transitional design between pit and tower silos. They are rare, and only occurred where stone was readily available. More common during this period were rectilinear wood silos, which were frame construction, clad with either horizontal or vertical wood siding. They were easy to build, taller, and usually attached to the exterior corner or gable end of the barn so their contents could be accessed from within. It was difficult to make them airtight, however, and their interior corners tended to impair loading and unloading, and created unwanted pockets of air. This was a common enough problem that farmers devised wooden linings with rounded interior corners.

Circular (sometimes octagonal) wood silos remedied the air pocket problem, but were no more airtight. Methods were developed for soaking tongue and groove boards and bending them to a round form, where they were attached horizontally and held in place by iron straps. A better method, the stave silo, placed the boards vertically, imitating barrel construction, freeing the constructor of the obligation to soak and bend the siding, but still requiring iron strapping. Circular silos out performed rectilinear ones, but retained some of the disadvantages of wood buildings, the most significant of which were that they often succumbed to the stresses produced by the weight and moisture content of the silage, and their foundations were prone to decay.

By 1914, round concrete silos had replaced the wood stave type. These could be built taller—increasing capacity—and did not require a lining. They would not rot, and were considerably more airtight. Early examples were constructed of stacked, precast concrete rings, and bound with iron hoops. These were improved upon by the development of concrete stave construction, and many silos of this type can still be seen today. Less common are brick silos, but glazed hollow tile silos were common in the 1920's and 30's, and many are still standing. These forms were more fragile and less satisfactory than concrete ones, however, which required less overall maintenance.

The end of World War II brought the airtight Harvestore silo, constructed of fiberglass bonded to steel sheets. These are recognizable by their blue color and large silhouette on the landscape. The fiberglass insulated the structure, assuring that the contents would not freeze, and the design included a mechanical auger that enabled farmers to unload silage from the bottom for the first time.

The 1880's and 90's, which saw the early development of the silo, also hosted new demands on American agriculture resulting from industrialization and a major population shift to urban centers. It is a time of significant scientific advancements in farm practices that include silo improvements as well as design enhancements for barns in the form of ventilators, windows, and sanitation measures. The round barn and the Wisconsin Dairy barn are popularized at this time, and farm journals and state agricultural experiment stations are busy researching and encouraging best practices, including the promotion of silage feeding.

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Silos (continued)

Because the nutritional value of corn outweighs that of a combination of hay and grain, feeding silage supports larger herds of cattle. While not necessarily critical for prospering farms, larger herds could make all the difference for more marginal operations. Plus, animals fed silage required less watering, which saved labor, especially important during winter months when natural water sources were often frozen. For dairy farmers the above-mentioned advantage of year round milk production provided income through the winter months, often at elevated prices, and helped meet the new demand from urban centers.

These factors, alongside the technological advancement of silo design and construction led to an expansion of silage production and storage, most notably after 1900. From 50,000 silos in the U.S. in1895, the number grew to nearly half a million in less than ten years, and by the 1920's Wisconsin alone had 100,000 silos as a result of the shift in dairy operations from New York to the upper Midwest. By 1960, there are over one million silos in the United States.

The information in this article is taken from the following sources, all of which are recommended reading for those interested in learning more about barns and farm buildings and practices.

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Mail Pouch Tobacco Barn Revealed

After nearly seventy years of being covered with aluminum siding, this Mail Pouch painted barn once again draws the attention of travelers along State Road 18, just west of Flora in Carroll County. Charles Viney, the current owner had no idea that it was a major source of contention with his grandparents. Back in the early 1950s, Charlie's grandfather, Willie Viney, succumbed to the "generous" offer made by Mail Pouch Tobacco to paint his barn for "free." However, when grandmother Gertrude found out, she was so furious about advertising tobacco that she gave her husband an ultimatum – either repaint the barn or side it over, and this is what he did. Fortunately, the aluminum siding protected the beautiful painting that is today visible on both the east and west sides. The north and south sides are also painted but still covered with siding. The barn was highlighted as a side trip on the 2016 Carroll County barn tour. Charlie has graciously given permission for visitors to stop on his property to photograph the barn, but asks that visitors do not try to enter the barn.

Indiana Bicentennial Barn Quilt

The Indiana Bicentennial Barn Quilt will again be on display to a large audience when it makes an appearance at next year's Indiana Heritage Quilt Show in Bloomington (Monroe County) at the Convention Center from March 7-10, 2019. The show is open to all interested quilters and quilt fans and includes competitions, workshops, vendors, and off-site quilt exhibits at local museums. To learn more about the show visit www.ihqs.org.

The Indiana Bicentennial Barn Quilt was conceived in advance of the state's Bicentennial by the Indiana Barn Foundation as a means of raising awareness about preserving Indiana's heritage barns, and to eventually be auctioned to raise funds for the Mauri Williamson Barn Preservation Grant. In partnership with the Indiana State Quilt Guild and Indiana Landmarks, and named a Bicentennial Legacy Project by the Indiana Bicentennial Commission, the quilt depicts a barn from nearly every one of the state's 92 counties.

Volunteer quilters were invited to design and submit 6-inch by 6-inch quilt blocks depicting a barn in a given county. Nappanee's Connie Kauffman, a quilt block contributor herself, developed the final quilt design, and Bremen's Ruby Borkholder finished the quilt by hand.

On February 29, 2016, the quilt contributors were honored at a private unveiling of the finished quilt before it was displayed at the Indiana Statehouse. The quilt then began a year-long journey around the state where it was displayed at various historical societies, libraries, museums, art centers, quilt shows, and county fairs, as well as the Indiana State Fair.

As 2016 drew to a close, the quilt, its contributors, and the Indiana Barn Foundation were honored when the quilt was named the Outstanding Bicentennial Collaborative Project by the Indiana Historical Society.

In March 2017, the quilt was auctioned to raise funds for IBF's barn preservation grant and was purchased by Melba Shillings of Starke County. Her husband, Jim, was president of the Starke County Historical Society when he received a call from quilter Judy Harness about the barn quilt project and a request for photos of local barns. One of the photos Jim sent her was his own barn built by his grandfather in 1902. Judy choose to depict the Edgar W. Shilling barn but sadly, Jim died in October 2015 and never saw the completed quilt. Melba decided that purchasing the quilt would be a fitting way to honor her husband's memory. IBF is grateful to her for loaning the quilt for special exhibits including the Indiana Heritage Quilt Show where hundreds of people from around the country will be able to see it.

The nonprofit Indiana Heritage Quilt Show will be selling the IBF quilt books and posters on behalf of IBF but welcomes IBF member volunteers to take one or more shifts at the sales table. If you are willing to volunteer, please contact Danielle Bachant-Bell, County Rep Coordinator, at either monroecountybarns@gmail.com or (812) 336-6141.

Breezy Point Farm, a Monroe County Treasure

by Danielle Bachant-Bell

Breezy Point Farm Historic District will soon be one of the latest historic farms in Indiana to be listed in the National Register of Historic Places. Located in Monroe County, the farm includes the 1882 I-house and nine additional contributing resources including two Transverse frame barns.

John Turner Ridge and Cynthia Van Buskirk, descended from early county settlers, were married in 1879. The following year they purchased 70 acres from Cynthia's father, "Big Dave" Van Buskirk, to establish Breezy Point Farm. The Ridge's operated a typical farm of crops and animals dominated by swine and poultry. The second generation increased the farm to over 400 acres and raised Duroc swine and Percherons. Farming continued with the third and current generation.

The larger of the two Transverse frame barns was constructed in 1897. It is a mixture of timber and balloon framing with joinery techniques that include mortise and tenon and nailing. Materials are a mixture of hewn sills and beams, treated sills where repairs have been made, sawn timbers and boards, and round and half-round logs on which some retain the tree bark. The central threshing area is raised three feet off the ground with a wood floor. There are no interior walls or second floor hay loft despite the presence of a hay hood. Large notches in some of the hewn sills indicates alterations to the interior layout over time as uses of the building changed, or reuse of the timbers from a previous building.

The smaller Transverse frame barn, the "cow barn," was constructed in 1898 to serve milking operations. Constructed of hewn timbers, sawn lumber and round logs, it utilizes both mortise and tenon and nailed construction. The central bay does not pass-through. The north portal door opens into hay storage on a dirt floor. The south portal accommodated the milking area with a concrete floor and access to a feed trough.

To accommodate their livestock, a third barn larger than the others was constructed by the family c.1919. However, it was destroyed by arson in December 1984. In addition to the National Register listing, Breezy Point Farm was locally designated, a step that will ensure protection of the buildings and land.