

■ HAY BARNs OR SHEDs

Key Points

- ▶ An alternative to storing hay in a haystack or livestock barn
- ▶ In use by the late 19th century
- ▶ Threat of fire was a significant reason to build a separate hay barn
- ▶ Hay barns or sheds could be open, partly-open, or fully-enclosed
- ▶ Field hay barns were one of few major structures located outside of the farmstead cluster
- ▶ Field pickup balers were first used in the late 1930s and became widespread in the 1940s

Hay barns in Minnesota are primarily associated with the state's livestock and dairy industries. The need to build hay barns emerged in the late 19th century as the number of livestock – especially dairy cows – increased steadily, as did the number of acres planted in hay.

Note: In addition to hay, which was fed to livestock, Minnesota farmers also need large quantities of straw, which used for livestock bedding. Straw's nutritional value did not to be preserved, and straw was able to withstand weathering better than hay did. Because it wasn't critical to protect straw, many farmers stored straw in large stacks outside, reserving their inside space for hay.

The term "hay" refers to grasses and legumes that are cut, dried, and stored for winter livestock feed. Wild hay was harvested by Minnesota farmers as early as the 1850s, but "tame" or planted hay was not grown in large quantities before about 1880. Alfalfa, a legume that made excellent hay, became one of Minnesota's leading hay crops beginning in the 1910s. The amount of hay harvested in Minnesota grew along with the diversification of farms and the rise of the dairy industry.

Minnesota farmers could usually harvest three, and sometimes four, cuttings of hay from a single field per season. Hay had to be properly harvested, dried, and stored to retain its food value all winter. The ability of a farm to carry livestock over the winter, and the number of wintered animals it could support, depended in large part on the farm's stores of hay.

Hay had to be dried, usually in the field, to minimize mold and bacteria growth once it was stored. Drying also prevented overly-moist hay from heating up to combustible temperatures in the barn (Neubauer and Walker 1961: 238). Harvesting and field-drying hay relied on good timing and cooperative weather to ensure that the crop was cut at the right time, dried to optimal condition, and then quickly moved into storage before it was re-wet through rain. (See Hoffbeck's *The Haymakers*, 2000, for vivid accounts.)

In Minnesota, hay was stored in three ways: within livestock barns, piled in outdoor haystacks, and stored in hay barns or hay sheds. It is believed that the circular "hay keeper" structures built in other states were not used in Minnesota (Lindor 2004).

See also

Dairy Barns
Beef Barns
Appendix: Focus on Minnesota Crops

Hay Barns or Sheds

Barns that housed both hay and livestock were built in many forms. Two of the most common were barns with hay storage on a floor above the livestock (e.g., hay mows), and barns with hay storage in the center (usually in a tall space extending from the ground level to roof ridge). This central area was often surrounded by livestock pens on two or three sides. Barns with hay storage above the livestock were more convenient but generally more expensive to build. See the “Dairy Barns” individual farm elements section for information on hay storage in barn mows, and the “Beef Barns” farm elements section for information on barns with hay storage in the center.

HAYMAKING TECHNOLOGY

The back-breaking job of putting up hay – originally hand-cut with scythes, raked into rows, and pitched into wagons – was eventually made easier by new technology. Devices such as hay carriers, forks, hoists, and buck rakes helped work crews pick up hay in the field and lift it into storage more rapidly. Hay storage barns, whether dedicated for hay or combined with a livestock barn, often had large doors in the gable or gambrel end and projecting hay hoods to accommodate the equipment. When hay slings supplanted hay forks, still larger hay doors and a stronger carrier track were necessary (Wooley 1946: 265).

Tractor-powered hay balers that gathered, baled, and tied hay were first used in the late 1930s and became widespread in the 1940s. Equipment to make round bales was introduced in the 1940s. At the same time, Minnesota farmers began using mechanical elevators or conveyors to move hay into the barn. In the early 1940s hay choppers and blowers were used to chop hay and blow it into a barn or silo (Wooley 1946: 267-268; Lindor 2004).

In 1942 a group of agricultural engineers looked at the future of hay handling technology and seem to presage the massive hay bales of recent decades. They wrote:

If a successful pickup baler could be devised that was as simple to operate as present-day grain binders, then hay baling might have such sweeping advantages from the labor standpoint that, regardless of other considerations, it would be widely adopted and in fact become the almost universal hay-making practice. From the storage standpoint this would probably mean a sharp trend toward one-story hay storages where a great weight of baled hay could be directly supported on the ground (Shier et al 1942: 350).

In the 1940s farmers began to make “haylage” or “grass silage.” The hay for haylage did not have to be dried carefully in the field (as hay needed for barn storage) and its nutritious qualities were well-preserved. Haylage was made in airtight glass-lined silos such as the Harvestore, and could also be made in trench or bunker silos.

By 1961 most farms that needed large amounts of hay used automated methods for harvesting, baling, and handling. Despite new techniques, however, the older methods of moving loose hay with a fork and tackle, and stacking baled hay by hand, were “still in common use” in 1961, especially when relatively small quantities of hay were needed (Neubauer and Walker 1961: 236).

An even newer technology – compressing chopped hay into pellets and wafers – was seeing a “rapid increase” in 1961 (Neubauer and Walker 1961: 236-237).

HAY STACKS

Before about 1950, loose hay was frequently stored in carefully-built outside hay stacks that shed water and preserved the quality of the hay within. The hand-pitched, dome-shaped stacks were 15'- or 20'-high and built so that the center remained loose and tall while the outer edges settled. Sometimes swamp hay or another type of grass that shed water was used for the stack's uppermost layer. Alfalfa, a common Minnesota hay crop, was not water-resistant enough to be stored outside unless covered by a tarp or roof.

After farmers bought balers in the 1940s and 1950s, outside hay stacks were commonly made of interlocking rectangular bales rather than loose hay.

HAY BARNs OR SHEDS

Stores of hay were a great fire hazard and frequently ignited under hot, dry conditions. Fire threat motivated many farmers to build a separate hay barn rather than risk a catastrophe if the livestock were also lost.

Separate, dedicated hay barns increased in number in the late 1920s and early 1930s as dairying and other livestock husbandry increased and as more farmers grew legume hay.

Dedicated hay barns were used to store both loose hay (long or chopped) and baled hay. They had to meet several design goals. They had to ensure that the hay crop stayed well-preserved and that the fire threat was minimized. Filling and emptying the barn had to be efficient using available equipment and labor, and the barn also needed to be adaptable to future technology. Finally, hay barns needed to be made of affordable materials and be uncomplicated to construct (Shier et al 1942: 351).

Whether open, partly-open, or enclosed, hay barns usually had gabled roofs. Hipped, shed, gambrel, or arched roofs were less common.

Hay storage barns were generally limited in width by "the distribution that can be secured easily from a single hay carrier track," according to agricultural engineers writing in 1941. They explained further: "A typical width is 24 feet, and from 32 to 34 feet is the practical maximum width. The maximum economy is obtained in the height; however, the total height should not greatly exceed the width, because of the heavier construction necessary, and the danger of storm damage to higher structures. The length of the building is determined by the capacity requirements" (Carter and Foster 1941: 279).

If they were built within the farmstead, hay barns were often located many feet from other structures so fire wouldn't spread.

Some hay barns were constructed out in the hay field and, in fact, field hay barns were one of few large structures on Minnesota farms that were not located within the farmstead building cluster. Field barns were convenient because less labor was required at harvest when extra hours were especially scarce. Instead, farmers moved the hay to the livestock barn later in the winter when they had more time. Some farmers hauled hay from the hay barn to the livestock barn about every two weeks in winter months (Wooley 1946: 267; Neubauer and Walker 1961: 234).

Hay Barns or Sheds

The Midwest Plan Service wrote in 1933 that it was experiencing a “demand for inexpensive hay shelters which may be erected in the field” (Midwest Farm 1933).

Some hay barns such as those built by Minnesota’s Finnish immigrants had air gaps in the walls to provide ventilation. Some had side walls that were tapered slightly toward the bottom, somewhat like a corn crib. Some hay barns had battered walls that were wider at the bottom to help resist the lateral pressure of the hay. Hay bales were often interlocked to reduce lateral pressure (Neubauer and Walker 1961: 237).

TYPES OF HAY BARNs: ENCLOSED

Some of the state’s most unique hay barns were built on the northeastern Minnesota farms of Finnish immigrants. These barns were similar to northern European designs that dated back to the early 15th century. The hay barn was one of “the classic quartet of the rural Finnish farmstead,” which included the house, sauna, and dairy barn. Most of Minnesota’s Finnish hay barns were built of logs (both hewn and unhewn) and had gabled roofs (Gudmundson 1991: 14, 16, 23; Koop 1988; Alanen 2000: 2.112-2.127).

In St. Louis County, intact Finnish hay barns were still standing in the late 1980s. On the Hill farm, for example, was a 19’ x 23’ hay barn, built circa 1897-1903. It was built into a steep hillside with a concrete foundation. It had wide spaces between the logs for air circulation (Koop “Hill” 1989). There were two hay barns on the Matson farm, both gable-roofed log structures built circa 1900. One was a dedicated hay barn, 19’ square, with a 7’-wide opening in one gable end. The other was a 25’ x 28’ combination hay and cattle barn (Koop “Matson” 1989; Alanen 2000: 2.112-2.127).

The Hanka farm in St. Louis County had a one-story log field barn, built circa 1915, which was located 500’ from the house. Measuring about 20’ x 24’, the barn had a gabled roof, an 8’ x 5’ wagon opening, gaps between the logs, and side walls that tapered inward slightly from top to bottom, which was “a characteristic common to many Finnish field hay barns.” The Hanka farm also had a combination hay and cattle barn, built circa 1915, that was 23’ x 58’ (Koop “Hanka” 1989).

Enclosed hay barns of timber frame and dimensional lumber construction were also built in Minnesota.

TYPES OF HAY BARNs: OPEN OR PARTLY-OPEN

It was more common for hay barns to be open or partly-open than to be fully enclosed. In fact the most common type of free-standing, dedicated hay barn in the Midwest was a gable-roofed structure with open or partly-open walls (Neubauer and Walker 1961: 234). Having open sides facilitated the drying process and was cost-effective since the hay didn’t need to be fully enclosed to be preserved. Open or partly-open structures were also efficient to load and unload.

According to barn historian Lowell Soike, a late 19th century hay barn that he considers a precursor to the modern pole barn was described in the May 31, 1889, issue of *Iowa Homestead*. The 40’ x 26’ hay barn had a 20’-tall central section that could be framed with either massive, upright, square timber columns or with full-length telephone poles. The pole frame eliminated the need for

interior posts. The barn could hold 35 to 40 tons of hay. The article suggested that open-sided livestock sheds could be added around three sides (Soike 1995: 90-91).

An early Minnesota example of an open-sided hay barn was pictured in a 1909 issue of the *Minnesota Farmers' Institutes Annual*. It was a tall structure whose gabled roof was supported by braced poles. The barn appears to have measured about 20' x 40'. It had fully-open sides and a hay hood over hay loading equipment. A very similar structure was illustrated in a 1944 issue of *Agricultural Engineering*, suggesting that the design was both widely built and long-lived (Witzel 1944: 375).

In 1933 and 1937 the Midwest Plan Service was offering plans for a 24' x 60' hay barn that was similar to the fully-open barn just described except that the upper 12' of the walls were sheathed with siding. The barn was framed by braced poles and roof trusses spaced 12' on center. The gabled roof had a hay hood that protected a large hay door. There was an open driveway through the side wall. The side walls were 20' high with the lower 8' left open. Either vertical wood or galvanized sheet metal siding were recommended (Midwest Farm 1933; Midwest Farm 1937). The University of Illinois' Carter and Foster wrote that this design was "widely used" in 1941 (Carter and Foster 1941: 281).

A rare form of the open-sided hay shed was the "hay barrack", often built by Dutch, German, and Ukrainian immigrants. Hay barracks were usually 12'- or 16'-square but occasionally 20'-square. They had hipped or sometimes gabled roofs that could be adjusted in height to shelter the hay. Geographer Allen G. Noble explained, "the roof rested on four movable wooden or metal pegs placed in a series of holes in the four posts. By using a ratcheting jack, the entire roof could be raised or lowered by moving each roof corner, one peg at a time" (Noble 1984: 109). Hay barracks were built in eastern Iowa and in Wisconsin. It is not known if any were built in Minnesota, where rectangular sheds with fixed roofs were much more common (Noble 1984: 110; Witzel 1944: 375).

By the 1930s and 1940s new building materials and methods such as pole frames, prefabricated trusses, sectional buildings, and steel and aluminum siding were entering the market and increasing in popularity. Many of the simple, rectangular multipurpose buildings sold to farmers as implement sheds, beef cattle barns, or grain storage sheds could also serve as hay barns. In 1953, for example, Reynolds Aluminum was advertising a 52' x 60' pole barn that could be lengthened by adding 15' sections. The 18'-high roof could shelter approximately 180 tons of chopped or baled hay, according to Reynolds. It was built with pressure-treated pole supports and corrugated aluminum roofing and siding. There was a 12' x 12' door at each end to accommodate machinery (Reynolds 1953; Anderson 1937: 164).

PREVALENCE

Minnesota farmers apparently built more open and partly-open hay barns than fully-enclosed structures. It is not known how many hay barns are still standing in the state. Those that date from the earliest years of dairying and diversification are likely to be rare.

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The builder of a haystack had to be skillful, according to Steven Hoffbeck in his account of Minnesota farming called *The Haymakers* (2000). To ensure preservation of the hay, the center of the stack had to remain uncompressed while the outer edges settled so that the entire 15'-to 20'-high mound shed water. Often a layer of swamp hay or another water-resistant grass was placed on the very top. Hoffbeck also notes that children were sternly forbidden to climb on the haystack. Location unknown, circa 1910. (MHS photo)

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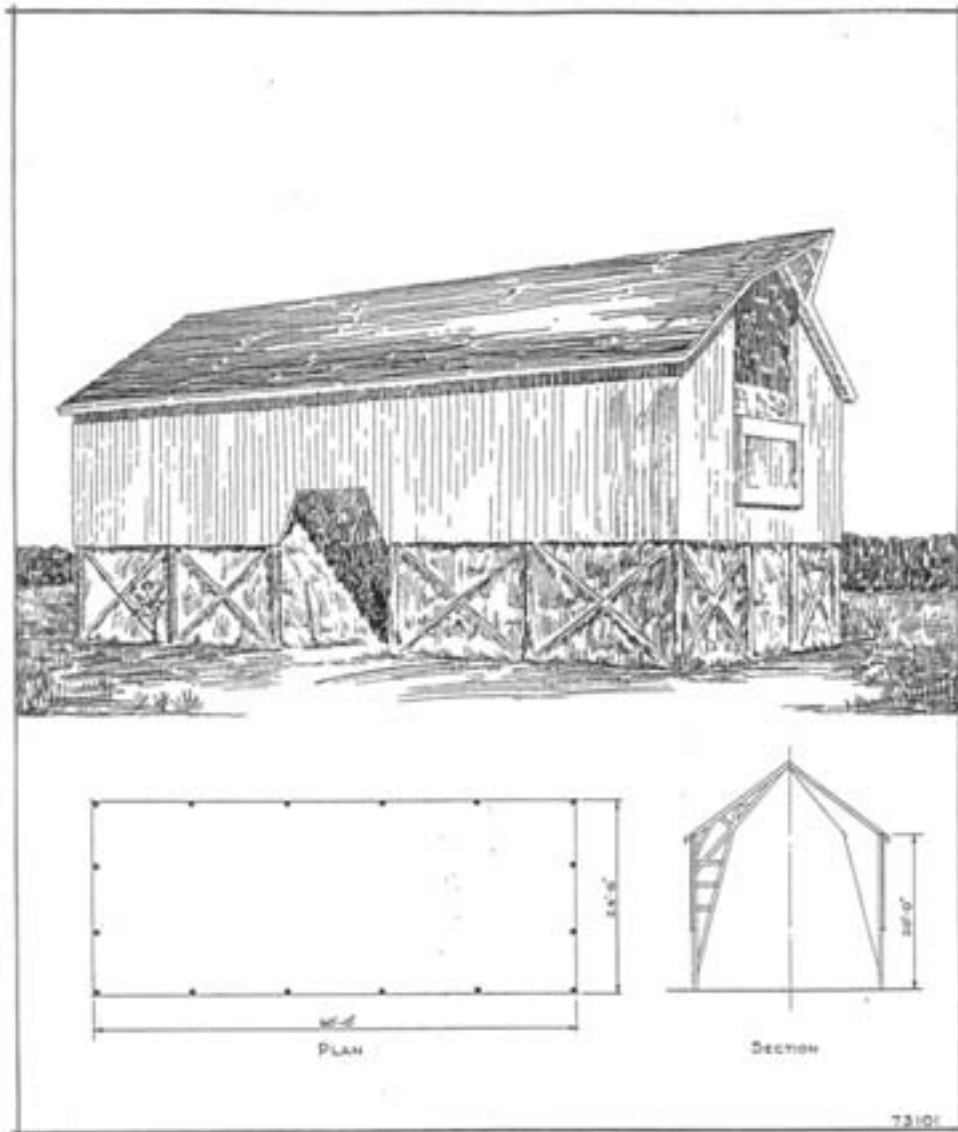


A fully-enclosed hay barn, photographed in 1932, that had typical sliding doors in the side wall, a brace and pulley on one end, and a hay hood on the other end. The photo shows additional hay stacked outside. It is interesting that the barn had electric wires leading to it. Benitt Farm, location unknown, 1932. (MHS photo by Nasvik)



Partly- or fully-open hay barns were more popular in Minnesota than those that were enclosed. This photo appeared in a 1909 issue of the *Minnesota Farmers' Institutes Annual* (v.22: 350). The caption indicated "such a shed can be built at a small cost and will pay for itself in a few years by the hay it will save over stacking in the open." The barn appears to be about 20' x 40', with a hay hood and hay loading equipment. The same photo is also in the Minnesota Historical Society's photo collection. Location unknown, circa 1909. (MHS photo by Harry Darius Ayer)

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This 24' x 60' hay barn is very similar to the photograph on the previous page except that the upper 12' of the walls are enclosed. The Midwest Plan Service, which published this particular plan in 1933, recommended vertical wood or galvanized metal siding. Very similar partly-open hay barns were illustrated in other technical sources in the early- and mid-20th century. From Midwest Farm Building Plan Service, 1933.

Hay Barns or Sheds

■ HIRED WORKERS' HOUSING

- ▶ Most hired workers' housing was not built for this purpose, but was adapted from other uses
- ▶ Mexican farm worker housing was generally substandard

FAMILY LABOR

Historically, farms in Minnesota were family-run enterprises in which it was necessary for all members of the family to work to ensure survival and prosperity. In most cases farm families lacked the cash with which to capitalize or create a cushion against hardship, and instead used their own labor – often intensively – to help counterbalance more unpredictable factors like weather and the markets. According to historian Mary Neth, family members received, instead of wages, “a share of the living the farm provided and an assurance that the farm would be a resource for the family's future.” Neth wrote, “Farm people viewed their labor not as an individual effort but as part of a group effort, related to the work of the entire family.” Families “expected that everyone would help out in whatever venue was most critical at a given moment” (Neth 1995: 18-19). In 1923 the University of Minnesota reported that both men and women were averaging more than 11 hours per day working on the farm (Lundquist 1923: 7, 13).

The University of Minnesota's Andrew Boss discussed labor in a farm management text published in 1914. He advised farmers, for example, to add livestock to their farms because it made use of cheap labor. Boss wrote that children can “often be profitably employed in caring for the poultry, sheep, and other livestock. In many cases most of the milking is done by the farmer's wife and children. They are not paid wages for doing the work and the product secured . . . is nearly clear gain, as they must be fed and clothed whether they work or not.” Boss continued, “Livestock raisers who have children old enough to work are thus placed at an advantage over livestock raisers who must hire all labor used” (Boss 1914: 131-132).

In a later book on farm management published in 1951, Boss and George A. Pond (also of the University of Minnesota) indicated that data from studies in Minnesota and Indiana had shown that farms with hired labor and fewer children were more profitable than those with more children, refuting the “commonly held” opinion “that farmers with large families have a decided financial advantage” over those with fewer children who have to hire outside labor. Boss and Pond went on to describe some of the inefficiencies in having children help with farm work (Boss and Pond 1951: 272).

In a 1944 article on rural students and education, the Agricultural Experiment Station reported, “Only slightly more than half of the 38,000 farm boys and girls in Minnesota, 16 and 17 years of age, were attending school as of 1940. With a percentage attendance of only 52.7, Minnesota ranked 40th among the 48 states. To most Minnesota citizens this is a shocking revelation, even though a checkback proves that the situation has actually improved since 1930 when Minnesota ranked

See also
Farmhouses

Individual Farm Elements

47th.” More than 83 percent of urban 16 and 17 year olds were attending school in 1940 (Nelson 1944: 5).

HIRED LABOR

A large percentage of Minnesota farms hired outside labor. On some farms this was confined to short-season “harvest hands,” but in many cases the help was one or more workers who lived on the farm much of the year (Boss and Pond 1951: 182). According to Hart, hired hands on family farms were especially important “at those stages of the demographic cycle when the son is too young to be of much help or when the father is too old” (Hart 1998: 286). Many accounts of Minnesota farming include descriptions of hired help. (Some recent examples are *Mapping the Farm* (Hildebrand 1995) and *Growing up on a Minnesota Farm* (Cotter and Jackson 2001).)

According to Merrill Jarchow, seasonal laborers worked in Minnesota as early as the 1850s helping to hand-cut the wheat crop. Jarchow wrote:

Wheat began to ripen in early and mid-August – a signal for the whole countryside to spring to life. Incoming trains at St. Charles, Winona, and other stations brought with them sets of rough-looking fellows, each carrying a bundle or valise. These men, looking like a detachment of Goths, were harvest hands, who began the season in the vicinity of St. Louis and worked northward through Iowa as the grain ripened. . . . Farmers drove into town and argued with the workers over wages, sometimes for several days, while the wheat was getting riper and riper. . . . At last the farmers would grow anxious, promise three dollars a day in wages, and drive off to their fields with a gang of laborers. They were generally good workers, but they demanded meals fit for a ‘New York alderman.’ The preparation of such meals was a real task for the farm women, as often a dozen men had to be fed three times a day for as many weeks” (Jarchow 1948: 21).

In the 1930s some migrant workers were still following the wheat harvest from Texas through the Red River Valley and into Canada, or moving from farm to farm within the spring wheat region of the Dakotas, Minnesota, and Canada (Taylor 1937).

The use of hired labor on Minnesota farms accelerated around World War I. During this period of relative prosperity, farm yields were increasing but farm labor was declining as industrial jobs and the social and cultural attractions of the city were drawing young people away from rural areas. Military service and other defense jobs also depleted farm labor.

In 1914, the University of Minnesota’s Andrew Boss advised farmers that the best help they could hire was a young man who had grown up on a farm in the area. It was better if the young man lived in an adjoining county so that he would be familiar with local growing conditions, “but will be free from the interruptions which a large acquaintance in the neighborhood may bring.” Boss explained, however, that such young men did not often stay long because they were frequently saving to buy farms of their own (Boss 1914: 145). In some rural Midwestern areas, working for wages was a natural stage for farm youth as they grew to adulthood (Neth 1995: 79-90).

Boss’ second choice for hired farm labor was a “professional” farmhand. Boss wrote that such men had perhaps not risen to “doing anything higher than farm labor for the simple reason that they are not able to plan work themselves. These men often will be failures as farmers but where properly

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directed and where not required to do too much thinking, they give reasonably satisfactory service" (Boss 1914: 145).

According to Boss, "The third class of help and the least desirable of all, is the transient or 'hobo' class. These people can be depended upon to work only a few days at a time and must be watched or supervised closely if satisfactory service is to be obtained. This is the class of help that usually drift from grain harvesting in the summer to logging in the winter, thus migrating from one end of the country to the other yearly. . . . Such help must be directed by a competent superintendent to give satisfactory service" (Boss 1914: 145).

Boss also advised farmers to add winter dairying or winter cattle-, hog-, or sheep-feeding to their operations to help generate enough income to make year-around help cost-effective (Boss 1914: 146).

A 1932 University of Minnesota study reported a considerable variation in the use of labor on farms in southeastern Minnesota. The authors wrote, "In most agricultural communities the natural and economic forces are such that they permit a rather wide range of variation in the organization of the farms and the amount of emphasis" placed on different operations. They also noted, "The relative advantages of hired and family help is a common subject of discussion among farmers. From 1918 to 1931 it was difficult to obtain efficient hired help at wages that farmers could afford to pay" (Wilcox et al 1932: 26, 5).

In a 1951 farm management study, Boss and Pond wrote, "Where fair comparisons have been made it was found . . . that farmers using the largest amount of hired help made the largest operators' labor income. The data available indicates that men who have to hire help to do the work they cannot do themselves may not be handicapped by that necessity." The analysis was made with data from Minnesota and Indiana (Boss and Pond 1951: 272-273).

Social Relationships. In her study of early 20th century Midwestern farms, Mary Neth learned that a hired man often "ate at the same table, had his own place to sleep in the house, and could go to town or church with the family." However, he was sometimes considered a social class "below" his employers, particularly if he were of a different ethnicity. When hired help was a relative, the child of a neighbor, or a worker of the same ethnicity as the owner, however, the worker usually enjoyed better status (Neth 1995: 79-90).

A 1921 survey of farm women's attitudes (sponsored by *The Farmer's Wife* magazine of St. Paul) revealed that the hired man was often considered part of the family, but that these relationships changed as farm labor became more transient around the time of World War I. A number of women who answered the survey expressed opinions similar to this one: "'When the boys of some neighboring farmer can be hired, I have no objection, but when a stranger comes into the house of whom we know nothing, I never feel at ease, and often he is not a desirable companion for my boys.'" A number of women in the survey also resented washing hired men's clothes (given the fact that washing was one of their hardest jobs) and indicated that separate sleeping quarters for hired men would make the women feel more comfortable (Lundquist 1923: 4-5). In the 1910s and 1920s, the farmhouse reform movement recommended that workers' sleeping quarters be segregated from the families', ideally with their own back stairs. Few farmhouses were built this way, however (Scharf 2004).

Individual Farm Elements**SUGAR BEET FARMING**

Mechanization reduced the need for extra labor in many cropping systems. But some crops such as asparagus, potatoes, and, especially, sugar beets, required extra manual labor.

Sugar beets were more labor-intensive than most crops and had to be cultivated several times both by machine and by hoe. They had to be "blocked" by hoe in preparation for thinning, and then thinned by workers on hands and knees. When mature, the beets were lifted (by tractor-drawn plows beginning around 1923), and then pulled from the field by hand, knocked together to remove the dirt, and then tossed in piles about 15' apart. Workers then topped the beets by cutting off the leaves with a knife and hand-loaded them into wagons so they could be hauled to a processor's collection station (Rasmussen 1967: 33, 35).

Minnesota's first sugar beet fields were located in southeastern Minnesota, southwest of Minneapolis. Many of the first laborers in these fields were European immigrants, including Russians, Poles, and Germans. In 1912 Andrew Boss wrote:

A few farmers who are in the beet growing district have solved the problem of securing labor by importing families of Germans or Hollanders who perform the necessary hand labor under contract. Those who have tried this method find it very satisfactory. The foreign family is moved on to the farm and usually given a small house in which to live. They take the contract of performing all hand labor on the beets at so much [money] per acre. Men, women, and children all work whenever there is work to do. Aside from taking care of the beets it is often possible for some member of the [hired] family to help at other farm work when the pressure is strongest, being paid, of course, for the extra labor. In many cases this practice also helps to solve the problem of how to get help for the housewife, as there are, frequently, girls in the family who are capable of doing house work (Boss 1912: 298).

According to Diebold, "World War I and the quota laws enacted by the United States in the 1920s effectively cut off that labor supply. . . . The Mexicans provided a satisfactory alternative" (Diebold 1981: 92). African Americans and Puerto Ricans also began working on Minnesota farms.

Mexican workers were first recruited to Minnesota by the Minnesota Sugar Company (later American Crystal Sugar), which set up offices around 1907 in Texas and nearby states to hire Mexican and Mexican-American workers. The sugar company then put the workers in contact with Minnesota beet farmers who needed them. There were about 200 farm workers of Mexican ethnicity in Minnesota in 1912. Both the number of sugar beet fields and the number of field workers increased substantially in the 1920s. Mexican workers were also employed in vegetable canning factories in rural Minnesota, as railroad track-layers, and in other industries. St. Paul's West Side Mexican-American community grew as many Mexican laborers decided to move permanently to Minnesota (Diebold 1981: 92, 97).

A 1924 Minnesota Extension bulletin on sugar beets indicated that most workers at that time were Mexican. The bulletin suggested to farmers that, if the acreage was large enough, the sugar beet processing plant could help secure the foreign laborers needed. The Extension Service advised that, if farm laborers were to be used, the acreage needed to be large enough to justify the labor expense: for example, "From 20 to 30 acres should be planted in order to employ a fair-sized colony of experienced Mexican beet workers." The 1924 bulletin also suggested that if the labor was to be

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done instead by local school children, then the farmer should plant a maximum of 10 acres and supervise the children (McGinnis 1924: 3-4, 11).

According to historian Jim Norris, the sugar beet work force in the Red River Valley was fairly diversified through the 1930s and included local youth, German-Russians, Filipinos, as well as Mexicans. Norris explained, "A 1930 American Sugar document described the Valley beet work force as 60 percent 'local white,' 35 percent 'Mexican,' and the remainder 'drift-in whites' (Norris *Betabeleros* 2002).

Beet farming's hand labor was reduced somewhat during World War II by mechanical harvesters that could lift, top, and load the beets, but the machines were not always satisfactory. In 1945, only 12 percent of the U.S. crop was harvested mechanically. Over the next 20 years, labor needs declined as technology improved the field machinery and developed beet varieties that needed less thinning. By 1958 it took 2.7 man-hours to grow one ton of sugar beets, compared to 11.2 man-hours in the 1910s (Rasmussen 1967: 33, 35).

GENERAL WORKERS' HOUSING

Specialized structures for Euro-American hired hands were not common on Minnesota farms. Most hired hands slept in the farmhouse with the farm family. Others slept in the barn loft, in a previous farmhouse, or in a bunkhouse that might be a shed, summer kitchen, or other building converted temporarily or permanently for this use (Scharf 2004).

During the farm labor shortages in the 1910s, farms had to work harder to attract and retain labor. Farmers could no longer expect hired help to work for little and sleep in the loft of the barn. Boss wrote in 1914, "Good board and comfortable living quarters must be provided if the men are to be interested in the work and remain contented. Reading rooms, bathrooms, and time for social privileges are provided by the progressive farmers who wish to keep first-class help. While such accommodations add to the expense, they ease decidedly the problem of getting good farm help" (Boss 1914: 140).

Boss recommended that if farmers could provide a suitable house on the farm and offer full-time work, they might be able to attract a married couple. The hired man's wife and children could also be employed on the farm, or could work on neighboring farms (Boss 1914: 146).

In 1937 the Midwest Plan Service was offering farmers a plan for a small tenant or hired worker's house. It was a one-story, 20' by 20' house with three rooms: a kitchen, living room, and bedroom. An outdoor privy was assumed, but the plans also offered an optional expansion to add a bathroom and another bedroom.

SUGAR BEET WORKERS' HOUSING

Housing for Mexican migrant workers was often substandard. According to historian Susan Diebold:

The Minnesota Sugar Company's treatment of migrants was apparently better than that of many firms, a fact which helps to account for the frequent return year after year of Mexican migrant families to Minnesota. Nevertheless, living conditions were still appalling by any objective standard. A former migrant worker recalled 'one specific case in

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Hollandale [Minnesota] where this farmer gave us two chicken coops to live in and we had to clean all the excrement out of it. . . . A total of twelve people had to live in two chicken coops.' As late as 1957 a state agency found chicken coop housing in 'flagrant violation' of state codes, but it reported that 'the occupants refused to . . . protest for fear they would lose their jobs as 'trouble-makers.' One migrant described 'The nicest place we had . . . an abandoned farm which had a two story dwelling that was to be ours. . . . But again, the building didn't have any plumbing, no wiring, nor screens' (Diebold 1981: 94).

A 1924 Minnesota Extension bulletin advised, "The [beet] grower must furnish a suitable dwelling place for the beet workers and it must be ready to occupy by April 15. An agreement for the hand workers usually specifies that the workers and their household goods shall be transported to and from the railroad station by the grower. All implements and tools necessary for the hand work are furnished by the grower" (McGinnis 1924: 9).

The first migrant housing in Minnesota appeared in the 1910s near Chaska and in the 1920s in the Red River Valley (Norris 2005). Migrant workers were often housed in little more than chicken coops or other outbuildings. Some farmers built a small colony of 5 to 8 identical shacks for the workers. After World War II, the American Crystal Sugar Company acknowledged that improved housing could be used as a means of enticing good workers to come to Minnesota, but it is not known how many farmers that contracted to grow beets for the company followed this advice (Norris 2005).

In the early 1950s the poor quality of migrant housing was brought to the public forefront. Migrant housing was investigated at the federal level by the Truman Commission on Migratory Labor and on the state level by a commission headed by Hubert Humphrey. Yet ensuing recommendations for improved housing were largely ignored through the late 1950s and the early 1960s (Norris 2005).

While in the 1960s migrant workers were no longer housed in chicken coops, housing was still minimal. According to one *Minneapolis Tribune* reporter in 1969, the "life of a migrant isn't just working in the fields 6 or 7 days a week. It's living in a dilapidated shack, courtesy of the farmer for whom you work. It's getting water from the farmer's hose because your house doesn't have running water . . ." (quoted in Diebold 1981: 103).

In the 1960s some western Minnesota farmers housed migrant workers in abandoned farmhouses fitted up for summer occupancy. Broken windows were replaced, the roof was checked for leaks, doors were tested to make sure they shut, and a screen door was added where necessary. Electricity was mandatory, but outdoor privies were common and water was often pumped at an outdoor well and carried into the house. If two families occupied the house, sheets of plywood could be used to separate the front from the back of the house. If a staircase was located near the front door, plywood partitions could be installed so the family living downstairs used the back door and the family upstairs used the front door and the staircase. Farmers furnished workers' housing with used equipment purchased at farm auctions including beds, mattresses, tables, chairs, stoves, washtubs (for baths), sinks, and refrigerators (Plank 2005).

The conditions of much migrant farm worker housing were still poor in 1997 (Contreras 2001: 4-5).

Hired Workers' Housing

PREVALENCE

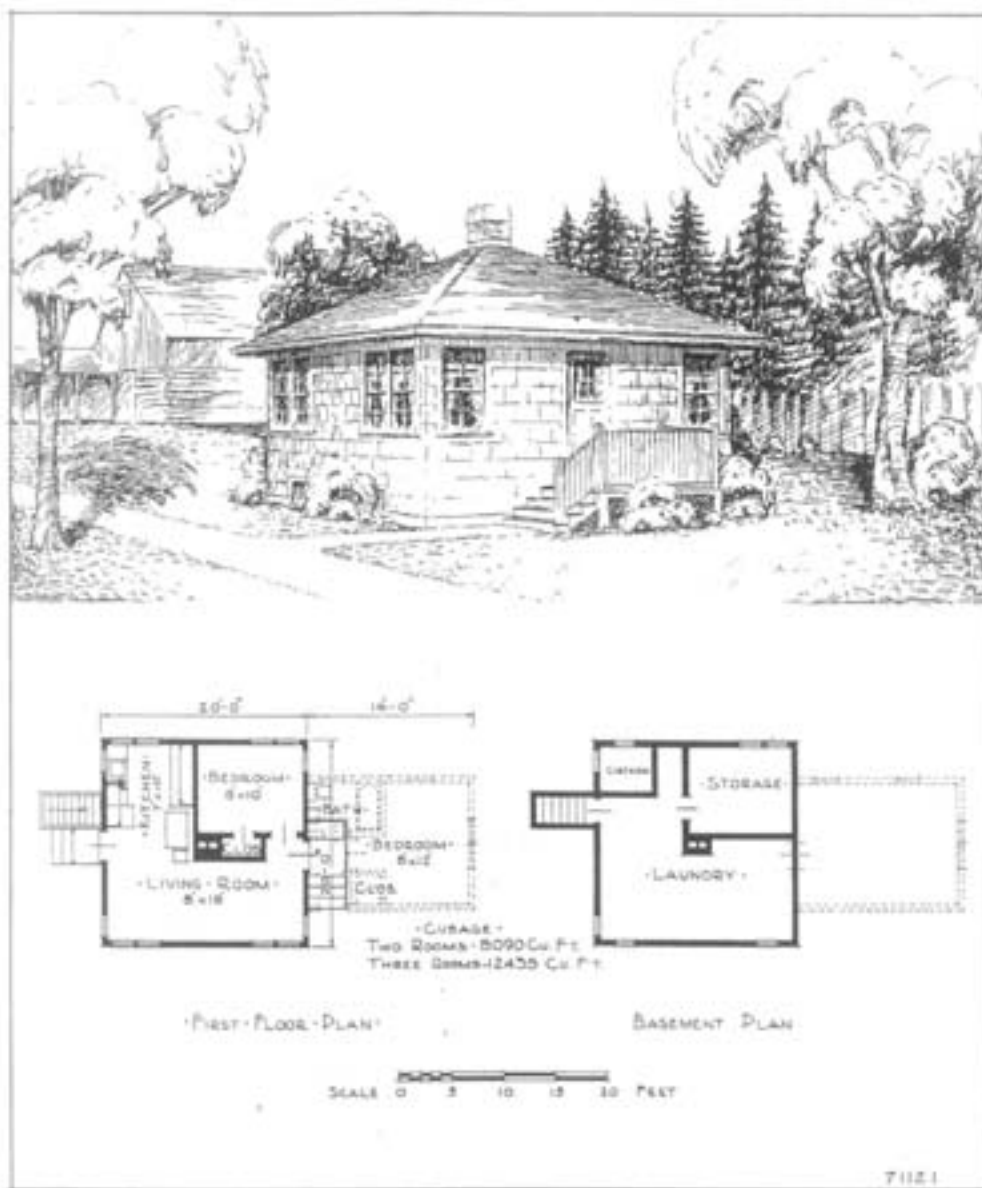
Relatively few buildings in Minnesota were constructed specifically for hired workers' housing, therefore extant examples are likely rare. Most workers were instead housed in the farmhouse, barn loft, or in another structure adapted for the purpose.

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A sugar beet worker near Fisher in the Red River Valley. Polk County, 1937. (MHS photo by Russell Lee)



Plans for this small house for a tenant or hired worker were distributed by Midwest Plan Service in the 1930s. The house measured 20' x 20' and had a kitchen, living room, and bedroom. An outdoor privy was assumed, but the plans show optional expansion for a bathroom and another bedroom. From Midwest Farm Building Plan Service (1937).

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■ HOG BARNs AND HOG COTS

- ▶ Hogs were usually sheltered farthest from the farmhouse
- ▶ Hog housing could be either permanent or portable
- ▶ Permanent houses ranged from simple shelters to barns with central alleys and lofts
- ▶ By the 1920s portable or “colony” houses were helping control soil-borne diseases
- ▶ Confinement systems were first used in Minnesota in the 1940s

“A pig is considered by some to be the most intelligent of domestic production animals. Contrary to popular belief he is extremely clean in habit, only becoming dirty and odoriferous when forced so by unclean surroundings or thermal stress” (Hazen and Mangold 1960: 589).

During the early settlement era, Minnesota farms often kept a mixture of livestock that almost always included oxen or work horses, poultry, a couple of dairy cows, and a pig. Pigs were first reared in pastures in the summer and in very makeshift structures in the winter. They were fed farm leftovers and garden scraps, a practice that continued through the 1950s although it was discouraged by many experts.

As Minnesota farmers began to shift their strategy away from growing only wheat in the late 19th and early 20th centuries, hogs were among the animals they added to their newly-diverse operations. Hog manure was valuable for fields, and hogs were good companions to dairy cows because they could be fed the skim milk that was separated from the marketable cream. Hogs could also eat other farm by-products that had little or no market value, as well as crop residue left in the fields after harvest.

Before about 1915, however, heavy losses from hog cholera made it risky for farmers to raise large numbers of pigs. In 1907, a successful vaccine for hog cholera was developed, and by 1915, hogs were being routinely vaccinated, allowing farmers to increase the size of their herds. The struggle to conquer hog cholera continued until World War II (Cavert 1956: 22; Cochrane 1993: 109)

Farms that raised pigs were found throughout Minnesota in 1930. The prevalence ranged from counties in southwestern Minnesota, where nearly all farms raised pigs, to northeastern Minnesota’s cutover land, where only 14 percent of farms had pigs in 1930 (Engene and Pond 1940).

Pig shelters – also called hog barns, swine houses, or piggeries – were built on a large percentage of Minnesota farms. Pig-raising was not regulated like the dairy industry, and a wide variety of structures were used. Sometimes a farm needed a succession of structures because pigs were “hard” on their housing and tended to push against the side walls, gnaw on wood, and root in dirt floors and under walls. While pigs could be housed in a general purpose or combination barn, few farmers did so because the milk from the dairy cows tended to absorb odors from the pigs. As broadening markets, economical feed sources, advancing technology, and improved methods made

See also

Stockyards
Develop of Livestock, 1900-1940
Appendix: Focus on Minn Livestock

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hog-raising more profitable, specialized hog housing was increasingly built. However, many farmers continued to use makeshift structures for all but farrowing because pigs were relatively cold-hardy.

In their 1982 study of settlement-era farm structures in central Minnesota, Marilyn Brinkman and Bill Morgan encountered early pig houses built of logs and other indigenous materials. One was a square structure, measuring about 7' x 7', built of poles, planks, and rails nailed to a vertical log framework. It had a dome-shaped roof thatched with hay. On the same farm was a larger hog barn measuring about 12' by 18' that was built with a combination of log and woodframe construction (Brinkman and Morgan 1982: 76).

While pigs could live most of their lives outside, baby pigs were not as hardy as adults. If the pigs farrowed outdoors or with only light shelter, farmers timed their breeding so the litters were born in June when the newborns could survive outdoors. Piglets growing all summer were also better able to flourish during the winter. With most of the state's pigs being born at the same time, however, prices were low when the finished hogs were shipped to market. One Minnesota farmer wrote in 1909, "If you have all outdoors for a pen and the sky for a roof, you cannot have pigs coming the first of March . . ." (Meade 1909: 227). To have March or April litters that could be marketed sooner and capture better prices, farmers needed to build enclosed hog barns.

In addition to being vulnerable to the cold, piglets were also susceptible to a host of disease and parasitic problems. In 1943, after farm specialists had been grappling with the problem for decades, about 30 percent of pigs nationwide were still dying before they reached the market, with losses up to 40 percent in some states (Hansen 1943: 9). In 1950 one-third of Minnesota's piglets died and another one-third were stunted due to parasites and disease (Zavoral 1950: 3).

LOCATION

Hog barns were best situated on well-drained land far from the house, southeast of other work areas, and away from drinking water sources. One expert wrote that it was untrue that swine liked to lie in water and mud (except in hot weather when no shade was available) and, "three-fourths of the epidemics among hogs can be traced to the insanitary wallow" (Moore et al 1920: 559). A clean, cool place with protection from winds, access to shade, and a short route to pastures was preferred. The corncrib and/or a root cellar were often sited nearby to make feeding more efficient.

SOIL SANITATION

By the 1910s experts were recommending that pigs not be raised on the same ground for two successive seasons. By the 1920s many farms were either farrowing the sows in scrupulously-cleaned farrowing barns and then moving the mother and litter to clean ground as soon as possible (about 10-14 days after farrowing), or farrowing in shelters out in the pastures. The shelters were moved to clean ground each season (Carter and Foster 1941: 241). The dirt-surfaced hog yard that was used by the state's earliest farmers was essentially obsolete by the 1940s.

PERMANENT HOG BARNs

Permanent hog barns – also called community houses or central houses – were generally used during the winter, and for farrowing and raising piglets until they were old enough and/or the weather was warm enough for them to go outside. Early Minnesota examples are described in 1896 and 1898

issues of the *Farmers Institutes Annual* (Murphy 1896; Louis 1896; Henry 1898). Permanent barns were often recommended for farmers who raised more than just a few pigs. Because the animals were gathered in one building, chores like feeding were more efficient. Some farmers, however, found permanent hog houses to be too expensive since the housing was only used part of the year – usually in winter and during spring farrowing. In response, agricultural engineers suggested that hog barns be used during the summer as storerooms, sheep barns, or implement sheds. Some barns were designed with interior pens that were hinged or removable to accommodate alternate uses (Moore et al 1920: 550). Removable pens also helped with barn cleaning.

Permanent houses were typically one-story, woodframe buildings with shed, gabled, gambrel, or half-monitor (or “broken”) roofs. Ceiling insulation was recommended in cold climates (Clarkson and Whitnah 1920: 70). Some hog houses were built of brick or structural clay tile, both of which were more expensive than wood but durable and cleanable.

Some permanent barns had upper lofts in which bedding was stored. These barns resembled dairy or general purpose barns, but were shorter. In addition to being convenient, a straw-filled loft helped insulate the barn. If a permanent hog house did not include space for storing food and bedding, storage had to be provided in another structure nearby. (Many farmers didn’t store feed in a pig barn because the grain absorbed odors and became objectionable to the pigs.)

Some of the first pig barns had dirt or wooden floors, which farmers found hard to clean and susceptible to damage by the pigs. By the turn of the century, many hog barns had poured concrete floors, which held up well to the constant cleaning. Well-designed floors were sloped to allow manure to run into gutters or drains, away from the pigs and their straw bedding. Because lying on cold concrete caused pigs to become rheumatic, however, some barns had 4’ x 4’ or 6’ x 6’ wooden platforms or overlays within the pens. The platforms were often hinged or removable for cleaning. If the pen or barn were used solely for farrowing, the floor of each pen was completely covered with wood so newborn pigs were never in contact with the cold concrete. Most pens had low fenders or guardrails to prevent the sows from crushing the piglets against the wall.

Supplying the barn with running water was useful because of the frequent cleaning required. Some experts recommended that the interior of the barn be regularly whitewashed to increase reflective light and facilitate cleaning.

The size of average pig barns did not vary significantly between the 1910s and 1950. Experts advised that the buildings not be too large because they would be cold in winter. A small house for a few hogs might measure 8’ x 14’. A house with a single row of pens might be 12’ x 42’, and a house with two rows might measure 20’ x 30’, 24’ x 24’, 24’ x 32’, or 24’ x 48’. A larger barn, perhaps used by a pig breeder might measure 26’ x 60’ or 28’ x 80’. Pens measured 6’ x 8’ or 8’ x 8’ and were sometimes removable so the feeder pigs could run freely after being weaned (Midwest Farm 1933; Kelley 1922; Fox 1940).

Barns with one row of pens were typically aligned east and west. A bank of windows along the south wall or on the south-facing slope of the roof supplied the pens with sunlight and air (Wooley 1946: 102).

Barns that contained two rows of pens flanking a central alley were oriented either east-west or north-south. In the east-west alignment, experts recommended that two rows of south-facing

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windows be provided – one for each row of pens. The windows might be located on two south-facing slopes of a gambrel roof, or along the south wall and in a clerestory level. In the north-south alignment, windows facing east and west were often placed within the pitches of a gabled and gambrel roof (Murphy 1896; Wooley 1946: 103).

One farming manual advised in 1920 that windows were “of special advantage in winter when the hogs delight in sunshine” (Moore et al 1920: 549). Windows built into the roof (and were therefore slanted) captured more light, but let more heat escape in the winter (Clarkson and Whitnah 1920). By the mid-1940s, some experts were suggesting that the benefits of sunlight from windows did not offset the loss of heat in the winter. Some recommended that windows be small, shuttered, or omitted entirely (Wooley 1946: 99-100).

Each hog pen held two to three adult pigs, or a boar, or a sow and her litter. The alley was sized to accommodate feed carts and manure wagons, widening from 4’ to 8’ as machine size grew. Beginning in the 1910s and 1920s, mechanical manure carriers and feeding equipment were often installed. Some pig barns also had a small workroom, butchering room, or feed room with a feed cooker.

Each pen had a food trough that was served from the central alley. Some pens had awning-type hinged doors that opened over the troughs to allow the worker to fill the trough with swill without interference from the strong hungry pigs.

Each pen also had a pig door leading to an outside yard. To conserve feed and improve sanitation, many farmers paved the feeding portion of the yard with concrete. Eventually most hog yards were entirely paved with concrete to facilitate cleaning.

To keep pigs healthy, adequate barn ventilation was critical. Before the 1950s farmers used adjustable windows and passive ventilation shafts with rooftop caps or cupolas, adapted from dairy barn technology. However, because hog barns were shorter than dairy barns, ventilation shafts were often too short to draw effectively. The problem was solved with electric fans, which became common in the 1950s.

By the early 20th century some farmers were using individual or “colony” huts or “cots” in the pasture so that sows and young litters had some protection when they were moved from the permanent barn to the pasture (Gaumnitz 1909: 233-234). When universities began to emphasize sanitation to reduce disease in the 1920s, experts recommended that sows and piglets be moved to the pasture as soon as possible (for example, at 10-14 days). In some cases the animals were hauled by wagon or truck to their field quarters so they wouldn’t come in contact with the ground (Wooley 1946: 98). (By the 1940s some pigs were herded down washable concrete lanes that led to the pastures. An alternative was to transport the pigs to the clean pasture by trailer.)

Pole-framed buildings were developed in the 1930s and widely used by the 1950s (Reynolds 1953). Metal-sided buildings (with various types of frames) were used as early as the 1910s and widespread by 1950.

By 1940 improved technology was helping reduce disease in central permanent houses. Methods included spraying the interior with disinfecting chemicals. *Successful Farming* magazine reported in 1940, “Concrete floors and modern disinfectants have made the central hog house popular for

Hog Barns and Hog Cots

early litters of strong pigs" (Fox 1940). The same author wrote, "In planning your farmstead, you are therefore free to a choice between [centralized or colony] systems. The central house represents a very heavy investment, but when built correctly its annual cost may fall reasonably close to the less expensive and shorter-lived [colony] structures" (Fox 1940).

HOG COTS OR COLONY HOUSES

Individual, portable pig houses – called hog "cots" or "colony" houses – were first used in the early 20th century (Gaumnitz 1909: 233-234). They were inexpensive structures that were placed in the pasture for the mother pig and young litter. Because they were portable, they could be shifted to new ground each season, thereby avoiding the transfer of soil-borne diseases. And because the pigs were separated, disease didn't spread as easily from litter to litter. One expert wrote in 1920, "if the movable hog house system could be introduced on every farm, it would greatly aid in stamping out the dreaded cholera" (Moore et al 1920: 553).

Hog cots had other advantages. Pigs could be shifted from open pasture to shade or shelter depending on the season. Cots were economical because farms could start with only a few pigs and then add more houses as the herd increased. Hog cots were also an asset to tenant farmers because they could be moved from farm to farm.

Hog cots were small lightweight wooden structures, built on treated-wood skids, with shed, saltbox, gabled, or A-frame roofs. They were built on the farm, and by 1927 were also being sold ready-made by lumberyards. In Nebraska this came at the urging of University of Nebraska staff who, in 1927, were trying to curb swine disease by encouraging lumberyards to sell cots. In Nebraska in 1927, most farmers who were purchasing cots from lumberyards were buying about ten at one time (Wood 1927).

The A-frame type was most the common type of cot, according to a 1946 source (Wooley 1946: 244). Shed-roofed cots were roomier than A-frames but less warm in winter and hotter in the summer because of the amount of roof surface. Some cots had hinged roof panels so the farmer could stand up inside to clean the house. Footprints of about 6' x 7', 6' x 8', or 8' x 8' were typical. Small doors and adjustable window openings were placed on opposing walls for access, light, and ventilation. Some huts had ventilators at the ridge line or in the gable ends. A few farmers used double-wide cots to house two litters (National Plan ca. 1950).

Inside the hog cot, fenders or guardrails lined the lower walls to ensure that the little ones were not crushed by the sow. Fenders were unnecessary on the sides of an A-frame cot because of the slope. Cots typically had wooden floors, but some styles omitted floors to make the cots easier to clean and move. If the cot had no floor, wire mesh was sometimes buried a few inches beneath the dirt so the hogs wouldn't dig under the house.

Pigs were at first farrowed in a hog barn and then moved to individual hog cots. By the mid-1920s, some farmers were using individual cots for both farrowing and pasture housing. To use cots for farrowing, some farmers place them close together in a row, facing south, with straw packed behind and between the huts for extra warmth. (The straw was held in place with fencing.) When the litters were two weeks old, the houses were scattered around the pasture. In Minnesota pigs could farrow in May and June using cots. By 1946 some cots had heaters for earlier farrowing.

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In another method, some farmers farrowed pigs in individual huts and then moved the pigs into a permanent house for winter feeding. By winter the pigs were several months old and more resistant to the diseases found in communal quarters (Zavoral 1950: 10).

Farmers could also use hog cots as summer houses for sows by turning the door to the southeast so the hottest sun wouldn't shine into the cot. Some farmers made several cots into a long, continuous house by rotating them so each cot's doors pointed east and west and then attaching them together (Wood 1927).

Pigs in pastures needed water, food, and shade. Water could be piped out to the pasture, or diverted from drainage tiles, or drawn from a shallow well (Zavoral 1950). Many farmers used "self-feeders" filled with corn or grain to save labor. Portable "shades" were built of wood or metal, or purchased ready-made.

In the winter, some farmers gathered cots around a concrete feeding yard and used them for winter housing (Moore et al 1920: 556).

Around 1940 the Economy Portable Housing Company was selling portable hexagonal farrowing houses. Each had an incubator in the center and six small pens. Prefabricated of tongue-and-groove fir flooring, the structures were sold in sections and could be assembled in about two hours. The company also made portable hexagonal chicken brooder houses of similar prefabricated design (Economy ca. 1940).

Minnesota Extension reported in 1946 that "some of Minnesota's largest swine growers use movable colony houses" (Zavoral 1946). In 1960 another author wrote that, because of the success in using individual houses to fight swine disease, "many large swine buildings stand today as empty monuments," replaced by colony houses (Ross 1960: 584).

CONFINEMENT SYSTEMS

The term "confinement" was being used in technical articles as early as 1943 (Hansen 1943; Zavoral 1946). Confinement had the potential to increase sanitation, suppress disease, reduce labor, and give farmers more control over other facets of production.

In one management plan recommended by Minnesota Extension in 1946, pigs were housed in a single building where everything "can be done under one roof – farrowing, marketing, weaning, weighing, castrating, vaccinating, sorting, and loading for market." The house was entirely surrounded by a concrete yard. A concrete paved lane led from the yard to four pastures, which were rotated in three- or four-year intervals so that the pigs never walked on ground that wasn't "clean" (Zavoral 1946). In these systems the barn and concrete areas had to be frequently cleaned with power washers and then disinfected to reduce disease (Wooley 1946: 98).

Eventually some operations used separate buildings for particular stages of the pigs' life cycle. One such system under study in 1959, for example, consisted of bringing the sows into a farrowing barn to give birth, moving them back to the pasture when the litter was a few days old, raising the pigs in the pasture for three to five weeks, bringing the pigs by trailer to a "growing" building for three to five weeks, moving the pigs to a finishing building for 12 to 16 weeks, and then marketing them. Farrowing was timed so that the buildings were filled for about five weeks and then cleaned for one

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week before the next group was brought in. Two growing buildings were sometimes used to allow one building to “rest”, which further reduced disease (Powell 1959). One-, two-, three-, and four-building systems were all under development in 1960 (Ross 1960; Hazen and Mangold 1960; Jedele 1960).

In 1960 a University of Illinois animal scientist wrote, “Changes in swine production nearing revolutionary proportion is taking place, or will appear on the horizon in the near future. While the practicality of confinement systems of swine production has been demonstrated over and over again by research institutions, universal acceptance by swine producers has been slow. . . . I believe most of the hogs of tomorrow will be raised under some sort of confinement program” (Ross 1960: 584).

Today, most pigs in Minnesota are raised in confinement systems.

HOG CRATES

As part of the transition to confinement barns, hog crates were used for farrowing. These sturdy but portable metal crates were used inside hog barns. They were about 2’ x 6’ and were placed within a pen that measured about 5’ x 8’. The sow remained in the crate from just prior to the birth until the piglets were weaned. Hog crates held the sow in place but allowed the piglets, which could fit through the crate’s widely-spaced bars, to run freely in the pen. The babies had a greater survival rate as they were not as easily crushed by the mother. The portable crates could be placed in any type of structure and were easy to clean and maintain. The crates were manufactured by metal fabricators such as the Wick Manufacturing Company of Madison, Minnesota, which made the brand Marvin Crate (D. Quackenbush 2005; J. Quackenbush 2005).

Today hog crates are often called “farrowing stalls” and are attached permanently to the floor of confinement barns.

EQUIPMENT

Before the 1960s it was common to feed the hogs household garbage or “slop” that was mixed in “swill barrels.” Some farmers heated the mixture in feed cookers which stood outside or in feed rooms attached to the barn. Experts discouraged using garbage because of concerns for the animals’ health, but the practice was widespread. Feed cookers were also used to render lard at butchering time.

In their 1982 study of farm structures in central Minnesota, Brinkman and Morgan documented a below-ground feed cooker. They wrote: “Near the smokehouse is another unique addition to the [Grausam] farm – a swill pit, dated 1923. It is a deeply-rounded cement hole that looks like a large cooking pot embedded in the ground. It was used to cook mash for the hogs. Potatoes, water, and ground corn and oats were all dumped into a huge kettle and set on scrapwood in the pit to cook. Math [Grausman] said the pit was practical as well as useful because, ‘Cement keeps the heat all in. Otherwise, in the open, it takes much more wood. This was better and that was good feed. It was poured into troughs we built ourselves out of planks’” (Brinkman and Morgan 1982: 111).

While farmers traditionally fed hogs by scattering or dumping feed on the ground, troughs were recommended to conserve feed and reduce illness. Many hogs were fed in V-shaped troughs that were attached to pens. Free-standing troughs that were used outdoors had to be designed so hogs

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couldn't tip them over. They were often made of heavy concrete. Some self-feeders for ear corn and alfalfa were wooden, angled, corncrib-like structures built on skids so they could be moved around the yard. Self-feeders for ground corn or other feed had a slightly different design. Vitamins, iodine, and other supplements were added to feed beginning in the 1930s and 1940s.

Hog farmers also used creep feeders to enable young pigs to get enough to eat without being pushed aside by the sows. Creep feeders typically consisted of a wooden framework with slats spaced so the piglets could fit through but the sows were held back.

YARDS, PASTURES, AND FIELDS

Hog yards surrounding permanent buildings were usually paved with concrete so they could be cleaned and disinfected. The yards were surrounded by sturdy wooden fences. It was common to make the fence sections movable so pigs could be separated by age and sex.

Equipment such as dipping vats, concrete wallows, loading chutes, breeding crates, or stocks for veterinary procedures were often located within or near the hog yard (*Farm Building Plans* 1953).

POST-WORLD WAR II CHANGES

After World War II, hog-raising expanded nationwide as U.S. population, consumer demand for meat, and corn production all grew. The size of herds in Minnesota increased considerably as growers took advantage of new developments in corn-raising, breeding, feeding, and mechanization. Under pressure to modernize, some farmers stopped raising pigs entirely rather than invest in the necessary new equipment.

By the 1950s, feeding, barn cleaning, and other chores were becoming increasingly automated. In 1958, for example, agricultural engineers were testing multi-step feeding systems that moved feed from bulk bins to mills, then mixed and ground the material, conveyed it to the feeding area, and distributed it in front of the hogs. At the same time, pressure washers for barn cleaning were becoming more sophisticated (Puckett et al 1958: 692).

Artificial insemination for hogs was developed commercially in the early 1960s. Farmers timed breeding to have several litters born year-round, which helped make better use of expensive buildings.

As herd size increased, good sanitation became an increasing concern. Hogs raised on concrete developed feet and leg problems, and wire and other types of flooring were tested. New methods of handling manure were also developed as the number of pigs per farm grew (Ross 1960).

PREVALENCE

Minnesota farmers used a variety of types of pig barns. These structures may not have survived for several reasons: some pig barns were makeshift structures, some deteriorated through the years because pigs were hard on their housing, some weren't maintained through time because they stood far away from the main cluster of buildings, and most portable or colony houses were made of lightweight materials that eventually deteriorated. Some permanent pig barns, on the other hand,

were built to be strong and durable. These are the most likely to be standing. Some of the earliest examples of 1940s production methods and confinement housing may be extant.

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Hog Barns and Hog Cots



Young ones at a piglet-sized trough, probably shortly after weaning. Warneke Farm, Anoka County, 1904. (MHS photo)

Individual Farm Elements



Sows with their litters in a hog yard. This hog barn had an upper loft for bedding and a ventilation system with flues for each pen. This barn's flues were tall to help them draw correctly. Note the sturdy board fence. Location unknown, circa 1910. (MHS photo by Harry Darius Ayer)



By the mid-1940s the A-frame was the most common style of hog cot. Colony houses or cots like this were typically built on skids and moved to fresh ground each season to inhibit the parasites and diseases that plagued swine. As late as 1950 one-third of Minnesota's piglets were still dying from disease and another one-third were stunted. Location unknown, circa 1925. (MHS photo by Harry Darius Ayer)

Individual Farm Elements



These cots were lined up, facing south, for farrowing in the spring. Straw was packed behind and between the huts for extra warmth and held in place with fencing. When the litters were about two weeks old, the cots were spread apart in the pasture. Location unknown, circa 1925. (MHS photo by Harry Darius Ayer)



Permanent hog barns of this design were built in Minnesota by the 1890s. The position of the windows indicates that the house had two rows of pens – one lit by the south-facing first-story windows and the other by windows at the clerestory level. By the 1920s disease prevention programs were discouraging farmers from using dirt-surfaced hog yards like this one. Location unknown, 1913. (MHS photo)

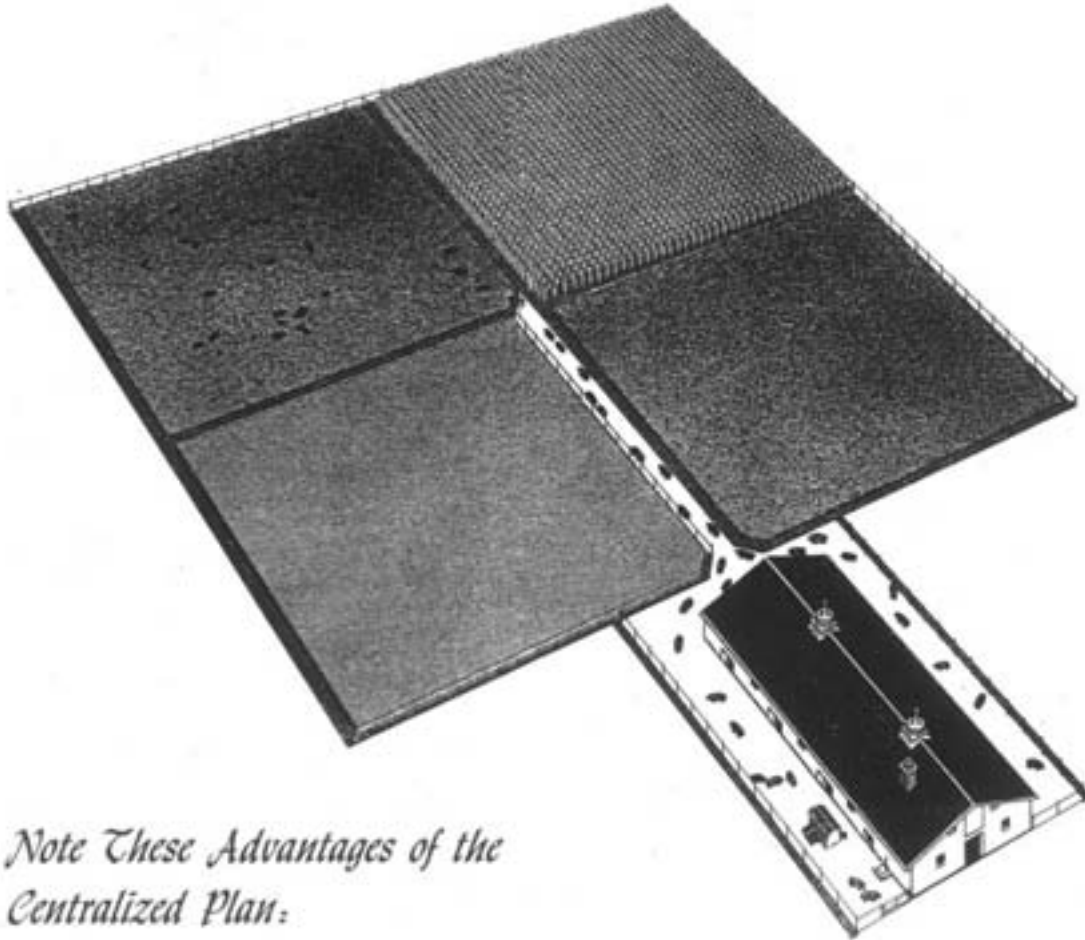


This hog house was typical with its long, narrow footprint and single-story design. Many hog barns resembled chicken houses, but had fewer windows. Kvistad Farm, location unknown, circa 1914. (MHS photo by Ole Mattiason Aarseth)



Outdoor troughs were commonly built of concrete so pigs couldn't tip them over. Location unknown, 1926. (MHS photo by Paul W. Hamilton)

Individual Farm Elements



Note These Advantages of the Centralized Plan:

- (1) A modern, permanent hog house which can be used the year round.
- (2) A concrete feeding floor equipped with gutter for easier cleaning.
- (3) Concrete-floored lane giving hogs access to pasture without contact with contaminated ground.
- (4) Four fields which can be rotated so that hogs will always have a clean pasture.

In this early confinement-type plan recommended in 1946 by Minnesota Agricultural Extension, pigs were housed in a single building where "farrowing, marketing, weaning, weighing, castrating, vaccinating, sorting, and loading for market" were all done under one roof. The house was entirely surrounded by a concrete yard. A concrete-paved lane led from the yard to pastures that were rotated so that the pigs never walked on ground that wasn't "clean." Soil-borne diseases remained in the pastures for about three years, hence the rotation. From Zavoral's "Centralized Hog Plan," University of Minnesota Agricultural Extension (1946).

■ HORSE BARN

- ▶ Horses were the primary source of mechanical power until about 1920, and were used on Minnesota farms until the mid-1950s
- ▶ In 1930 most Minnesota farms kept four to seven horses
- ▶ On small farms, horses were kept with dairy cows or in a general purpose barn
- ▶ Farms with more than 5-6 horses sometimes housed them in a separate horse barn

Work horses and mules were the main source of mechanical power on Minnesota farms beginning in the early settlement period. Nearly all horses on farms in Minnesota were used for draft; very few were kept solely for riding. Some farms needed to devote 25 percent of their land just to growing oats, hay, and straw for the farm's own work horses.

In 1900 Minnesota had about 154,600 farms and about 600,000 horses that were two or more years of age, making an average of about four horses per farm. Thirty years later horses were still an important source of power. In 1930, most Minnesota farms kept an average of four to seven horses and mules, except farms in the northeastern Minnesota cutover and in the Twin City suburban area, where there were an average of one to three horses and mules per farm (Engene and Pond 1940). In 1938 Minnesota had 682,000 horses and 13,000 mules. That year Minnesota ranked fourth among states in the total number of horses on farms (Harvey 1938: 3).

One author in the 1940s estimated a work horse was needed for each 25 to 30 acres of cultivated land, if no other sources of power were used. This meant that a 160-acre farm with 140 tilled acres needed about 5 to 6 horses (Anderson 1943: 656).

Nationwide the number of horses expanded with the growth of agriculture and peaked around 1913-1918. As the use of tractors increased in the 1920s-1940s, the number of horses gradually decreased. Many Minnesota farmers phased out the last of their draft horses in the mid-1950s.

Many small- to average-size farms kept draft horses in the same barn as the dairy herd or in a general purpose (also called combination) barn that might be "planned to house horses, dairy cows, and perhaps beef cattle, hogs, and sheep" (Wooley 1946: 119). This was not ideal, however, and often hogs and dairy cows had their own quarters, leaving horses, sheep, and beef cattle for a general purpose barn (Wooley 1946: 119).

Horse barns were usually built on farms that needed more than the average of 5-6 work horses, in part to protect the investment of these animals. One farm manual advised in 1920: "Horses require light, airy and dry shelter, and are too valuable to be housed in buildings which do not meet these requirements. Horses, shut up in dungeons without light or ventilation, cannot be expected to come out of such quarters in good condition for work . . ." The article concluded that "convenience, sanitation, and contentment on the part of the animals are the three things to strive for in building any [horse] barn" (Moore et al 1920: 540).

See also

Implement or Machine Sheds
Appendix: Focus on Mechan Techno
Appendix: Focus on Minn Livestock

Individual Farm Elements

The horse barn needed to be accessible to all farming operations and yet, because of the aroma, was usually somewhat removed from the house. A site downwind was recommended.

The size of the barn depended on the number of horses (and sometimes mules) being housed. One recommendation from 1923 allocated 75-90 sq. ft. per horse (including the alley). Using this advice, a barn housing six horses would need about 480 sq. ft., or be perhaps 20' x 24' (Louden 1923). The Midwest Plan Service in 1933 offered plans for a 36' x 58' barn for 16 horses (Midwest Farm Building 1933).

It was recommended that every horse barn have a separate wagon and equipment room, a central service alley, and a separate harness room – the latter to protect the leather “from the fumes of the manure and from the accumulation of dust” (Moore et al 1920: 540).

While there were horse barns where the animals faced in toward a central feed alley, most experts recommended facing horses out from the alley for several reasons – it made “cleaning the barns, caring for harness, grooming the animals, and handling larger teams a little more convenient” and allowed each horse to see outside (Wooley 1946: 116).

A 1920 manual advised: “One 3' x 3' window should be provided for every stall, and it should always be low enough for the horse to look out. Nothing adds more to a horse’s contentment than the ability to see what is going on about it” (Moore et al 1920: 542).

Horses were kept untethered in stalls. Single stalls were usually about 5' wide by 9' long, with double stalls measuring perhaps 8' x 10'. Teams were often housed together. One early plan called for smaller stalls of 3'6" by about 6' (Moore et al 1920: 542). Box stalls for carriage or riding horses, or to be used for a mare with a young colt or a sick horse, were at least 9' x 12' or preferably 12' x 12'. Each stall had provisions for water and feed.

Stalls were primarily constructed of wooden planks, with 2" wood planks covering the floor. Beneath the wood flooring could be a sloped concrete floor, and the lower stall walls and manger could also be concrete.

The carriage room, which housed wagons, spreaders, and other equipment, was frequently a drive-through space. While a harness or tack room was often provided, some farmers used this room for miscellaneous storage and hung each horse’s harness on a peg in its stall. The barn’s feed room had feed bins, scales, and equipment for grinding and mixing grain. After commercial and fortified feeds became widespread, feed rooms were often converted to other uses. Most barns stored hay and bedding in a loft, with chutes through which it could be dropped to the first floor (Wooley 1946: 116-119).

Ventilation of horse barns was important and several passive systems were used. In the King system, fresh air entered the barn near the top of the first story, dropped to the floor, and was drawn out by flues built into the walls via intake openings near the floor.

Like general purpose barns, horse barns were built of wood, clay tile, concrete block, and, less often, stone and brick. Gabled, gambrel, and gothic-arched roofs were common.

Horse Barns

After 1918 the numbers of draft horses began to decrease as the use of trucks and tractors grew nationwide. The use of mules also began to decline, after peaking in the U.S. about 1925 (Anderson 1943: 621, 630).

During the period of transition from horses to tractors, the need for a separate horse barn diminished. During the transition, combination buildings were designed to accommodate horses, trucks, tractors, and other farm equipment. One 1946 plan, for example, provided a machinery storage area and room "for 6 horses, 250 bu. of corn, 500 bu. of oats, 20 tons of hay, and 10 tons of bedding." The machinery area encompassed almost two-thirds of the 30' x 60' building (Wooley 1946: 117).

Despite the progress of mechanization, 72 percent of farms in the U.S. still kept horses or mules in 1940 (Anderson 1943: 631). By 1953, however, the University of Minnesota was no longer including plans for horse barns in their standard plan book for farmers. Instead, housing for horses was shown only within general purpose barns. Many Minnesota farms retired their last horses in the mid-1950s.

PREVALENCE

It is not known how many Minnesota farmers built dedicated horse barns. They were most often built on large farms where more than seven or eight draft animals were needed. As horses were replaced by tractors, the barns were likely converted to other uses. Extant examples may be rare.

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Individual Farm Elements

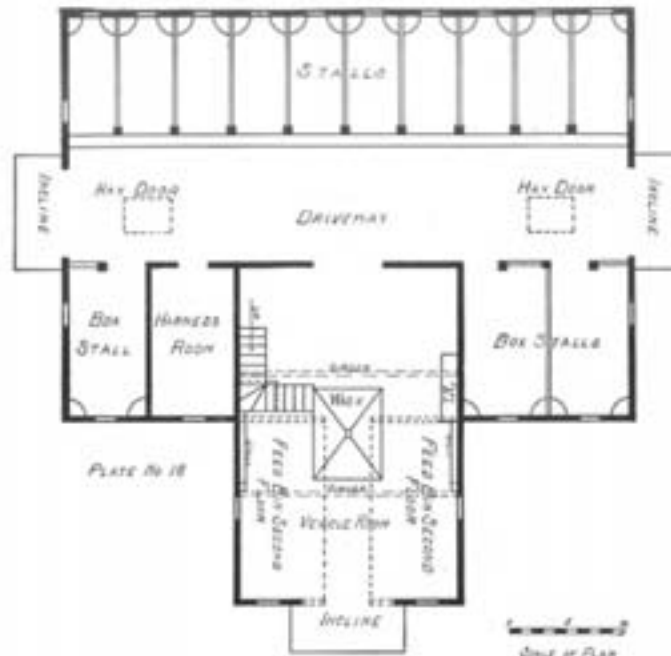


This general purpose or combination barn housed horses and cattle. Note the closely spaced windows, one for each stall. Oak Hill Farm, location unknown, circa 1910. (MHS photo by Harry Darius Ayer)



Finding and training a well-matched team was difficult, and such horses were valuable and often housed together in the same stall. As farms adopted tractors beginning in the 1920s, the draft horses also had to work well in the field next to the loud machinery. This farm was located in Lake of the Woods County. Circa 1942. (MHS photo by Kenneth Melvin Wright)

Individual Farm Elements



HORSE BARN



A horse barn plan issued by the North Dakota Experiment Station and printed in a 1920 farming manual distributed in the Midwest. The barn had 10 regular stalls, three box stalls (used for teams, foals, or sick animals), and the recommended harness room, wagon room, and provisions for feed mixing and hay and straw storage (Moore et al 1920).

■ HOUSEBARNS

- ▶ Housebarns provided shelter for farmers and their livestock “under one roof”
- ▶ They are extremely rare in the U.S., with one example known to be standing in Minnesota

Among the accounts of housebarns during Minnesota’s early settlement period is that of Merrill Jarchow, who wrote, “Near Sleepy Eye, a Danish family built a sod house large enough to accommodate not only themselves, but their cows and oxen as well. Within it copper utensils brought from Denmark seemed almost out of place” (Jarchow 1949: 83).

In a National Register nomination for the Seitaniemi Housebarn in St. Louis County’s Waasa Township, historian Michael Koop wrote in 1989:

Despite its widespread use as a building tradition on the Continent, few housebarns were constructed in the New World. Of the fifteen or twenty housebarns known to have been built in America, all of them are located in the Upper Midwest and Great Plains states of Kansas, Michigan, Missouri, Nebraska, North Dakota, South Dakota, Texas, and Wisconsin. Interestingly, nearly all of these buildings were constructed by German or Czech-Bohemian immigrants (Koop 1989: 8.1).

The Seitaniemi Housebarn was built circa 1907 and enlarged circa 1913. Koop described it as a two-story log structure in which living quarters for the farm family shared a common wall with housing for horses, cattle, and later sheep, as well as provision for hay storage. The building made efficient use of resources, and allowed heat from the livestock to help warm the house while the stored hay help provide insulation (Koop 1989; see also Alanen 2000: 2.112-2.127).

PREVALENCE

Housebarns were rarely built in Minnesota. Today there is only one known example in the state.

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See also

Combination Buildings
Saunas

Individual Farm Elements



The Seitaniemi Housebarn, shown here, was built by Finnish immigrants circa 1907 and enlarged circa 1913. Waasa Township, St. Louis County, circa 1988. (MHS photo by Michael Koop)

■ ICEHOUSES

- ▶ Usually small free-standing structures with gable roofs
- ▶ The simplest icehouses stored cakes of ice buried in insulating material
- ▶ More elaborate structures separated ice cakes from the insulation
- ▶ Ice was needed, for example, to quickly cool raw milk and fresh eggs
- ▶ Used until electric refrigerators were common

A staple of many early farms, icehouses were used to store ice for cooling food before electricity and mechanical refrigeration became available. Chunks of ice were floated in the milk house cooling tank, for example, to quickly cool the warm raw milk. Eggs gathered from the hen house also needed to be quickly cooled and then stored for several weeks in cold conditions. In the 1940 federal census, Minnesota ranked 38th among states in the number of farms with mechanical refrigerators in the farmhouse. Instead of using refrigerators for cooling, many farms cut and stored their own ice.

In Minnesota, icehouses were especially associated with milking cows and raising poultry, and many were built when farms diversified in 1875-1920 (depending on location in the state).

Some icehouses had a cold storage room, similar to a present-day walk-in cooler. Icehouses were especially important on dairy farms where milk had to be quickly cooled and then stored cold. Some dairy experts recommended that an icehouse and a milk house could be “built under one roof” (Washburn 1931: 301).

Agricultural experts urged farmers to see a farm icehouse, not as a luxury, but as a smart business investment. “When one considers the quantity of meat and other supplies spoiled during the heated periods, or the cans of cream that are graded lower or rendered entirely unsalable, it will be seen that an icehouse should really be considered a necessity, and that it can be made to pay for itself in one or two seasons” (Welch 1914: 186).

Icehouses were most often woodframe or masonry structures, but came in a wide variety of forms and sizes. Most had gabled roofs, and floors were often wooden or poured concrete.

Icehouses were usually free-standing structures although they sometimes adjoined the farmhouse or milking barn. Some icehouses were cut into hillsides or built partly underground for better insulation. Good drainage and convenience to the farmhouse were the main factors in location (Midwest Farm 1937; Welch 1914: 186; Brooks and Jacon 1994: 64).

The size of the icehouse depended on the needs of the farm. A minimal recommended size was 8’ x 8’ x 8’ and held about 14 tons of ice – enough to “furnish all the refrigeration needed by the ordinary family” (Welch 1914: 187). Typical footprints ranged from 12’ x 12’ to 16’ x 20’. One

See also

Milk Houses
Springhouses and Springboxes
Root Cellars

Individual Farm Elements

publication suggested that several families could join together to build and stock a larger icehouse (Welch 1914: 187).

In areas where ice was expensive or hard to get, well-constructed icehouses with thick, insulated walls were recommended. In places where natural ice was easily obtained from nearby lakes or streams and storage loss was not a concern, uninsulated icehouses were preferred (Welch 1914: 189; Midwest Farm 1937). The two forms are described below:

Uninsulated Icehouses. A simple, uninsulated woodframe icehouse could be built quite easily by any farmer with rough carpentry skills. This type typically had a stone or concrete foundation and floor. A single wall of shiplap or drop siding covered the outside of the studding. The inside studs were often left unfinished or they could be lined with rough boards for greater strength. A drain in the center of the floor carried away water as the ice melted. A door, made of loose boards fitted into grooves, ran from the sill to the rafters. Slatted louvers in both gable ends vented moisture. More substantial icehouses were built of masonry block with cement asbestos shingles and a cupola for ventilation (Midwest Farm 1937; Welch 1914: 187-188).

The ice was packed in loose sawdust or dry planer shavings, which many sawmills put up in bales. The floor of the icehouse was covered with a foot of sawdust or shavings, and a 12" to 18" layer was packed all around the ice pile. The top of the ice pile was covered with another 2' layer of sawdust.

Uninsulated icehouses were cheap to build but inconvenient. The sawdust had to be unpacked and then repacked each time ice was removed. The ice blocks had to be washed before use and there was considerable ice loss from breakage and melting (Welch 1914: 188).

Insulated Icehouses. More complex, insulated icehouses separated the ice cakes from the insulating material. They were more expensive to build but saved on labor and waste. This type of icehouse had a concrete foundation and floor and woodframe construction with walls, ceilings, and doors that were all double-layered. The cavities in the walls, door, and ceiling were tightly packed with sawdust or wood shavings. Corn stalks, flax straw, corkboard, cardboard-like compo-board, or other insulating materials were also used. Because the insulation was contained within the walls, ice cakes could be stored clean, away from the sawdust (Midwest Farm 1937; Welch 1914: 190-191).

Insulated icehouses often had drop siding on the exterior and tongue-and-groove sheathing on the interior, both over waterproof building paper. Screened louvers in the gable ends provided ventilation.

PREVALENCE

Farm icehouses were built throughout Minnesota and used for many decades. Eventually, however, icehouses were supplanted by electric refrigerators and freezers (including walk-in style coolers), and by bulk milk tanks. When they were no longer needed for ice, many icehouses were converted to sheds, smokehouses, or other uses. Some extant examples likely still exist.

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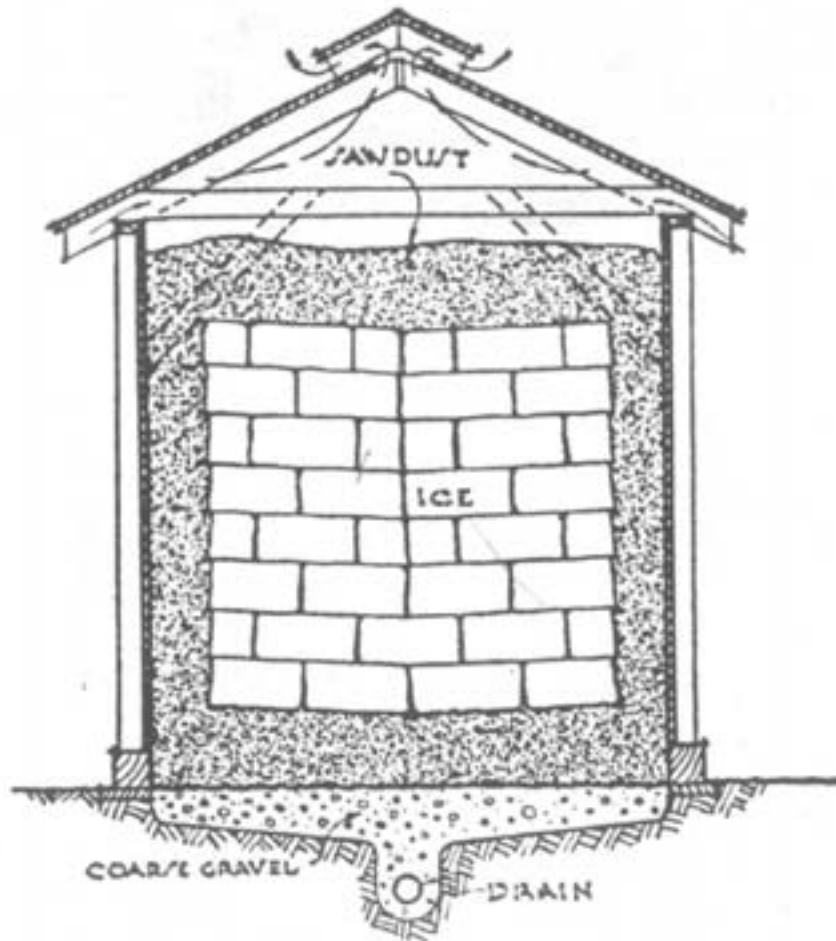
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Icehouses were frequently insulated with sawdust. This recommended design appeared in a textbook written by agricultural engineers from the University of Illinois and published in 1941. From Carter and Foster's *Farm Buildings* (1941).



These buildings are apparently icehouses. Location unknown, circa 1910. (MHS photo by Harry Darius Ayer)

■ IMPLEMENT OR MACHINE SHEDS

- ▶ Found on most Minnesota farms beginning in the late 19th century
- ▶ Important to protect and lengthen the life of mechanical equipment – a major farm investment
- ▶ Increasingly built after average farmers adopted tractors in the 1920s
- ▶ Implement sheds lent themselves to prefabricated, buildings without interior posts
- ▶ Eventually implement sheds rivaled livestock barns in size and importance

Implement or machine sheds (also called wagon sheds) were constructed to house valuable farm equipment. Found on most Minnesota farms beginning in the late 19th century, they were first used for horse-drawn wagons and implements.

In 1912 L. B. Bassett of the University of Minnesota urged farmers to build a machine shed. He argued, “On the 56,138 farms in Minnesota, there is over fifty-two million dollars’ worth of farm machinery, according to the 1910 census report. Much of this machinery stands idle 95 percent of the time. During this 95 percent of the time or 348 days of the year, most of the machinery is left in the open or in poorly constructed sheds” (Bassett 1912: 119).

Machine sheds came into increasing use with the adoption of gas-powered machinery in the 1920s. According to the University of Minnesota, 99 percent of Minnesota farmers still used work horses in 1930, but the number of horses had declined 27 percent over the previous 12 years and was steadily dropping as farms added a tractor to their operation (Cavert 1930: 4).

While the original costs of erecting an equipment storage building sometimes seemed prohibitive, experts cited long-term cost savings from protection of the machinery. They reasoned that having a well-constructed implement shed could be the difference between equipment lasting 5 years or more than 30 years. Wooley and Carter pointed out in 1933 that “the life of most farm machines is almost entirely unrelated to the amount of work performed each year: few machines are actually worn out.” Further, Wooley advised the use of implement sheds as a means to maintain a strong credit record. He wrote, “If there is any one thing that impresses a banker as poor management, it is neglect of farm machines” (Wooley and Carter 1933: 1; Wooley 1946: 259).

An implement shed was typically located on well-drained land near the center of farm activities. In 1912 Bassett recommended that it be quickly accessible to the fields, and in relatively close proximity to the farmhouse, barns, workshop, and garage to reduce “miles of unnecessary travel” throughout the year. Orientation varied, but the shed often faced east or south. Some experts suggested that a machine shed be used as a windbreak for the farmyard. Some also advised that the shed be built and positioned so that it could be expanded at a later date (Bassett 1912: 119; Neubauer and Walker 1961).

In the early 20th century, old unused buildings were often used to shelter farm equipment, but frequently provided little protection. Boss wrote in 1914 that equipment stored in poor “sheds with

See also

Farm Shops
Garages
Appendix: Focus on Mechan Techno

Individual Farm Elements

leaky roofs and wet floors, often rust quite as badly as if they were standing outdoors” (Boss 1914: 117).

Simple woodframe structures with open sides were the earliest sheds built specifically to store implements. Many were lean-tos attached to other farm buildings. One of the most basic styles – and popular for many decades – was a three-sided building with the fourth side entirely open.

Fully-enclosed implement sheds provided greater protection and more versatility of use. They protected machinery from the weather, kept out birds and animals, provided space to make repairs, and protected against theft. Some housed a workshop for maintenance and repairs. These areas usually had a stove pipe or chimney for heating. Like three-sided sheds, fully-enclosed sheds were usually woodframe. (See also “Farm Shops,” another individual farm elements section.)

Though implement sheds were built in all shapes and sizes, they needed to be of adequate size to store and maneuver machinery. Historically the most common shape was a long narrow building from 20’ to 36’ wide and 40’ to 100’ long. While some sheds had one large open space, many had individual stalls, each often 12’ wide. A 1912 *Minnesota Farmers’ Institutes* article, for example, described an 18’ x 90’ shed with stalls of varying widths to house a manure spreader, rack wagon, box wagon, ensilage cutter, gang plow, corn planter, cultivators, grain binders, disc, grain drill, hay loader, tedder rake, and workshop. This building could be built for \$400 (\$7,500 in 2003 dollars) (Bassett 1912: 120-122; Carter and Foster 1941: 283-284; Neubauer and Walker 1961: 241, 243).

Some machinery storage sheds had a driveway down the length of the building, with rows of stalls on each side. Others had shorter drive-through areas for tractor-pulled wagons, spreaders, and other often-used equipment, as well as enclosed areas for seldom-used machines (Wooley 1946: 262).

Implement sheds needed large doors that could be conveniently opened with plenty of clearance for larger machinery. The doors were usually hinged on smaller buildings, and hung on roller or sliding-type hangers on larger structures. As equipment got larger, door size increased.

Before farms were electrified, implement sheds often had windows, as well as large doors, to bring in natural light. Electrification was a boon to implement sheds, according to one agricultural engineer, who wrote their utility was wonderfully improved the moment two or three wires were extended into them (White 1936: 19).

Implement sheds were most often built with dimensional lumber and sided with wood. Structural clay tile and concrete block were more durable and withstood strong winds, but were also more expensive. Early sheds typically had floors of packed dirt or clay, cinder, or crushed rock or gravel. Eventually concrete became the standard recommendation although occasionally asphalt was used. Some machine sheds had repair pits so workers could more easily access machines.

Because of their simplicity, implement sheds lent themselves well to engineering innovations and materials that became available after World War II, as well as to the post-World War II trend of constructing buildings with multiple uses. On some Minnesota farms, the implement shed was the first building to exhibit “modern” materials and methods as farms built new sheds after the war to house expensive new equipment.

Implement or Machine Sheds

Pole-framed buildings – often with gabled roofs, steel siding, and concrete floors – became popular after World War II, although the building type had been developed in the 1930s. An implement shed that could double as a livestock barn was featured in a 1933 plan by the Midwest Plan Service, for example. It was a pole-framed, wood-sided building. In circa 1960, Merickel Buildings of Wadena offered pole-framed options in three sizes. They had no interior posts to interfere with moving machinery and had “precision-sawed” rafters to give them strength and rigidity. The sheds could be sheathed with either corrugated steel, fir plywood, or shiplap siding (Midwest Farm 1933; Merickel ca. 1960).

Prefabricated metal units became common in the 1940s. Many had frames, walls, roofs, and doors all built of metal. In 1948, for example, the Stran-Steel division of Great Lakes Steel was advertising a popular 40' x 100' building called the “Quonset 40” which was a grain storage building that could serve as a machine shed at other times of the year. Using the slogan “There’s a Quonset for Every Job on Your Farmstead,” Stran-Steel also sold the “Quonset 16”, “Quonset 20”, “Quonset 24”, and “Quonset 32” for machinery storage and other uses (Stran-Steel 1948; Stran-Steel 1957; Flintkote 1946).

As farms modernized, some implement sheds became known as “farm service centers,” complete with a repair shop and an office to manage farm interests. Implement sheds became larger as machinery became more expensive, more varied, and more complex. Eventually the implement shed rivaled the livestock barn in size and importance on many Minnesota farms.

PREVALENCE

Virtually all Minnesota farms had some provision for storing equipment – usually a free-standing implement shed. Examples from the pre-gasoline tractor era (the 1920s) may be rare. It is likely that well-preserved examples from other eras are still standing.

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Individual Farm Elements

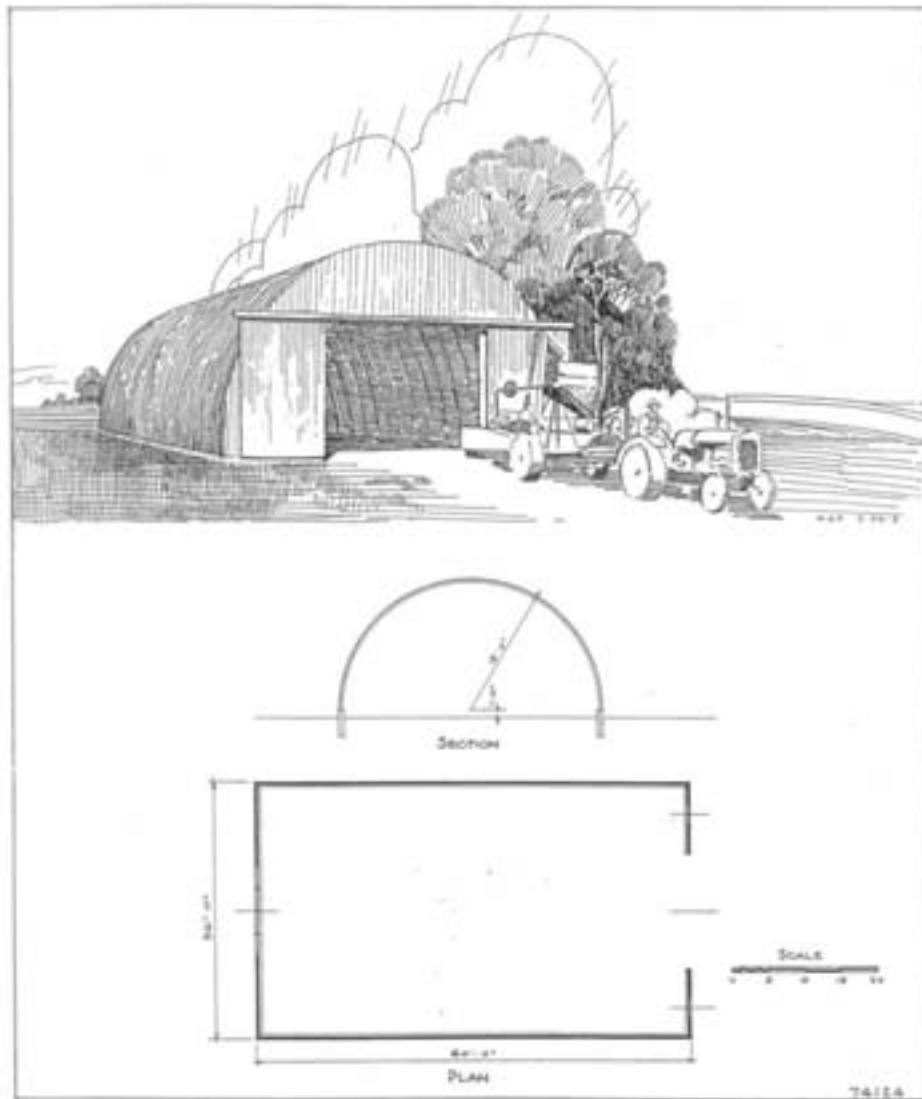
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Implement or Machine Sheds



An implement or machine shed. It had a standing seam metal roof and the walls were sheathed in corrugated metal. Location unknown, circa 1910. (MHS photo by Harry Darius Ayer)

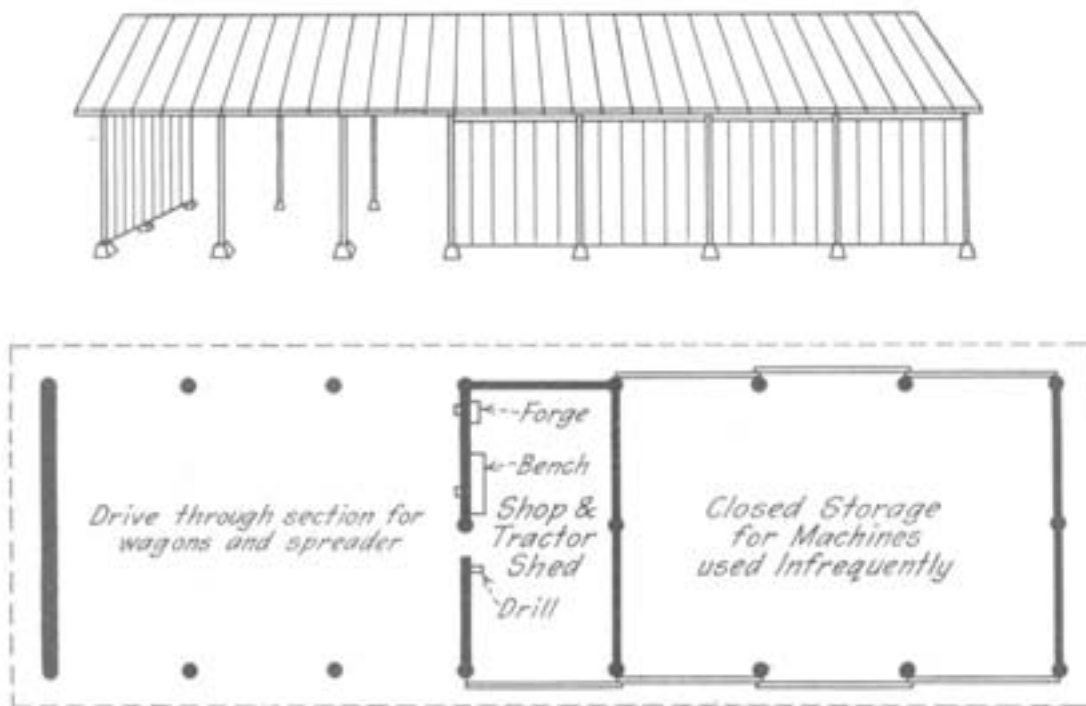
Individual Farm Elements



Maximizing floor space by eliminating structural posts was useful in an implement shed. The 36' x 60' building in this 1933 plan was supported by arches built-up from 1" x 4" or 1" x 3" boards, and was sheathed with corrugated metal. From Midwest Farm Building Plan Service (1933).

Implement or Machine Sheds

6.312



This combined implement shed and farm shop had a “drive-through section” for frequently-used wagons and manure spreader, a central shop with workbench, forge and stationary drill, and an enclosed implement shed for equipment used less often. From Wooley's *Farm Buildings*, a 1946 manual for “farm managers, appraisers, county agents, vocational teachers, and farm operators,” according to the preface.

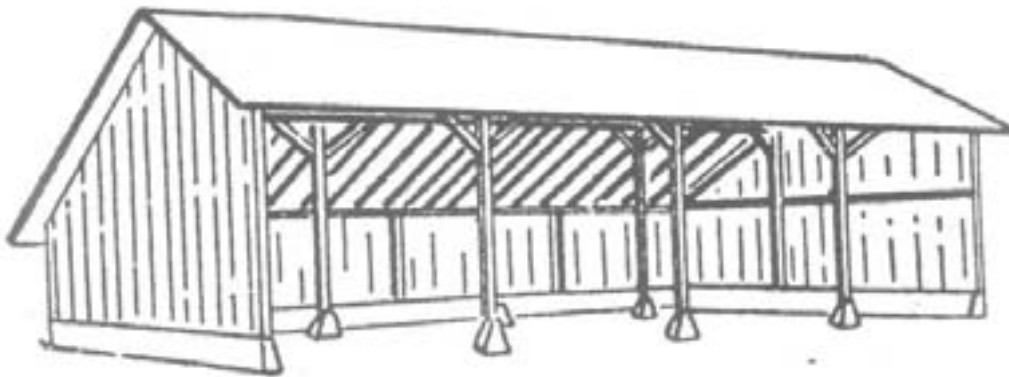


FIG. 139.—An open-front storage shed.

Some implement sheds were relatively simple open-fronted buildings with wood or metal siding and gravel floors. From the 1946 manual *Farm Buildings* by the University of Missouri's John C. Wooley.

■ IRRIGATION STRUCTURES

- ▶ Irrigation in Minnesota began on a very small scale in the 1920s
- ▶ The center pivot irrigator was patented in 1952; concrete pads were added in the 1970s
- ▶ By the early 1960s about 20,000 acres were under irrigation in the state

The first irrigation systems in Minnesota were used by truck farmers who raised produce around the Twin Cities area in the 1920s. The number of acres irrigated was very small and much of this land has been consumed by suburban growth (Wright 2005). Other early irrigation systems during this era included a one-acre field (crop unknown) along Highway 10 in Sherburne County and the Sanford family's one-acre strawberry field near Elbow Lake. Potato and sugar beet farmers in the Red River Valley also experimented with irrigation around the 1920s (Wright 2005). Irrigating potato fields in the valley became more common in the 1950s (Kenney 1995: 189).

The number of farms that were irrigated grew slowly. By 1941, about 250 of Minnesota's 197,000 farms were irrigating a total of about 1,500 acres of land (Young and Woods 1987: 3).

Nationwide, agricultural irrigation was advanced by the development of lightweight aluminum pipe around the time of World War II.

In 1950, about 4,200 acres were being irrigated in Minnesota. The number grew to 9,200 acres in 1954. According to one estimate, there were 15,000 acres irrigated in Minnesota in 1956 (Wood 1957: 419). By the early 1960s there were some 20,000 acres irrigated in the state (Wright 2005).

One area noted for its irrigation in the mid- to late 1960s is "Bonanza Valley," located near the town of Brooten and extending to the Villard, Glenwood, and Paynesville areas in Stearns, Pope, and Kandiyohi counties. At its center is about 50,000 to 60,000 acres of outwash sand plain soils with a prolific water aquifer. Irrigation started in the Bonanza Valley when farmers – mostly dairymen – began to irrigate alfalfa and corn. They later irrigated peas and sweet corn seed. About 1,000 acres were under irrigation there in 1966, the year the Bonanza Valley Irrigators Association formed (Scholten et al 1993). Today a wide area is irrigated and a Brooten community sign reads "Brooten, the Heart of Bonanza Valley, Welcomes you to Irrigation Country."

Irrigation in Minnesota grew during the drought years of 1976 and 1977, finally becoming more common in the state (Wright 2005). In 2002 there were some 432,888 acres irrigated in Minnesota. The greatest number of irrigated acres were in these 10 counties: Otter Tail, Pope, Dakota, Stearns, Sherburne, Swift, Wadena, Hubbard, Morrison, and Todd (Wright 2002).

The type of crops irrigated in Minnesota changed through the decades. In the 1920s produce and truck crops such as strawberries were irrigated. By the 1970s commonly irrigated crops included corn, beans, alfalfa, and sunflowers.

See also

Fields and Pastures
Erosion Control Structures
Drainage Structures

Individual Farm Elements**IRRIGATION EQUIPMENT**

The historically simplest form of agricultural irrigation, the water-filled canal or trench, did not work well in Minnesota because of the state's soil types. The first irrigators used in the state were known as sprinkler irrigators and consisted of vertical steel pipes with sprinkler heads mounted on top (Wright 2005; Wood 1957: 418).

The state's most prevalent type was the center pivot system, which was invented in 1947, according to one source (Kenney 1995: 189). The center pivot system was apparently patented in 1952. Center pivot irrigators consisted of long horizontal pipes with one end mounted on wheels and the other end attached to a rotating joint at a fixed location. As the system pivoted, water dripped from the pipe resulting in a circular irrigation pattern with the rotating joint at the center. The first systems were water-driven, but by the late 1960s fuel- or electric-powered motors were used to rotate the irrigators. In the 1970s farmers began to use a concrete pad to support the pivot point and its pump station. Until this time irrigation systems were essentially temporary structures that, when no longer used, could be moved or dismantled leaving little physical evidence (Beyer 2005).

The corners of a rectangular field did not receive water with a center pivot system. About 149 acres of a 160-acre field were normally irrigated. The corners were usually planted with crops that were better able to withstand dryer soils (Beyer 2005).

Two systems uncommon in Minnesota were "wheel lines" and "traveling guns." Unlike the pivot system which traveled in a circle, the wheel line traveled in one direction. To be used successfully, the field had to be long and narrow and planted with short crops such as strawberries, onions, or turf grass. The traveling gun system resembled a piece of farm machinery on four wheels. It had to be moved by the farmer every six hours (Wright 2005; Beyer 2005).

Farmers first drew irrigation water from shallow wells and from public rivers, lakes, and reservoirs. Today, according to the Minnesota Department of Natural Resources (MnDNR), a farmer can take only enough water per year to equal a 6" rainfall if drawing from a river, but can take the equivalent per year of a 12"-15" rainfall if drawing from ground water (Young and Woods 1987). Beginning in the late 1960s or early 1970s, a farmer needed a permit from the MnDNR to irrigate, although the law was not rigorously enforced. By the mid-1970s, the development of heavy well-drilling equipment helped shift the trend toward pulling irrigation water from deep wells.

Each center pivot irrigator usually had its own well, but it was not uncommon for several systems to be run from a single well. The water would be piped from one system to another with water lines that, in Minnesota, could extend a mile or more (Beyer 2005).

A farmer's decision to irrigate was not only related to potential profits from the investment, but also to the conditions of particular fields on the farm. For example, one farmer might irrigate only 40 acres of his 640-acre farm, while another farmer might irrigate 300 acres of a 350-acre farm. A field did not have to be flat to be irrigated. A center point irrigation system could "climb" 20' to 40' above the pivot point (Beyer 2005).

Irrigation Structures

On some farms, fences and shelterbelts were removed from farm fields to facilitate irrigation. However, the size of the irrigation system was generally determined by the size of the field, not vice versa (Beyer 2005).

Today most center pivot irrigation systems in Minnesota range in length from 200' to 2600', with the majority being about 1,300' long (Beyer 2005).

PREVALENCE

Few, if any, pre-1960 irrigation systems are likely to be found in Minnesota. Those dating from the 1960s, and especially in the 1970s, are probably much more common.

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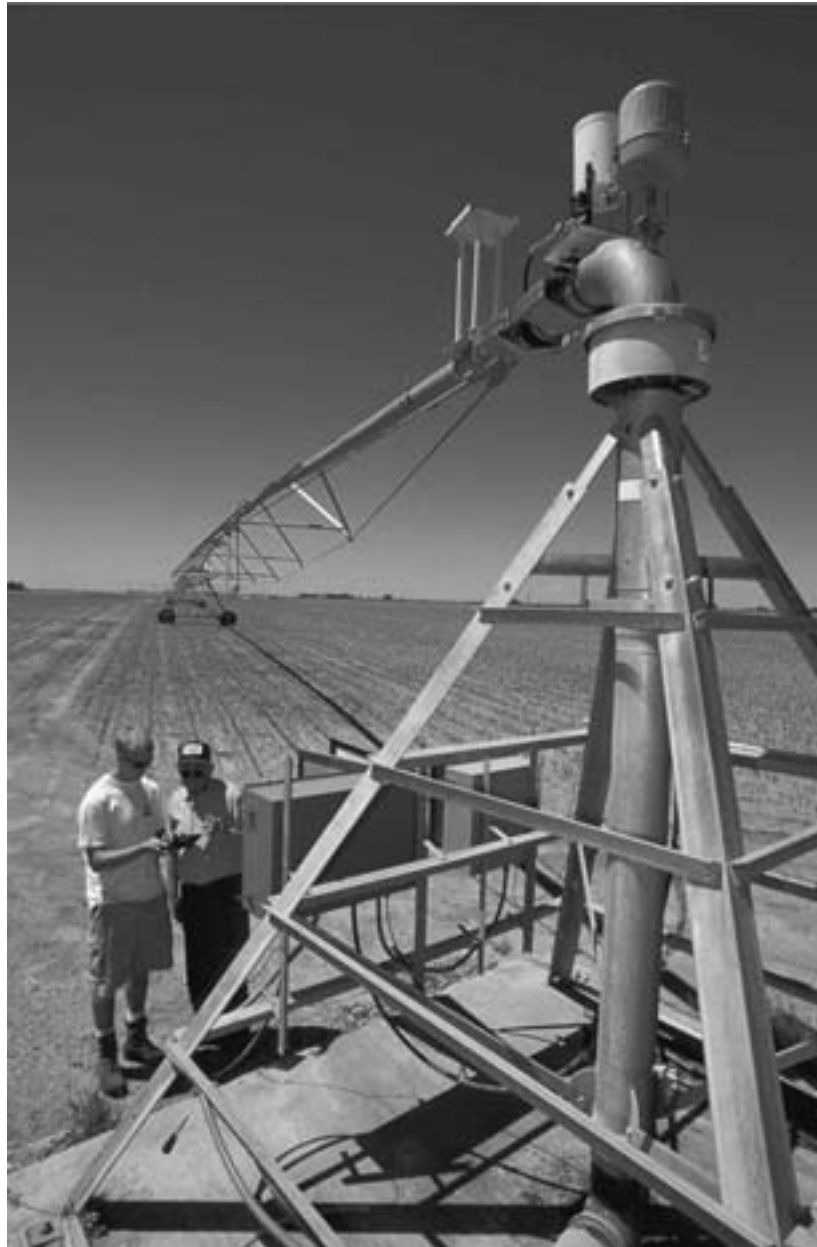
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The center pivot irrigation system, like the example shown here, was patented in 1952. Concrete pads were added in the 1970s. By the early 1960s about 20,000 acres of cropland in Minnesota were being irrigated. (USDA-ARS Image Gallery photo by Scott Bauer)

■ LANDSCAPING AND ORNAMENTAL PLANTINGS

- ▶ The ideal plan divided the farmstead into separate service, private, and public areas
- ▶ Farmsteads were planted for both beauty and utility
- ▶ Open, mowed lawns were found on Minnesota farms by at least the 1890s

University of Minnesota horticulturist LeRoy Cady explained in 1919 that Minnesota's first settlers could spare little time for "planting and adorning" their farmsteads. Instead, they had to "provide the necessities of life and lay the foundation for a permanent home." He wrote, "that stage has passed in most parts of our state" and "more attention may now be given to making our homes attractive and comfortable" (Cady 1919:1).

As early as the 1890s, however, Minnesota experts were encouraging farmers to beautify their property by planting front and back lawns, shade trees, ornamental shrubs, foundation and screen plantings, and colorful flower beds. One author wrote in 1910 that "the most common fault to be found with the great majority of farm homes, throughout the Middle West, is that they seem to have had little thought expended upon them in planning, planting, or up-keep." Not mincing words, the writer grumbled, "Most of these places are bare and untidy. The planting, if any has been done, is often poorly chosen and badly placed. Furthermore, they lack the great essential of a home, attractiveness" (Kirkpatrick 1910: 269-270).

Fears of a swelling farm to city exodus sparked an early 20th century reform effort that became known as the Country Life Movement. Believing that something deficient in rural life was driving people to the cities, progressive-era reformers sought to stem rural migration by raising the standard of living for farm families. Among the recommendations of a 1909 federal commission on bettering the quality of farm life were cultural and aesthetic improvements on the farm.

It was against this background that Minnesota experts took up the cause of farmstead beautification: "If the home is attractive, both inside and out, something that is comfortable and can be shown to friends with pride, the young people will not hurry away to the city, but will stay and help improve and enjoy it" (Cady 1919:1).

Farm experts also stressed the economic benefits of landscaping the farm. Landscaping "increases the selling price of the land many per cent above the expense incurred," one author wrote in 1910 (Kirkpatrick 1910: 270). Another wrote in 1950, "The farmer will find that a well-arranged and carefully landscaped farmstead not only will speak proudly for his farm but will actually contribute to the efficiency of his farm business" (Snyder: 1950:3). And a 1937 expert noted, "Success is often reflected in the quality and appearance of the house and its immediate surroundings" (Hunt 1937: 2).

See also

Farmsteads
Gardens (Vegetable)
Orchards
Windbreaks

Individual Farm Elements**SERVICE, PRIVATE, AND PUBLIC AREAS**

One of the main goals of a landscaping plan, experts explained, was to separate the business and service areas of the farmstead from the public and private spaces. A good design could hide the unattractive and rough elements of the farm workplace, enhance the appearance of the house, and create pleasant, homey outdoor living areas for relaxing and socializing (Snyder 1950: 3; Hunt 1937: 28).

The service area extending from the back door of the house, for example, contained by necessity elements, "can not be made to look particularly attractive" (Hunt 1937: 7). However, this area could be hidden from public view with hardy hedges, trees, and screen plantings, while at the same time accommodating farm chores and deliveries (Hunt 1937: 6-8; Snyder 1950: 4).

The private area of the farmstead, where the family socialized and entertained, was usually located to the rear or side of the house. Here, the landscaping goal was to create a cheerful, secluded space bordered by flowers, shrubs, and small trees. The ideal private area had an open lawn, shade, comfortable outdoor furniture, and special landscaping accessories such as a birdhouse, birdbath, rock garden, pond, arbor, fireplace, or rose garden (Hunt 1937: 8; Snyder 1950: 4-5).

The public area of the farmstead generally included the driveway and the front of the house. A goal of landscaping in this area was to frame and highlight the house and lead visitors to its main entrance. Experts recommended an open grass lawn, proportionate to the size of the house, "with the boundaries softened by judicious planting of shrubbery" (Hamilton 1908: 96). In an ideal arrangement from the mid-century, the driveway approached the house from one side and included a parking lot near the door (Hunt 1937: 6-8; Snyder 1950: 4).

In 1910 a Minnesota Farmers' Institutes author spelled out a set of landscaping principles for the ideal farmstead, which remained consistent in similar publications through 1950:

- the farmstead was planned with a purpose
- the buildings, lots, and lawns had a pleasing relation
- the place was well-furnished with trees and shrubbery, which were grouped at the sides and rear, and around the foundation of the house, rather than set in rows or scattered haphazardly around the grounds
- there was an open, mowed lawn
- there were no unnecessary fences, walks, or drives, and the yard was uncluttered
- the place was neat and well-kept, restful and homelike (Kirkpatrick 1910: 271; Cady 1919; Hunt 1937; Snyder 1950).

ORNAMENTAL PLANTINGS

According to historian Merrill Jarchow, even in the early, hardscrabble decades of Minnesota agriculture, "often a real effort was made to beautify the farm by spacing stately elms or evergreens along the drive leading to the yard and by arranging flower beds and shrubbery in attractive designs around the house" (Jarchow 1949: 99).

A 1921 survey of Minnesota farm women, many of whom had lived through the difficult pioneer period, showed that most put a high value on the "pleasing effect" of ornamental plantings (Lundquist 1923: 16).

To help farmers make their farmsteads into places "where one would like to live," the University of Minnesota and others distributed sample landscaping plans with species lists and detailed instructions (Kirkpatrick 1910: 271). Most of the recommended species were tested for hardiness and vigor at the University's experiment stations.

Lawns. The lawns were the most important part of the farmstead planting plan and usually the first thing to be planted. Experts recommended installing a spacious, well-drained, Kentucky bluegrass lawn with few objects to interfere with mowing. Early experts approved of allowing sheep or horses to graze on the lawns to keep them neatly clipped, but warned farmers to keep the sheep away from the tempting shrubbery (Snyder 1950: 5; Cady 1919: 2; Wilson 1909: 26; Kirkpatrick 1910: 272).

Borders and Hedges. Borders and hedges separated the farmstead grounds into distinct areas. If there was plenty of space, "the combination shrub and perennial border [12' to 20' wide] is probably the most satisfactory" divider, the Extension Service said (Hunt 1937: 10). If there was not enough room for a shrub border, a hedge 3' to 6' wide could be planted. In very cramped spaces, vines trained on trellises or fences made an effective division. Hardy perennial vines also made attractive screens for covering clothesline posts, fuel tanks, rock piles, the outhouse, and other structures (Cady 1919: 7; Hunt 1937: 10; Snyder 1950: 8-9).

Trees. Trees were recommended to shade the house and outdoor living areas, frame the view of the house, and to provide a backdrop for the house. Trees also hid undesirable views and provided wind and snow protection (Wilson 1914: 57; Snyder 1950: 6).

Flowers. Flowers added color and interest to the farmstead. Extension experts encouraged using flowers in borders and foundation plantings, but frowned on isolated flower beds out in the middle of the yard because they were "difficult to maintain and clutter up the lawn." Perennials were usually preferred in borders, and experts reminded farmers to harmonize flower colors. Specific hardy species were recommended. It was suggested that a separate flower garden for cutting be planted at the back or side of the house (Snyder 1950: 8-9; Hunt 1937: 7; Cady 1919: 6-7).

PREVALENCE

Like all vegetative features, lawns, trees, and other ornamental plantings are often lost to plant disease and other natural processes. However, because they were so widespread historically, it is expected that vestiges of ornamental lawns and plantings will remain on many Minnesota farms. Small shrubs and flowers may have survived in fewer numbers.

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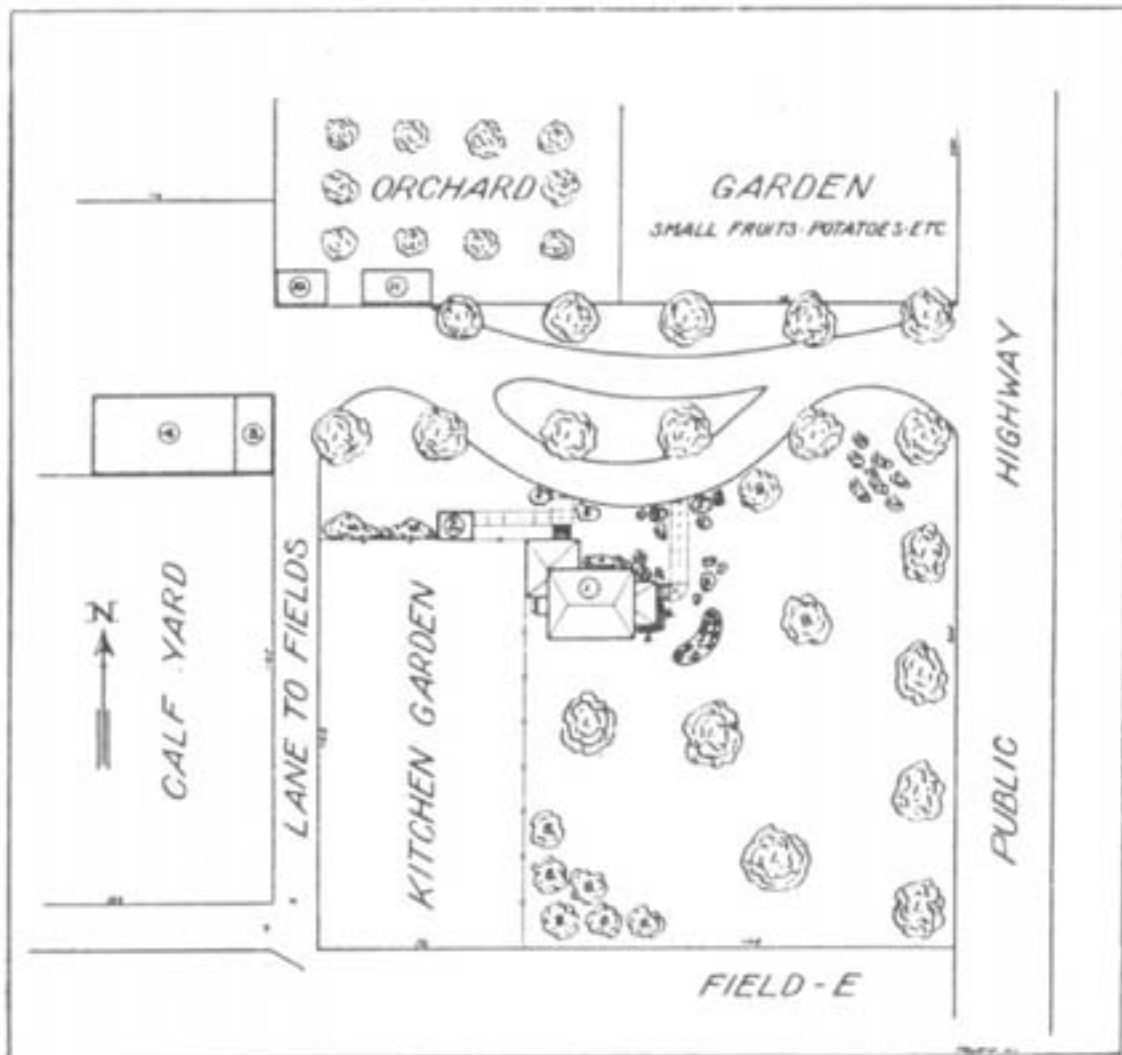
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This drawing appeared above the caption "Suggestive arrangement of buildings and grouping of shrubbery and trees on a well planned farmstead." From the 1914 book *Farm Management* by the University of Minnesota's Andrew Boss.



A farmstead with elaborate – and atypical – ornamental plantings. Location unknown, circa 1910. (MHS photo by Harry Darius Ayer)

■ MANURE PITS OR BUNKERS

- ▶ A three-sided, roofed, concrete structure used for storing manure
- ▶ Widely used from about 1920 to 1960

The manure pit or bunker – built by farmers by the 1910s – stored manure after it was removed from the barn, before it was spread on the fields. During the first half of the 20th century before chemical fertilizers were widespread, livestock manure was a farm’s major source of nitrogen. Raising livestock along with crops, and using animal manure to fertilize those crops, were major tenets of diversified farming. As one educator wrote, “To pile up manure in the barnyard where one-half of the nitrogen will leach away and the other half will go off as ammonia is a very foolish extravagance. To bore holes in a wooden [barn] floor for the urine to run through is even worse waste” (Moore et al 1920: 501).

A manure pit typically consisted of a roofed, three-walled, poured concrete structure. The supporting posts were tall enough to allow a tractor and manure spreader to drive beneath the roof for loading and unloading. The lower walls were about 4’ high, while the upper walls were left open for ventilation. Sometimes the manure spreader was stored within the manure pit when the spreader was not in use.

Monolithic concrete pits were superior to simply piling manure in the farmyard because they captured the valuable liquid manure. The floor of the pit was often sloped so that the liquid could run into a cistern opening in a corner. The liquid was periodically pumped out and spread on the fields.

Plans from both 1933 and circa 1950 indicate that an 18’ x 37’ manure pit was considered suitable for handling 18 dairy cows, a typical number for a Minnesota farm in the early 20th century (Midwest Farm 1933; National Plan Service ca. 1950: 57).

Manure pits were usually situated at the end of a litter carrier track that emerged from the barn. On hilly sites the manure pit could be built into the side of a slope, but engineers pointed out that the pit should be placed where the farmer did not have to push manure loads up hill. Engineers also cautioned, “Both local and state milk ordinances should be consulted in determining the location of this structure with respect to the milk house and barn. Also, some ordinances require the use of screens over all openings” (Midwest Farm 1933).

A more recent method of manure handling, the manure lagoon, came into use with the practice of raising large numbers of livestock in confinement operations. One longtime University of Minnesota animal scientist (now retired) estimated that he first saw a manure lagoon on a Minnesota farm around 1970. One of their first uses was under the floors of confinement barns (Hanke 2005).

See also

Stockyards
Dairy Barns
Farmyards

Individual Farm Elements**PREVALENCE**

Manure pits were widely used on Minnesota farms that kept livestock. Their use declined as farms phased out their animals and as the use of commercial fertilizers increased. Intact manure pits may be uncommon.

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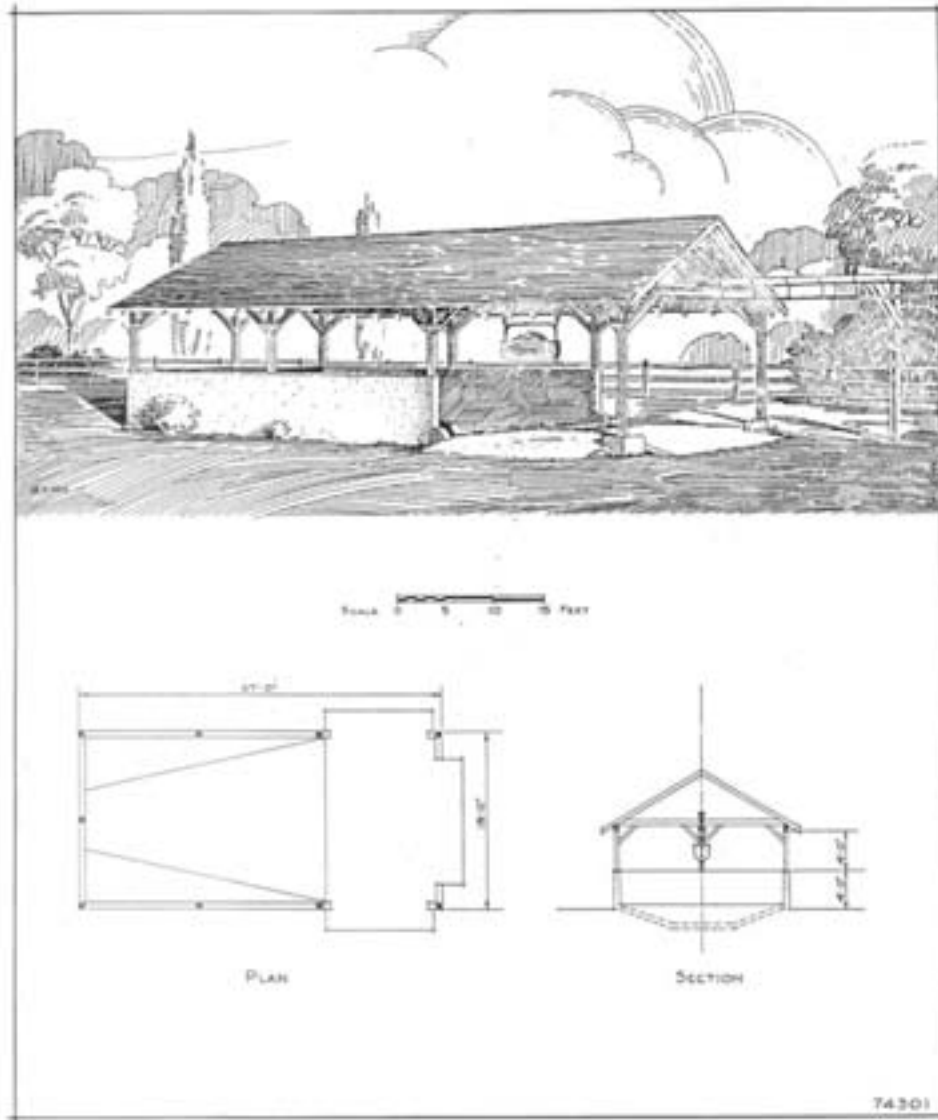
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A 1937 manure pit plan issued by the Midwest Plan Service. The structure measured 18' x 37' and had a slanted concrete floor. From Midwest Farm Building Plan Service catalog of plans (1937).

Individual Farm Elements

Manure Pits or Bunkers

6.328

■ MILK HOUSES

- ▶ Minnesota's earliest milk houses likely date from the mid-1890s
- ▶ Except during the earliest period, a milk house was necessary for a dairy farm to function
- ▶ Milk houses were small one- or two-room buildings whose design and operation were increasingly regulated by dairy sanitation laws
- ▶ One author called the milk house cooling tank the second most-important piece of equipment on a dairy farm after the cream separator
- ▶ In the 1950s refrigerated bulk tanks steadily replaced cooling tanks; both resided in the milk house

The milk house was a dedicated space in which raw milk was cooled, strained, and stored at the correct temperature before being taken to market. The cream separator was usually housed here as well. See also "Dairy Barns" and "Milking Barns", two other individual farm elements sections.

On Minnesota's earliest dairy farms there were no specialized facilities for handling and storing milk, cream, and butter. Milk was often cooled and stored in a bucket suspended down the well shaft, in a spring house (if the farm was fortunate enough to have a spring), in a root cellar, or in an icehouse. Historian Merrill Jarchow explained, "The milk was set in shallow pans or earthen crocks, which were placed on racks or some cheap structure. After the milk had set, the cream was skimmed off, and the milk was fed to the family, the pigs, or the calves. The cream was placed in a dash churn and made into butter, a strenuous job" (Jarchow 1946: 107-108). While used on some farms by necessity, root cellars were not desirable for storing dairy products because the cream and butter tended to absorb odors and flavors from the vegetables.

Another historian wrote, "Only a few [Minnesota] dairymen had continuous running cold water direct from the well. The one with a flowing [artesian] well was fortunate and had no problem keeping his cream sweet or milk of desirable quality and so produced a higher quality butter" (Wayne 1977: 19).

AN ESSENTIAL BUILDING

A milk house or milk room was sometimes called a dairy, milk shed, or separator room. It was a structure essential to a Minnesota dairy farm and – in the words of geographers Noble and Cleek – "an unmistakable trademark of the dairy farm" nationwide (Noble and Cleek 1995: 140).

Milk houses, dairy barns, and milking barns were the farm buildings most subject to government regulation in Minnesota. Barn cleaning, manure handling, milking, equipment sanitation, milk cooling, and milk storage were all subject to rules and inspections that increased through time. In 1924 the U.S. Public Health Service published a "Proposed Standard Milk Ordinance" that helped guide many state and local laws. A set of Minnesota regulations was developed about the same time.

See also

Dairy Barns
Milking Barns
Icehouses

Springhouses and Springboxes

Diversification & Rise of Dairy, 1875-1900

Individual Farm Elements

Minnesota adopted a “Grade A” certification system in 1945, and the state’s dairy requirements were strengthened considerably in the 1970s. (See also a discussion of dairy regulations under “Focus on the USDA and the Minnesota Department of Agriculture” in this report’s appendices.)

The milk house often contained facilities to clean the milking equipment and cream separator. In the early 20th century, many farmers cleaned the separator and milk cans in the farmhouse kitchen. But as herds grew larger and milk houses were built or improved, milking and separating equipment was often cleaned and air-dried in the milk house. (In her study of Stearns County dairy farmers, Marilyn Brinkman found that, on many farms, both men and women milked, and then men left for the fields while women took apart and washed the milking machines and cream separator (Brinkman 1988: 17; Neth 1995: 19-20).)

Dairy laws eventually dictated that no extraneous material could be stored in a milk house and no extra activities could occur there.

The milk house could be incorporated within the dairy barn, be an addition to the barn, or be detached from the barn. Eventually dairy laws required that milk houses be strictly separated from barns, even if they were physically connected to them.

Minnesota’s earliest milk houses likely date from the mid-1890s. One of the University of Minnesota’s early publications, the *Minnesota Farmers’ Institutes Annual*, was carrying articles on milk house design by 1895 and 1898. A milk house described in 1895 was a three-room area within a dairy barn that contained a wood stove on which to heat water for cleaning, a cream separator, piping to carry skim milk to a calf barn to be fed to the calves, a hand pump to draw water, and another pump to send water to buckets near the cows (Casselman 1895: 73; Flaten 1898).

Experts advised that capital invested in the construction of a milk house would be soon recovered in milk and cream that would otherwise spoil.

One of the University of Minnesota’s top dairy specialists, R. M. Washburn, wrote in 1914 of the merits of the milk house:

Any farmer with 10 or more cows, used for purposes of cream- or milk-production, can ill afford to be without some clean and convenient place in which to separate the milk and keep the cream. The separator must be housed, preferably in a place free from dust and away from odors. The cream-cooling tank, which occasionally is found in the yard by the pump protected from sun and dust by old boards or a door, would last longer and preserve the cream better if inside a building. To keep the cream cool in summer and to prevent it from freezing in winter are both important. If we add to these concrete statements the further fact that far more pleasure and satisfaction can be had from work when performed in a more definite and sanitary way, we shall have ample reason to encourage the construction of modest dairy buildings (Washburn 1914: 181).

LOCATION

It was recommended that a milk house be sited on well-drained land with a good supply of water, be close to the barn for ease of hauling heavy milk, be on the “clean” side of the barn (away from

Milk Houses

the manure pile or pit), be sited so it didn't interfere with silo loading and unloading, and be handy for the milk truck. It was helpful to build the milk house at the base of the windmill and its pump. In 1940, *Successful Farming* magazine also suggested that, if visible from the highway and attractive, the milk house could draw passers-by to purchase dairy products (Fox 1940: 48).

If milk houses were built onto barns, they were generally required to have a separate entrance or have a vestibule or passage with closeable doors that separated the milk house from the barn (White 1923:100; National Plan 1951: 10).

On some farms the milk house was combined with the icehouse or with the milking barn. The National Plan Service, for example, offered plans in 1951 for an 18' x 44' concrete block building with a four-stall milking barn that comprised about 2/3 of the interior and a milk house that occupied the rest (National Plan 1951: 9). (See "Milking Barns" and "Icehouses", two separate property sections.)

SIZE

Milk houses were generally small one- or two-room buildings with just enough space for necessary functions and equipment. A milk house that was too large was hard to heat and clean, and tended to attract the storage of extra clutter (Jones and Hill 1934: 28). Recommendations for milk house sizes stayed relatively constant between the 1910s and the 1950s.

The minimum recommended size was 8' x 8'. Plans for a woodframe 8' x 8' milk house were being offered by the *Successful Farming* magazine in 1934, the Midwest Plan Service in 1937, and the University of Minnesota in 1953.

R. M. Washburn, in both 1914 and 1931, recommended a 10' x 10' milk house for herds of less than 20 cows. If a small gasoline-powered motor (to run the separator) were included, the building should be 10' x 12'. If the herd were 20 or more cows, Washburn recommended that the milk house be 18' x 20' and include a sink, hot water, and other provisions to wash the cream separator and milk cans instead of the equipment being washed in the farmhouse kitchen (Washburn 1914: 181-182; Washburn 1931: 293-301).

In 1937 the Midwest Plan Service was offering plans for milk houses that were 8' x 8', 8' x 12', 11' x 11', and 12' x 16'. A larger house, about 21' x 24', could be built if fluid milk was being bottled on the farm (Midwest Farm 1937). In circa 1950 the National Plan Service was offering plans for a 9' x 12' woodframe milk house that closely resembled those of earlier decades (National Plan ca. 1950).

MATERIALS AND EQUIPMENT

To preserve the quality and taste of the milk, the milk house needed to be an odorless, clean, cool area with an indoor air temperature of about 50 degrees. Maintaining this temperature in the winter was eventually made easier by electric heaters.

Milk houses built before World War II were usually made of wood. Because of the constant presence of moisture, however, concrete block, poured concrete, concrete staves, structural clay tile, and brick were also used. In all cases, a concrete floor was advised. It was recommended that

Individual Farm Elements

the foundation rise about 18" above ground to keep the wooden sill and siding above the moisture (Washburn 1914: 185-186; Noble 1984: 116; Structural Clay 1941; National Plan ca. 1950).

Milk houses needed windows for light, especially in years before electricity. Experts cautioned that the windows shouldn't be too large, however, or the interior temperature would be hard to control. Window screens were needed to keep out insects.

It was best if interior walls and ceilings were finished with a smooth, durable, washable surface like concrete block, tile, or tough enamel paint to facilitate cleaning (Washburn 1914: 186). A light color of paint increased visibility within the building.

Cooling Tank. Before the introduction of bulk milk tanks in the 1950s, milk cans were cooled and stored in the milk house's water-filled cooling tank. The milk was stored here until it could be delivered to (or picked up by) the creamery or cheese plant.

Washburn wrote in 1914 that the cooling tank was the second-most important single piece of equipment on the dairy farm after the cream separator (Washburn 1914: 184).

Early tanks could be round and made of wooden staves, or could be rectangular and made of wood lined with galvanized iron (Brinkman 1988: 84). They were soon built almost exclusively of poured concrete. Most tanks were insulated. It was recommended that cooling tanks be only large enough to hold the requisite number of milk cans and be compartmentalized so the cans wouldn't tip. Except in the earliest milk houses, the cooling tank was often recessed into the floor so the heavy cans could be maneuvered out of the tank more easily. To preserve the life of a cooling tank, experts recommended that a block and tackle be used to raise the cans (Fox 1940).

Milk had to be cooled rapidly – simply setting the warm milk in an icebox or icehouse, for example, was not effective (Eckles and Warren 1916/rpt. 1921: 179). It was also important that farmers didn't mix the warm evening's milk with the cooled morning milk.

To quickly cool the milk, water in the cooling tank could either be continuously-flowing well water, or water in which ice from the icehouse was floated. (If the tank had continuously-flowing water, the water was often used for livestock (for drinking) after it left the milk house.) By the early 1940s, electricity was used to maintain the water temperature. In the 1950s some milk houses had a cold-water spray that discharged over the cans by a motor-driven pump (Flaten 1898: 33; Washburn 1914: 184-185; Fox 1940).

Washing and Sterilization Equipment. Milk houses often contained sinks, hot water, and other equipment for washing and sterilizing. In the 1910s-1930s, the sterilizer could be an oven or a small, tight concrete room in which instruments were steamed, or a "steam jet through the drain board of the sink" (Washburn 1914: 184; Washburn 1931). Electric sterilizers were introduced by the 1930s and were eventually used on most farms. Milk houses often had an interior rack to air-dry cans and equipment. Many also had an outside rack attached to an exterior wall.

Cream Separators. Cream separators were often kept in the milk house. Prior to the use of on-farm separators, farmers took whole milk to the creamery or skimming station and usually returned home with skim or sour milk which was fed to the livestock. With the advent of separators, the milk was

separated on the farm and only the cream was hauled to the creamery. This changed again with the introduction of refrigerated bulk tanks in the 1950s.

Mechanical cream separators were first introduced in the U.S. in 1878 but, according to Jarchow, "did not appear in Minnesota until late in the century" (Jarchow 1946: 118). At first both gravity and centrifugal devices were used, but the centrifuge eventually became most popular. Separators were first cranked by hand and eventually had electric motors. In her 1988 study of Stearns County dairying, Marilyn Brinkman wrote, "By the beginning of World War I, [mechanical cream separators] were a common fixture on dairy farms, despite the painstaking task of cleaning them after each use" (Brinkman 1988: 76).

Cream separators were about 4' tall and bolted to the milk house floor. The milk house foundation needed footings sunk deeply so that frost wouldn't heave the floor and unbalance the separator.

Bulk Tanks. By the 1950s stainless steel refrigerated bulk tanks were becoming affordable for Minnesota dairy farmers, leading one expert to write in 1957 that "the time honored milk can may soon become as much of a novelty as the walking plow" (Meyer 1957: 14). Minnesota had about 600 bulk tanks in 1954. By 1957 the number had jumped to about 5,200 tanks, with 110,000 Minnesota farms milking cows that year. Bulk tanks were installed in the milk house in place of the cooling tank. The University of Minnesota advised in 1957, "It may be possible to find a cooler to fit an existing milk house" – which suggests that the addition of bulk tanks may have been responsible for the construction of a number of new milk houses on Minnesota farms (Meyer 1957: 14).

PREVALENCE

Milk houses were built on nearly all farms in Minnesota that produced dairy products to be marketed commercially. It is likely that many will still be standing. Most milk house cooling tanks were replaced by bulk tanks in the 1950s or early 1960s. Early milk houses with intact cooling tanks and other equipment are likely rare.

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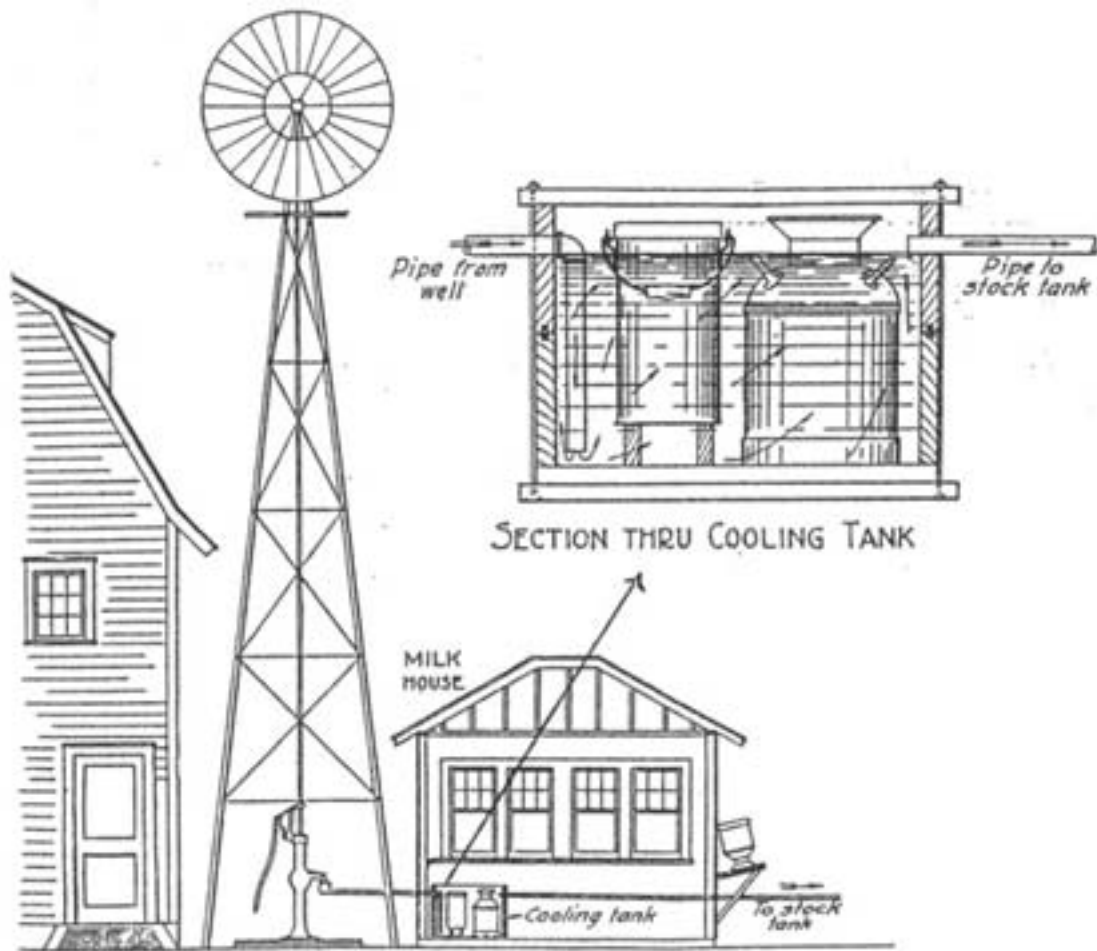
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Milk Houses**6.334**



A convenient place to site the milk house was near the windmill where a good source of water was available. In this diagram by the Minnesota Cooperative Creamery Association, the milk cans were cooled by pumping cold well water into the cooling tank. The water was then discharged to the stock tank for livestock to drink. Note the outside rack for air-drying the milk cans and other equipment. From a 1925 Minnesota Extension Service bulletin by Harold Macy.

Individual Farm Elements



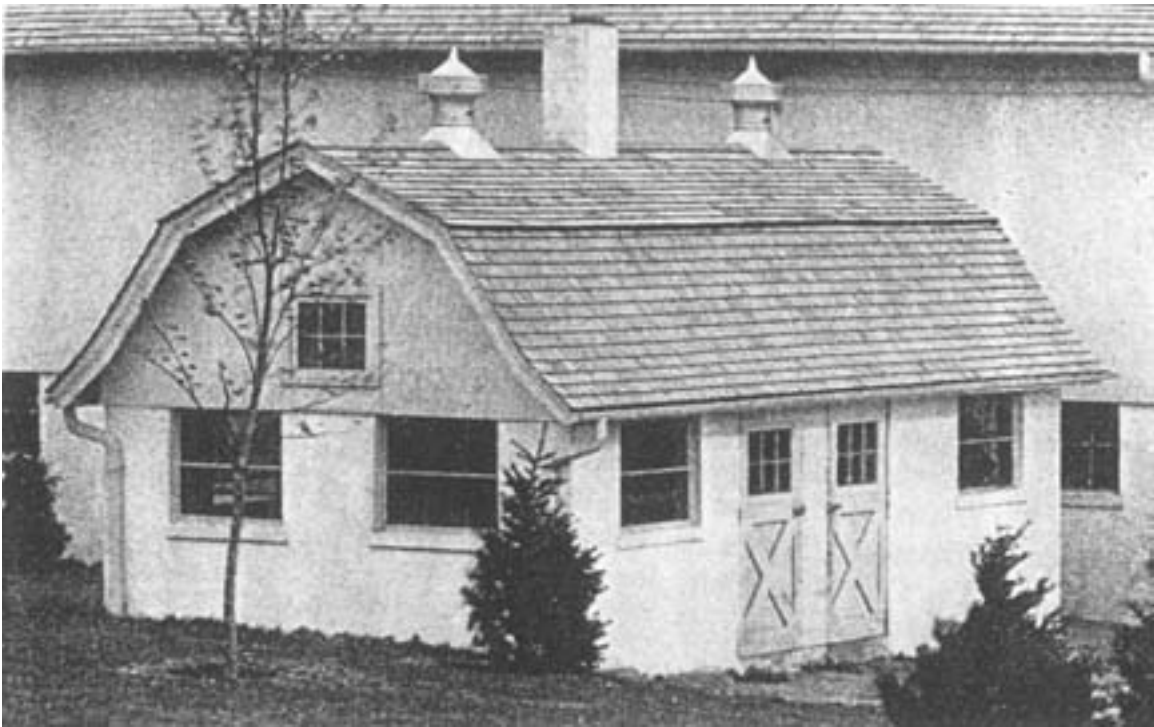
An adequate milk house could be as small as 8' x 8', although a 10' x 12' design was more accommodating. This house had a concrete foundation, wood siding, and an outside drying rack, all typical. The black device (with handle) near the door was probably an insulated water shut-off valve. Believed to be Douglas County, circa 1950. (MHS photo)

Milk Houses

6.336



A milk house standing in St. Louis County, circa 1940. (MHS photo)



A substantial poured concrete milk house in a 1941 agricultural engineering textbook written by University of Illinois faculty. From Carter and Foster's *Farm Buildings* (1941).

■ MILKING BARNs

- ▶ Usually found on farms using a pen barn with loose housing
- ▶ Uncommon before 1950

A milking barn (also called a milking room or a milking parlor) was generally the companion to a pen barn or “loafing” barn. In this dairying system, the cows lounged on deep straw bedding in the pen barn, and were led to the milking barn twice a day to be milked. This contrasted with the stall barn system – much more common in Minnesota – in which the cows were both confined and milked in small fixed stalls. (See “Dairy Barns,” another individual farm elements section, for information on both pen barns and stall or stanchion barns.)

A milking barn could be a separate building or a segregated room within a larger barn.

Milking barns and other dairy facilities were subject to increasingly stringent dairy regulations, particularly after World War I. Both state and local laws guided many aspects of milking barn design and operation, especially for farmers who produced milk for the fresh, fluid milk market (Grade A), as opposed to milk sold as an ingredient for processed foods (Grade B).

LOCATION

Milking barns were usually located close to the barn in which the cows were housed, and sited within an integrated system of pens, stockyards, and pastures. The farm’s milk house, where raw milk was handled, was always located near the milking barn.

On some farms, the milking barn was integrated with the milk house. In 1937, for example, the Midwest Plan Service offered plans for a one-story combination milking barn and milk house. The building had a poured concrete base (below the window sill level) and woodframe upper walls. The milking area was 20’ x 20’ with six milking stalls – apparently adequate for 30 to 60 cows. The milk house portion was 10’ x 20’ (Midwest Farm 1937). In another example from 1951, the National Plan Service provided plans for an 18’ x 44’ concrete block building with a four-stall milking parlor that comprised about two-thirds of the interior, and a milk house that occupied the rest (National Plan 1951: 9). (See also the individual farm elements section entitled “Milk Houses.”)

DEVELOPMENT

The use of milking barns in the Midwest probably dates from the late 19th century. One of the earliest reports on the subject was an article written in 1905 by Wilbur Fraser of the University of Illinois. Fraser reported on 18 farms in Illinois that were using loose housing and milking barns. One of the farms had been using the system since 1891. The method showed such promise that the University of Illinois began to use it for part of its herd in 1903 (Fraser 1905). In 1941 the

See also

Dairy Barns
Milk Houses
Silos
World War II & Postwar, 1940-1960

Appendix: Focus on Minn Livestock

Individual Farm Elements

University of Wisconsin embarked on a several-year dairy research project whose results were reported widely. The study found milking barns and loose housing to have many advantages, which helped encourage Midwestern farmers to try the method (Witzel and Barrett 1944; Witzel and Heizer 1946; Engene et al 1948; Witzel and Derber 1952).

Systems with a milking barn were considered more sanitary than those in which cows were milked and housed in the same stalls. The farm needed two separate structures – one for milking and one for housing – but the two buildings could be less complicated than a traditional stall barn. Using a milking barn was considered to be an efficient use of labor, and healthier for the cows who weren't confined all day in stanchions. (For more information see the individual farm elements section called "Dairy Barns.")

Milking barns had another disadvantage: in very cold climates it was sometimes hard to keep a milking barn warm enough in the winter without artificial heat, which was an added expense. In traditional stall barns, the cows themselves produced sufficient heat to keep the indoor air temperature warm. But only a few cows occupied a milking barn at any one time. A cold milking barn could make conditions miserable for the farmer, who already contended with cold, chapped, and constantly wet hands as each cow's udder was cleaned before she was milked. By 1960 artificial heating was standard in many milking barns.

Milking barns were fairly rare before World War II. A 1931 issue of *Agricultural Engineering* reported that some of the farms that had been studied by Fraser in Illinois in 1905 were still successfully using milking barns in 1931 (Long 1931: 399). According to an article in *Successful Farming* in 1934, milking barns were growing in popularity (White and Witzel 1934). According to University of Minnesota authors, they had become "quite common" in 1936 and "increasingly popular" in 1950 (White et al 1936: 3; Eckles 1950: 514).

COMPONENTS AND OPERATION

After World War II, milking barns were often built with pole frames, corrugated steel or aluminum siding, and other prefabricated materials. Nearly all were one story. Because interior cleanliness was paramount, poured concrete was almost always used for the floors and sometimes for the lower walls.

Milking barns were designed for milking efficiency. Twice a day, the cows were led into the milking barn a few at a time. Typical milking barns had 4 to 12 milking stalls, most with stanchions. In some milking barns, the cows walked toward the milking stalls in single-file, almost assembly-line fashion, and were washed before they reached the milking stalls.

Milking stalls were built in various styles – some allowed two cows to be milked at once, some allowed the cow to back out after milking was over, some allowed the cow to exit in a forward direction, and some were arranged in a "herringbone" pattern. Developed in New Zealand in 1957, the herringbone had two rows of milking stalls angled outward from a central alley. The cows faced outward and the worker stood in the central alley. The arrangement was efficient because the worker only had to move about 40 inches between cows' udders instead of 8' between udders in traditional stall arrangements (Fuller and Larson 1960: 7).

Milking Barns

Dairy cows were usually fed grain while being milked (or shortly before). Most stalls had individual feed cups.

By 1931 milking barns were being designed with two levels of flooring so that the farmer stood about 24" to 30" below the cows, reducing the tiresome bending and stooping associated with milking. In the 1930s new features being added to milking barns included "fly brushes" – a set of large brushes through which the cows walked as they entered the milking barn so that fewer insects were carried inside.

By the 1930s and 1940s milking barns were being promoted for their labor-saving efficiency. A 1948 University of Minnesota bulletin provided the following advice for using a four-stall milking barn effectively:

For herds of up to 30 cows, labor will be used most efficiently if one man does the milking, using two single [milking machine] units. With a well-organized routine, he can milk 20 or more cows an hour. Milk [the] cows on an 'assembly line' basis. That is, release the milked cows and bring in the unmilked cows one or two at a time, while the milking machines are working on other cows. Time is wasted if all of the cows in the milking room are milked, then all are released at the same time (Engene et al 1948).

In 1930 a rotary milking system called the "rotolactor" was just being tried in a New Jersey milking barn. The barn had a ramp leading to an elevated circular platform that had stanchions facing toward the center. A steady line of cows walked up the ramp and onto the slowly revolving platform. In a revolution that lasted about 12 minutes, the platform moved the cows past stations at which workers washed the cows and attached milking equipment. The milker was detached near the end of the circle's revolution about 10 minutes later, and the cow walked down the ramp and away from the platform (Long 1931: 399, 404). Today similar rotary milking platforms are used on Minnesota's largest dairy farms.

In 1960 the University of Wisconsin's S. A. Witzel summarized good milking barn design, including features then required by dairy laws (Witzel 1960: 602-603). These elements included:

- walls smooth and easily cleaned
- floors sloped to drains
- good lighting, both natural and artificial
- insulated construction and good ventilation
- correct flow of cows through the room
- proper washing of udders using antiseptic in the water
- proper handling of feed
- dust- and rodent-proof feed storage
- properly designed hand-washing and toilet facilities
- vestibule between the milking barn and the milk house
- inward swinging door from the milk house
- manure cleaned up
- proper waste disposal system
- room temperature of about 50 degrees

Individual Farm Elements

By 1960 many milking barns had attached elevated bulk feed storage containers, some with conveyors and metered feeding (Witzel 1960: 602).

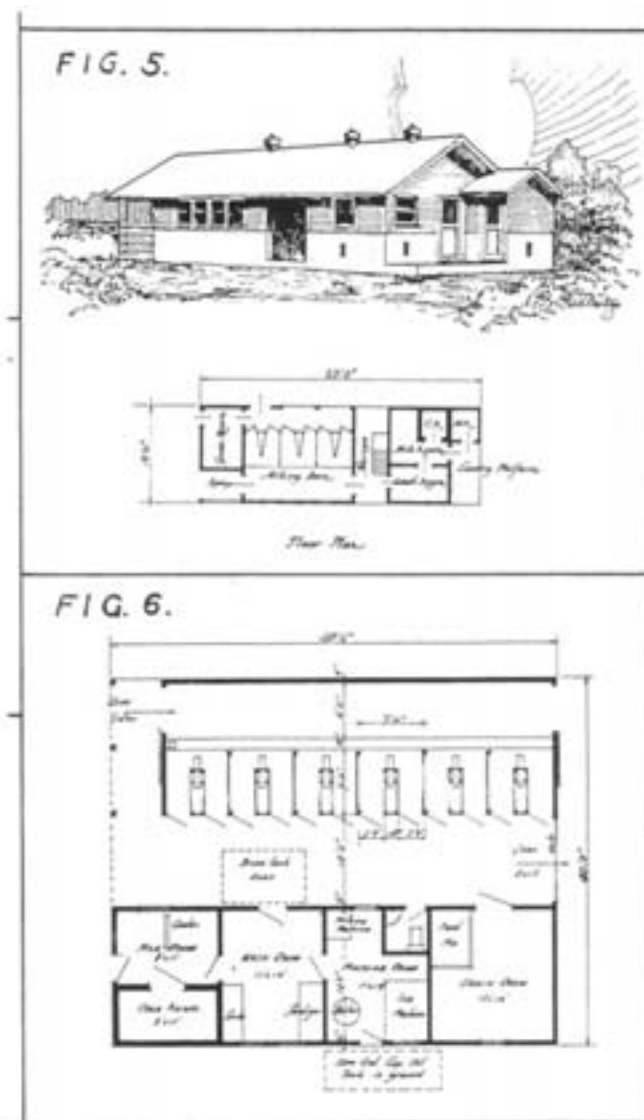
PREVALENCE

Dairy barns were widely built throughout Minnesota but most were stall barns. Milking barns, which were used with pen barns and loose housing systems, were uncommon before 1950. Pre-1960 examples are assumed to be uncommon, with pre-1950 examples being fairly rare.

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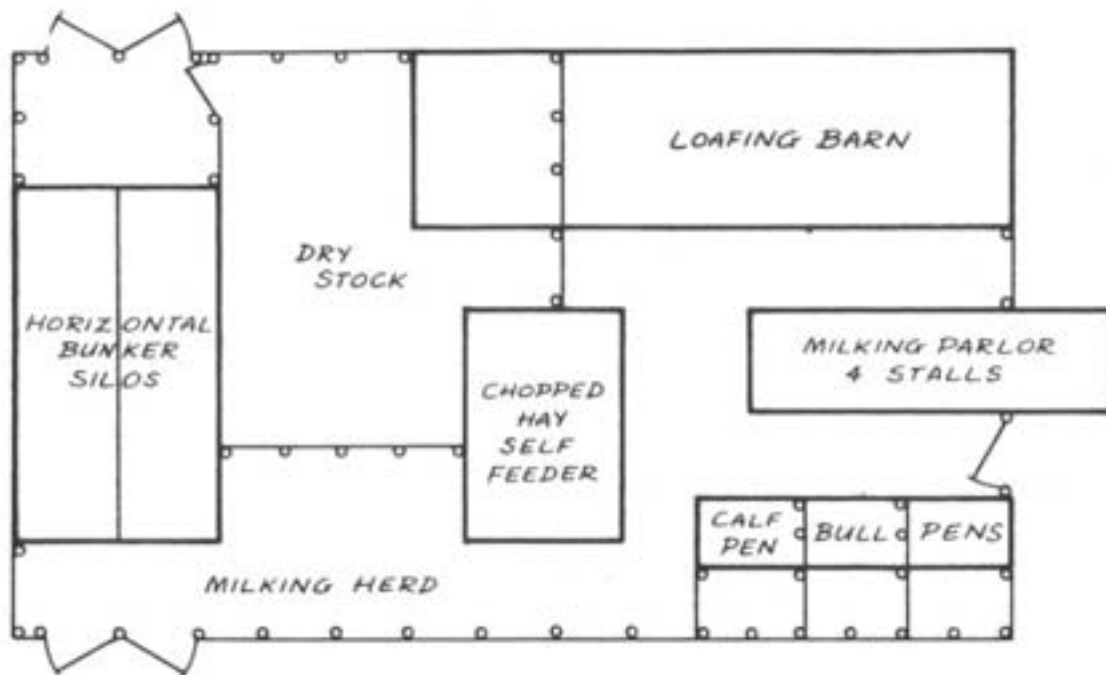
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Milking Barns



The milking barn on top had concrete lower walls and a woodframe superstructure. It housed six parallel, walk-through milking stalls through which five cows per hour could move. The lower barn had 12 stalls with small flags hinged to the stall doors that “signal the milk house operator when a cow had been released” so that a constant stream of cows could be milked. Both milking barns had integrated milk houses and grain storage. From J. D. Long’s “Present Trends in Dairy Management,” *Agricultural Engineering* (Nov. 1931). The upper plan also appeared in the Midwest Plan Service’s set of plans issued in 1937.

Individual Farm Elements



"An efficient and convenient dairy layout" from a 1961 text entitled *Farm Building Design*. Milking barns or milking parlors were best sited with easy access to the milk house, pen barn, stockyards, feed storage structures. From Neubauer and Walker (1961).

Milking Barns

6.344

■ ORCHARDS

- ▶ Orchards and gardens were usually placed within easy reach of the house
- ▶ The best place for an orchard was the northeast slope of a hill or in the shelter of a windbreak
- ▶ Poultry were kept in the orchard to help control insects

University of Minnesota publications on farmstead planning from the 1890s to the 1950s consistently showed an orchard and garden on every farm and argued that no farm could afford to be without provisions to grow fruits and vegetables (Hays 1894: 272-278; Kirkpatrick 1910: 273; *Farm Building Plans* 1953). And in a 1921 survey sponsored by *Farmer's Wife* magazine, farm women expressed "in no uncertain terms the value they place upon the orchards on their farms" (Lundquist 1923: 15).

Farm orchards provided fruit for both home use and for sale. A farm orchard might range from 30-40 trees to several hundred. One source in 1956 recommended that farm orchards be one-half to one acre in size (Roberts et al 1956: 244).

On many Minnesota farms, orchards – like gardens and flocks of poultry – fell within the traditional sphere of women's responsibilities. Orchards, gardens, and poultry houses were all placed near the farmhouse so that their products would be convenient to the kitchen, and so that women could care for them while simultaneously watching children, cooking, washing, and cleaning. Placing poultry houses within (or near) the orchard made double use of the space and helped keep the insect population down (Lundquist 1923: 14; Wilson 1909: 26; Wilson 1914: 58; *Farm Building Plans* 1953; Hays 1894: 272-278; Kirkpatrick 1910: 273).

Orchards for growing apples, pears, and plums were planted in straight, evenly spaced rows, for ease of cultivation and management. Whenever possible they were planted on sloping land so that air circulation reduced diseases, and near a temperature-moderating body of water. The best location for an orchard was the north or northeast slope of a hill. Horticulturist LeRoy Cady explained in 1910, "The northeast slope protects from the drying south and southwest winds, and also aids in protecting from sunscald" (Cady 1910: 281; Hart 1998: 257-258).

In 1914 the University of Minnesota's Andrew Boss wrote:

Fruit growing like vegetable growing is an intensive form of farming calling for high capitalization and requiring a large amount of labor per acre. It is adapted to somewhat larger land areas than truck gardening, and a family can handle from five to forty acres and often more where fruit growing is made the specialty. Great care is required in the management of the orchards in most localities. While this type of farming is often urged as particularly remunerative and easy, the opposite is usually the case (Boss 1914: 46-47).

See also

Gardens (Vegetable)

Farmsteads

Landscaping and Ornamental Plantings

Roadside Markets

Appendix: Focus on Minnesota Crops

Individual Farm Elements

Fruit trees were subject to wind and snow damage, so orchards were often planted in a part of the farmstead protected by a windbreak. However farmers had to be careful not to plant fruit trees in a spot that was too sheltered in the winter, "as the trees are apt to freeze and thaw during the warm days" wrote Cady (Cady 1910: 281; Wilson 1914: 58).

When an orchard was to be used for growing a cash crop rather than for home use, it was even more important that it be laid out so that the trees would flourish and chores like pruning and harvesting would be efficient. In 1920 four competing patterns of tree layout were in use – rectangular, quincunx, alternate, and hexagonal – and there was controversy over optimal spacing. Selecting hardy productive stock, mulching, spraying, and pruning trees, and care of the soil were all important. In 1920 experts were recommending against the common practices of cutting hay and pasturing livestock in the orchard because of damage to the trees and reduction of soil fertility (Moore et al 1920: 245-267). By the mid-1950s, electric insect traps were being used in some orchards and truck gardens.

The need for farm orchards declined as roads and transportation improved and farmers could shop in town more often, as farm labor decreased, and as prepackaged and frozen foods became increasingly available, particularly after World War II.

PREVALENCE

Because orchard trees are more long-lived than more ephemeral gardens, it is expected that more remnants of historic orchards than vegetable and flower gardens have survived on Minnesota farms. Orchards may be much reduced from their historic size of several dozen trees. Like all vegetative features, fruit trees are subject to decline by natural processes.

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Harvesting an apple crop, possibly for cash sale. Location unknown, circa 1910. (MHS photo by Harry Darius Ayer)



Poultry houses were commonly sited within or near the orchard so that the birds would eat the insects that might mar the fruit. Both were often located near the farmhouse. Location unknown, circa 1918. (MHS photo)

Individual Farm Elements

Orchards

6.350

■ OTHER ANIMAL HUSBANDRY ELEMENTS

- ▶ Includes miscellaneous farm elements associated with animal husbandry

Miscellaneous animal husbandry elements on Minnesota farms include structures such as:

- breeding racks and loading chutes
- egg cooling structures
- feed houses
- hives and other beekeeping structures
- hog wallows
- livestock dips
- range or temporary shelters
- riding horse barns
- shades for poultry, cattle, or hogs
- sheep shearing sheds
- stock ponds, man-made
- sun porches for poultry
- swill pits or feed cookers

For more information, see sources such as those listed below.

PREVALENCE

Miscellaneous animal husbandry elements are likely to be found throughout the state, with early intact examples being the most rare.

SOURCES

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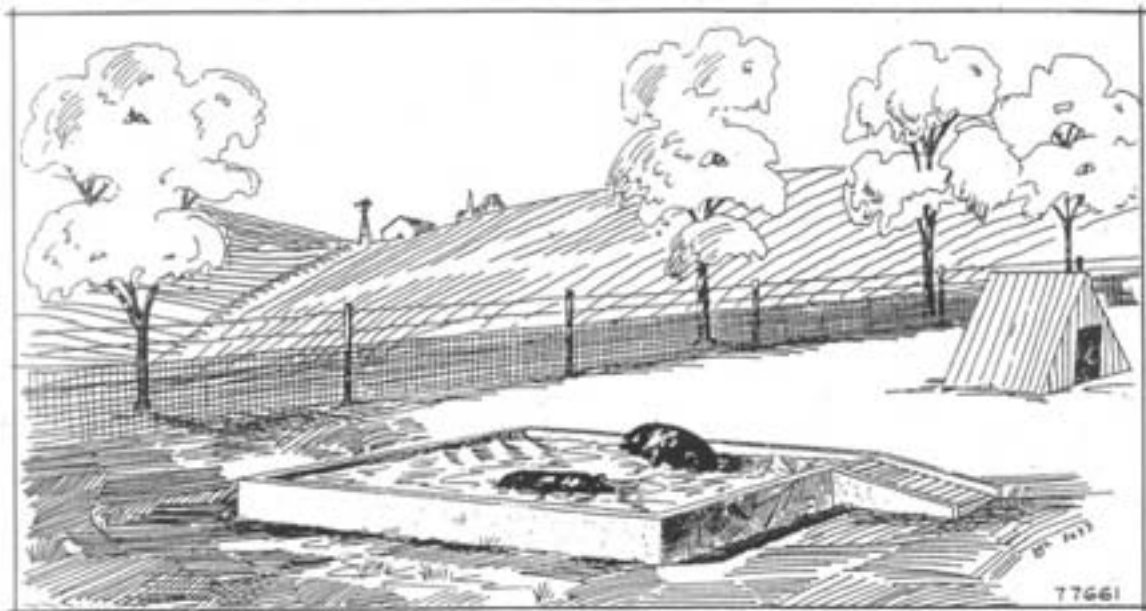
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See also

Animal Underpasses
Stock Tanks

Individual Farm Elements

Hog wallows were shallow water-filled pools in which pigs could cool off. Oil or chemicals were sometimes added to the water to control parasites. In 1937 the Midwest Plan Service was offering plans for this 14' x 14' concrete pig wallow. Note the adjacent hog cot and the woven wire (or "hog" wire) fence topped by the typical two strands of barbed wire. From Midwest Farm Building Plan Service (1937).

Other Animal Husbandry Elements**6.352**

■ OTHER CROP HUSBANDRY ELEMENTS

- ▶ Includes miscellaneous farm elements associated with raising, storing, and processing crops

Miscellaneous crop husbandry elements on Minnesota farms include structures such as:

- drying sheds or dry houses
- elevated metal feed bins, also called hopper bins
- packing sheds
- sorghum mills or presses

For more information, see sources such as those listed below.

PREVALENCE

Miscellaneous crop husbandry elements are likely to be found throughout the state, with early intact examples being the most rare.

SOURCES

Barre, H. J., and L. L. Sammet. *Farm Structures*. New York: John Wiley and Sons, 1950.

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See also

Tobacco Barns
Sugarhouses
Scale Houses

Individual Farm Elements



Elevated feed bins like the one shown here were in use by the 1950s. Erickson Farm, Marine Township, Otter Tail County, 1974. (MHS photo by Eugene Debs Becker)

Other Crop Husbandry Elements

■ OTHER DOMESTIC ELEMENTS

- ▶ Includes miscellaneous farm elements related to domestic life

Miscellaneous domestic elements on Minnesota farms include structures such as:

- birdhouses
- carriage houses
- garden seats and arbors
- graves and gravestones
- lawn art, ornaments, statuary
- picnic fireplaces
- religious icons
- school bus waiting shelters
- statuary
- storm cellars
- walls

For more information, see sources such as those listed below.

PREVALENCE

Miscellaneous domestic elements are likely to be found throughout the state, with early intact examples being the most rare.

SOURCES

Farm Building Plans. St. Paul: University of Minnesota Institute of Agriculture, Dept. of Agricultural Engineering, 1953.

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See also
Saunas

Individual Farm Elements



The Lingen family cemetery is a small fenced plot in a wooded area of the farmstead. There are five graves in a grassy square that measures about 24' x 24'. Pope County, 2005. (Gemini Research photo)

Other Domestic Elements

■ OTHER SERVICE AND UTILITY ELEMENTS

- ▶ Includes miscellaneous elements related to the farm's service and utility infrastructure

Miscellaneous service and utility elements on Minnesota farms include structures such as:

- bridges
- clothes lines
- fuel tanks for gasoline, diesel, kerosene, heating oil
- landing strips
- mailboxes
- retaining walls
- secondary income structures such as:
 - auto repair shops
 - blacksmith shops
 - brick kilns
 - lime kilns
 - resort cabins
 - sawmill sheds
- "sheds" (e.g., for storage, etc.)
- signs with farm's name or products
- tornado shelters
- trash incinerators

Small multi-purpose storage structures – today often called "sheds" – were apparently not often constructed on Minnesota farms before 1960. None of the historic plan books, farm building texts, and farm periodicals reviewed in this study discussed construction of a "shed." The small pre-1960 "sheds" that stand on farms today were more likely to have been built for another purpose (such as a smokehouse, brooder house, or power house) and used as a storage shed for part of the year, or used as a shed full-time after the original function was no longer needed.

For information on landing strips, see "Airplane Hangars," an individual farm elements section.

PREVALENCE

Miscellaneous service and utility elements are likely to be found throughout the state, with early intact examples being the most rare.

SOURCES

Boss, Andrew, and George A. Pond. *Modern Farm Management: Principles and Practice*. St. Paul: Webb Publishing Co., 1951.

Farm Building Plans. St. Paul: University of Minnesota Institute of Agriculture, Dept. of Agricultural Engineering, 1953.

See also

Woodsheds
Water Power Structures
Propane Gas Structures
Airplane Hangars

Individual Farm Elements



A Stevens County farm mailbox. Ehlers Farm, Framnas Township, Stevens County, 2004. (Gemini Research photo)

Other Service and Utility Elements

6.358