▪ THRESHING BARNS

- Threshing barns were built in Minnesota between the 1850s and the time of farm diversification, which began in the 1870s in southeastern Minnesota
- Most threshing barns were timber frame, three-bay structures with a central drive
- After diversification, the three-bay form persisted, often as a raised three-bay barn
- Most were built in southeastern Minnesota

Wheat was first raised commercially in Minnesota beginning around 1858. The farms were concentrated in southeastern Minnesota, which is where most of the state's threshing barns were built. By 1869 wheat occupied 62 percent of the state's cultivated fields, and in 1870 the leading wheat growing areas were Olmsted, Goodhue, Fillmore, Wabasha, Dakota, and Winona – all southeastern counties. By 1880 wheat was grown on nearly 70 percent of all tilled acreage in Minnesota. By this time, however, wheat yields were declining and land prices in southeastern Minnesota were rising. These factors helped shift wheat farming to the edge of the settlement frontier in western Minnesota and the Red River Valley where land prices were lower. By the time the wheat frontier moved to the Red River Valley, threshing had been mechanized, farms were raising more livestock, and commercial pre-cut lumber was becoming available – all factors that favored new barn forms over the threshing barn, especially in western Minnesota. However, the three-bay threshing barn form persisted as farms diversified, and some farms built "raised" three-bay barns on basements (or raised an existing threshing barn onto a basement) to accommodate livestock.

See also this context study's "Planning and Building Farm Structures: Barn Forms and Terminology" for a discussion of barn forms including three-bay barns and raised three-bay barns.

The threshing barn originated in Europe and was a single-function structure, according to barn historians Calkins and Perkins, with its purpose being the threshing and storage of grain. Livestock were generally not housed in a threshing barn (Calkins and Perkins 1995: 40).

In the U.S. threshing barns were commonly known as English barns, but also called New England, Connecticut, or Yankee barns. They were brought to the Midwest by Yankee or old-stock American settlers. Among the barn's ethnic variations was a type of threshing barn called a "Scheune," built by German immigrants to the Midwest. It was similar to the English threshing barn but usually built of fachwerk or half-timbering (Calkins and Perkins 1995: 45).

In a study of Midwestern threshing barns Calkins and Perkins have written, "As long as wheat was grown, a continuing need existed for the function provided by the three-bay threshing barn. The barn's diffusion westward [to the Midwest] went hand-in-hand with the crops it served" (Calkins and Perkins 1995: 40). The authors explained that in some parts of Wisconsin the threshing barn was the primary barn form prior to the introduction of commercial dairying around 1875 (Calkins and Perkins 1995: 44). The same was likely true in Minnesota. After diversifying, farmers tended to

See also

Granaries, Elevators, Bins, Dryers
Develop of Wheat Mono, 1860-1885
Appendix: Focus on Minnesota Crops
Barn Forms and Terminology

build general purpose barns (or dairy barns) that were better suited to animal husbandry (Ennals 1972). Some of these barns were three-bay barns identical to threshing barns, but built on basements

Strictly-defined threshing barns (those built before mechanized threshing) were generally one-story, gable-roofed rectangular buildings. They were usually timber-framed, with four bents (e.g., about 16′ apart) creating evenly-sized three bays. The central or threshing bay was accessed by a double door on each of the longitudinal (i.e., eave) sides. The central bay was often used as a driveway and historically – before threshing was mechanized in the 1850s and 1860s – as a threshing floor.

Calkins and Perkins explain, "The [double] door openings were large enough to allow a fully loaded wagon, pulled by a team, to enter and exit the central bay. Besides serving as a sheltered location to unload the harvest, the drive-through bay also was the surface upon which the grain crop was threshed or separated" (Calkins and Perkins 1995: 55). The two sets of doors were adjusted to "regulate the draft needed to carry the winnowed chaff from the threshing floor" (Calkins and Perkins 1995: 51). In the 1850s and 1860s farmers increasingly used mechanical threshers that also did the winnowing, reducing the need for air flow.

One of the flanking bays was usually used to store grain sheaves waiting to be threshed, while the other stored threshed grain to be used for feed, as well as the grain straw, which was used for livestock bedding.

Threshing barns often measured 24′ to 40′ wide by 48′ to 60′ long. Some were up to 80′ long, in which case they had more than three bays. Steep gabled roofs were common. The barns usually had vertical siding with the planks spaced about 1″ apart to provide the ventilation needed to dry and safely store the grain.

Threshing barns rarely had windows other than a small window in the peak of a gable end and a row of small transom windows above the door openings (Calkins and Perkins 1995: 51).

Threshing barns were often built of local timber. Some were built of brick or stone rubble. The barns often had foundations of stone or brick, and wooden floors. The flooring of the central bay was often reinforced to support the weight of loaded wagons (Calkins and Perkins 1995: 45, 48).

Hand-threshing in threshing barns was eventually replaced by mechanical processes that were much more efficient. Horse-powered threshing machines were available by the 1850s and 1860s, and steam-powered threshers in the 1880s. Threshers were large machines into which grain sheaves were fed. They were often owned by a commercial thresher who moved the rig from farm to farm. Itinerant crews or groups of farmers and neighbors provided the labor. Smaller tractor-drawn threshers became affordable for Minnesota farmers in the mid-1930s.

As Minnesota agriculture diversified, the three-bay form persisted but the barns were no longer used as "threshing barns." Some farmers built three-bay barns on top of basements, creating a "raised three-bay barn." Livestock were housed in the basement and hay and feed on the floor above. Platform lofts above the outer bays could store more hay.

Some threshing barns were modified to house livestock and hay in one of the flanking bays. The livestock bay was often fitted with a door in the gable end, plus a window (Calkins and Perkins

1995: 51). Threshing barns were frequently enlarged with extra bays built onto the gable ends, with shed-roofed additions, or with an upper story added. Some farmers converted their threshing barn into an implement shed or similar structure after building a new dairy or general purpose barn.

According to Calkins and Perkins, "The three-bay threshing barn not only is a reminder of an earlier emphasis on wheat that originally dominated Midwestern agriculture, but also represents the early settlement period when timber-frame barns were the dominant structures of the Midwestern landscape" (Calkins and Perkins 1995: 59).

PREVALENCE

It is expected that intact strictly-defined threshing barns (those built before mechanical threshing) will be rare in Minnesota. More prevalent will be threshing barns modified to shelter livestock or built after mechanized threshing as general purpose barns, usually on basements. Threshing barns will be most likely found in southeastern Minnesota where wheat growing was concentrated in the era before farms mechanized.

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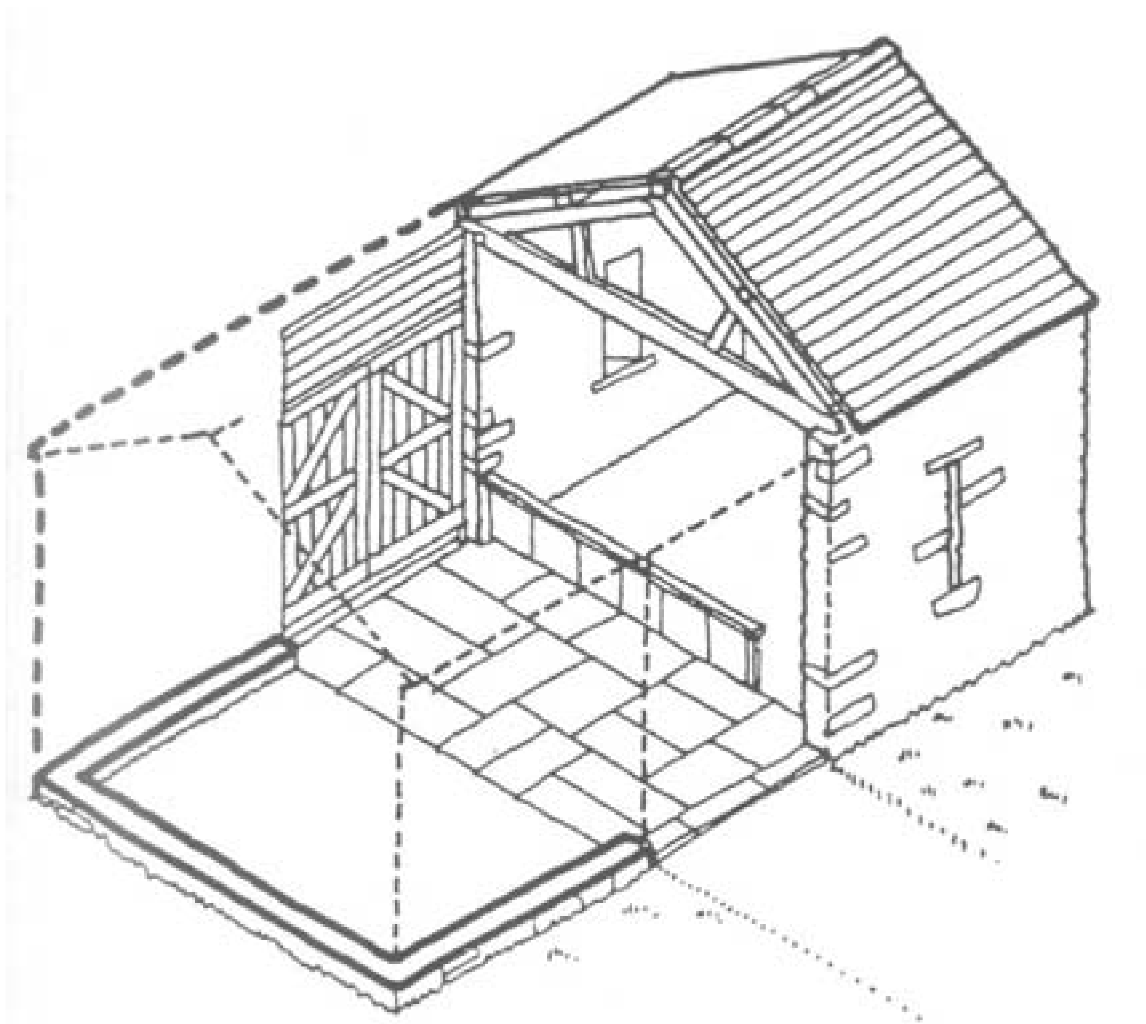

The anatomy of a three-bay threshing barn, which was usually supported by four bents. The central drive doubled as the threshing floor. Stored in one flanking bay were grain sheaves waiting to be threshed. Stored in the other bay were the products of threshing – the grain and the wheat straw. Animals were usually not housed in a threshing barn, and they did not have basements. From Calkins and Perkins, "The Three-Bay Threshing Barn" (1995).

This threshing barn was apparently built in 1855 on the Childs Farm in Waseca County. After the farm diversified, the barn was altered to support animal husbandry. Wilton Township, Waseca County, 1938. (MHS photo by Lewis)

▪ TOBACCO BARNS

- Gable-roofed sheds with good air circulation for drying tobacco
- Built largely in central Minnesota; survivors are likely rare today

Tobacco barns or sheds were built in Minnesota at least as early as the 1910s. They were considered important for serious commercial growers because tobacco needed to be handled carefully to bring the highest prices.

Tobacco barns were gable-roofed woodframe buildings – usually somewhat long and narrow – with provisions for good air circulation. Vertical openings along sidewalls and roof-top cupolas or metal ventilators were common. Many tobacco sheds had vertical siding, and hinged or sliding vehicle doors (Vogeler and Dockendorff 1978: 78-81). It is likely that tobacco barns were used for other purposes during months when the crop was not being stored.

In a study of tobacco barns in central Minnesota, geographers Ingolf Vogeler and Thomas Dockendorff wrote in 1978, "Lack of a tobacco shed, for whatever reason, requires either renting a neighbor's shed and increasing production costs or curing tobacco in a barn or tool shed and lowering the quality of the tobacco. Large acreage and long-time commitment to growing tobacco made it feasible to build a specialized tobacco shed. . . . Tobacco sheds seem to have been constructed only after several years of tobacco cultivation, but only if the acreage planted warranted a shed" (Vogeler and Dockendorff 1978: 79).

Tobacco growing peaked in Minnesota in the 1920s and was concentrated in central counties such as Morrison, Benton, Sherburne, Meeker, Stearns, and Mille Lacs. Farmers eventually moved to other cash crops that were more profitable and required less labor and expertise.

PREVALENCE

According to Vogeler and Dockendorff, the only tobacco barns standing in central Minnesota in 1978 were located in Stearns and Meeker counties. (The authors provided some location details.) Most tobacco barns surviving in 1978 had been converted to livestock barns or sheds for storing implements or crops (Vogeler and Dockendorff 1978: 80-82). In general, they will be rare in the state.

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See also
Other Crop Husbandry Elements

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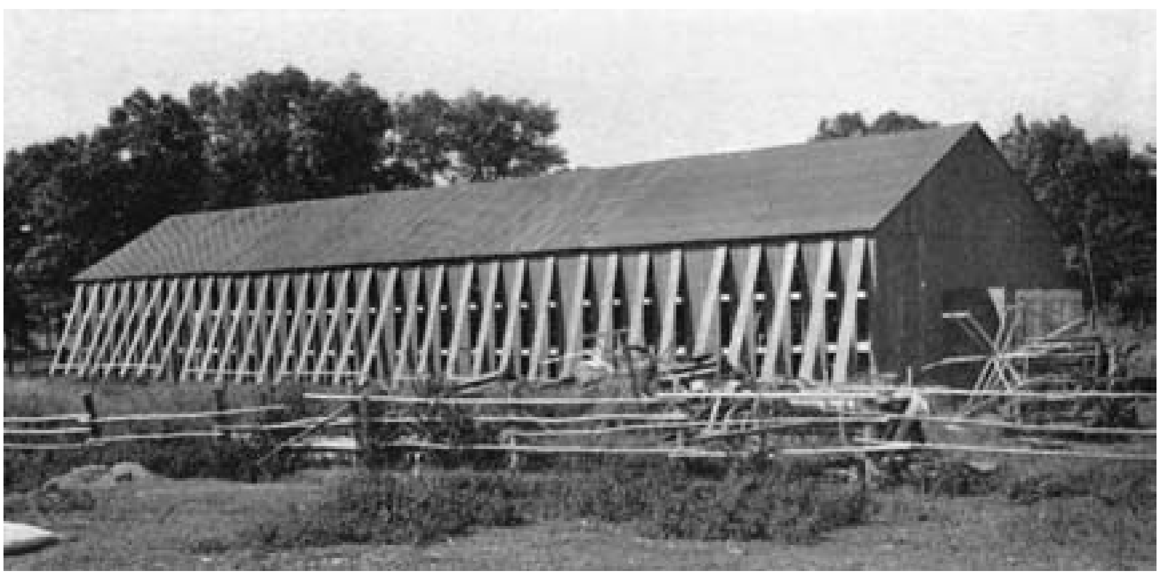

This tobacco barn near St. Cloud had a typical long, narrow form and vertical ventilator panels in the side walls. Location unknown, circa 1908-1911. (MHS photo)

▪ UTILITY POLES AND EQUIPMENT

- Some Minnesota farm had electricity by 1909, usually home-generated
- Electrical distribution poles, transmission wires, and related structures were found on nearly every Minnesota farm after electrification
- Farm telephone service began during the 1910s, but only half of Minnesota farms had phones in 1940

Electrical power distribution poles and transmission wires were necessary to carry electricity from the generator to farm buildings, or between buildings on the farm. Before centralized efforts brought electricity to farms in the 1930s-1950s, some farms generated their own electricity. These systems, installed as early as 1910, used water, wind, and especially gasoline power. These farms were the first to install power poles and wires, and were generally the most prosperous farms. In 1929, for example, about five percent of Minnesota farms had electricity (Cavert 1930: 11).

See also "Focus on Farm Electrification" in this report's appendices, and "Power Houses," another individual farm elements section.

In 1939, 41 percent of Minnesota farms had an electrical line within one-quarter mile, 25 percent had farmhouse lighting from an outside electrical line, and 5 percent had farmhouse lighting from an on-farm electrical generating plant (Engene and Pond 1944: 28).

Most Minnesota farms did not receive high line electrical service until the Rural Electrification Administration (REA) was established during the Depression. Beginning in 1936, the REA's first full year in operation, farms were gradually electrified. Progress was slow due to costs, a change in priorities during World War II, and other factors. By 1945, half of Minnesota farms had electricity, and by 1950, 84 percent. In 1960, more than 95 percent of Minnesota farms had electric power (Jellison 1993: 55, 103, 154, 169).

Typically, a farm's main electrical service line entered the farmstead from the nearest public road and extended to a pole-mounted transformer and main line switch (White 1936: 18). It was recommended that the transformer be located near the center of the load, to keep the secondary distribution lines as short as possible (Stewart et al 1928: 7-13). In a typical wiring plan from 1936, overhead distribution lines extended from the transformer to the granary and hog house, silo and cattle barn, milk house, combination machine shed-garage, well, and house. A yard light was mounted on the barn. Power was controlled by 30-amp switches at the granary, silo-barn, machine shed. There were also 60-amp switches at the milk house and farmhouse (White 1936: 18).

Agricultural engineers recommended that the wooden poles be 20' tall. The wires were 8 to 12 gauge, depending on their location within the system.

See also

Power Houses
Farmyards
Appendix: Focus on Farm Electrification
Farmsteads

Complete yard lighting usually required three lamps – one at the house, one at the barn, and one at the garage. Two-hundred-watt lamps were recommended (Stewart et al 1928: 19). It was recommended that yard lights be at least 15' above the ground and equipped with flat-dome reflectors to create a wide spread of light on the ground. Lamps were often placed on the corner or gable end of the barn. If the yard was large, the yard light was placed on the wooden distribution pole (Stewart et al 1928: 19). For security, it was advised that yard light switches be located in the master bedroom, as well as out in the yard or the barn (Stewart et al 1928: 19; Fox 1940: 64-65).

TELEPHONE SERVICE

Rural telephone service began during the prosperous World War I years, often provided by farmer-organized cooperatives. Wooden telephone poles, similar to electrical poles, were built along rural roads to service area farms. Telephone poles were often shorter and less elaborate than electrical poles. Telephone wires were later hung almost exclusively on electrical poles, usually at the lowest elevation.

By 1920, nearly 40 percent of American farms had telephones. The most common early rural telephone was the magneto set. It was a big contraption, usually hung on the wall, and often served 20 or more subscribers hooked to the same grounded magnet circuit. To make a call, the caller turned the generator crank, which was heard as a ring by other parties on the line. The switchboard operator plugged into the line, the caller lifted the receiver and asked for a number. Private conversations were impossible (Hadwiger and Cochran 1984: 224-225).

During the hard times of the 1920s and 1930s, fewer farmers could afford a phone and many dropped the service. Cooperatives found it hard to maintain existing phone lines and to replace systems lost to road widening and REA power lines, which caused interference on nearby magneto telephone lines. Neglected phone wires were often jury-rigged from fence posts to dead trees, forcing farmers who still had phones to "whoop and holler" to relay messages down the line, from farm to farm (Hadwiger and Cochran 1984: 222-226).

In 1939, just 49 percent of Minnesota farms had telephone service. Nearly two-thirds of farms in southeast Minnesota had phones, and a little over half of farms in southwestern Minnesota. But in the northeastern part of the state, only one-third of farms had telephones in 1939 (Engene and Pond 1944: 28). With the return of farm prosperity after World War II, the number of rural phones began to climb. In 1949, the Hill-Poage Act authorized the Rural Electrification Administration to make loans for rural telephone systems. During the 1950s and 1960s, telephone service was extended to most Minnesota farms: 60 percent of state farms had phone service in 1950, and 80 percent had phones by 1960 (Hadwiger and Cochran 1984: 221; Jellison 1993: 154, 169).

From the beginning, the telephone was more than a social convenience for farmers. It was also useful in the business. Farmers could call the veterinarian to treat sick animals, call the elevator for the latest grain and livestock prices, or ring up the implement dealer for repair parts. Farmers used phones to call the doctor, summon help in emergencies, and warn neighbors of approaching storms (Fite 1989: 291; Hadwiger and Cochran 1984: 222). Many rural phone systems also transmitted news, anticipating radio and television broadcasts. According to one source, "On some systems, [the operator] rang all lines at 7 each evening to report the correct time, the weather forecast, and market questions" (Hadwiger and Cochran 1984: 221).

PREVALENCE

It is expected that many historic utility poles, wires, yard light fixtures, and related structures are still standing on Minnesota farms.

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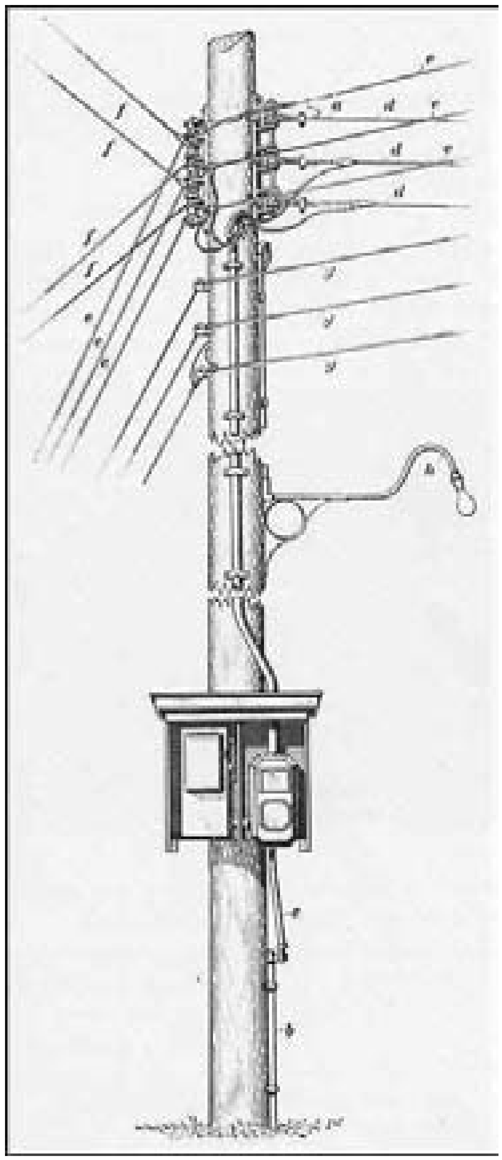
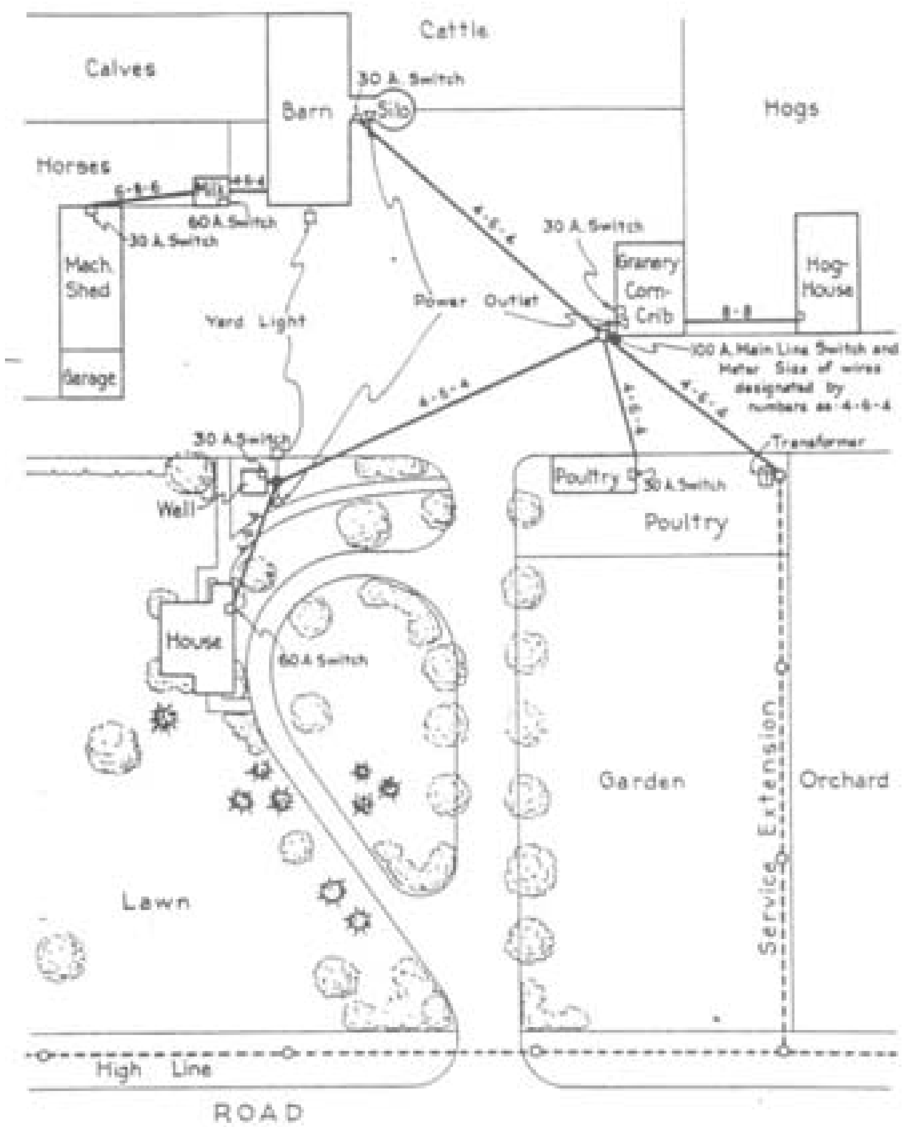


An electrical power distribution pole with yard light and switches. From the 1937 book *Farm Wiring for Light and Power* by C. H. Sprague.



This farmstead wiring diagram appeared in a 1936 issue of *Agricultural Engineering* written by University of Minnesota professor H. B. White. The article was entitled "Farm Structures Planned for Electric Wiring and Appliances."

▪ WATER POWER STRUCTURES

- Water power from farm streams could be harnessed to grind grain, saw wood, or generate electricity
- Small dams or batteries could be used to store either the water or the electricity generated

Minnesota farms harnessed water power from rivers and streams to ease a variety of chores. Water-powered mills ground grain and cut lumber. Other water-powered machinery could cut nails or shingles, turn wood, or pump well water.

Various types of water wheels were usually used to harness water power on farms.

In many cases an on-farm source of water power developed into a secondary (or even principal) source of income for the farm. For example, a grist mill or saw mill might serve farmers in a large radius and even form the nucleus of a small village.

GENERATING ELECTRICITY

F. I. Anderson wrote in 1919, "A small stream capable of developing from 25 to 50 hp will supply a farmer (at practically no expense beyond the original cost of installation) not only with light but with power for even the heavier farm operations such as threshing; and in addition will do the washing, ironing and cooking, and at the same time keep the house warm in the coldest weather" (Anderson cited in Schaenzer 1957: 447).

Some Minnesota farmers used water power to generate electricity. There were many types of farm hydro-electric power plants. The setup was dictated by the volume and fall, or pressure, of the flowing water. For example, when the quantity of water was large and the fall was more than 8′, a turbine could be used to produce electricity. If the fall was smaller – for example, 5′ to 8′ – a water wheel was more practical. In the usual arrangement, water was carried through a drive pipe to the wheel, which turned as water fell on it. The wheel was belted to a direct-current generator. A water wheel was also used when the fall was 5′ to 14′ but the quantity of water was small. With a fall of more than 15′ and a small quantity of water, a special water motor was used (Stewart "Water" 1921: 123-124).

Many farm streams could not produce enough power to run an electrical plant without some kind of storage facilities. Where freezing was not a problem, a homemade dam could be used to store water. Or, a small water wheel could produce enough electricity to charge storage batteries. One expert advised, "The installation is cheaper and less bothersome, when storage batteries are used, than when water is stored" with a dam (Stewart "Water" 1921: 124).

See also

Power Houses
Utility Poles and Equipment
Windmills

PREVALENCE

Water power structures were primarily built in hilly regions of the state. Existing structures are assumed to be rare.

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An 18”-diameter Pelton water wheel, used to generate electricity or power other farm jobs. Pelton wheels, made by Pelton Water Wheel Company of California, were recommended to Minnesota farmers by the University of Minnesota for generating electricity using the power of a farm stream. Photograph is from a web site called *Rob's Pelton Place on the Net* (http://www.oldpelton.net/) 2005.

▪ WATER TANKS AND TANK HOUSES

- Water tanks stored water for house, barn, and livestock
- Water tank houses sheltered water tanks

The use of windmills and force pumps led to the practice of storing well water in elevated tanks – a practice first introduced by railroad companies (Brooks and Jacon 1994: 71). Farm water tanks ranged from small wooden or galvanized metal tanks, to larger brick, tile, or poured concrete tanks. Some water tanks were pressurized, and some were enclosed in small wooden shelters called water tanks (Structural Clay 1941; Midwest Farm 1937; Boss 1898: 158; Mowry 1914: 97).

The Minnesota Farmers' Institutes promoted the advantages of indoor, rather than outdoor, gravity tanks. An 1898 article described a simple indoor water system that provided running water in the farmhouse and barn. The windmill pumped water from the well into a "good, clean barrel" located in the attic or second floor of the farmhouse. The barrel, covered with muslin and set in a galvanized iron tray to catch overflow and sweat, was fitted with 1" pipes leading to the kitchen sink and to an in-house milk cooling tank on the first floor. The cooling tank was fitted with pipes leading outdoors to the stock tank and a cistern. "Thus, when water is pumped it is forced to the house where it first fills the house tank, then overflows into and fills the milk tank, which in turn overflows into the stock tank, or into the cistern. This always keeps cool, fresh water in the house and milk tanks" (Boss 1898: 158). A 1920 article by University of Minnesota staff described a similar arrangement which diverted rainwater to a tank in the attic or to a tank elevated against an outside wall of the house (Shepperd 1920: 144).

Outdoor elevated tanks were not used year-round in Minnesota because they would freeze, but an elevated outdoor tank "works during the months when help is most needed and least readily available" (Shepperd 1920: 140). Sometimes, elevated water tanks were placed in the barn loft, where heat from the livestock kept the water from freezing. Elevated tanks could also be built in an upper story of a well-insulated pump house or milk house, provided the house extended "clear up around and over the tank to protect it" (Stewart 1922: 2).

Water tanks could also be built on a hill, provided the tank was placed slightly higher than the house or outbuildings. "It will not give trouble with freezing if it is on top of the ground, as long as it cannot freeze under the tank" (Stewart 1922: 2). In 1937, for example, the Midwest Plan Service published plans for a cylindrical concrete water tank that was about 12' in diameter and 18' tall (Midwest Farm 1937). Circular brick or concrete tanks were typical, but wooden tanks were also used (Brooks and Jacon 1994: 71).

Some farms had hydropneumatic water tanks that used air pressure to force water to various parts of the home. These tanks were typically located in the basement of the farmhouse or underground in well pits (Stewart 1922: 15).

See also

Cisterns
Pumps and Pump Houses
Wells
Windmills

PREVALENCE

It is not known how many Minnesota farms used water tanks or tank houses. It is assumed that extant tanks will be rare. Water tank houses are more likely to have survived because they were useful for storage. Tanks and tank houses with associated equipment or within larger water systems are likely rare.

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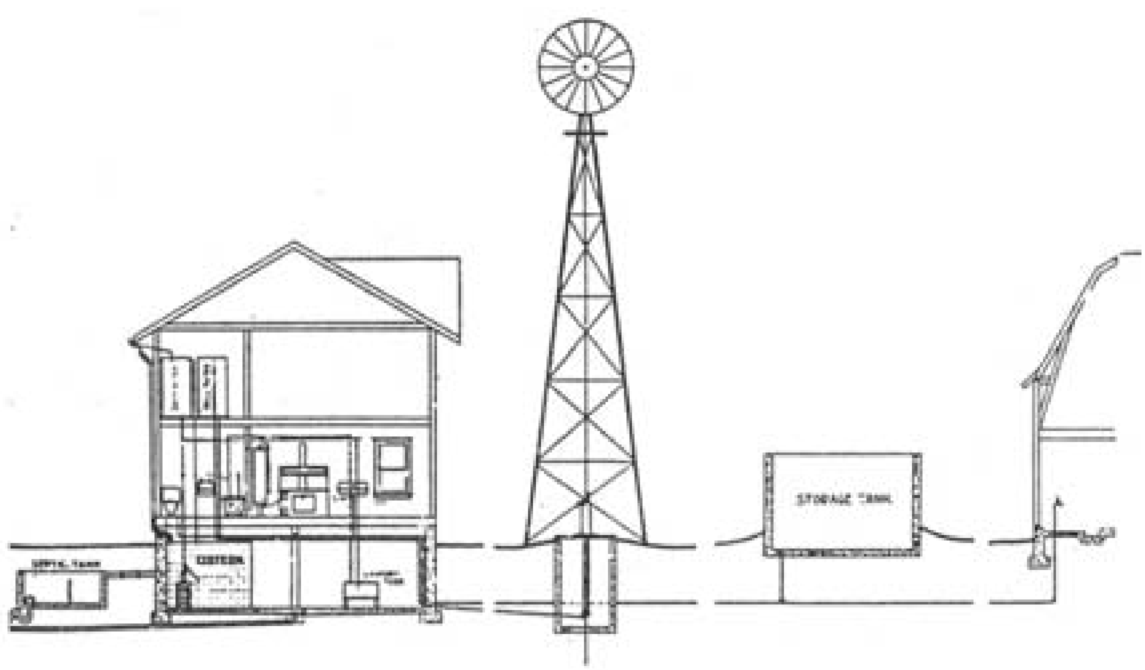

The position of the water storage tank within a typical farm water system, drawn by the University of Minnesota's Division of Agricultural Engineering. If the water tank was elevated, it could only be used for about seven months in Minnesota, but University staff pointed out that those seven months were busy on the farm and an elevated water tank might be well worth the investment. From Shepperd and Stewart's "Low Cost Water Systems for Farm Homes" (1922).

▪ WELLS

- Found on nearly all farms
- Sited above barns and away from other possible contaminant sources
- Early, shallow wells were dug, bored, or driven
- Drilled wells were deepest, safest, and most long-lived
- Drilled wells constituted 30 percent of Minnesota wells in 1922
- Most wells had a mechanical pump to move the water

Essential for the drinking water supply, wells were found on almost all farms. Their type varied depending on the locality, soil composition, water table depth, and the labor, equipment, and resources available for construction (Brooks and Jacon 1994: 72).

Merrill Jarchow wrote of wells in the early settlement period:

> Securing water was another task . . . . In summer, water could be dipped from springs and streams, but in winter it was not always so readily available. Then ice or snow was usually melted on the back of the kitchen stove. Most settlers, of course, dug wells and installed pumps sooner or later. Pumps were offered for sale in St. Paul as early as 1851, but many farmers could not afford them, or lived where they were unavailable. . . . Water was drawn by the primitive means of a rope and bucket. . . . When settlement reached the Red River Valley in the 1870s, the water problem was even more acute than in the wooded sections. Buffalo wallows were relied upon at first, and the water from them had to be boiled. In dry seasons the wallows dried up and deep wells were resorted to. One early settler remembered the well water as being bluish, smelly, and extremely distasteful. Serious illness often resulted when people were not careful to boil such water before using it" (Jarchow 1949: 85).

In addition to providing water, wells were also used for food storage before refrigeration. Jaakkola and Frericks quote Minnesota food historian Marjorie Kreidberg who explained:

> Even wells or cisterns dug deep into the earth were used as places where perishables could be suspended by a rope to hang above the water in the cool hollow of the chamber. They were considered more desirable for storing dairy products than underground cellars or ground-level storage closets, where vegetables were kept along with other raw and unprocessed foods. It was widely recognized that the 'steam and vapor arising from the vegetables' affected the taste of the milk and butter (quoted in Jaakkola and Frericks 1996: 28).

Except for artesian wells, all other wells required mechanical means to raise the water. The water could be drawn from some wells with ropes and buckets, but more typical in Minnesota were pumps

See also

Pumps and Pump Houses
Water Tanks and Tank Houses
Windmills
Cisterns

driven by hand, windmill, or a motor powered by gas or electricity. (See also "Windmills" and "Pumps and Pump Houses", two other individual farm elements sections.)

Agricultural educators provided detailed plans for many building projects so that farmers could do the jobs themselves. But when it came to putting in a well, experts urged farmers to hire a professional. F. L. Marsh cautioned in 1902: "It is often thought anyone can put in a well. In many localities it calls for the highest skill and largest experience" (Marsh 1902: 64).

There were four main types of farm well construction in Minnesota: dug, bored, driven, and drilled.

Dug or Bored Wells. The earliest farmstead wells were often shallow open wells, either dug or bored, and operated with a rope and bucket. "Hand digging was the least expensive and simplest method available" (Brooks and Jacon 1994: 72). This type of well was also used in areas where the water table was low. A hole was dug or bored down into the hard subsoil or clay, and water seeped into the well, often coming from a considerable distance (Stewart 1922: 10).

Dug or bored wells were often less than 25′ deep. The well cavity was usually lined, or curbed, with stone, brick, tile, or concrete. Cement pipe and iron culvert pipe were also used. Some wells were lined with lumber, although experts discouraged this practice (Brooks and Jacon 1994: 72; Marsh 1902: 66; Stewart 1922: 7-8).

Many dug or bored wells went dry after a few years: "Some farms have five or six dry bored wells," according to one author (Stewart 1922: 10). In addition, dug or bored wells were very susceptible to contamination from surface water (Stewart 1914: 67; Stewart 1922: 8-9).

Driven Wells. In areas where the water table was high, driven wells were favored. They were used throughout the sandy soil regions of northwest Minnesota and in much of the western prairie region. This type of well had no water reservoir space. It consisted of a pipe fitted with a mesh-covered point that was forced through the soil to a layer or "lense" of water-bearing sand or gravel where water freely entered the pipe. Tubular wells, a variation, were constructed by driving a pipe down to the water-bearing layer and then inserting a pump point and cylinder inside the tube. Windmills often sat over driven wells (Marsh 1902: 64-65; Stewart 1922: 10-11).

Drilled Wells. Drilled wells were more expensive than those dug, bored, and driven. However, the experts urged farmers to replace their shallow wells with deeper drilled wells. In 1922, for example, an Extension Service bulletin reported that only about 30 percent of wells in Minnesota were drilled wells. "The number of drilled wells is too small," the bulletin said. "Their number is increasing yearly, but it should increase more rapidly. A drilled well provides the safest source of water supply" (Stewart 1922: 12-13). Drilled wells, which were 100′ to 200′ deep, usually penetrated layers of impervious material before reaching water. So "there is almost no danger of contamination from surface drainage. These small, deep wells are to be recommended, for improving sanitary conditions, wherever they can be had." Like driven walls, drilled wells had no water reservoir. Windmills often sat over drilled wells (Stewart 1914: 70).

Wells were generally covered at the surface with double-planked wood, concrete, or cast-iron covers. Sometimes a small gable-roofed, open-sided shed was used, particularly for earlier, shallow wells. The ideal well top was an arch-shaped cover of brick or concrete with openings for the pump and a manhole. An underground concrete collar surrounding the well was also recommended to prevent surface water from moving down the outside of the well to the water stratum (Stewart 1914: 69; Stewart 1922: 8-9).

Farm specialists recommended that wells be placed on ground that was higher than the barn and other farm buildings and that they be located at least 150' to 200' from privies, cesspools, manure piles, and other sources of contamination (Brooks and Jacon 1994: 72; Stewart 1914: 69; Stewart 1922: 9). But judging by experts' warnings, the location of many farm wells was less than ideal. Extension educators frequently lectured farmers about the health risks of poorly located and constructed farmstead wells. In 1902, for example, a Minnesota Farmers' Institutes author observed that "a very large percentage of the wells are not furnishing water of good quality," and reminded farm families of "the sickness and funeral expense resulting from drinking poor water" (Marsh 1902: 64). John T. Stewart of the University of Minnesota severely admonished Minnesota farmers in 1914 about the condition of their wells:

> Any person who is familiar with farm conditions has undoubtedly noticed the lack of sanitary precautions which should be taken in regard to the family water-supply. The well is often located on ground lower than the surrounding buildings, around which are manure piles and other deposits of filth. It is lined with a wooden curb or an open wall, and is covered at the surface of the ground with an open plank top. Poultry and small animals pass freely around over the covering, or wallow in the waste water which stands within a few feet of the well top. Persons coming from the stables, and others with filth and dirt adhering to their shoes, stand on the top while drawing water. As a result, a large amount of this filth, which accumulates on the cover, is carried into the well by the splash of water each time a pail is drawn. Each rain carries a large amount of filth from the cover and the surrounding soil into the well, through both the top and the open wall, thus making an easy method of transmitting into the well disease germs which have been permitted to collect in the near vicinity (Stewart 1914: 67).

In 1922 the Minnesota Extension Service repeated its warnings, noting that "The large number of wells that are polluted is a serious menace" (Stewart 1922: 6).

By 1960 it was common to improve the quality of farm water through such practices as aeration, settling the sediment, filtration, disinfection (e.g., with chlorine), and softening. The latter was used for bathing and clothes-washing water.

PREVALENCE

Wells were located on nearly all Minnesota farms, and historic wells are likely to remain. Evidence of abandoned wells can include well casings, diameter pipes, pumps, surface depressions, or wooden, concrete, or metal covers. Dug wells may be identified by a ring of concrete, clay tile, brick, or stone.

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Using a windlass, rope, and bucket was a simple but labor-intensive way to raise water from an early farm well. Mechanical pumps soon became the preferred method. Photo taken near Marine-on-St. Croix, circa 1900. (MHS photo)

This farm well had a closed wooden cover and a hand pump. Location unknown, 1903. (MHS photo by Edward Albert Fairbrother)

This well had a wooden cover and a hand pump, and was sited near the livestock. Kandiyohi County, circa 1920. (MHS photo)

▪ WETLANDS

- Wet, untillable areas were often put to some farm use
- Wetlands were sometimes tilled in very dry years
- Farmland drainage significantly reduced the number and size of wetlands

Like woodlots and hilly areas, wetlands (also sometimes called sloughs, bogs, marshes, swamps, potholes, or ponds) were generally counted among a farm's untillable acres. Even though they were untillable, farm wetlands, like native woodlots and hilly terrain, were landscape resources that farmers tried to put to some use.

A farm's sloughs and potholes often formed an interconnected wetlands system. Wet areas changed in size seasonally, and varied through the years according to the amount of rainfall, the height of the watertable, and the functioning of a farm's tile drainage system. (If a farm's historic drainage outlets were not maintained, for example, they could become plugged, causing sloughs to increase in size.)

Minnesota farmers began draining wetlands in the late 19th century, usually to increase the size of the farm's tillable fields. Wetlands were also drained for road-straightening, railroad-building, and other development. Legislative support for cropland drainage was a significant part of government agricultural policy. (See "Drainage Structures," a separate farm element section.)

Many farms used wetlands for livestock watering. The shores of wetlands were used as grazing areas and as places to cut wild or marsh hay. Wetlands were often fenced to keep livestock either in or out. During very dry years, some wet areas were tilled. Farmers also used wetlands for berry collecting, hunting (e.g., deer and waterfowl), fishing and minnow trapping, and trapping animals like muskrat and beaver whose pelts could be sold for cash.

In the mid-20th century it was common for a farm in western Minnesota, for example, to have one or two moderately-sized wetlands, as well as other scattered wet spots. Wetlands were common in northern Minnesota where some farms contained (or were adjacent to) extensive peat bogs and other wet areas that posed challenges to farming. During dry years peat bogs sometimes burned in fires that were difficult to put out. Crops could be grown on peat bogs, but they were often subject to early frost. After being drained, peat bogs needed treatment with phosphorus and potassium fertilizers before being productive (Pond and Crickman 1933: 8).

PREVALENCE

Wetlands are found throughout Minnesota but are less common in the hilly, more well-drained southeastern part of the state. The size of wetlands can vary seasonally, can change with the watertable, and can be affected by the installation and maintenance of field drainage systems.

See also

Drainage Structures
Fields and Pastures
Erosion Control Structures

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Sloughs or potholes were often used for grazing and watering. Some might be tilled during very dry years. Location unknown, circa 1910. (MHS photo)

Many farm wetlands were drained for cropland. The shores of remaining sloughs were used for hunting, trapping, grazing, and cutting wild hay. Stevens County, 2005. (Gemini Research photo)

▪ WINDBREAKS

- Installed on nearly all farms except in forested areas
- Usually bordered the north and west sides of a farmstead
- Recommended to consist of three layers: a snow catch, a snow trap, and the main windbreak
- Recommended to include a mix of large shrubs, fast-growing trees, hardwoods, and conifers

Farmstead windbreaks were strategically planted groves of trees that sheltered the farmstead from prevailing winds. In the early 20th century farm experts advised that planting a windbreak was just as important on a farm as draining wet land. The University distributed standard farmstead windbreak plans and sent out experts from the School of Forestry to supervise planting (Kenety 1920: 149; Cheyney 1914: 66).

A good farmstead windbreak sheltered the house and outbuildings from wind, driving snow, blowing field dirt, and dust and noise from the road. A windbreak reduced farmhouse heating costs and prevented snow from drifting around buildings, roads, and livestock yards. The windbreak kept animals warmer and healthier (promoting better weight gain), and sheltered and trapped moisture in the garden and orchard. It supplied firewood, fence posts, lumber, and wildlife habitat. And it beautified the farmstead landscape (Stoeckeler and Williams 1949: 191-192; Anderson 1949: 1-2).

Farmers were quick to recognize these benefits and one of the first things new settlers did when they came to the Minnesota prairie "was to have a grove of trees" (Kenety 1920: 149). Pioneer farmers "realized that it was going to take more than a sod house to give them the protection to which they had been accustomed in the wooded East. It was not surprising, therefore, that a plantation of trees often shared with the garden the first patch of sod that was broken. Wildings collected along nearby streams comprised their planting stock" (Stoeckeler and Williams 1949: 192). A Farmers' Institutes expert wrote in 1894, "white willow, cottonwood, box-elder, soft maple, white ash and white elm stand as the old favorites and have done an immense amount of service as windbreaks all over the prairie regions" and that Russian willows and poplars were also becoming popular (Hays 1894: 277).

In 1914 the Minnesota Farmers' Institutes published plans for windbreaks two and four rods wide (33'and 66'). The two-rod plan called for an outer row of box-elder trees, followed by three inner rows of alternating cottonwood and spruce trees: Norway spruce in southern Minnesota, blue spruce in clay soils, and white spruce in northern Minnesota. The four-rod plan added four more inner rows of alternating cottonwood and European larch (Cheyney 1914: 64-65).

In 1926 the Extension Service promoted a three-part farmstead windbreak plan that became the standard for decades. So effective was this windbreak that one expert observed 30 mile-per-hour winds slowed to five or six miles per hour inside the windbreak. The plan consisted of an outer "snow catch" of low-growing trees on the windward sides of the plantation, an empty space

See also
Woodlots
Shelterbelts
Farmsteads
Woodsheds

between the snow catch and the main windbreak which served as a "snow trap," and the main grove (Anderson 1937: 4; Anderson 1949: 2).

The outermost layer, the snow catch, consisted of two or three rows of shrubs or low-growing trees. They were planted in rows about 10' apart. Within the rows, shrubs were set 4' to 6' apart. Recommended snow catch plants included caragana, Russian olive, buffalo berry, low-growing willows, Tatarian honeysuckle, wild plum, chokecherry, pincherry, and common lilac (Anderson 1949: 5).

Blowing snow lodged in the sheltered lee of the snow catch, an empty space about 60' wide. Snow in this area melted slowly in the spring, preserving valuable moisture. That made the space ideal for use in the summer as a garden or high-quality pasture (Anderson 1949: 2-5).

The inner layer of the three-part windbreak consisted of an 80'-wide band of broadleaf and conifer trees arranged in eight staggered rows, spaced 10' to 12' apart. Within the rows the trees were planted about 6' apart, a close spacing that forced trees to grow taller and offered better wind protection. The Extension Service recommended specific types of trees for each row of the main windbreak: "There should be two rows of fast-growing, short-lived, broad-leaved trees; two rows of long-lived, broad-leaved trees; and four rows of hardy conifers. Such a combination insures the best year-round protection. The fast-growing trees not only give early protection but also serve as a nurse crop for the longer-lived, more permanent trees." Specific species were recommended for each type of plant (Anderson 1949: 5-10).

The innermost rows were spruce trees. These evergreen rows were closest to the house, providing year-round beauty and foliage. The minimum recommended distance between the innermost row of the windbreak and the nearest buildings was 100', and 200' was preferable (Anderson 1949: 5-10; Kirkpatrick, 1910: 276; Quam et al 1993).

Recent farmstead windbreak plans offer variations on the historic designs. A 10-row plan issued by the USDA Soil Conservation Service and the North Dakota Extension Service in 1993, for example, had two outer rows of tall, high-density shrubs to trap snow, a 60'-wide snow trap, and eight inner rows, consisting of a row of shrubs, followed by successive rows of small conifers, small deciduous trees, tall deciduous trees, tall conifers, medium conifers, and small trees. The innermost row, closest to the house, was another row of shrubs (Quam et al 1993).

Windbreaks were usually planted on the north and west sides of the farmstead where they offered the greatest protection from the prevailing Minnesota winter winds. "It is almost never necessary to provide protection on more than two sides of a farmstead if you have a good solid grove," the Extension Service said in 1949 (Anderson 1949: 4).

If the farmhouse faced a public road to the north or west, the windbreak could be extended part-way across the front yard, offering partial protection from the wind but allowing some view of the house from the road. Or, one leg of the windbreak could be planted on the other side of the road, although that was not ideal. University of Minnesota building plans also show driveways cut through the windbreak on north and west-facing farmsteads (*Farm Building Plans* 1953; Snyder 1950: 7; Hays 1894: 273).

The recommended distance between the windbreak and the main farmstead buildings was at least 100' to prevent snow from piling up in the yard. On farms where space for the windbreak was limited, experts suggested planting compact belts of conifers in order to increase the amount of snow that collected next to the tree barrier. The space between the windbreak and the buildings made a good location for a garden, orchard, or a sheltered winter cattle yard (Anderson 1937: 3; Anderson 1949: 4; Stoeckeler and Williams 1949: 198).

After planting the windbreak, farmers were advised to protect the young trees by fencing, watering, and frequent shallow cultivation. Pruning windbreak trees was unnecessary, except for removing dead or diseased trees and broken limbs: "The denser the planting, the better the shelter." When trees became crowded, the windbreak could be thinned by cutting individual trees. When spaces appeared in the crowns of mature windbreaks, experts recommended filling in the gaps with shade tolerant trees such as red cedar (Stoeckeler and Williams 1949: 199; Anderson 1949: 15-16).

PREVALENCE

It is expected that windbreaks, an essential part of the farm landscape, will be found on farms throughout the state. Many will be fairly intact. Like all vegetative features, windbreaks are subject to deterioration and death of the plants due to natural forces. However, while individual trees within them may have died or be in poor condition, many windbreaks have been perpetuated by volunteer reseeding of trees and shrubs. In addition, unlike field shelterbelts which may have been superceded by alternative conservation methods, many windbreaks still serve their original purpose and therefore have been retained. Some have been rejuvenated with the addition of new plants.

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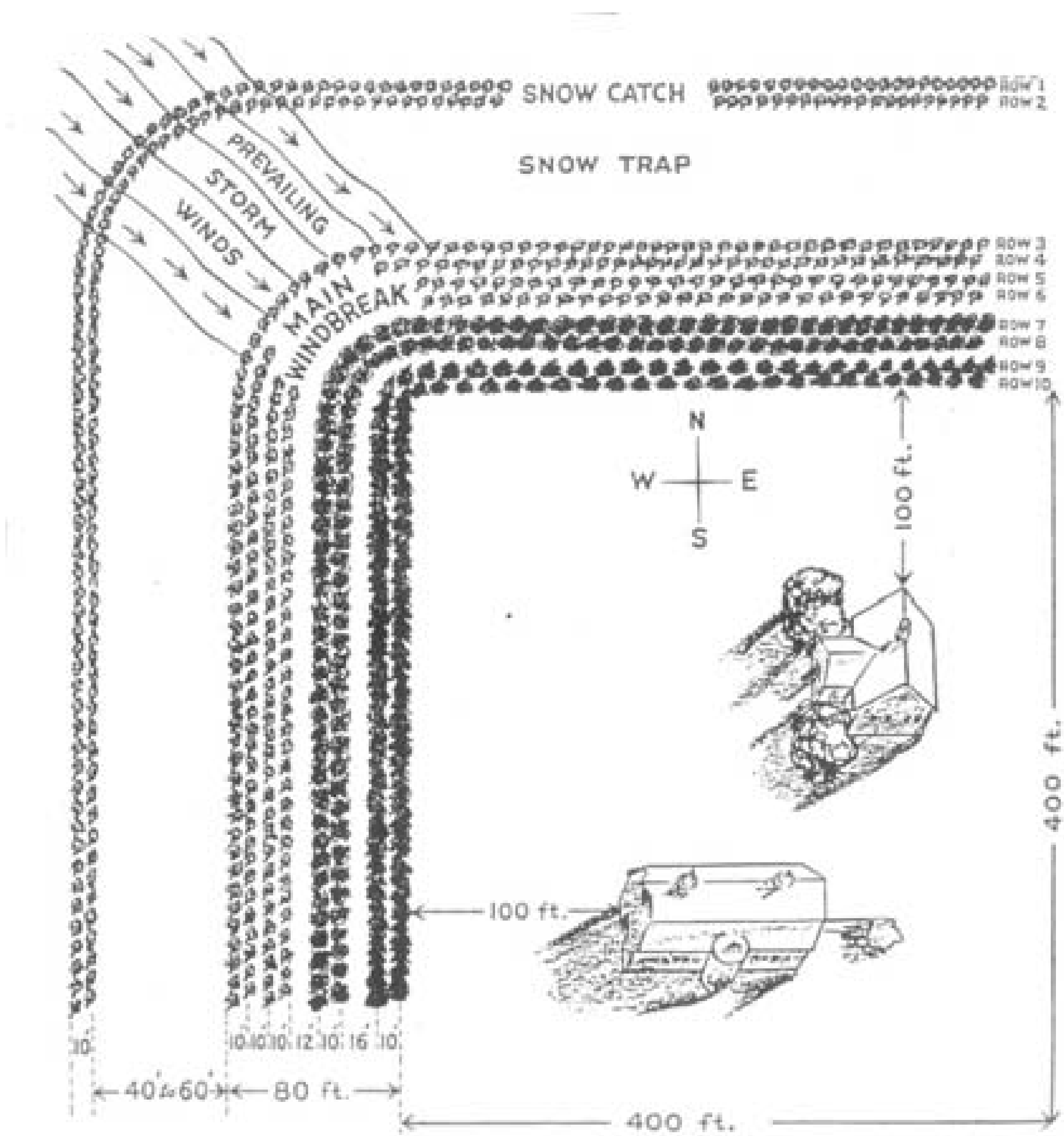

Windbreaks consisted of a strategic arrangement of fast- and slow-growing deciduous trees and shrubs, usually with conifers in leeward rows. The outer section had a snow catch – two rows of tall shrubs – and a 40' to 60' snow trap to stop Minnesota's fierce blowing snow before it hit the main windbreak. This scheme appears in Minnesota Extension publications from at least the 1930s and 1940s. From Anderson's "Planting the Farmstead Shelter Belt" (1949).

■ WINDMILLS

- Found on most Minnesota farms
- Primarily used to power well water pumps, especially pumping driven or drilled wells
- European-style windmills with large blades and broad bases were rare in Minnesota
- American-style windmills were invented in the 1850s and were first built of wood
- Most windmills were either sectional-wheeled or solid-wheeled
- Steel windmills were introduced in the late 19th century and became common in Minnesota in the 1920s
- The use of windmills declined with electrification

On Minnesota farms, wind power was used almost exclusively to pump the well water for the house and livestock. Most Minnesota farms had a windmill to power their water pump unless the farm had an artesian well, or unless well water was exclusively pumped by hand or by gasoline or electric motor. Until the 1930s windmills were also used to operate small farm machines such as feedmills and sawmills, and to generate electricity.

"Mass-produced, lightweight, and sturdy," windmills provided power on the farm until rural electrification (*Minnesota Farmscape* 1980: 13). One early user of the invention declared the windmill "a national blessing" (Baker 1960: 41).

European-style windmills had been used in the U.S. since Colonial times. These cumbersome-looking machines had towers of brick, wood, or stone that were broad and strong enough to support large turning blades. The mills were used to grind grain and "were not adapted to pumping water for livestock, irrigation, or domestic use" (Baker 1960: 38). According to LaVern J. Rippley, writing in 1981, "As far as can be determined, the only Dutch-type windmills in Minnesota were those built and used by German immigrants." Examples include the stone Seppman Mill near Mankato (1863, listed on the National Register), and mills that once stood near New Ulm, Potsdam, and Claremont (Rippley 1981: 63-64).

The familiar American-style windmill, with a turbine wheel mounted on a tall, lightweight tower and a governor to regulate the wheel speed, was invented in New England in the 1850s (Baker 1960: 38-39).

Water-pumping windmills were built on towers set directly over driven or drilled wells and their associated pumping equipment. Towers were also attached to the ground with stone, brick, or concrete. The towers were sometimes mounted on the roof of a small building.

There were two basic types of American windmills: sectional-wheel and solid-wheel. Sectional-wheel mills had adjustable sections, or blades, that folded inward as the wind speed increased, protecting the wheel and gears from damage. Solid-wheel mills did not fold, but were

See also
Wells
Pumps and Pump Houses
Water Tanks and Tank Houses
Power Houses

instead governed by a side vane that turned the wheel out of the wind when the velocity grew too great (Baker 1960: 40).

Wooden windmills were the most frequently used farm windmills until World War I. Steel windmills, which were first developed in the 1880s, became common in the 1920s and soon surpassed wooden mills in number. Steel windmills were back-geared, which allowed them to run more smoothly and to run in lighter winds than the older wooden windmills (Baker 1960: 45; Brooks and Jacon 1994: 73).

Early windmills, whether steel or wood, had open gears that required weekly maintenance and oiling. In 1912 "self-oiling" steel windmills with enclosed gears were developed, spelling the end of both wooden windmills and open-geared steel mills. Neither wooden or open-geared windmills were manufactured after World War II (Baker 1960: 48).

By 1930 "Aermotor" was the most popular American windmill. It was the first successful all-steel windmill and was manufactured by the Aermotor Company of Chicago.

While the Aermotor Company was a leading manufacturer, there were many other companies, making dozens of different models. Many companies were located in Midwestern states such as Minnesota, Illinois, Wisconsin, Indiana, Nebraska, and Michigan. Popular models included:

- Halladay, the first successful sectional-wheel windmill, manufactured by the U.S. Wind Engine and Pump Company of Batavia, Illinois.
- Eclipse, the first solid-wheel windmill, manufactured by the Eclipse Wind Mill Company of Beloit, Wisconsin.
- Dempster wooden solid-wheel and sectional-wheel windmills, made by the Dempster Mill Manufacturing Company of Beatrice, Nebraska.
- Perkins, a solid-wheel windmill, made by the Perkins Wind Mill and Axe Company of Mishawaka, Indiana.
- Duplex, a sectional-wheel windmill, manufactured in Superior, Wisconsin.
- Manvel, a solid-wheel windmill, made by the Kalamazoo Tank and Silo Company, Kalamazoo, Michigan.
- Hummer, a sectional-wheel windmill, and "Wonder," a self-oiling mill, both made by the Elgin Wind Power and Pump Company, Elgin, Illinois (Baker 1960: 39-49).

Some windmills had distinctive features. For example, the popular "Dempster" had horse-shaped counterweights. The "Fairbury" had bull-shaped counterweights (Baker 1960: 44).

Although mass-produced windmills were widely available, some farmers made their own out of scrap automobile pieces, steel drums, and other spare parts (Baker 1960: 49).

The use of windmills on Minnesota farms declined when farms were electrified and electric well pumps were installed.

PREVALENCE

Steel windmills, while once very common, are disappearing from Minnesota farms. Wooden windmills and homemade windmills are assumed to be very rare. Evidence of the windmill bases or anchors may exist if the tower itself is gone.

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The towers of European-style windmills, like the Seppman Mill near Mankato (shown here), had to be sturdy enough to support the massive turning blades. They were used to grind grain. Circa 1890. (MHS photo)

Steel windmills were introduced in the late 19th century and became common on Minnesota farms in the 1920s. This may be a Star windmill, identified by the star on the vane and the painted blade tips. The narrow ladder on the tower was used to service the gears and blades. Location unknown, circa 1910. (MHS photo)

This farm windmill was fairly tall. (The height was in part determined by the height of trees on the farmstead.) A wooden silo is visible behind the windmill tower. Location unknown, circa 1900. (MHS photo by Joseph Jay Brechet)

Sectional-wheel windmills had adjustable blades that folded inward as the wind speed increased, protecting the wheel and gears from damage. In early windmills, both blades and tower were built of wood. Some windmills were built on top of small buildings. Location unknown, circa 1900. (MHS photo by Joseph Jay Brechet)

Solid-wheel windmills did not have folding blades, but were instead governed by a side vane that turned the wheel out of the wind when the velocity grew too great. Location unknown, circa 1930. (MHS photo)

▪ WOODLOTS

- Woodlots were natural or planted trees that provided fuel and timber for the farm
- Native woodlots were usually the remnants of original forests
- Woodlots could be used for grazing, hunting, or collecting nuts, berries, or sap
- Planted woodlots were often part of the farmstead windbreak

Farm woodlots were stands of native or planted trees that provided firewood, fence posts, lumber, and even maple syrup. For the purposes of this study they are differentiated from windbreaks, which were usually orderly groups of trees and shrubs planted to block the wind.

During the early settlement period much of Minnesota was forested. In these areas, most farm woodlots were remnants of the original timber stands. Farmers eventually cleared most of the trees that grew on good agricultural soils. Trees growing on poor soil, on unneeded land, or on terrain unsuited for cultivation, were left standing, and farmers cut the trees whenever they needed wood (Cheyney and Brown 1927: 3-4). Woodlots were also used for hunting birds, deer, and other wildlife, could be fenced for grazing, and sometimes provided edible nuts, berries, or tree sap (e.g., for maple syrup).

In northeastern Minnesota's cutover regions, woodlots were a major challenge to farm development. In 1918 the University of Minnesota reported that cutover farmers were only able to clear an average of 3.8 acres per year for fields, given the area's trees, stumps, and rocks (Peck 1918: 6).

In many cases in the cutover, the sale of wood products helped settlers pay for their land. A University of Minnesota study of 141 farms in cutover counties in 1914-1916 found that 23 percent of farm income was coming from wood products, "principally posts and ties with some poles and cordwood" (Peck 1918: 6, 16). One author advised in 1920, "If the settler can sell the wood that he takes off of the land while clearing, there will be more of an incentive for him to clear for he will be receiving pay for each acre he clears. He can have cash coming in for a part of his work and at the same time be developing his farm" (Worsham 1920: 17).

Farmers also planted woodlots, often transplanting hardy, native saplings growing nearby.

Between 1873 and 1891 the federal Timber Culture Act encouraged the planting of trees. The Act, passed by Congress in 1873, gave 160 acres to a landowner who planted and tended 40 acres of trees for 10 years. (The amount was later reduced to 10 acres of trees tended for 8 years.) Another provision of the Act sped up a homesteader's residency requirement under the Homestead Act of 1862 from five years to three years if the settler planted and tended an acre of trees (Blegen 1975: 404).

In 1873 the Minnesota legislature provided a bounty of two dollars annually for ten years for each acre of prairie planted with any kind of forest trees except black locust. There was also a bounty

See also
Woodsheds
Windbreaks
Early Settlement, 1820-1870
Developing the Cutover, 1900-1940

for each half-mile of public highway planted with trees and many farmers took advantage of the offer. "When I came [to Minnesota] in 1875," wrote a farm expert in Worthington, "the planting of tree claims was the every-spring business of about one-half of our farmers" (Ludlow 1894: 278). In southwestern Minnesota cottonwood plantations were popular in the early years of settlement because they grew rapidly from cuttings. Also common were soft maple, box-elder, and white ash woodlots. Cottonwoods suffered in drought years, but white ash and black walnut "which were put out on high rolling prairie" did well, even in dry years (Ludlow 1894: 278-279; Stoeckeler and Williams 1949: 192; Jarchow 1949: 71-72).

Planted woodlots were often part of farmstead windbreaks. In 1914 the *Minnesota Farmers' Institutes Annual* provided plans for a ten-rod woodlot-and-windbreak plantation, with the five rows closest to the farmstead forming the windbreak, and the outer rows forming the woodlot. The woodlot plan called for planting European larch trees, which produced high-quality timber, alternating with cottonless cottonwood trees or Norway or Carolina poplar. All these trees grew rapidly and could begin to furnish firewood and posts within ten years. To encourage farmers to plant woodlots and windbreaks, the University of Minnesota sent out experts from the College of Forestry to supervise planting (Cheyney 1914: 63-64, 66).

As rural areas were electrified and the need for firewood declined, many farmers came to believe that "their woodlots are of little value," according to a 1930 Minnesota survey. For the most part, farmers devoted little time to properly managing their woodlots, and often allowed livestock to graze there continually, a practice that discouraged new tree growth. As a result, their woodlots became unproductive (Rees 1930: 270).

At the same time, farm woodlots represented significant untapped timber resources. In 1930 the University of Minnesota estimated that 75 percent of southeast Minnesota's standing forest was contained in farm woodlots (Rees 1930: 270).

Farm specialists encouraged farmers to see their woodlots as another valuable crop; one that could earn revenue from marginal land and make farmers more productive during the slack winter season. In 1927 the Minnesota Agricultural Experiment Station estimated that an intensively-managed woodlot could produce at least half a cord of firewood per acre per year, plus about 120 board feet of lumber per acre – all of which could be sold for cash. Farmers could increase their woodlot returns by weeding out slow-growing species and replacing them with fast-growing trees, by cutting mature trees, by proper harvesting, and by smart marketing. They were also advised to fill in blank spaces to increase tree density and to prohibit grazing in the woodlot (Cheyney and Brown 1927: 25-28).

Another benefit of a well-managed woodlot was erosion control. In 1927 the Experiment Station noted that woodlots "on all the watersheds of streams in the Upper Mississippi Valley would contribute materially to a rational system of flood control" (Cheyney and Brown 1927: 28).

PREVALENCE

It is expected that farm woodlots will be found throughout Minnesota, but will be more common in forested areas.

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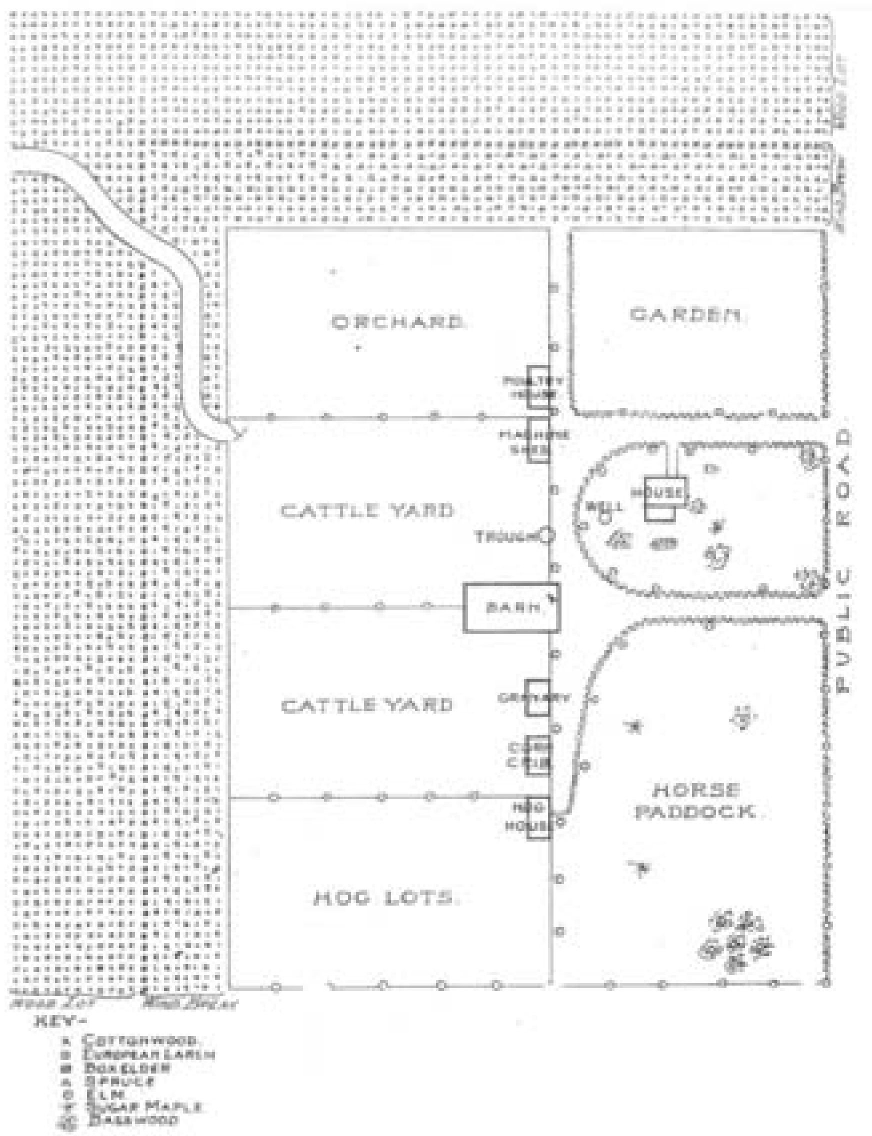

This 1914 University publication for Minnesota farmers demonstrates how a three-acre woodlot could be planted if the farm had no natural stand of timber. The woodlot comprised the outer 12 rows of this scheme and consisted of alternating cottonwood and larch trees from which wood for fuel, fence posts, and other uses could be harvested. The inner eight rows were the windbreak. From Cheyney's "Windbreaks and Woodlots" (1914).

▪ WOODSHEDS

- Once found on many Minnesota farms where wood was widely used for cooking and heating
- Often a simple structure that could have open sides or be enclosed
- Often located close to the back door of the house

In 1984 Allen Noble wrote of the woodshed: "Originally required on virtually every farmstead [in North America], it nevertheless was almost always an unprepossessing structure, and frequently a quite nondescript one. Almost any kind of small frame building served" (Noble 1984: 86).

Woodsheds were either free-standing structures or additions to other outbuildings. They commonly had either gable or shed roofs. They sometimes had one, two, or three open walls.

Wood was widely used as fuel for heating and cooking on Minnesota farms, even after central heating systems were installed.

In the 1910s a small percentage of Minnesota farmhouses had a central heating system consisting of a wood- or coal-fueled furnace in the basement. Many of the furnaces circulated either forced air or hot water (Wilson 1914). (A 1921 survey of readers by *The Farmer's Wife* magazine revealed that, among 892 Minnesota respondents, about eight percent had central heating. The systems included hot air, hot water, steam, and ductless furnaces (Lundquist 1923: 11). In 1940, 19 percent of Minnesota farmhouses had central heating, while 75 percent of the state's urban houses did (Davies 1947: 11).)

PREVALENCE

Woodsheds were prevalent when firewood was the principal fuel for cooking and heating, and keeping the wood dry was important. Electric cooking ranges reduced the need for wood somewhat, as did conversion to coal, fuel oil, or propane gas for farmhouse heating. After woodsheds were no longer needed, many were reused for other storage purposes. It is not known how many examples are still standing.

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See also

Farmhouses
Farmyards
Woodlots

A substantial woodshed. While adults and adolescents usually split the wood, carrying it to the house for cooking and heating was often a child's job. Location unknown, circa 1910. (MHS photo)