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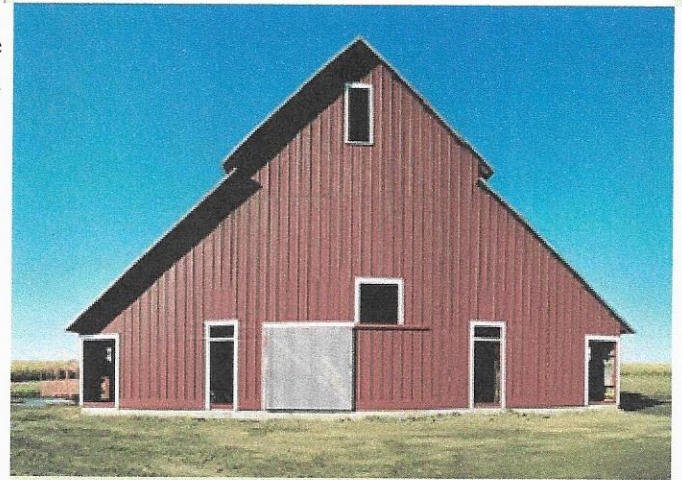
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Barns – Functions & Forms

Barns are a distinctive part of the rural landscape and a source of romance for some urban dwellers driving out into the country. But barns exist to solve very real problems for farmers. As the technology of farming changed – particularly during the 1940s – so did the shape and form of barns.



The barn on the Wessels Living History Farm site was built in the 1920s, has animal stalls on either side, a granary in the north central section, an open area in the middle, and a haymow on the second floor.

Barns are as much a part of the technology of the farm as a tractor. Usually, barns and other farm buildings are designed to accomplish one or more functions:

- Animal shelter and production like milking.
- Crop storage and feeding.
- Vehicle and implement shelter and repair.
- Any combination of these functions.

So, some farmers would build a barn to milk their cows with hay storage on the second floor to feed them. Other barns would house and feed horses. Others would combine all three functions with horses on one side, cows on the others.

Carla Due Interview

The large barns were sources of pride. Some said that German farmers would build the barn first and build it better than their houses.

The barns also served social functions. Carla Due remembers barn dances. "If they had a real nice barn," she says, "they would have a barn dance up in the haymow before they started putting up hay. And those were wonderful because the whole neighborhood got together, just brought whatever you had and had lunch together."

Many farmers would divide the functions they needed into several smaller outbuildings. As farming got more mechanized, separate machine sheds sprouted up. In the Midwest, chicken coops and



small hog barns were common, since most farmers had diversified grain and livestock operations.

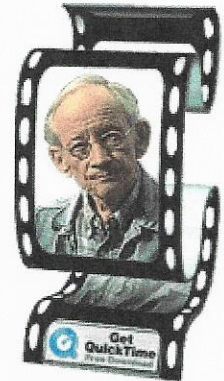
There are also regional differences in barns and outbuildings. In the south, winters are milder, and so there was generally little need for large barns to house animals. They were simply allowed to stay outside over the winter months. Barns in the south were smaller and more specialized. For instance, tobacco farmers built special structures to cure their tobacco leaves.

In the 1940s, farming underwent a technological revolution. Almost all farmers retired their horses, and so they no longer needed to house them in horse barns. The structures were adapted to other uses. Stalls were ripped out. Doors were widened so that tractors and larger implements could be driven in, repaired and protected from the winter snow.

As more and more farmers specialized, growing only one crop or producing only one kind of livestock, barns were adapted to those functions. Grain farmers began putting in more and more grain bins.

When the mechanical corn combine was introduced, corncribs that had protected corn on the cob were replaced by corn drying bins housing tons of corn kernels until market conditions provided the best price for the farmer.

When automatic hay balers were introduced, all of the technology used to hoist loose hay into the second floor haymow via ropes and pulleys was obsolete. Motorized conveyor belts would haul bales into the mow. Later, large round bales protected themselves – especially when they were automatically wrapped in plastic – and they were left in the field. The bales became their own barns.



After the 1940s, the rural outbuildings that were left became utilitarian metal buildings, replacing the graceful wooden barns. And for many urban dwellers, some of the romance left the country. Yet, former U.S. Poet Laureate Ted Kooser (right) still finds poetry in old barns. In his poem "Riding the Bus in Midwinter" Ted looks out and imagines what would happen if a barn "could loosen itself from its old foundations and start out rocking and creaking over the fields..."

Written by Bill Ganzel, the Ganzel Group. A partial bibliography of sources is here.

The Livestock Industry Grows

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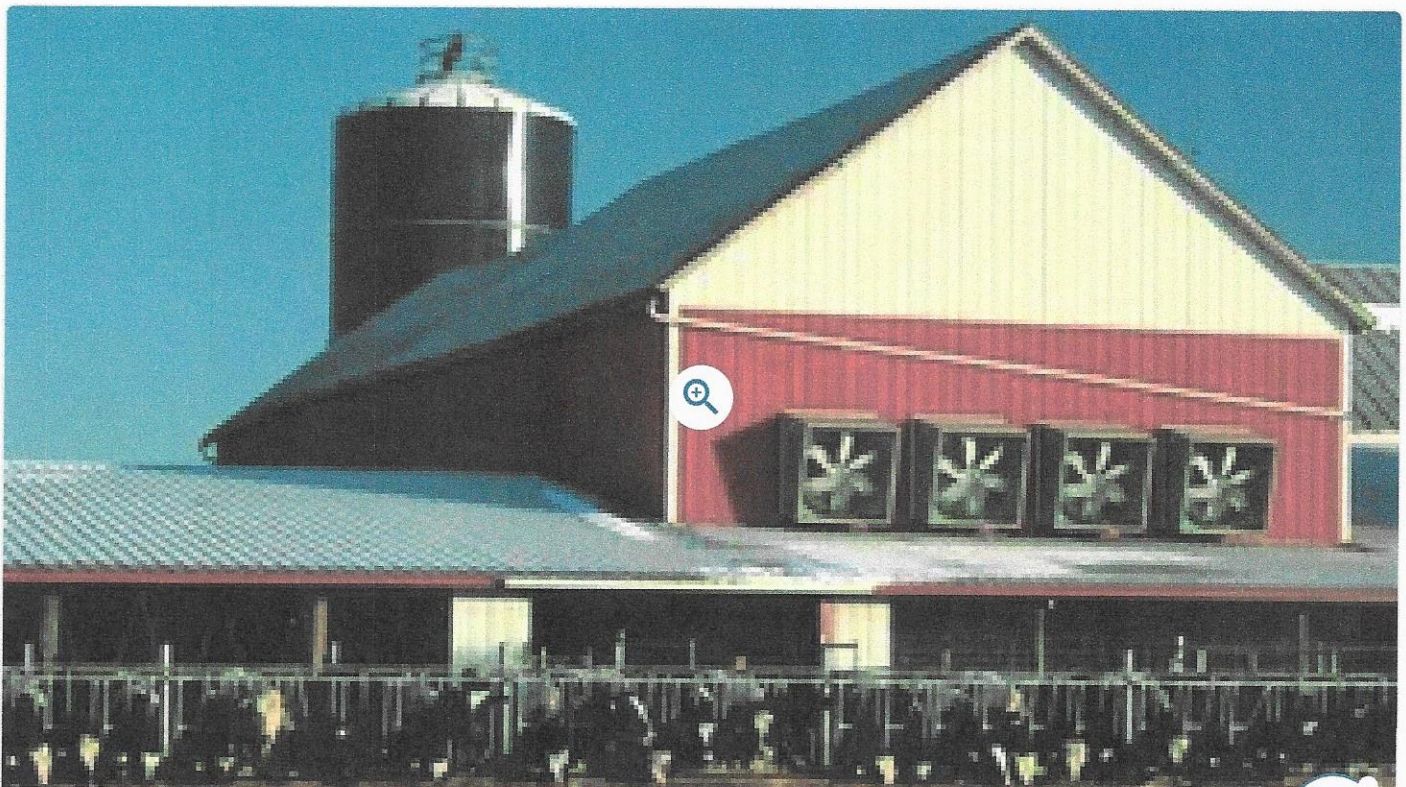
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Livestock barns and shelters

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Barns and shelters tend to be the most important elements of the [livestock farm](#). Two general types of animal shelters may be distinguished: the multipurpose type, a single-story building with clear-span [roof](#) construction, useful for feed storage and machinery, as well as for livestock; and the specific type, designed for a particular type of animal.

There are two major [cattle-housing](#) methods, the stall barn (or stanchion barn) and the loose-housing system. In the stall [barn](#) each animal is tied up in a stall for resting, feeding, milking, and watering. The typical plan has two rows of stalls. In older buildings hay and straw are stored in an overhead [loft](#), but in modern layouts [adjacent](#) buildings are generally used.

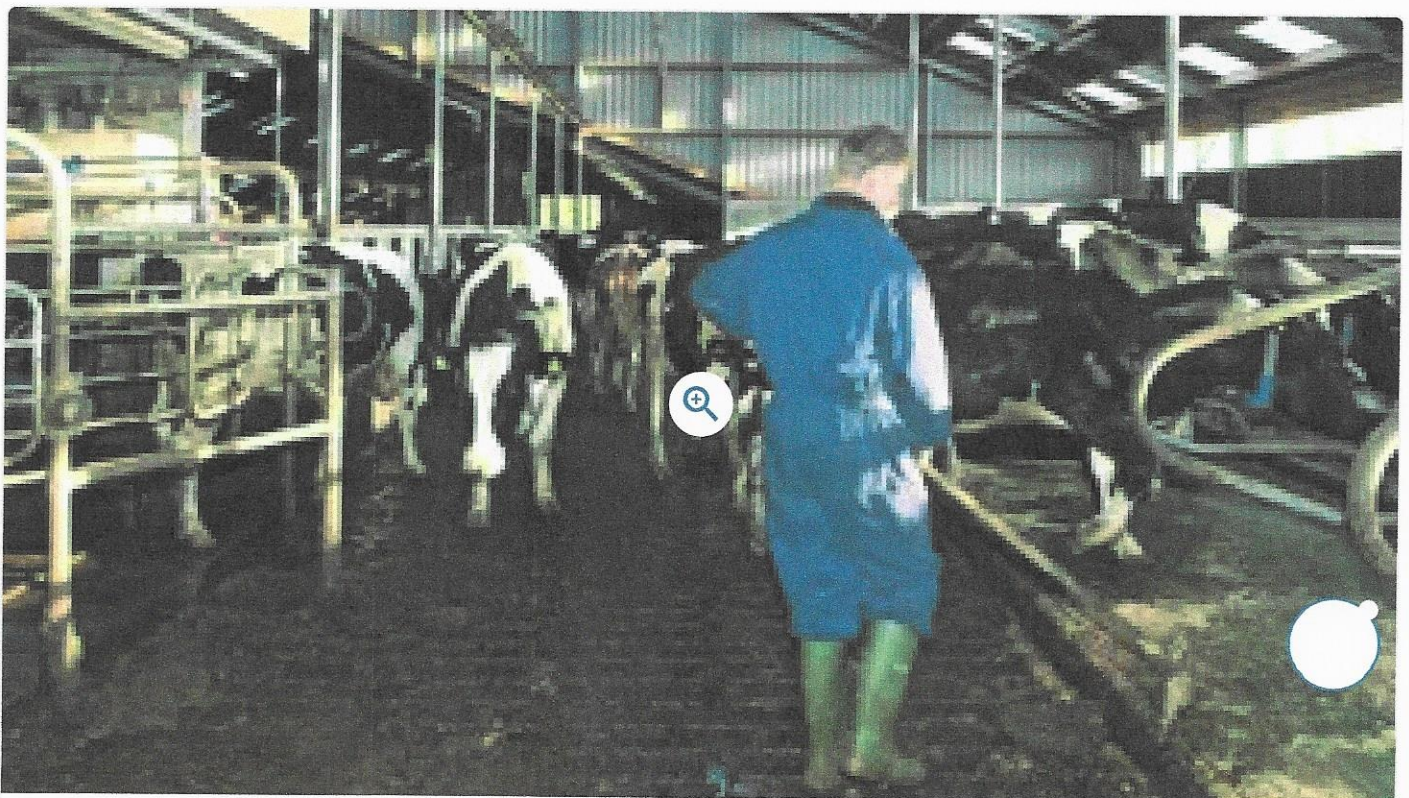


dairy farm

Image: © Nancy Gill/Shutterstock.com



In cold and moderate climates the barns need insulated walls and ceilings, as well as **ventilation systems**, either natural or power-operated. In mild and hot areas the barns are open on one or two sides. The loose-housing system, developed in the United States after **World War II**, is now employed throughout the world. Basically, this system includes a wood- or metal-framed shelter, arranged in such a way that the animals can move freely inside and sometimes also between the shelter and an outside yard. Depending on the bedded areas, four types can be distinguished: loose housing on permanent litter—for example, straw, corncob, sawdust; loose housing in free stalls or cubicles; loose housing on slatted floors; and loose housing on sloped concrete.

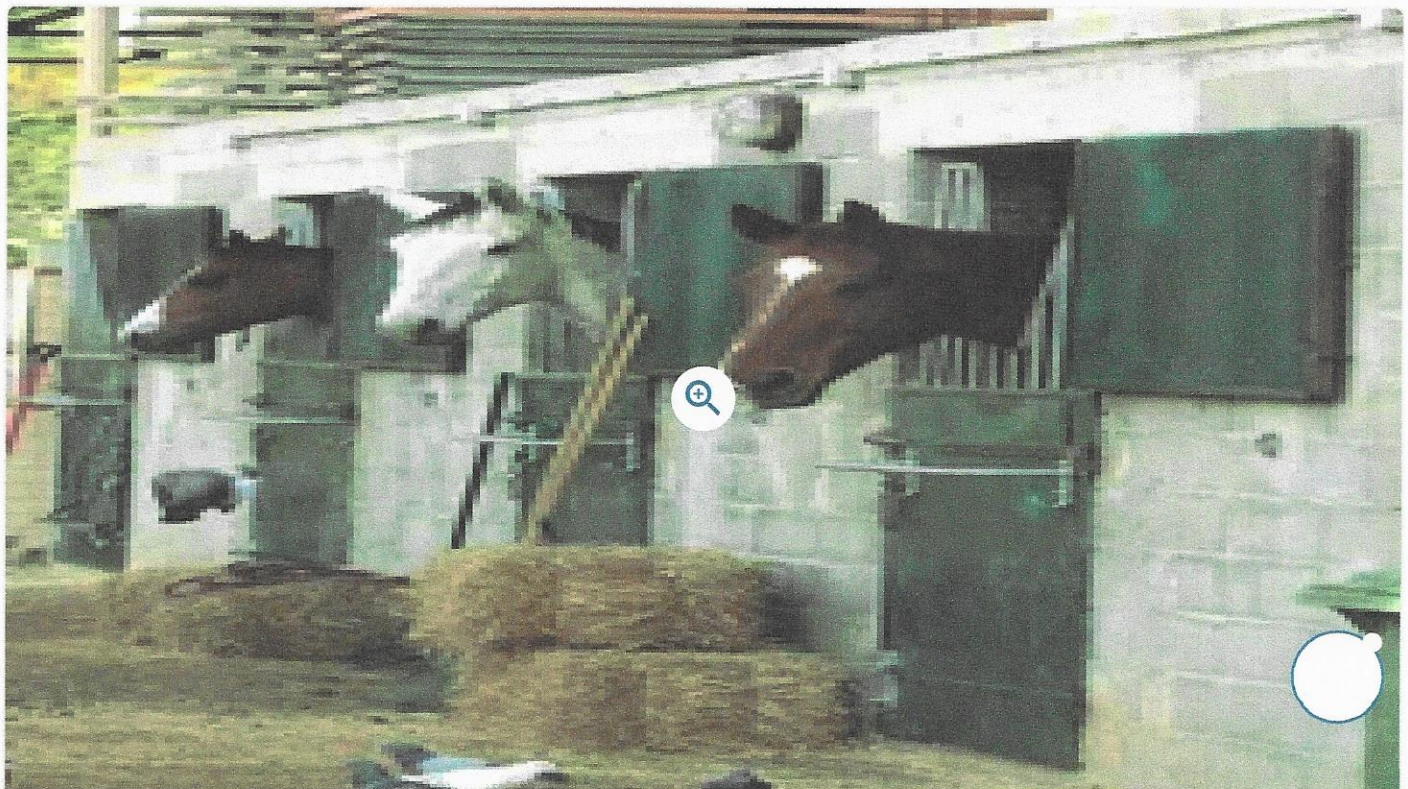


dairy farm

Image: © corepics/Fotolia

In some countries, in old as well as new **dairy farms**, cows are housed in stall barns that include milk rooms. Milking takes place in stalls, and the milk is carried either in cans or directly by pipeline to a refrigerated tank in the milk room. Modern **layouts** with loose housing always include a milking parlour, either stationary or rotary. Two types of loose housing are used: loose housing on permanent litter and loose housing in free stalls, either under a clear-span roof or under a narrow lean-to roof.

Beef-breeding **cows** often live on pastures, with only open-front sheds, during the calving period. In France and Scotland, however, they are kept in barns all winter. For fattening steers there are two major housing systems. The first of these is the American system, with very large groups of animals and a wide surface per animal. In the western United States the open feedlots include only fences, troughs, and alleys for feed distribution. In the Midwest Corn Belt a shelter is often included. The second, the European system, is **characterized** by very small groups (10 to 20 animals each) and a very small surface, generally covered. Any of the four loose-housing systems can be used.



horse stable

Image: © David Monjou/Fotolia

For **horses** and **ponies** it is customary to use individual stalls, where the animal can move freely, even though this requires more space. **Mules** may be kept together in large pens. In mild climates **sheep** and **goats** live on pastures without any shelter. The facilities include fences, waterers, corrals, dipping vats, and lambing and shearing sheds. In moderate and cold climates the flock is wintered in sheds. The trend is toward clear-span buildings, with large alleys so that trailers can distribute feed into racks and troughs. Ewes are housed by groups (50 to 100 each), and special pens are kept for lambs. Feed racks and fence partitions are generally movable. For the dairy ewes there are special milking parlours. Goats are housed either in tie stalls, for small flocks under 50 head, with milking on the spot, or in pens, for larger flocks housed by groups, with milking in a special milking parlour.

Pig housing varies for sows and fattening pigs. The sow lives with its litter for four to eight weeks according to the weaning age chosen. During this period there are two types of housing: movable, individual houses (generally of wood) located on or close to pastures and fixed in place, and central farrowing houses. A sow may farrow and live with its piglets in a single pen or farrow in a special stall, to avoid possibly crushing the piglets, or may farrow tied up by a chain or a harness. The pregnant sows live either free in groups of six to 12 or tied up or blocked up inside individual stalls. In cold climates the house is heated; in all modern practice infrared lamps or tubes are used to keep piglets warm. Fattening pigs, like fattening beef cattle, may be kept either in a simple feedlot, in large groups with a wide surface per head and a simple open shelter, a system widely used in the **United States Corn Belt**, or penned in a closed building,

isolated and ventilated, each pen holding seven to 15 pigs. This is the most common system in Europe. Size of the pig units varies all the way from five sows or 20 pigs to large farms of up to 100,000 pigs.

Poultry farming is the most-industrialized type of animal production. Some of the breeding phases no longer take place in farms but in specialized plants; the farmer buys either **chicks** for broiler production or young layers for egg production. The typical modern **broiler house** holds from 10 to 100,000 birds, with automated feeding. Two types of facilities can be used. The broilers can be put on the ground on a deep litter of wood shavings, on wire mesh above a pit, or on a combination of these two floors. Alternatively, the broilers can be housed in metal cages, on three stories, each cage holding three to 10 animals. In this case, feeding and cleaning are mechanized and the density is higher. The typical **laying house** holds several thousand hens. The same facilities as for broilers are used, but use of the cage is more common for layers. There are several types of cages, some of which are mechanized to facilitate feeding, cleaning, and egg collecting. Each cage can hold one to five hens. The density can reach about two hens per square foot (23 hens per square metre). The main types are cages in two- or three-story batteries (California cages), which are not superposed but rise in tiers; and flat-deck cages, which allow maximum mechanization. The buildings are generally one story, fully enclosed; they have insulated structures with sophisticated ventilation systems. **Turkeys** and other fowl are housed like poultry but generally on the ground. **Rabbit** production involves housing by groups in cages, on one, two, or three stories.

Buildings for machinery and supplies

This type of building is designed solely to afford protection from the weather, mainly rain. **Machinery storage** should have as much surface as possible between the interior posts, without being too deep, so that each machine can be taken out easily. The best solution is a clear-span shed, wood or metal-framed, 25 to 35 feet (eight to 10 metres) wide), open on one side and 15 feet (4.5 metres) high under the gutter. At the end of the shed, one bay is reserved for repair and maintenance and another for tools. This part is equipped with sliding or overhead doors. The same shed, or another, can be used for

equipped with sliding or overhead doors. The same shed, or another, can be used for storing the **fertilizers**, seeds, and **pesticides**.

Crop storage



Amish farmhouse

Image: age fotostock/SuperStock

Wheat, **barley**, shelled **corn** (maize), and other **cereals** can be stored in farm bins if the moisture is below a certain limit (from 10 to 15 percent). In some cases artificial drying is necessary before storage, though it is possible to store wet grain, especially shelled corn, in airtight **silos** for animal fodder. The most common methods of storage of dry grain are (1) in piles of five to 10 feet (1.5 to three metres) on a waterproof **floor** in a building with reinforced walls; (2) in square or round bins erected within a building, usually of timber, plywood, corrugated steel, or wire mesh lined with waterproof paper; and (3) in watertight bins, often of corrugated metal, with their own roofs, for outside erection. Ear corn is dried by natural **ventilation** through a **crib** of limited width, located in a building or outside. Loose or baled **hay** is stored and sometimes dried by ventilation with fresh or heated air, either under sheds or in special installations called hay towers. Silage is made to conserve moist fodders, such as corn, **sorghum**, and grass. There are two types of **silos**. The horizontal **silo** is parallel-piped, either cut into the

ground (trench silo) or built aboveground (bunker silo). The floor is natural earth or concrete. The walls can be concrete, timber or plywood, or sheet steel. The capacity varies but can be large. The **tower** silo is an above ground cylinder, with 20- to 30-foot (six- to nine-metre) diameter and a 50- to 65-foot (15- to 20-metre) height.

Ordinary **silos**, which are only watertight, are of wood, concrete, masonry staves or blocks, or steel. Special airtight silos with steel walls and a fused-glass surface are used for storage of high dry-matter silage, called “haylage.” **Fruit** and **vegetable** storage for family **consumption** is usually in caves or cellars. For crops to be marketed, conditioning and storage generally are handled by commercial enterprises, but some large specialized farms have their own storage. The buildings are insulated, and temperature control is assured either by ventilation with outside air (i.e., for **potatoes** and **onions**) or by refrigeration (i.e., for **apples**).

Special-purpose structures



tobacco shed

Image: © Anne Kitzman/Shutterstock.com



Many secondary farm structures, such as smokehouses and well houses, are a leftover

of the past, but some are necessary in specialized farms. A typical example is the **tobacco barn**, built for static air circulation.

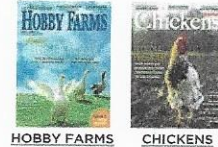
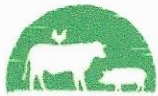
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Build A Better Barn For Your Farm

It's possible to build a barn that balances your dream barn with practical reality. Read more on choosing a site, function, accessories, get online resources and read lessons learned.



by [Sarah Christie](#) February 18, 2009

PHOTO: iStock/Thinkstock

When you decide to build a barn, combining your wish list with a dose of practical reality will result in a barn that brings you pleasure, saves you money and provides years of active use.

There are reasons why barns are traditionally painted red—they are the functional and metaphorical heart of any farm. Barns shelter cows and cats, horses and hay. They evoke memories of exploration, discovery, safety and solace. Barns are the hub of summertime activity and a warm oasis of winter quiet. They age more gracefully than houses or humans, and over time, they take on a persona all their own.

We instinctively relate to barns because, like most Americans, barns work for a living. If you are fortunate enough to have an existing barn on your property, you may have toyed with the question of whether to remodel or replace it. Then again, you might have unconsciously adjusted your needs and habits to fit the parameters of the barn.

Regardless of your approach, you are probably going to spend nearly as much time in the barn as you are in the house, so it makes sense to create a space that is functional, efficient and pleasing to work in. Only you can assess your true needs. Are you more likely to get daily use out of a well-designed wash rack and rat-proof grain bins or a wet bar with Dolby sound? Combining your wish list with a dose of practical reality will result in a barn that brings you pleasure, saves you money and provides years of active use.

Choosing a Barn Site

Of course, "location, location, location" is first and foremost in barn building. The structure itself might be elaborate or simple, but location is independent of design.

Horses smell wonderful, but that doesn't mean you want to live directly downwind of their stalls. That flat area at the bottom of the hill might look inviting to build on, until it becomes a flood plain next winter.

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Understanding the “micro-climate” of your site, i.e. the path of the sun, direction of the prevailing winds and runoff pattern during rainstorms, is essential to planning a barn that works. Pay attention to the prevailing winds on the property. They probably change from morning to evening. With a little foresight, you can orient the stalls and/or breezeway to take advantage of airflow, keeping the barn well-ventilated. This is critical for the respiratory health of your livestock, as well as your own comfort.

Siting the structure to take advantage of the morning sun and afternoon shade will make the building comfortable year-round. Avoiding natural drainages is environmentally and economically smart. Erosion control is a costly, never-ending battle. It's better to give flowing water a wide berth when building.

Basic Barn Functions

Barns perform three basic functions. They can house and shelter livestock, store feed and equipment, and provide a workspace for tinkering and repairs. As such, they can be specialized or multiuse. Pole barns are the least expensive to build and are commonly designed for hay storage. But by enclosing one or more sides, they can easily accommodate equipment, tools and materials.

Livestock barns are most commonly designed for horses, but can be modified for goats, sheep or other stock. Barns that function more like a workshop can provide space for lumber milling, carpentry and mechanical repairs. Old-style working barns typically blend one or more of these functions, though hay storage on large spreads frequently demands a dedicated structure (or two).

Today, numerous modular barn companies offer every conceivable configuration and style of barn imaginable. Barn builders can choose from Tudor, Kentucky classic, rustic, Spanish, Amish or basic shedrow designs, as well as exterior siding materials to fit any locale. Choosing what design works best for you depends on your location, budget and needs. If you are going to keep animals in your barn, consider the need for insulation and air circulation.

Residents of mountain states will probably prefer a design that allows them to close the barn against inclement weather in the winter. If aesthetics and resale value are high priorities, a raised center-aisle design makes a gracious statement and offers functionality that takes advantage of natural light and airflow. A gable roof option is more affordable, but still offers the advantages of a fully contained structure.

A courtyard layout evokes the ambiance of Spanish elegance, but it requires significantly more area than other designs. The possibilities are almost endless.

Collecting a clip file on barn designs, equipment, fencing, landscaping and accessories will help you mentally formulate that dream facility until it eventually materializes.

Your wish list will one day become a valuable resource guide when the time comes to build, but unless you have worked in a number of professional barns, it can be difficult to discern what is really useful, what is not and what luxuries might actually be worth the cost. With a little common sense, you can bridge the gap between the fantasy barn and the functional barn.

Accessorizing a Dream Barn

If money is not an obstacle, there is no limit to the amount of accessorizing that can be done to build a dream barn.

Using an architect specializing in barn design, it is possible to repeat architectural themes found in the home, and accommodate amenities, such as a loft or apartment, office, intercom, sound system, [video surveillance](#), trophy case, restrooms and entertainment areas.

For farm owners with show or racehorse facilities who entertain high-rolling clientele, these luxuries can actually qualify as requirements. A lounge area with a big screen TV is a perfectly reasonable feature if you need to let clients view videos of your sale prospects performing in world-class events.

What are barns used for?

Today, the huge, airy farm structures we know as barns are used mostly to store modern farm machinery and house farm animals. But before modern farming, they had a greater number of important uses. Before the invention of threshing machines (which separate cereal grains like wheat from their stalks), the grain harvest had to be stored in barns, where it would await threshing or pounding by hand during winter months. The structures had to be large and drafty for the process of winnowing, which separated straw dust from the grains after threshing.

Before farmers began to raise special crops to feed their livestock during the winter, they used hay, which is dried grass (grown wild or taken from the stalks of cereal crops). Huge amounts **enough to last several months** had to be stored away. Hay was usually kept in barn lofts located above the main floor, where farm animals spent the winter. This high storage place allowed air to circulate around the hay, keeping it from rotting. It was convenient, too, because hay could be pulled down as needed to feed the livestock.

Because farmers had to store their harvest crops in barns, they wisely cut entrance holes near their roofs, inviting barn owls to make nests there. The birds would hunt the rats and mice that liked to feed on the grain.



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Farm Buildings and Structures: Importance in Farm Enterprise

May 17, 2021

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INTRODUCTION

Farm Buildings

Types of Farm Buildings and their importance

Farm structures and their importance

Farm buildings and structures are built on the farm site for the smooth running of farm operations. The types of buildings or structures vary, depending on the conditions on the farm. They may be temporary or permanent. They may be built of wood using logs or poles or of various grades of cement mixtures from concrete or ceramic tiles or stone. Grass, straw and palm fronds are other materials used on the farm for building or putting up structures.

Read: [Factors to Consider for Proper Farms Buildings and Structures](#)

In this article, you are going to learn the various farm buildings and structures, and their importance in farm business enterprise.

Farm Buildings

Farm buildings help to shelter animals from bad weather conditions and from theft. It is easy to take proper care of animals when they are kept inside, and the use of farm buildings help to ensure clean production of farm produce like egg, fruit and vegetables along with expensive equipment. Farm buildings can

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the farm can carry. An example of this is the keeping of dairy cattle which is determined by the presence or absence of a milking shed. Also the problem concerning the number of cattle which can be kept in during the period of wet weather is of course dictated by the capacity of the buildings on the farm.

Again, the extent to which machinery can be employed largely dependent upon the accommodation available on the farm because modern machinery and equipment need protection from the weather when not in use.

Types of Farm Buildings and Their Importance

1. Animal and plant nurseries

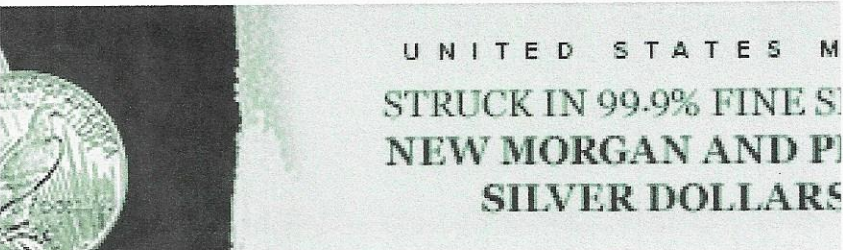
Sometimes young animals or plants may need to be nursed under special conditions before exposing them to natural competition.

2. Shelters

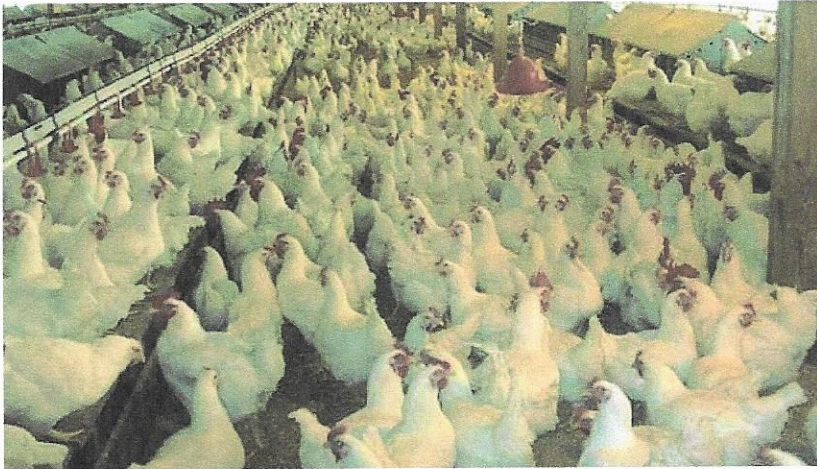
- Barns for cows
- Sheds for sheep and goats
- Sties for pigs
- Stables for horses
- Hutches for rabbits and poultry

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Deep litter poultry house

3. Special shelters

Special shelters make it possible to obtain the products of which the animals were raised easily and hygienically.

4. Administrative block

A farm enterprise requires office work like record keeping, accounting, marketing. Farming business can't run efficiently and successfully without records and some degree of paperwork.

5. Staff quarters

Staff quarters is a farmhouse for labourers and farmer's family. No serious farm businessman will live far distance from his animals and crops. Having farmhouse enhances productivity, effective use of farm labour, and provides comfort.

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1. Silos

Silos are circular or rectangular structures usually made of stainless steel used to store food grains and sometimes silage. Average silo has a very large capacity that can carry at least one hundred tons of grain. Large quantities of food grains, silage can be stored in silo for long period of time. There are partitions through which materials can be put and taken out. It serves as reservoir. It helps to keep farm produce from waste and spoilage before marketing. Having silos help the farmer to maximize profits by storing his produce when the prices are low and sell when the prices go up.



2. Abattoir

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are in some way inadequate. A livestock farm may be handicapped due to absence of drinking water on the farm. Certain crops like vegetables, fruits, root crops and potatoes can't be grown to any great extent on the farm where there is insufficient water supply.

4. Irrigation canals

These canals are very important in areas with low rainfall distribution and are useful during the dry season, especially where the amount of rainfall is not enough to meet the water requirements of the crops during the growing season.

The irrigation canals carry the water from a reservoir to the crops. There are water pumps which are connected to the dam at the reservoir. The pumps suck the water from the dam through the tubes and force it into the irrigation canals which then makes it available to the growing crops. Irrigation enhances all-year-round production of crops.

5. Drainage canals

Drainage canals are gutter-like structures for conducting surplus water away from the farms to a central pool. This pool of water may be connected to a flowing river or used as irrigation for uncultivated farmland. Drainage canals are generally constructed in a water-logged areas.


6. Processing structures

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decomposition before they are used as manure for crops in the farm. Such structure is very important in mixed farming system.

8. Animals dips

They are usually made by concrete bath lacing sunk into the ground. When in use, they are filled with water and disinfectant or insecticide. When animals pass through them their coats is soaked to kill ecloparasites like lice, ticks, and fleas. They are suitable for cattle, goat sheep, horses and donkeys.

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