

Loose Housing for First-calf Heifers: a Case Study

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One problem with first-calf heifers is that you don't know what they are going to do after they calve. Are they going to accept the calf, be alarmed by it, or ignore it? Loose housing is a management method that can benefit heifers, cows, calves, and the producer.

A loose-housing system has four main components: dry bedding, feeding and watering stations, access to pastures, and a lane to connect them. This type of loose-housing system was implemented at the Eden Shale Farm in 2014 (Figure 1). The area in and around an old dairy barn, which was not being utilized by the beef operation, was renovated for this use. Converting structures that are not being fully utilized in order to improve production is one of the main objectives of this exercise.

Dry bedding, in this example, was fashioned by renovating the earthen floor of the barn to create an all-weather surface using geotextile fabric and rock, which was then covered with wood shavings (Figure 2). The goal with this practice is to create a dry place for cattle to lie down. There are multiple options for bedding, and decisions should be made based on suitability for your system's moisture and traffic demands as well as cost and availability.

Ventilation and temperature are critical factors in calf comfort and health. The loose-housing area should provide plenty of ventilation to maintain dryness and move away contaminated air and moisture. In this case, an open-side east-facing barn was used. A southern exposure opening would be ideal. Appropriate orientation and openness to prevailing winds are good uses of free energy. Producers who do not have an old barn to renovate can and have instead used a bedded outdoor area.

Two separate areas for feeding and watering are needed. Separation provides space, freedom of movement, reduces dominant behavior, and eliminates bottlenecks. Round troughs are more

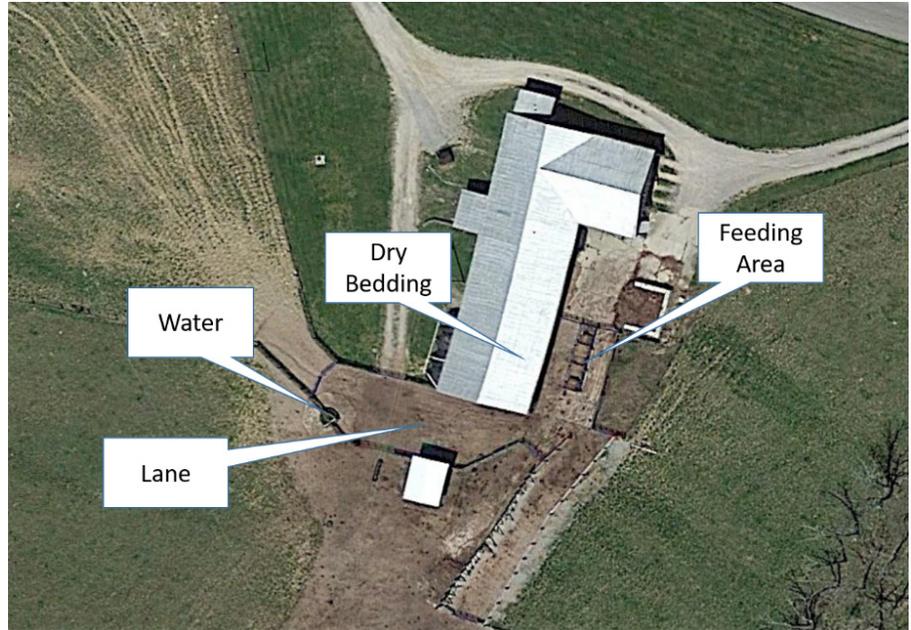


Figure 1. Aerial view of the dairy barn showing the four components of loose housing.



Figure 2. A bedded-floor pen for calving.

efficient than any other shape because cattle have the ability to fan out. Greater efficiency is provided when a round waterer is placed in a fence line. Figures 1 and 3 show the lane with a tire waterer in the fence line, which allows cattle in

the lane and nursery to simultaneously use the same waterer. Portable bunkers for feeding concentrated diets and the mineral feeder also were placed in the lane for easy access.

A lane should provide access to all areas. This includes access to multiple pastures. In this case, the lane provides access to three pastures, the loose housing in the barn, and to the feeder and waterer. The lane is wide enough to accommodate the equipment needed to load the nursery forage feeder without making a three-point turn. From a design standpoint, a lane should be short and narrow to reduce the need for rock, geotextile fabric, and fencing materials to construct the heavy traffic pad lane.

Figure 4 shows the forage feeding structure, which the heifers on pasture, via the lane, and the heifers in the barn can access. The design also allows the forage feeder to be subdivided with a gate panel to allow simultaneous access to a second pasture. The forage feeder also can be used to feed concentrated diets without a stockman needing to enter the cattle area (Figure 5).

Management of the System

One way to manage the practice is to start with the heifers in one pasture with access to the water and feeder via the lane (Figure 6). As the heifers get ready to calve or have calved, they are placed in the loose-housing area for 24 hours. Even though the cow and calf may bond in a few hours, 24 hours is considered the standard, minimum amount of time to ensure that the pair have bonded. Heifers and cows prefer to calve away from the herd and seek a sheltered area, which this system provides. With the loose-housing system, the producer can monitor their status, ear tag the calf, and record data in the first 24 hours with relative ease. Conversely, ear tagging later in a pasture setting when the calves are two- to four-weeks old is more difficult because the cow and calf have a stronger relationship.

After 24 hours, the cow and calf are transferred to the nursery containing other pairs. In this area, cows will leave their calf in the morning, after the calf has nursed, and graze with other mothers, leaving their calf with the other calves and a few cows that stay behind. Managing the mothering pairs as a separate group creates a more adjusted calf and relieves stress on the mother by not being grouped with non-mothers. After a couple of weeks, the older cow-calf pairs are moved to a fresh pasture (Figure 6).



Figure 3. A heifer and her newborn calf coming up to feed and ready to be placed in the loose housing area.



Figure 4. Hay-feeding structure, which has access to multiple pastures and the loose housing pens.



Figure 5. Forage feeder can easily be converted to feed concentrate diets.



Figure 6. Aerial view showing a pasture for heifers and their calves with access to the water and feeder.



Figure 7. Forage feeding area after scraping.



Figure 8. Manure stack pad.

At this time, the forage feeder can be subdivided to allow concurrent group access to the feeder.

The removal of manure is a stockman's least favorite activity. The efficiency of the task can be improved by creating areas and passageways that accommodate available equipment. However, this may not be possible when the practice uses an existing structure constructed with interior support columns. Interior support columns also will have an effect upon the size and configuration of pens and layout. An ideal structure has an open floor plan, which allows flexibility of use and better operational efficiency compared to structures with interior columns.

When the area is occupied, accumulated manure in front of the outdoor hay feeder is periodically pushed into the stack pad area for storage and to drain through a filter strip (figures 7 and 8). A good management practice is to push up manure sooner, if rain is forecast, to reduce sloppy conditions.

Essentials of a Well-designed System

In order for loose housing to operate efficiently, a proper layout is needed so materials can be moved with minimal effort. To that end, forages, feed, and bedding material should be stored as close as possible to reduce travel distances by the stockman. Gates should be installed so that cattle and the stockman have easy access and flow to all areas. Incorporating a handling facility in the barn creates added efficiency and benefits. Ideally, loose housing should be located on a well-draining summit. Any drainage water from the roof should be moved offsite to reduce the interaction of stormwater with mud and manure around the barn. Managing stormwater around the barn also preserves the foundation of the structures, while protecting the siding of wooden barns. In this example, the area is located on a ridge, directly off a county road, and within walking distance of the manager's house. Water from the roof is controlled by guttering, piped into tanks (harvested), and used to water the cattle. Regardless of the commodities placed in the feeder, the feeder should be accessed and loaded by the stockman without entering the cattle area.

Benefits of a Well-designed System

The loose-housing system increases the productivity of the replacement herd and the stockman by providing the optimum environment for production and management. While there is work in creating the system upfront, the design will reduce effort later by creating greater efficiency, flow, and movement of materials.

Cattle thrive in loose housing because they can lie down on clean, dry bedding, which is what they prefer. Cows generally lie down 50 percent of the time, whereas calves rest for 90 percent. Being able to lie down is of vital importance because it reduces energy and feed requirements. However, it is extremely important that calves be able to lie down to provide sufficient early growth and development. In addition, calves groom themselves 150 times a day. If they are clean they have fewer opportunities to ingest harmful pathogens.

Adequate ventilation provides fresh air while removing moisture and contaminants, which can cause respiratory and enteric diseases, from the air. A loose-housing system oriented to a southern open side will provide sunlight during the winter to dry out the flooring and eliminate harmful disease causing pathogens. An open southern side will provide protection from a searing sun while allowing southern prevailing breezes to ventilate the structure.

Stockman efficiency is obtained by having pastures adjacent to one another. This allows the stockman to monitor multiple groups from a centralized location or hub. An added benefit of having pastures for this system adjacent to each other is that it helps to reinforce stable relationships between the separated groups. Social contact between the separated heifers and mothers can still be experienced through the fence. Having a smaller calving window can also reduce the amount of time that the herd is separated.

During summer months, access to loose housing can provide shade and relief from scorching temperatures. Providing shade increases conception rates, feed intake, and average daily gains. In winter, the lower critical temperature for cattle with a wet hair coat is 54 degrees Fahrenheit. Loose housing can reduce energy requirements by protecting cattle with a wet hair-coat from low temperatures and from precipitation events such as freezing rain. A loose-housing system could also be used throughout the year to protect pastures during weather events such as drought, hot weather, and hurricane season.

Generally speaking, spacious feeding and watering stations reduce competition. The proximity of drinking water is advantageous because cows like to calve near available water. In this example, a tire waterer is used to provide water. The tire waterer provides adequate space for

each animal, access to an abundant supply, ideal posture when drinking, and introduction of the water source to the new calf. It also can be easily monitored by the producer.

Summary

This case study's goal was to provide the best possible environment to first-calf heifers and their calves. This was obtained by controlling environmental conditions to provide great care, high standards for hygiene, and housing to achieve good health and productivity. In planning the building conversion and the surrounding area, all physiological requirements of the cattle should be given priority to achieve production benefits. The potential benefits include maintaining the body-condition score of the heifer/cow, improving gains and feed efficiency, reducing pathogenic infections, and providing the pair the freedom to perform instinctive behavior. Loose housing is a practice that takes advantage of these benefits and more when it is designed and operated as a system. Once the physiological needs of the cattle have been met, the basic needs of the stockman as well as any ease of feeding and manure handling should be considered. In this example, the stockman has the ability to monitor at least four groups of animals from one centralized location. This is a practice that not only provides efficiency and productivity but also safety for the producer.