LOOSE HOUSING
for DAIRY FARMS
as utilized in North Dakota
and possibly applied in Alaska

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The North Dakota Extension Service has assisted in planning many loose housing installations in the state. They endorse this system of management without qualifications as one that saves time and money. Management is more exacting for loose housing than for stanchion barns. Chopping straw may reduce the quantity of bedding required by as much as a third and also facilitates cleaning as compared to long unchopped material. Best results are obtained by spreading straw in the evening. The amount required is about the same as in a stanchion barn.

Concerning bedded areas, the trend has been to go to buildings 10 feet or more wide. Sixty square feet per cow is adequate for bedded areas and is actually better than 80 square feet. Satisfactory ventilation is obtained by leaving a six inch or wider opening the entire length of the building at the ridge. A hood over the slot improves appearance and prevents snow from rolling into the opening during periods of snowfall and very low winds. This arrangement assists in overcoming one of their major problems, excess moisture.
Loose housing sheds with end openings have been unsatisfactory because of heavy localized traffic. Planning is necessary to spread the cows as much as possible, thus eliminating channels of heavy traffic on the bedding.

Paving around feed bunks is a basic requirement, and most North Dakota dairies have paved areas around the bunks. Many dairy farms have alternate lots. Where available, the second lot is used only in the spring or during periods of very mild weather. One real problem has centered around winter accumulation of manure in feed lots. During spring break-up it is impossible to remove manure fast enough to prevent the area from becoming very soft. It is under these conditions that an alternate lot--kept clean during the winter--has particular value. On a few completely paved lots, straw is spread over thawed manure to provide a stable condition.

In North Dakota one-man loose housing systems sometimes involve as many as 40 milk cows. A Madsens Polled Holstein Farm near Fargo utilizes a conventional loose housing management with the bedded area open to the south. The operator did not know the amounts of straw used, but the cows and the bedded areas were clean, indicating an adequate amount. Wheat straw is preferred over oat straw. No problems have been encountered with the freezing of teats or udders. Feeding areas are covered and closed on the windward side. A self-unloading wagon is used to fill the feed bunks. The holding area is paved and covered. Complete satisfaction was expressed with their management system.

A dairy husbandman with the North Dakota Experiment Station, Mr. E. G. Edgerly, states that they have more trouble operating a herd under loose housing management than in the stanchion barn at their institution. He says that it takes a better manager for loose housing than for stanchion operations. Last winter (1961) in an open loose housing shed they had trouble with freezing of teats on all cows in the herd. The barn is located where there is a continual wind, 10 miles per hour or greater, blowing over the cows. Their herdsman pointed out that teats were frozen during high winds while the cows were eating and drinking in the open. Cows have hay before them all the time and are fed silage twice a day. Silage consumption is about 35 pounds per day. Brown Swiss appear to suffer less in cold weather than Holsteins.

This winter (1962), their loose housing shed has been closed in. Four revolving ventilators 15 inches in diameter are located in the ridge of the shed. Feeding is on a concrete slab in an area which opens off from the bedded area. A 16-foot door is left open in good weather, but closed under conditions of wind or extreme cold. Mr. Edgerly commented in a recent letter:
"Since you were here, our present loose housing has had a more severe test, as we have just had a spell of weather with continuous subzero temperatures for several days and lows into the -30° range. We came through this very well with no frozen teats. One cow that was just fresh, and that was feeding near the door, did become a little chilled. We, also, have come to the conclusion that we need more ventilators, as the limited ones we have just frost all over and close up on warm days. We feel that we need additional ventilators that can be opened or closed depending on the temperature. On real cold days they should be closed, and on the warmer days they will need to be opened. We do have to clean out the frost from our present ventilators occasionally or they become plugged".

He suggests that bedded areas should be from 48 to 50 feet wide and that bedding should be stored under the same roof or one adjacent to the area.

NEW HAMPSHIRE SYSTEM

Mr. Edgerly formerly worked at the New Hampshire Experiment Station. He provides the following description of a loose housing system developed there:

"We do have (at New Hampshire), as you will recall, a type of loose housing that is quite different in several respects from the conventional loose housing design of today. Our barn was constructed in 1932. We do not have separate so-called bedded and feeding areas as present loose housing facilities have. Our cows have complete access to the entire area except at milking time when the barn is divided by movable partitions into two portions—the un milked animals on one side (this could be considered a holding area) and those that have been through the milking parlor on the other side. A 6-foot wide feed bunk separates the area into two halves with access for the cows around the barn at either end of this feed facility. Cows can eat from either side of this feed floor and it is here that we feed hay and silage and beet or citrus pulp. We have a milking parlor with individual side-opening stalls in a U-shape for eight animals. Grain is fed in the milking parlor. Now—to answer some of your questions:
1. With 64 cows (based on 3-foot allowance per animal at feeding bunk) floor space is between 65 and 70 square feet per cow. Obviously, our numbers vary from 60 animals to 70 depending on calvings, culling, and so forth.

2. We use sawdust and put down a fresh layer each morning following the daily cleaning. We pick up manure by hand and load on a spreader or in some cases a flat-bedded truck. Actually, we go over the area just before each milking and pick up fresh droppings, tossing them back along the wall. This helps greatly in maintaining cleanliness of floor and animals.

3. Each cow has three feet of bunk space for feeding, provided all cows are eating at the same time. We feed hay and silage three times daily.

4. We have two water tanks 7 1/2 x 2 feet (inside dimensions). These are located in the barn. With our system of cleaning we have no problem of build up of manure and bedding around these tanks.

5. Our barn does not open directly to the outside except by way of a lobby entrance. The cows are out in the yard each morning during the cleaning out time. They come back in about 10 o'clock and the door is closed so that they remain inside the rest of the day. In the summertime, of course, our cows are at pasture until about 11 am when they are brought to the barn and remain there until after the evening milking and then go back to the pasture for the night. I am not entirely in favor of the wide open loose housing in climates as severe as you would have in North Dakota, and as we can have in New Hampshire. I think the energy required for keeping the cow comfortably warm might be better used for milk production.

6. We do not have a serious problem with the large cows versus small cows. We feel that the smaller animals can always find some place at the feed bunk to satisfy her needs if we provide adequate amounts of feed so that none of them will go hungry.

I really think that a pen stable has a great deal to offer from the standpoint of animal comfort. It does present some management problems. I perhaps say that we give the barn a thorough cleaning about four times per year using a power tractor loader for removing the bedding down to the dirt floor."
SILAGE

Horizontal silos in North Dakota are often covered with two inches of dirt on top of plastic. Manure is placed on top of the dirt. Horizontal silos have become quite efficient with large feeders who are using 500 tons or more. It was pointed out that grass silage is declining in popularity in North Dakota. Their Director of Extension says:

"This movement away from grass silage can be credited to more than its objectionable odor. First of all, most of our grass was ensiled at moisture contents of nearly 80 per cent. At this high moisture content the TDN per pound of silage was relatively low. Under very cold conditions it was difficult to get sufficient dry matter into the cattle to meet ration requirements. We have a number of farmers who are still making grass silage but they are wilting it down to about 65 per cent. Under these conditions both the feed value per pound is increased and the odor problems are decreased."

The practice of wilting forage materials to 60 to 70 per cent moisture before ensiling has been recommended for many years in Alaska. Extension Circular 23, "Tips on Making Silage", gives additional pointers concerning silage making.

CONCLUSIONS

Loose housing management for dairy cows in severe climates seems to require more management ability than the stanchion barn. Experience in North Dakota provides some guidelines for Alaskan Dairymen planning loose housing systems. The trend is to —

- Improve ventilation of shelters
- Pave around feed bunkers
- Provide covered feeding areas protected from wind
- Pick up droppings before milking to promote cleanliness and conserve bedding