LOOSE HOUSING FOR DAIRY CATTLE

S. A. WITZEL
University of Wisconsin, Madison, Wisconsin

Proven favorable to housing for high producing dairy cows, cold loose housing at the Wisconsin Station has shown the way to specialized dairy farming in the Midwest. This system allows free, active cows to wait on themselves and bring the milk to the elevated stall milking parlor. Here the operator quickly and effectively milks his cows with the aid of a cleaned in place milk pipeline which carries the milk to the refrigerated bulk tank in the milk room. Success requires careful planning, a workable layout, effective equipment and an operator willing to adjust himself and his herd management practices to his new system of housing.

Today for the dairy farmer who is interested in a free and easy way of handling his dairy herd where all bottlenecks are removed, where quality milk can be produced, and where there is almost no limit to herd size, loose housing complete with milking parlor, pipeline milking, and bulk milk handling is the practical answer. Eleven years of research at the Wisconsin Station has shown that loose housing, properly planned and operated**, can serve as well or better in housing the dairy cow than the stanchion barn. The test periods were six months in length and covered the winter housing period. In a cold loose housing system, cows have less health disturbances and a better recovery record than cows in stanchions. Here there was an absence of injuries such as injured udders and teats, abscessed hocks, and swollen knees. Loose housing exposes cows to sunshine, fresh air, and exercise which tends to make them rugged.

RELATIVE PRODUCTION

The 17 cows in the cold loose housing barn consumed about 5 percent more roughages and about the same amount of concentrates as the 17 cows in the stanchion barn. In terms of total digestible nutrients, after allowance was made for the additional increase in weight of the loose housing herd, this latter herd produced a pound of 4 percent fat corrected milk with 99.7 percent of the feed required in the stanchion barn. In other words, there was no penalty to pay for exposure to cold weather. This was further emphasized by daily and weekly comparisons of the production of these high producing Holstein cows with the outside temperature and weather conditions. Temperature and weather had no effect upon production based upon 4 percent fat corrected milk.

Milk production for nine years of the experiment showed that the loose housing herd produced 100.58 percent of the amount of milk produced by the control herd in the stanchion barn. From these tests it is concluded that cows in a loose housing system will do equally well as compared to cows in a stanchion barn. Perhaps freedom from injuries and the more rugged condition of the cows in a loose housing system would tend to give the loose housing herd a decided advantage over a long time period.

Milk quality at the project, while good from the start partly through the use of effective cooling, has improved for the loose housing herd as the arrangement of the loose housing system, the equipment, and the management has improved. The first year when the feeding area was bedded, the cows were difficult to keep clean, and the milk delivered at the plant had an average raw milk count of 21,821 per ml as compared to an average count of 7,439 for the stanchion barn. By cleaning the paved feeding area daily and rebuilding the mangers so no forage could be wasted, the cows gave up the practice of lying down on the bare floor in the feeding area. This helped to keep the cows clean. Good management of the bedded area by turning under the droppings and adding fresh bedding and limited clipping of udder and flanks all aided in keeping the cows surprisingly clean.

Other steps in the road to progress included adoption of open, cold loose housing after trying warm, confined loose housing with a third test herd housed in an insulated loose housing barn for 3 years. This insulated loose housing barn was operated as an open, cold loose housing barn for the last 5 years, the same as the original non-insulated barn that was used throughout the entire test period for the cold loose housing herd. Open, cold loose housing helped keep the cows cleaner. The barn lot was paved for an area of a little over 100 square feet per cow where the cows remained in periods of soft ground conditions. The concrete barn lots were scraped at frequent intervals with a tractor except when frozen.

The milking parlor was originally a 4-stall floor level parlor with all north light. Two bucket milkers
were used by the two operators. This room was later enlarged for four windows and cross ventilation. Eight floor level stalls were used to hasten the concentrate feeding and milking the cows. Six cows could be let out, and let in and fed at a time, instead of two.

Finally, a 4 elevated stall, tandem type milking parlor complete with milk line milking, bulk milk cooling, and bulk milk transport to market was provided.

For comparison, the control herd in the stanchion barn is being milked in a cleaned-in-place milk line, and the milk is cooled and held in a second bulk tank separate from the milk produced by the two loose housing herds being milked in the milking parlor.

This past winter the bacteria count on the milk from the milking parlor and loose housing herds was under 2000 per ml. The weighted averages of bacterial counts of quarter samples showed 3,573 per ml for the milk from the stanchion barn and 2,334 per ml for milk from the pen barns. The conclusions as reported by Dr. Frazier and his staff, reached as a result of bacteriological investigations are:

1. There is no significant difference in numbers or kinds of bacteria in milk as it leaves the udders of the cows in stanchion barn housing as compared with milk from cows in loose housing.

2. There is no indication that abnormality of milk from apparently normal quarters is greater in milk from one type of housing than from the other.

3. Milk of equally satisfactory bacteriological quality can be produced from cows housed in either a stanchion barn or in a pen barn.

Good milking technique can be easily followed in the milking parlor. A sanitizing solution is metered into the warm wash water for washing udders and rinsing teat cups. A reversible flow vacuum type cleaning arrangement is being used for in-place cleaning of the pipeline. The operator in this 4-stall parlor has worked on dairy farms, in cheese factories, and milk plants all of his life. He is an excellent operator and, as he says, due to his age he couldn't think of continuing at dairying if it wasn't made easy for him with the milking parlor and its equipment.

Further tests regarding the effect on milk quality of skip-a-day milk pick up, where fresh warm milk is added to cold milk from a previous milking, along with all other aspects of bulk milk handling are being studied in a project still to be completed. While there are problems in bulk milk at the farm level, their solution will come as research, the development of equipment, and practice in the field permit.

There can be little doubt that with small or larger herds housed in properly planned, well managed loose housing systems complete with sanitary milking parlors and bulk milk from cow to plant, milk of uniformly high quality can be produced. Perhaps the advent of 100 percent dairy farms is all but here for this region. Perhaps a 100 percent grassland dairy farmer would have time to get his manure hauled to the fields before fly season. His crops of grass could be harvested and preserved when the greatest feeding value could be obtained. He could have more time to be a dairy farmer and he would have more milk income from his well managed, perhaps somewhat larger herd producing quality milk. All this he can do with less time and less fatigue. His family can help as the all important milking chore becomes safe and easy.

Dairy Chores

For the other dairy chores, hay, stored at ground level can be quickly rolled into the manger. Some may move the manger and make hay feeding all but self feeding. In the same way, adequate bedding stored above or in the open, cold bedding area is easy to apply daily and as required. For clean cows and the use of a minimum amount of bedding, there should be no watering, feeding, holding, or concentration of traffic in the bedded area. Here careful management will save additional bedding if droppings are turned under once or twice daily. Chopped bedding is much easier to load out and spread than long bedding and it seems to go further.

Silage feeding is best arranged in a separate manger so hay and silage can be fed at the same time to simplify chores and save time. If enough manger space for hay and silage can be provided so all of the cows and heifers can eat at feeding time, the feeding space provision should be adequate. This would require about 1½ feet of manger space per animal for silage and another 1½ feet for hay. If both are fed at the same manger, 30" is sufficient space per cow. If the silage is from well cared corn, it may be that some cows will pick out the ears. In this case, enough silage feeding space should be provided to permit all animals to eat at feeding time. Otherwise, a deep feed manger having a large quantity of silage for self feeding throughout the day will be less likely to freeze during cold weather.

To control brass cows, remove horns and equip feeding mangers with vertical posts 5 to 8 feet apart or "V" notches through which they must place their heads to eat.

Several plans for a labor-saving silage feeding operation have been devised by dairy farmers and researchers. Perhaps the mechanical silo unloader discharging into a large self-feeding manger would be one practical method many would like. Others may prefer the trench silo with tractor-mounted fork and if the distance is too great for direct delivery to feed manger one may use a self-unloading wagon for transfer of silage from trench silo to feeding manger. While snow and cold weather may be a problem, the trench silo protects the silage from freezing and it can be filled with less man hours per ton than the tower silo. The fact remains that one needs a good location for the trench silo. It must be accessible every day in the feeding season. For those on level land, perhaps the larger stack silo will have a place.

For the cleaning of feeding area, barn lots, and bedded area, a tractor equipped with loader and scraper is most important. With this equipment, manure and even snow can be quickly removed as necessary to keep barn and lots open and sanitary. Even calf and hospital pens can be arranged for cleaning with this equipment. During the test period, calves and young stock did well in the cold.

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larger volume of germicide employed in the glass slide technique as compared with the Weber and Black procedure contributes toward the early endpoints obtained in the former instance. It is generally accepted that disinfection rates are dependent upon the concentration, rather than the quantity, of disinfectant employed. Chaplin substantiated this hypothesis using QACs.

Despite differences in the time required to reach the endpoint, it is significant that both methods have yielded results in otherwise good general agreement; either appears satisfactory for evaluating QACs alone or in detergent formulations.

The shorter exposure period required to reach the endpoint with the glass slide method apparently contradicts the findings reported in earlier studies. Here, a plating technique using 5 x 10⁶ cells of Micrococcus pyogenes var. aureus BDR 490 per ml of germicide showed faster killing for 20 ppm Roccal than was indicated for 100 ppm Roccal by the glass slide method with an initial count of 2 x 10⁶ cells per slide. The disagreement in results is explainable in the earlier failure to use an inhibitor to neutralize the QAC. To determine the bacteriostatic level of Roccal for M. pyogenes var. aureus in agar, 1 ml of a suspension containing 275 cells per ml of the organism was combined simultaneously with 1 ml of Roccal and 8 ml of nutrient agar in petri plates to give final Roccal concentrations ranging from 0.5 to 2.0 ppm. The results (figure 2) show that as low as 1.2 ppm Roccal caused 65 percent, and 1.5 ppm practically 100 percent "bacteriostasis." In the earlier studies, where 1 ml of 20 ppm solution was plated, the QAC concentration in the medium would be of the order of 2.0 ppm, an amount considerably in excess of that required for significant bacteriostasis.

Acknowledgements

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Bacteriological Evaluation

References


Caprices and Figures

Figure 1. Comparison of detergent-sanitizers A, B, and C with their constituent QACs. Key: detergent-sanitizer; □ QAC; D, distilled water; H, hard water.

Figure 2. The bacteriostatic level of Roccal for Micrococcus pyogenes var. aureus in nutrient agar.

Loose Cow Housing

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bars. A heat lamp placed over a newborn calf for a few hours is usually sufficient in the colder weather. It is true that all manure must be removed before fly season. Since the greatest fertilizing value can be obtained by hauling direct to field and plowing down before the nitrogen has escaped, one must plan his field operations to be sure he can meet the deadline for manure removal. It is important to keep a warm manure pack intact through the cold part of the winter, but it may be advisable to haul most of it while the fields are still frozen on some farms.

Indicated Advantage

The profit cows are those one adds after he has enough cows in his herd to pay all expenses, including modest wages for himself and for any family help involved.

Here with loose housing, more housing capacity can be added to an operating unit at a very low cost. If he has a 4-stall, one-operator milking parlor with a capacity of 30 cows per hour, it is easy to see that another hour of milking a day will add 15 more cows to the herd.

For the young dairymen willing and able to try new ideas and willing to make the necessary adjustments in his thinking, his work, his dairy housing, and his herd management, loose housing holds a real challenge. Here, at low cost, he can establish a profitable dairy farming enterprise with an open road ahead. If he specializes in dairying, all of his effort, his planning, and his capital can be directed to his dairy enterprise. For him, the complete loose housing system with an elevated stall milking parlor, pipeline for milk, bulk cooling, and delivery of milk can save time and eliminate drudgery. It makes a complete system from standing grass to storage, to at least semi-self feeding, quick bedding, tractor scraping, and manure removal with the cows carrying the milk directly to the milking parlor. Here the milk starts its journey as a fluid from the cow to the ultimate bottling and processing plant. Without ever being lifted by hand until its final delivery to the customer.

There is room for all to take a deep interest in this new development. Believe me, it is new and if needless mistakes are to be avoided, why not let the research and science team up to help find the answers. All of these things the sanitarians are doing. It is certainly not necessary to remind you that one's judgment can be no better than his facts. At the Wisconsin Agricultural Experiment Station, members of this Association have already posed enough questions to keep our research staff going for some time. Progress is being made and we sincerely appreciate your interest. With the growing interest of the progressive-minded equipment industry anxiously awaiting the results of every test, there certainly is no loss of time between the date on the research report and the appearance of a product incorporating these findings. It is with genu-
safety of the nation’s food supply or undermine the effective enforce­
ment of our National Food, Drug and Cosmetic Act.

This Committee, after consider­ing many proposals and after con­
sultations with various interested and informed persons, has made several recommendations to the Board which it believes will be
helpful in solving the problems which are involved. Some of these
recommendations have to do with
means of reducing the number of
Hearings for Standards-Making
Purposes and reducing the cost and
duration of such Hearings. Some
have to do with the liberalization
and broadening the scope of tem-
porary permits to market meritor-
ious new products which deviate
in various ways from existing stand-
ards. Some contemplate a greater
degree of informal consultation be-
tween F. D. A. and industry be-
fore new standards are formally
proposed.

The Committee has become con-
vinced that certain amendments of
the present law are desirable in the
interest of reducing the number and
duration of Food Standards hear-
ings. The Board understands
that various versions of proposed a-
mendments to the Food, Drug and
Cosmetic Act are under considera-
tion or in preparation for submis-
sion to Congress. Some of these
proposals aim at the objectives
which its Committee has recom-
mended to the Board.

The Board maintains that the de-
termination of the safety of new
chemical additives in foods should
be made initially by a scientific
body and by scientific methods in-
dependent of hearings on food
standards.

The resolution of facts in regard
to the suitability of new chemicals
proposed for use in foods separate
from Food Standards Hearings will
be of great aid in curtailing the
length of Hearings. Hearings should
also be reduced in number by omit-
ting them when no genuine con-
troversy arises which needs to be
resolved.

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In respect that I wish to recognize
the splendid cooperation which the
dairy equipment people are giving
this new, all important revolution
in dairy farming methods.

NEW 20 PAGE BULLETIN ON BULK MILK

A comprehensive twenty page bulletin, covering all aspects of bulk
milk, has just been released by Mojonnier Bros. Co. of Chicago. The
bulletin is designed as a working guide to those interested in bulk milk.
In addition to complete information on all stainless steel Bulk Coolers,
the bulletin contains field reports, bacteria count studies, data on sizing
of tanks and compressors, dimensions and specifications, cooling data,
and a cutaway diagram showing construction features. Also included is
a most complete section on pickup tankers with refrigerated pump-out
 compartements of special design. All who deal with Grade A milk will
be interested in this useful and informative report on the bulk milk move-
ment. Copies are available free on request from Mojonnier Bros. Co.,