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A modern stall barn can be designed and mechanized to provide good labor efficiency (Bates, 1983).

The major health problems associated with these barns are usually a result of inadequate ventilation (respiratory) or improper stall platform design and/or maintenance (teat and leg injuries, mastitis, etc). The regular intimacy required between operator and cow for milking, feeding and clean-up usually result in better observation. However, during cold or inclement weather problems often result from failure to turn out cows for exercise (lameness, heat detection, etc.).

FREE STALL HOUSING

Some feel that there are more health problems associated with free stall housing than with tie stall and stanchion barns. Often times the most problems are seen when cows, managers, and veterinarians are moved from tie stall barns to free stall barns for the first time. The typical health problems encountered will often be different in free stall housing systems. Anyone concerned with free stall housing should be familiar with the Proceedings from the Dairy Free Stall Housing Symposium held in January 1986. They contain experiences of farmers, farm advisors, engineers, designers, dairy and animal scientists, veterinarians, and suppliers during the 25 years that free stall housing has been used for dairy cattle.

The Northeast Dairy Practices Council (NDPC, 1980) considers the following functional components of a free stall housing system: resting (free stalls), feeding, waterers, alleys, holding area, milking center, treatment and maternity area, and manure handling. Ventilation and layout should be added to this list.

Free Stalls

The individual free stall or cubicle is the heart of any free

stall housing system. The design, construction and management of the stall can have a great impact on animal use and health. In keeping with this, the stall should provide a clean, dry and comfortable resting location for the cow. Day to day management and size are probably the two most important features. Regular attention to removal of manure and urine and replacement of bedding can go a long way towards keeping stalls clean, dry and comfortable. Various designs and materials are used for the stall partition, stall base, and bedding in attempts to accomplish this objective with minimum day to day labor and expense.

Irish and Merrill (1986) indicate that "The ideal free stall should provide a stress-free environment for dairy heifers and cows and a low cost, low care facility for the dairy operator. For animals, a free stall should be more attractive and comfortable than any other resting location. Ample space for the largest animal in a group to freely enter, lie down, lunge forward and rise without injury is a prime concern. Position the standing or lying animal so that manure and urine are deposited behind the stall bin to keep animals cleaner. In addition, the free stall should be injury-free, trap-free, durable (withstanding cow pressures c, 5000 lb-in), maintenance-free and marketable."

Free Stall Partitions:

Free stall partitions in general are becoming less restrictive and more open. The so called loop stall is the prime example of this trend. This provides more room for the animal to lunge when getting up and down and provides better ventilation. It also reduces the ability of the partition and front to position the cow within the desired area. The use of brisket boards and training rails becomes more important with these stalls. Training rails in particular are often the

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