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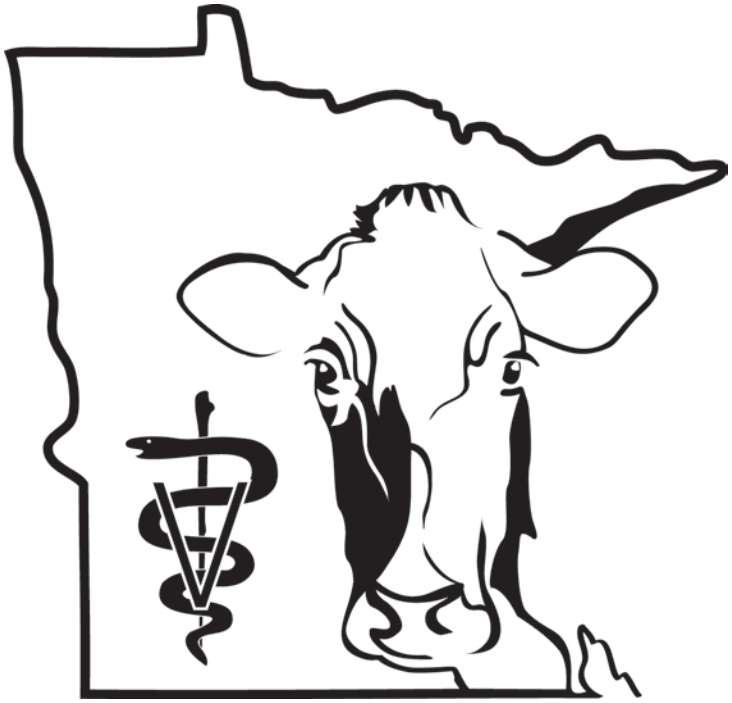

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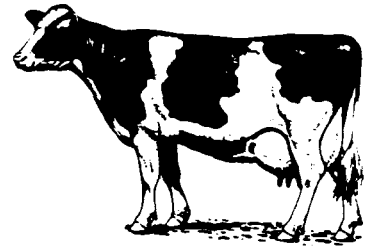

Dairy Update

Dairy Free Stall Design and Management

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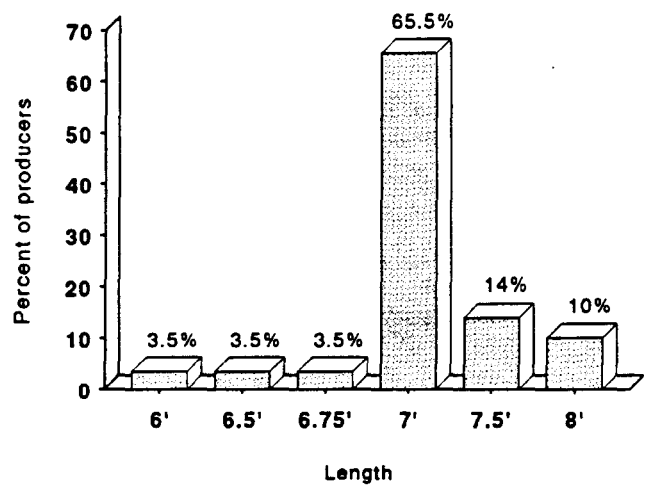
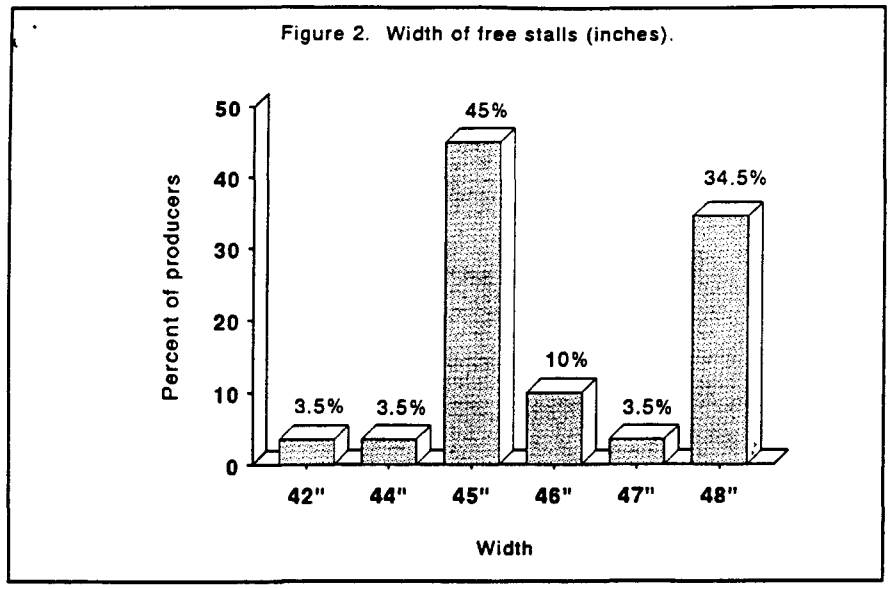
Free stall design and management is a key to dairy cow performance. The free stall must be clean, well bedded, well ventilated, comfortable, and offer a sense of security for the dairy cow.

In a survey of 29 large dairy operations in Michigan and Wisconsin in the fall of 1993, free stall design and management was studied to better understand cow comfort.

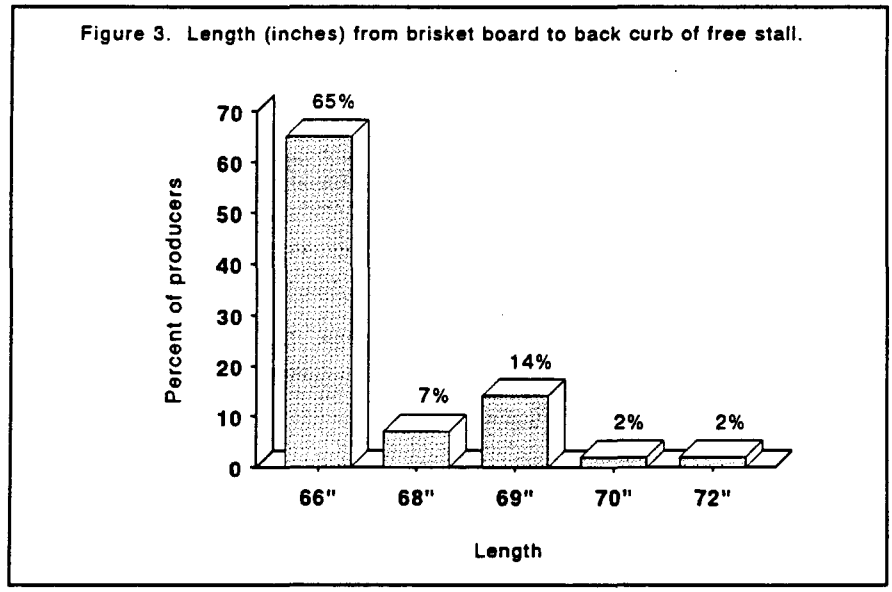
Size of free stalls has been researched for a number of years. Figures 1 and 2 provide length and width of free stalls in herds surveyed. The most popular length of free stalls in the study was seven feet (65.5%) and the width of free stalls was reported most frequently (45%) at 45 inches wide.

Figure 1. Length of free stalls (feet).





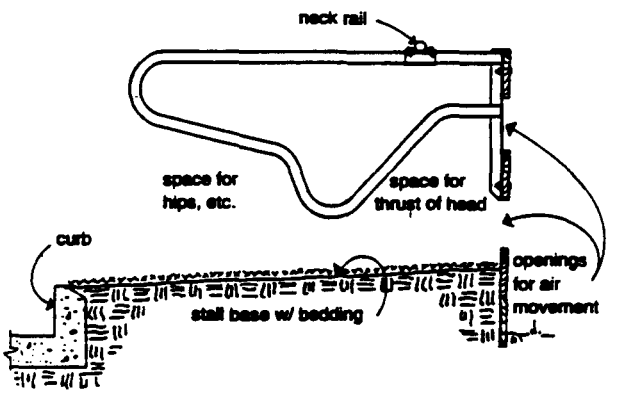
Brisket board usage and placement were studied in the survey. Of the 29 farms surveyed, 48% of the producers utilized brisket boards while 52% responded "no" to brisket boards. For those using brisket boards, Figure 3 shows placement of brisket boards in inches from brisket board to back curb of the free stall. Sixty-six inches is the current recommendation and 65% of producers reported this figure in their survey response.



In the survey, producers were questioned on the type of free stalls. In Michigan, 73% of producers surveyed reported using the Michigan State University loop while the type of loop varied greatly in other dairy setups. A diagram of the Michigan loop is shown in Figure 4. A number of dairy producers reported utilizing the New York style loop in both Michigan and

Wisconsin. One large herd in Michigan recently installed free stalls designed and built in Northern Indiana.

Figure 4. Michigan free stall loop.



Free stall management studied in the survey included the following areas: base of free stalls, bedding materials in free stalls, frequency of bedding with sand and kiln dried shavings, method to move sand to storage area, problems with sand, and mattress usage and materials utilized inside mattress covers.

Figure 5 reveals base materials used in free stalls. Dirt based or cement based free stalls were most frequently reported in the survey. Both were at 38%.

Figure 5. Base material in free stall.

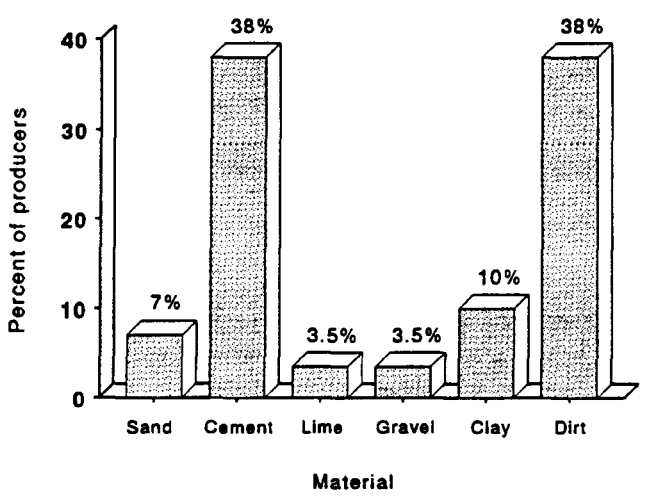
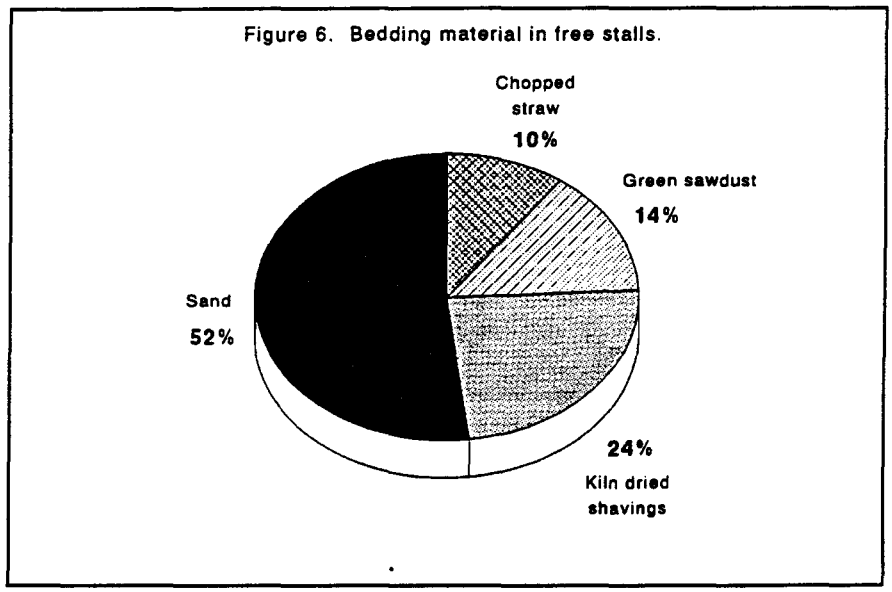


Figure 6 shows that over half (52%) of producers surveyed utilize sand in their free stalls while kiln dried shavings came in second at 24%. Sand is a very popular bedding material but does present problems when run through piston pumps and stored in lagoons. Of those producers using sand, 80% reported bedding once every two to three weeks while those bedding with kiln dried shavings did it weekly and often two times per week.



Method of moving sand to storage site or disposal site was studied in the survey (Figure 7). Of those producers using sand for bedding in free stalls, 47% reported problems with sand. Problems listed were: rapid wearing out of piston pump, settling of sand in lagoon and difficult to agitate, settling out in manure tanks en route to field site and filling of PVC pipe in gravity flow system. One Wisconsin producer utilizing sand in free stalls reported moving and rebuilding his piston pump annually to avoid major repairs.

Mattresses in free stalls are a relatively new management concept. Michigan reported the first use of mattresses in free stalls in 1986. In its infancy, durability of mattress covers were a problem. Recently, mattress materials have been developed and made available to producers that hopefully can last five to seven years in free stalls. Figure 8 shows usage of mattresses in herds surveyed in Michigan and Wisconsin. Thirteen, or 45%, of the producers surveyed used mattresses in their free stalls.

Figure 7. Method to move sand to storage area or field site.

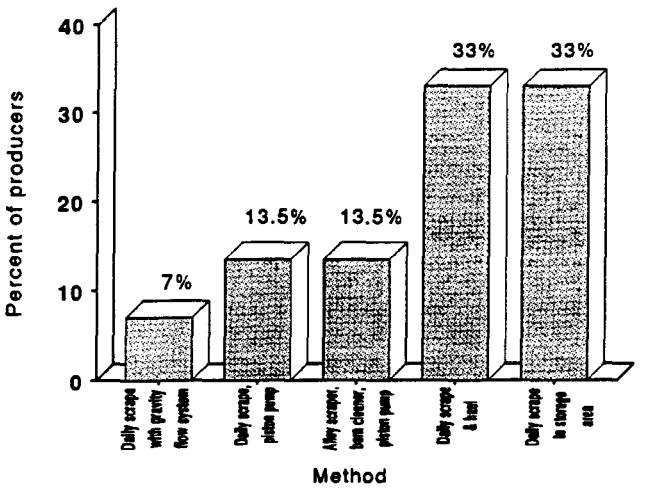
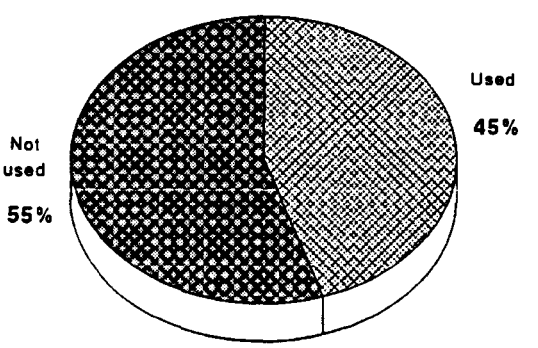
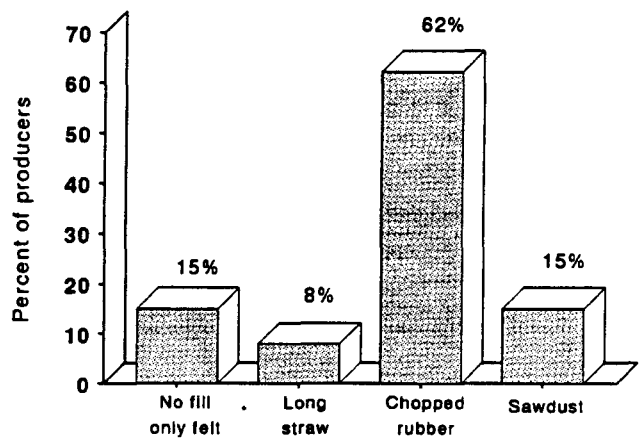


Figure 8. Mattress usage.



Material used inside the mattress cover is receiving much attention. In recent years, chopped rubber had surfaced as a popular fill material inside mattress covers. Two producers in Eastern Wisconsin reported using a junk felt material over a sugar sand free stall base. It appeared to reduce mattress cover cost and no filler material was required. Herd owners reported satisfactory results with only junk felt material over sand base. Figure 9 shows materials used inside mattress covers. Chopped rubber is used in 62% of herds. A number of producers expressed concern with organic bedding materials (sawdust and straw) when used as mattress filler. They reported deterioration of materials inside the mattress cover especially if it became wet.

Figure 9. Material used inside mattress covers.



As mentioned earlier, mattresses are a relatively new management concept and a few unique problems surfaced with mattresses. The major problem or concern at survey time was durability of mattress cover materials. New materials are coming on the market that are higher priced but offer new hope for longer wear. Another concern is chopped rubber serving as the fill in the mattresses. Chopped rubber is currently very popular but it is listed in Michigan as a hazardous material. Breakage and deterioration of mattress cover materials may allow the rubber to get into the manure and into the disposal sites. This bears watching; however, dairy producers like the firmness and durability of chopped rubber as a filler for mattresses. Cow comfort is a real benefit in favor of mattresses with rubber fill.