

in barn,	=\$1045.66=	=\$1424.43=	=\$1634.57=
Actual money saved,		=\$378.77=	=\$588.91=
Proportional cost,	=100%=	=136%=	=156%=

TABLE 2B.

	Round barn, 90 feet in diameter	Rectangular barn, 36 × 176-3/4 ft.	
		Plank frame	Mortise frame
Lumber in barn,	\$1628.48	\$2007.67	\$2497.56
Material in foundation,	130.35	196.80	196.80
Material in silo,	265.00	513.52	513.52
Total cost of material in barn,	=\$2023.83=	=\$2717.99=	=\$3207.88=
Actual money saved,		=\$694.16=	=\$1184.05=
Proportional cost,	=100%=	=134%=	=158%=

The square feet of floor space in the round barn 90 feet in diameter and rectangular barn 36 × 176-3/4 feet are the same, but the cubical content of the former is more than that of the latter. The increase in the lumber bill is 23 percent in the plank frame and 53 percent in the mortise frame barn. The round barn 90 feet in diameter contains 283 and the rectangular barn 426 lineal feet of wall. The rectangular barn has, therefore, 50 percent more lineal feet of outside barn wall, requiring a proportional increase in both paint and foundation.

The smaller surface on the outside wall of the round barn requires less paint and makes a proportional saving in keeping the round barn painted in after years.

ROUND AND RECTANGULAR BARNs, _Including Silos_, COMPARED

Owing to the fact that a silo is a necessity for the most economical production of milk, a barn is not complete for a dairyman's purpose unless it includes a silo with capacity to store sufficient silage for the herd. In the case of the round barn, the silo is most economically built inside, but in the rectangular form would cause a waste of space, and for that reason is best erected outside. Therefore, in comparing a round dairy barn with a rectangular dairy barn, silos should be included.

In figuring the cost of materials in the silos for the round and rectangular barns, the capacity needed in each case was determined in the following manner: Allowing 40 pounds of silage per cow per day for 7 winter months and 25 pounds per cow per day for 3 months during the summer, would require for 40 cows 220 tons; then allowing one-eighth for waste would make the silage requirement 248 tons. As the silo in the round barn 60 feet in diameter is 53 feet deep, it would need to be only 16 feet in diameter to hold 250 tons. This diameter is sufficiently small to allow summer feeding without waste. To erect a silo outside of a barn, with sufficient stability to stand well, the height above ground should not be much more than twice the diameter, and in order to avoid waste for summer feeding, the diameter should not be greater than 16 feet for a herd of 40 cows. In order that a deep enough layer of silage can be fed off each day during the summer to avoid waste, it is evident that to store 250 tons of silage outside the barn, two silos would be required. One of these should be 16 feet in diameter and 36 feet deep, holding 154 tons, and the other 13 feet in diameter and 36 feet deep,