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EFFICIENCY OF THE ROUND BARN

From *The Homestead*

The round barn, which a half score of years ago was derided and scoffed at, is rapidly gaining in popularity on account of its all-around utility and adaptability to practically every line of arming from exclusive grain production to general live-stock farming. When a country man is convinced that he can save from thirty-four to fifty-eight per cent of the cost of a rectangular barn by constructing a round barn of quite similar area he usually becomes decidedly enthusiastic about this unique building, other things being equal. Great credit is owing to the Illinois agricultural college for its commendable and, in the main, successful efforts in popularizing the round barn. Especially in the dairy districts of northern Illinois and southern Wisconsin has the round barn met with particular favor, as the fact that it permits of having the silo centrally located and in this way minimizes feeding labor strongly appeals to the overworked milk farmer.

Probably one of the most active opponents of the round barn is community custom, which in certain districts has favored the erection of one special type of barn to the exclusion of all others; square, rectangular, pentagonal, and even octagonal-shaped structures for the accommodation of the farm animals, and the housing of the grain and roughage have been the

result. In barn building as in farming the general country man is much more willing to follow custom than to attempt to deviate from locality dictate and to build a barn which would be an innovation for his district. However, this lack of inclination to adopt a new idea simply because it is new is gradually being overruled; all that is necessary to popularize the round barn in certain neighborhood is to have one farmer build a practical structure of this character and if it proves a success in less than no time all the farmers thereabout are talking round barn.

The Illinois authorities have conducted innumerable tests pertaining to the efficiency of the round barn; they have built two of these barns on the grounds of the college farm, and for several years have utilized them with great success as quarters for livestock and to provide storage room for grain and hay. The results of their detailed investigations show that the circular structure is much stronger; that the rectangular form requires twenty-two percent more wall and foundation to enclose the same space; and that the cost of material is from thirty-four to fifty-eight percent more for the rectangular building. The round barn offers greater convenience in storing, handling and distributing the feed while much greater strength is secured with less lumber than is possible in the case of the rectangular building.

In the early days when lumber was dirt cheap it was only natural that the rectangular structure should predominate in popular opinion but nowadays when timber is scarce and therefore expensive the country man is gradually being forced into accepting the circular barn on account of the fact that it can be built at so pronounced a saving in material. The noteworthy point about this matter is that once a farmer owns and uses a round barn he will never thereafter be satisfied with any other building. The trouble with most round barns which have been constructed in the past is that they were not provided with self-supporting roofs. They usually were equipped with straight roofs, which necessitated numerous supports in the barn below, and were both costly and inconvenient. The dome-shaped, self-supporting roof in use today does away with these defects, and in addition nearly doubles the capacity of the mow.

Another objection to the round barn where the owner does not carefully study the proposition before building, is that he is liable to build a structure of too great a diameter and as a result have lots of waste space in the building. Circular barns ranging from sixty to ninety feet in diameter are very practical; they will accommodate as many as one hundred dairy cows the with space to spare. However, when one builds a barn of greater diameter his wisdom is to be questioned because with round barns large enough for two or more rows of cows the row headed out does not utilize the space as economically as in the case of the rectangular barn, as a cow needs more width at the rear of the platform than at the manger. Where there are two rows of cows, the inner row is usually headed out, and as only about one-third of the cows are in this row, this loss of space is counterbalanced by the large number of cows in the outer circle using the space more economically than they do in rectangular barns.

Naturally a round barn cannot be so readily enlarged as one of rectangular construction, but this difficulty is overcome by the fact that the circular structure may be built higher to the eaves, thus allowing for an extensive growth in the size of the herd by providing for stables in the second story should the occasion for a larger barn arise. This plan also provides sufficient room for the hay mows and granary on the second floor. The popular supposition that a round barn is difficult to light is erroneous, in a circular barn and during the winter the sun can directly shine into some portion of the stable at all hours of the day. A final objection that the rectangular object cannot be placed in a circle without a waste of space in no way applies to the circular dairy barn as the storage of hay and grain depends upon cubical content of the building irrespective of its shape.

The essential advantages of the round barn are convenience, strength, and cheapness, as was previously mentioned. Either a wooden, brick, or concrete silo is constructed in the center of the barn, as in this position it is of material importance as a support to the roof and in addition its central location minimizes the labor involved in feeding the succulent silage to the dairy matrons. Hay and grain may be fed quite as easily as the ensilage by arranging the grain and hay chutes so that they terminate near the silo in the central feeding alley in the basement. One practical dairyman who owns a round barn elevates his grain to the bins, which are located near the top of the structure, by means of machinery; by gravity the grain slides through chutes to the second floor, where it passes through a feed grinder; hence to the basement stable, where with little labor it is fed to the stock.

A second advantage is contained in the large unobstructed hay mow, where the self-supporting roof is employed. The hay carrier runs on a circular track located midway between the silo and the outside wall of the barn and permits of depositing the forkful of roughage at the desired point; the man in the mow never has to move more than a few feet at a time in moving away the hay in ship-shape fashion; this means another saving in labor. A third good point in the round barn is that in case a Gurler silo is built in the center of the building it is unnecessary to board it up on the outside, and on this account quite a saving in the gross cost of the silo is possible. The circular construction is by all odds the stronger, as it takes advantage of the lineal instead of the breaking strength of the lumber; each row of boards running around the barn really acts as a hoop to hold the structure together; the real strain comes on these hoops in the lineal direction, where the maximum strength lies.

In case the lumber is properly placed in a round barn much of it will perform two or more functions, as every row of siding boards surrounding the framework serves also as a brake; the same is true of the roof boards and the arched rafters. If the siding is put on vertically, and the roof built dome-shaped, no scaffolding is required inside or outside. In order to infallibly impress the country man with the efficiency of the round barn the Illinois Agricultural College made a careful study of the proportional expenses involved in the construction of circular barns of different diameters as compared with correspondingly dimensioned rectangular buildings of both plank frame and mortise frame construction. Their results were somewhat as follows: The lumber for a round barn sixty feet in diameter with a cubical content of 117,669 feet cost $799.76, while the bill of material for rectangular structure 36 feet wide and 78 ½ feet long, with a cubical content of 117, 138 feet, amounted to $1023.27 where plank frame construction was employed, while it came to $1233.41 where mortise frame construction was used. The results in the case of a 90-foot circular barn as compared with a rectangular barn 36 by 176 ½ feet in dimension were quite similar, the round barn with a cubical content of 322,952 feet, costing $1628.48 for the lumber, while the rectangular form with a cubical content of 270,570 feet necessitated the use of $2007.67 worth of material where the plank frame construction was used and $2497.56 worth of lumber where the mortise frame method was followed.