

# Round Bale Calculation

In order to compare round bale price you need to know the amount of hay in different size bales. To figure the amount of hay in a round bale you need to calculate the volume of the bale. The formula to do this is (radius squared times 3.1416 times width). The radius is half the diameter of course. For simplicity sake, we will assume all bales are baled at the same tension so regardless of the size of the bale there is the same amount of hay in each cubic foot.

Table A shows the number of cubic feet in four different size round bales commonly available. So, for example a 5 ft by 5 ft round bale contains about 98 cubic feet of hay compared to a 4 ft by 4 ft bale with about half that.

Now we get to the interesting part where we find that there is big difference in a 5 ft diameter by 4 ft width vs. a 4 ft diameter by a 5 ft width. Looking at the Comparison Percent part of Table A we find that a 5 ft diameter by 4 ft width is 25% more than a 4 ft diameter by 5 ft width. Therefore the 5ft diameter bale contains 25% more hay than the 4 ft diameter bale. You can do the math yourself. In this example just divide 78.5 by 62.8.

So, why is this important? The reason is that it makes a big difference what you pay for your hay. Let's say there are two places to get 4 x 5 round bales and both places sell at \$40 per bale. However, one place is selling 5 ft diameter bales and the other is selling 5 ft width. Which is the better deal? By doing the calculation you discover that the 5 ft diameter bale gives you much more hay than the 4 ft bale even though they are both advertised as the same 4 x 5 size, which of course they are not. Another way to look at this is what you are paying for a cubic foot of hay. At \$40 per bale you pay \$0.50 per cubic foot for a 5 ft diameter bale and \$0.63 per bale for a 4 ft diameter bale; or 25% more for the smaller diameter bale.

**Table A**

Round Bale Size in Feet		Cu Feet	Comparison Percent			
Diameter	Width		5x5	5x4	4x5	4x4
5	5	98.2	100%	125%	156%	195%
5	4	78.5	80%	100%	125%	156%
4	5	62.8	64%	80%	100%	125%
4	4	50.3	51%	64%	80%	100%