



Pelvic Measurements in Replacement Heifers

Calving difficulty, or dystocia can be caused by a number of reasons including an over-conditioned dam, malformation of the calf or dam, abnormal presentation of the calf, uterine torsion, and the inability for the calf to pass through the birth canal due to lack of dilation. However the most common reason for dystocia is the disproportion of the calf's size to the size of the cow or heifer's pelvic area (Rodning et al., 2018). Calving difficulty can be minimized through various means including making sire selections that are appropriate for the level of risk in the females, managing females that are genetically predisposed for calving ease, and making selection decisions based on pre-breeding measurements in females. Such a management practice to reduce the risk of dystocia is measuring pelvic area in replacement heifers to understand their likelihood to birth a calf that is too large for them to handle.

Generally, a producer would want to measure pelvic areas during a pre-breeding soundness exam for replacement heifers. While the pelvic areas in heifers 12 to 14 months of age are likely to get larger as they mature, the growth will be proportional across all heifers. This suggests that heifers with small pelvic areas during a pre-breeding exam will always have a small pelvis compared to other females measured that day. Much like calculating the measurement of a rectangle, the pelvic measurement is calculated by multiplying the width and height of the pelvis as shows in Figure 1 and demonstrated in Example 1. The measurement, in square centimeters can then be used to estimate the appropriate size and birthweight of her first calf.

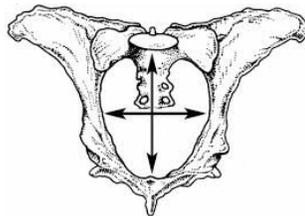


Figure 1. The pelvic area is measured by multiplying the pelvic height and width

Example 1

pelvic height—14 cm, pelvic width—12 cm
14 cm x 12 cm = 168 cm² pelvic area

Researchers from the University of Nebraska developed a system that uses ratios to estimate the size of a calf that a heifer can safely deliver based on her age and weight. The corresponding ratio can then be used with the pelvic area measurement to estimate the calf birthweight that the heifer can handle when calving at two years of age. Ratios can be found in Table 1., but a more specific example of this method of estimation is described in example 2.

Example 2

168 cm² / 2.1 = 80 lb calf that the heifer can safely deliver

Just like any method of prediction, there is a margin of error. Researchers have reported that this method of estimation can be used with 80% accuracy.

While pelvic measurements can be recorded before breeding or during pregnancy checks, it is more responsible to do so before breeding. This would aid in avoiding calving wrecks by culling heifers whose pelvic area is considered small, or making more appropriate breeding decisions. As with most management practices, using more information when making decisions typically leads to the desired outcome. If replacement heifers are important to a producer and there are adequate facilities and labor, measuring pelvic areas can lead to reduced risk of calving difficulties. This responsible decision can lead to many benefits including quicker rebreeding, earlier calving in following years, and more live calves on the ground.

For more information on preparing for breeding season, please visit or call the Cheyenne County Extension Office at (785)332-3171.



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Table 1. Using Pelvic Measurements to Estimate Deliverable Calf Size and Birthweight

Time of Measurement	Heifer Age (months)	Heifer Weight (lbs)	Pelvic Area (cm ²)	Pelvic Area/Birth Weight ratio	Estimated Calf Birth Weight (lbs)
Before Breeding	12—13	600	140	2.1	67
			160	2.1	76
			180	2.1	86
Pregnancy Exam	18—19	800	180	2.7	67
			200	2.7	74
			220	2.7	82

Adapted from Patterson, D & Herring, W. (2017). *Pelvic Measurements and Calving Difficulty*. University Extension, University of Missouri-Columbia.