

Cattle Producer's Handbook

Reproduction Section

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Reproductive Tract Anatomy and Physiology of the Bull

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The major objective of cow-calf operations is to produce one calf per cow every year. Therefore, adequate reproduction of the herd is imperative for efficiency and profitability of cow-calf systems. Basically, herd reproductive performance is determined by fertility of cows and bulls and the capacity of bulls in identifying and servicing cows in heat. If one of these factors is inadequate, reproductive rates will be significantly impaired. Therefore, beef cows and bulls need to be properly managed to ensure adequate cow-calf production efficiency.

Although a lot of attention is directed toward reproductive management of females (see other papers in the Reproduction Section), bull reproductive management is often overlooked. Infertility of a single cow results in one less calf, whereas infertility of one bull results in many fewer calves by impacting reproductive performance of all the cows that the bull was expected to breed.

The first step for proper bull management is to understand anatomy and physiology concepts of the bull's reproductive system. With this basic knowledge, producers and field personnel will be able to better comprehend and employ the tools available for enhanced bull reproduction.

Anatomy

Major structures of the bull reproductive tract are the penis, testicles, and the accessory organs and glands responsible for sperm maturation and transport, including epididymis, seminal vesicles, and prostate (Fig. 1). Some of their features and functions are:

Penis—Organ responsible for copulation and deposition of semen into the cow's reproductive tract. The penis is maintained inside the body of the bull by the

sigmoid flexure, an anatomical structure that prevents exposure of the penis to prevent injuries. During copulation, the musculature responsible for the sigmoid flexure (retractor muscles) relaxes and the penis extends and becomes exposed.

Testicles—Bulls have a pair of testicles that have two main functions: production of sperm cells (spermatozoa) and synthesis of testosterone, which is the male hormone. The testicles are located outside the body cavity of bulls and housed in the scrotum (a sac of skin containing sweat glands, muscles, and tissues to protect

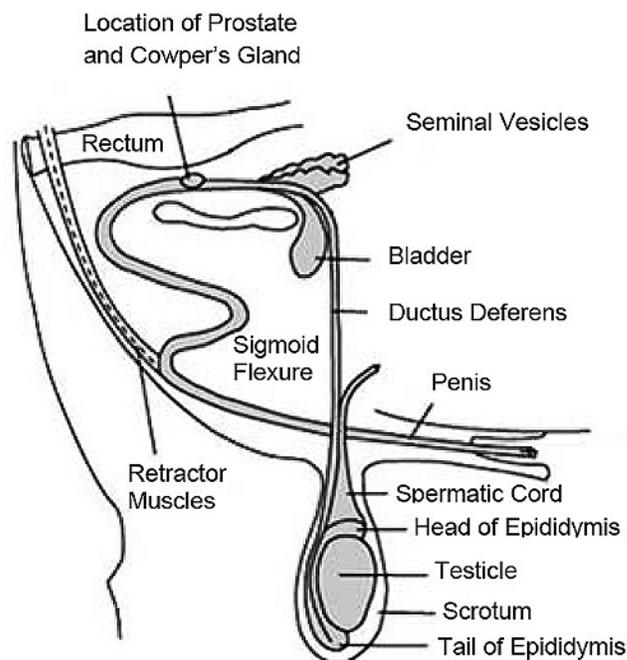


Fig. 1. Lateral view of the bull reproductive tract.