

Cattle Producer's Handbook

Reproduction Section

440

Reproductive Tract Anatomy and Physiology of the Cow

*Revised by**

*C. P. Mathis and R. Parker
Extension Animal Resources Department
New Mexico State University*

Understanding the anatomy and physiology of the cow's reproductive system is fundamental to good cattle management. Basic knowledge in this area will enable producers to do a better job getting cows rebred, especially if artificial insemination and estrous synchronization are employed. It will also enable producers to understand and better control reproductive diseases and calving problems.

Anatomy

The ovary is the primary female reproductive organ and has two important functions: (1) producing the female reproductive cell, the egg or ovum, and (2) producing the hormones estrogen and progesterone. The two ovaries of the cow are oval to bean-shaped organs that are one to one and a half inches long and located in the abdominal cavity (Fig. 1).

*Original authors were T. D. Rich and E. J. Turman, Animal Science Department, Oklahoma State University.

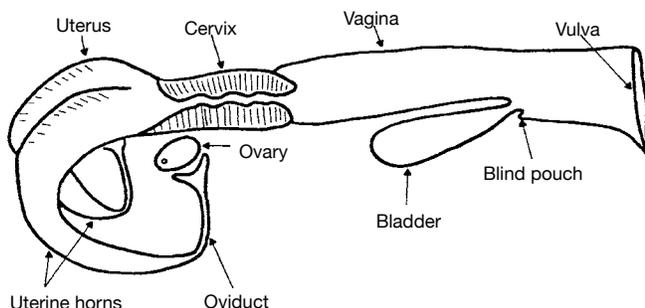


Fig. 1. The reproductive tract of a cow.

The secondary sex organs are a series of tubes that receive semen, transport sperm to the egg so it can be fertilized, nourish the fertilized egg (embryo), and expel the offspring. These organs include the vagina, cervix, uterus, uterine horns, and oviducts (also called Fallopian tubes), which have a funnel-shaped opening called the infundibulum.

The ovary produces the egg by a process called oogenesis. In contrast to the continuous process of spermatogenesis in the male, oogenesis is cyclic. This cycle (called the estrous cycle) has a characteristic length and consists of a definite sequence of events, both physiological and behavioral.

The ovary contains several thousand tiny structures, called primary follicles, that consist of a germ cell surrounded by a layer of cells. This germ cell has the potential to mature into an egg if the follicle completes development. Most of the primary follicles never develop. Rather, they die, are absorbed by the ovary, and are replaced by newly formed primary follicles.

The relatively few primary follicles that develop completely do so through a series of phases (Fig. 2). Many layers of cells are added to the single layer of cells surrounding the egg in the primary follicle, forming a central cavity.

As the follicle and cavity grow larger the egg becomes attached to the back side of the follicle (opposite the ovulation site) by a stalk of cells. As the follicle grows rapidly, the side opposite the egg bulges from the surface of the ovary and becomes very thin. Once the follicle reaches this mature state it is called a Graafian follicle. At ovulation, the thin portion ruptures to release the contents of the follicle, including the egg.