

**Virginia 4-H Dairy Quiz Bowl Team Study Materials**  
Section 6. Reproduction

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- Disadvantages of twinning in dairy cattle:
  - Reduced milk production during the lactation
  - Calving difficulties are more frequent
  - Abortion rates are higher
  - Twins are often weak at birth
  - Potential for a freemartin heifer
- Ninety-five percent of heifers born twin to a bull are sterile.
- Many hormones play a role in a cow's estrous cycle. Estrogen is at its peak at the onset of standing estrus.
- Spermatozoa produce lactic acid.
- The average gestation length for a Holstein cow is 279 days.
- Advantages of using artificial insemination over natural service:
  - Better disease control
  - Better record keeping
  - Easier to prove bulls
  - Genetic improvement
  - Less expensive than keeping a bull
  - Safety
  - Use of better bulls
- The number one reason for culling in US dairy herds is reproduction.
- Liquid nitrogen is used to freeze and store semen. The temperature of liquid nitrogen is -320°F.
- The fertile life of an egg after its release from the follicle on an ovary is 6 to 12 hours.
- Sperm live 24 to 30 hours after being deposited in the cow's reproductive tract.
- It takes sperm 6 hours to become capacitated (i.e., to develop the ability to fertilize the egg).
- Duration of standing heat is usually 2 to 12 hours.
- A cow should be inseminated 5 to 15 hours after the onset of standing heat.
- Parts of the cow's reproductive tract:
  - Vulva
  - Vagina
  - Cervix
  - Uterus
  - Oviduct
  - Ovary
- Signs of estrus in dairy cattle include:
  - Restlessness
  - Bellowing
  - Following and smelling another cow
  - Mounting other cows
  - Standing to be mounted
  - Discharge of clear mucus from the vulva
  - Vulva becomes red and swollen
- The most reliable sign of estrus is standing to be mounted.
- The normal range in the length of the estrous cycle is 18 to 24 days. On average, there are 21 days between heat periods in dairy cows.
- The most common cause of a cow not coming back into heat is pregnancy.
- It usually takes 40 to 60 days after calving for a cow's reproductive tract to return to normal.
- The normal birth position of a calf is front feet first with the head between the legs.
- The two main functions of the ovary are:
  - Production of ova (eggs)
  - Secretion of hormones essential for reproduction
- One hundred percent of the eggs that a mature cow has in her ovaries are present at birth.
- Fertilization of an ovum occurs in the oviduct. The fetus develops in the uterus after the ovum is fertilized.
- The two main functions of the testes are:
  - Sperm production
  - Testosterone production
- Follicular ovarian cysts are generally treated with Gonadotropin Releasing Hormone followed 7 to 10 days later with prostaglandin.
- The placenta is attached to the uterus in dairy cattle by maternal caruncles and fetal cotyledons (placentones).
- Milk progesterone levels are low during estrus.
- Artificial insemination began in the US in 1938.
- The first calf resulting from frozen semen was born in the US in 1953.
- Kamar® and Beacon™ detectors are used to detect heat or estrus.
- Frozen semen should be thawed in warm water (90 to 95 °F) to maximize the motile sperm.



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- The hormone prostaglandin causes destruction or regression of the corpus luteum.
- The incidence of retained placenta and metritis are highest in summer.
- The reproductive performance of a dairy herd is primarily affected by conception rate and heat detection efficiency.
- Most embryo transfers are conducted on day 7 or 8 after breeding.
- Three to five percent of pregnant cows exhibit estrus.
- Reasons cows don't become pregnant when the herd is bred by artificial insemination:
  - Failure to ovulate
  - Fertilization failure
  - Hormone imbalance
  - Poor quality semen
  - Failure to inseminate
  - Improper insemination technique
  - Heat detection errors
- Factors affecting a dairy herd's conception rate:
  - Heat detection accuracy
  - Herd (cow) fertility
  - Semen (bull) fertility
  - Technician competency
- Signs that a cow is near the time of calving:
  - Udder full
  - Vulva enlarged
  - Mucus discharge
  - Relaxation of ligaments at tail head
  - Restlessness