

Animal Reproduction

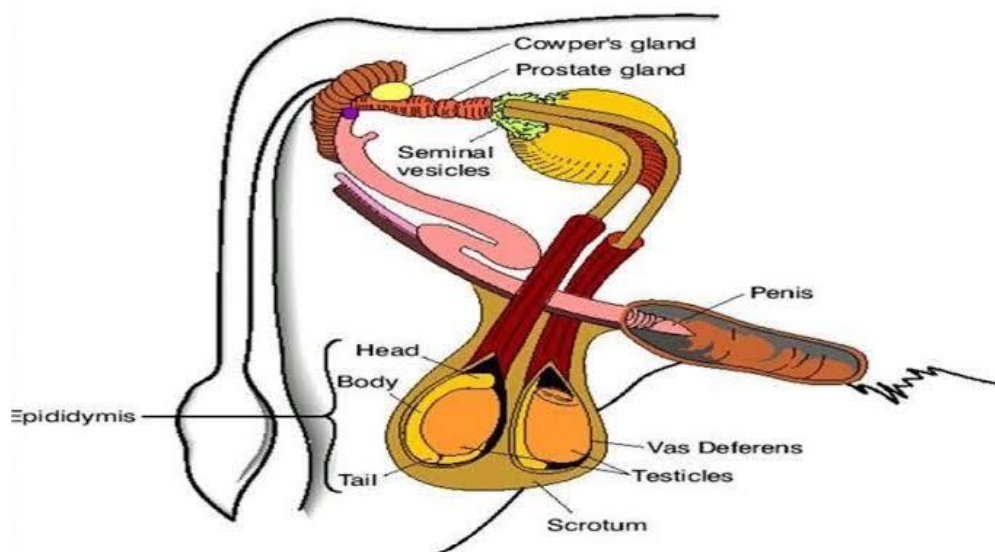
Topic – Animal Reproduction

MEANING OF REPRODUCTION- This is the ability of animals to give birth to young ones. This is aimed at ensuring continuity of life. The reproduction system includes all the organs and tissues associated with reproduction in farm animals

Farm animals reproduce by sexual means and are mostly **viviparous** because they give birth to their young ones alive but poultry bird on the other hand are **oviparous** because they reproduce by laying and hatching of eggs after incubation period

MALE REPRODUCTIVE SYSTEM

Reproductive Organs of the Bull



The male reproductive system includes the **testis** which produce the spermatozoa and sex hormone called testosterone which helps in the development of the male sex secondary characteristics. It is especially produced in the seminiferous tubules of the testes during meiotic cell division by a process called spermatogenesis. The testes are suspended or protected by the scrotal sac (scrotum) outside the abdominal cavity to help sperm cells to be produced at desired temperature. The **epididymis** ensures the storage and maturation of sperm cells in the testes. The testes are connected to **vas deference** which transports sperm from the testes to the uterus,

. The **accessory glands** (cowper's gland, seminal vesicle and prostate gland) are located along the urethra, they produce slimy alkaline fluid which helps the movement of spermatozoa, this fluid together with the spermatozoa results in the formation of sperm as well as removal of urine.

FUNCTIONS OF THE VARIOUS PARTS OF THE MALE REPRODUCTIVE SYSTEM 1.

TESTIS

They are located within the scrotum or scrotal sac. When stimulated by the hormone testosterone it secretes spermatozoa. Removal of the testes is called Castration. The spermatozoa are produced by the process of spermatogenesis.

2. SCROTUM

The scrotum houses the testes. It also regulates the temperature of the testes and when the day is cold, the scrotum shrinks (constricts) and when the day is hot, it drops or falls to a lower level. It does not have hair or very little hair so as to perform its function very well.

3. VAS DEFERENS

This is responsible for conducting or transporting of the sperm from the epididymis to the neck of the urethra. The removal of the vas deferens is known as vasectomy. This can only be done when the animal sexual characters have developed and may be to remove its poor quality. Vasectomy is safer than castration because the animal can still be stimulated but the sperm is not allowed to come down.

4. EPIDIDYMIS

The epididymis ensures the storage and maturation of sperm cells in the testes before it is being used or released.

5. SEMINAL VESICLE

This region secretes a fluid rich in food substances, this fluid helps in feeding the spermatozoa before fertilization takes place.

6. PROSTATE GLAND

This secretes a prostatic fluid which helps to inhibit urine formation during copulation and ejaculation.

7. COWPER'S GLAND

This also secretes the Cowper's fluid which is alkaline and helps to reduce the acidity of the sperm.

8. SEMEN

This is a mixture of the seminal fluid and the spermatozoa. Only about 25% of the quantity of semen ejaculated is spermatozoa the remaining 75% are the seminal fluids.

9. URETHRA

This is a narrow tract a urino-genital organ which helps to inject sperms into the vagina as well as

the removal of urine. The urethra ends externally in penis.

10. PENIS

This is the organ which is used to introduce the sperm into the vagina. When it stimulated, the arteries expand, the blood flows into the blood vessels thereby making the penis to be turgid that copulation can take place.

11. COPULATION

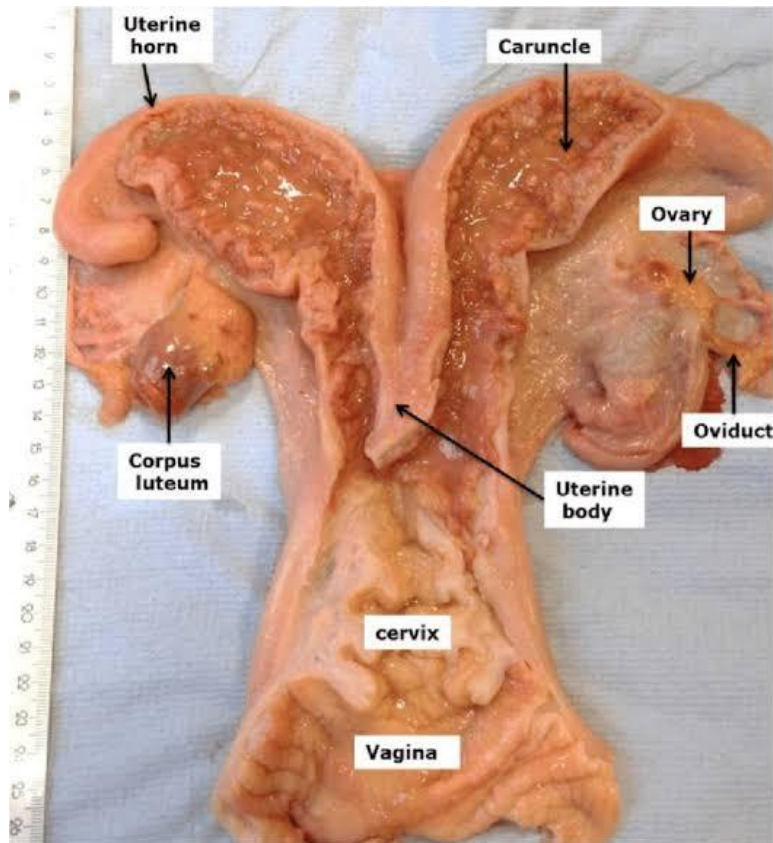
This is mating between the male and female animals.

12. EJACULATION

This is the release of the sperm by the male during copulation.

FEMALE REPRODUCTIVE SYSTEM.

REPRODUCTIVE ORGAN OF A COW



The female reproductive system

includes the ovaries which produce the ovum or ova (egg) enclosed by the graffian follicles and some hormones such as the oestrogen.

A mature egg or ovum when released from the graffian follicle in the ovary into the oviduct the process is called OVULATION.

As soon as the egg or ovum is released from the ovary, the female animal comes on heat and is the fusion of the male and female sex cells takes place in the walls of the uterus. The process is called IMPLANTATION. The development of the foetus takes place in the uterus. Below the uterus is the vagina which receives the spermatozoa during copulation. The female reproductive system end with the vulva an external opening.

REPRODUCTIVE SYSTEM IN BIRDS

The male bird has two testes located inside the body. They are connected to the cloaca with a narrow tube which ends as a raise papilla.

In the female, the single ovary produces ova (egg) in capsules attached to the ovary by short stalks. The ovary also produces the yolk.

The infundibulum receives the yolk released by the ovary. Albumen and chalaza (holds the yolk and germ cells in position) are formed in the magnum(takes 3 hours). The two shell formed in the isthmus(takes 1 hour), the egg shell is finally formed in the uterus(takes 20 hours)after which the egg is laid through the cloaca.

Fertilization of the egg takes place as soon as the egg enters the oviduct when spermatozoa are present. It occurs before the formation of the albumen.

TERMS ASSOCIATED WITH ANIMAL PRODUCTION

OESTRUS CYCLE: This is the interval from the end of one heat period to the beginning of another. It is under the influence of hormones. It varies from animals

Cow 20-21 days

Ewe 17-21 days

Sow 14-28 days

Doe (goat) 17-21 days

Doe (Rabbit) spontaneous

HEAT PERIOD: This is the period when the female animal shows signs of its readiness to mate. It is the period of ovulation and it varies in animals e.g

Cow 5-24 hrs

Ewe 35-36 hrs

Sow 40-48 hrs

Doe (goat) 40-50 hrs

SIGNS OF HEAT PERIOD

The vulva becomes large, red and swollen

This is undue noise making or grunting

A clear viscous secretion comes from the vagina which arouses and excites the male

Restlessness

Shows tendency to be ridden or mounted by another animal

Loss of appetite

Abnormal high temperature

Frequent urination

Standing still to be mounted

Frequent tail shaking e.g (goat)

MATING: This is also called coitus or copulation. It is also the terms when the penis of a

male animal is inserted into the vagina of a female leading to the ejaculation of the spermatozoa

TYPES OF MATING

There are two types of mating; they are Natural mating and Artificial mating

NATURAL MATING: This occurs when a male animal identifies a female animal on heat period and mounts the female for mating. Under natural type of mating there are methods e.g 1 flock mating where the male and female animals are allowed to move freely together and mate freely. 2 pen mating where very few number of males are kept with few number of females so that they can mate at any time the female is on heat e.g four males together with twelve females. 3 stud or hand mating where the males are kept separately to be mated with individual females when on heat period after which the male is taken away.

ARTIFICIAL MATING: This is called artificial insemination which involves the injection of spermatozoa artificially into the vagina of female animal on heat period

The sperms are collected from a male animal with desirable character such as spermatozoa is stored at 196 degrees centigrade under liquid nitrogen until it is used.

GESTATION PERIOD: This is the period between conception and birth of the young one. it is the period of pregnancy in animals. It is the period of swelling of the abdomen. It is the period of swelling of the udder, there is increase in life weight. It is under the control of the hormone progesterone (pregnancy hormone) and it varies in animals

Gestation period

Range

Cow=283 days

275-285 days

Ewe =114 days

112-116 days

Sow =150 days

145-155 days

Doe (goat) 151 days

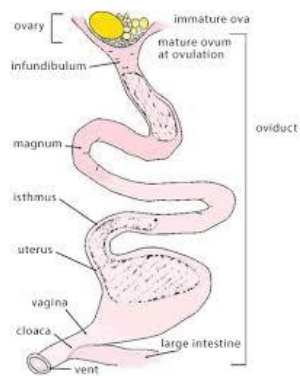
150-155 days

Doe (Rabbit) 31 days

30-31 days

LACTATION: This is the period of milk letdown. It is the period during which the female animal release milk from its udder immediately after parturition and thereafter. The milk is used to feed the young one, it is under the influence of hormone i.e. decrease in progesterone and increase in estrogen and oxytocin.

PROCESS OF EGG FORMATION

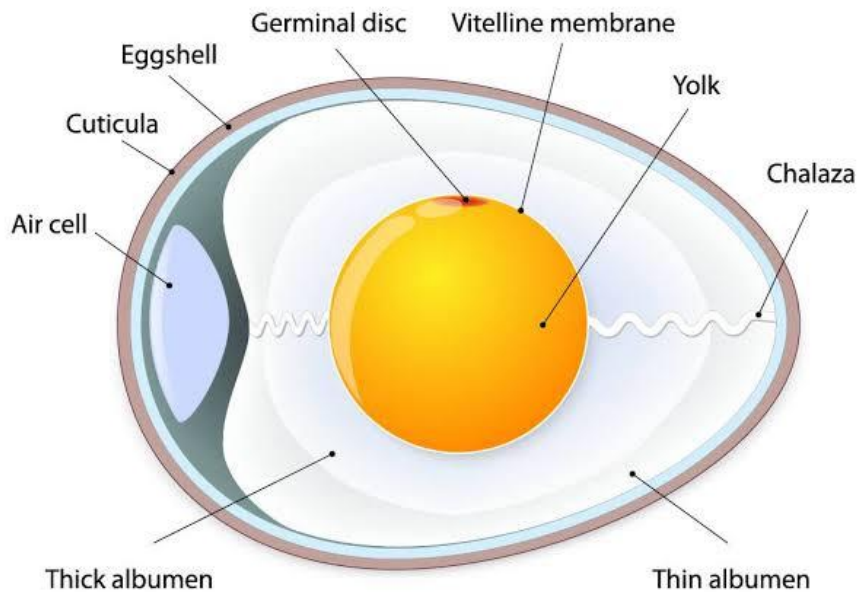


This process is controlled by hormones. The egg is formed partly in the oviduct. The yolk is secreted by the ovary and enclosed in the follicle.

The yolk increases in size by accumulating yolk materials carried from different parts of the body by blood stream. The germinal disk is attached to the top of the yolk. The follicle burst to release the yolk. The yolk release by the ovary is taken up by the infundibulum. The internal terminal part of the oviduct. Fertilization occurs here before the other components are added. However the complete formation of the egg is independent of whether the egg is fertilized or not. The egg stays 15 minutes in the infundibulum and travels to the magnum and part of the albumen is secreted on egg moves to the albumen is secreted on the egg, chalaza is also formed here, the egg moves to the isthmus and spends 75 minutes and the two egg shells membranes are formed, the shape of the egg is also formed here after which it moves to the uterus and spends 19-20 hours and the egg shells are formed from calcium carbonate secreted by glands of the uterus, mineral solutions are also added to the egg after which it moves to the vagina and stayed for a short time is laid through the cloacae. It takes almost 24 hours for a complete egg to be formed.

Diagram of an egg

CHICKEN EGG



MAIN REPRODUCTIVE HORMONES AND THEIR FUNCTIONS

Hormones are chemical substances that coordinate the activities of the body. They are secreted by ductless glands in the body and transferred through the blood to the targeted organ on which they exert their effect.

MALE REPRODUCTIVE HORMONES

Testosterone (Androgen)

Functions : It initiates spermatogenesis. It is responsible for the initiation of male secondary sex characteristics, increases libido, it enhances muscular and skeletal growth, it reduces fat deposition, sustains the life of sperm in the epididymis, it promotes the growth of accessory sex glands.

FEMALE REPRODUCTIVE HORMONES

Oestrogen- Functions- Stimulates the development of female secondary sex characteristics eg heat behavior, promotes the promotion of egg through oogenesis, it is responsible for preparing of the uterus living for the reception of the fertilized egg or ovum, it increases blood supply as well as the water content of the uterus, stimulates the growth of the duct system in the mammary gland (udder), induces the rapid multiplication of epithelium in the vagina, it increases ciliary activities and mucus secretion

Follicle stimulation hormone (FSH) It stimulates the growth of the ovarian follicle

Luteinizing hormone (LH)- It causes the rapture of the follicle and subsequent release of ova (ovulation). It stimulates the secretion of ovarian hormone ie oestrogen and progesterone.

Progesterone (pregnancy hormone)- It ensures the development of uterus and implantation of the fertilized ovum, it prevents the ripening of more follicle, causes the development of alveoli in mammary gland, ensures continuance of pregnancy.

Oxytocin- Aids the contraction of the female uterine muscles during pregnancy. It causes milk let down after birth, promotes transportation of spermatozoa in the female genital tract.

Relaxin- It causes the relaxation of the pelvic ligament during parturition for easy passage of the young ones.

Assignment

Define reproduction

Write the function of these hormones (a) Oestrogen (b) Progesterone (c) Relaxine

Describe the process of the egg formation

Write the gestation period for these animal (a) cow (sheep) (c) sow

Explain (a) heat period (b) Gestation period