

## COLLECTION OF SEMEN

Various methods of collection of semen have been devised from time to time. The older unsatisfactory methods have gradually been replaced by the newer modern techniques.

The three most common methods are:

- (1) Use of an Artificial Vagina (A.V.),
- (2) -by Electro-stimulation and
- (3) by massaging the ampulae of the ductus

diferences through rectal wall. Suitability of a particular method depends on the type and condition of a species, e.g., AV is applicable on most of our domestic animals but definitely not on poultry, where the massage method is the only practical solution to get ejaculation. For sheep and goat, apart from all the three methods as mentioned, collection of semen from the vagina of an ewe is also best done

at the time when the ewe is out of heat and its vagina is more apt to be dry and free *from mucus*. The ideal method of semen collection will be the one which is safe for the sire and collector, the semen obtained is really a representative of a normal ejaculate, free of contamination and lastly it is protected from thermal shock.

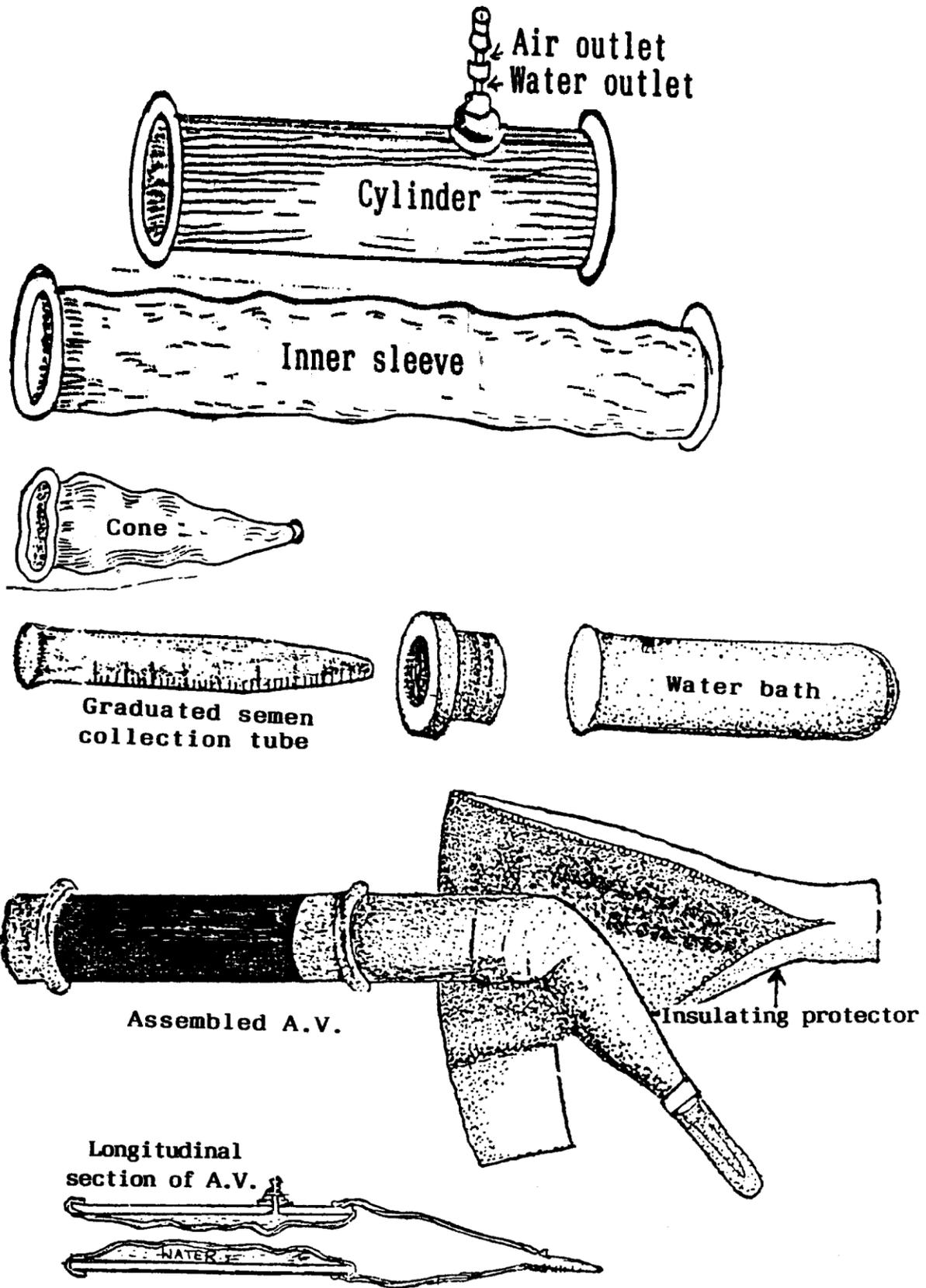
### Artificial Vagina Method (AV)

Semen collection by AV in Cattle and Buffalo It has been proved to be the best method and is now most commonly used. There are different kinds of artificial vagina for different classes of animals' conditions of

which are almost exactly similar to that of the natural vagina. The one for cattle and buffaloes consists of (i) an outer heavy rubber cylinder, (ii) inner sleeves of rubber, (iii) the semen receiving cone, (iv) semen collecting vial made of glass or plastic which may be graduated.

Prior to collection all these parts are cleaned, sterilised and assembled into artificial vagina. The inner sleeve is put into the outer cylinder and both the ends of inner sleeve are reflected over the cylinder forming a water tight space between them and water at 40 - 50 °C is filled in there. The cone along with the attached vial is then slipped over one of the ends of this water jacketed barrel and then tightly secured with the help of rubber bands. The vial and cone are then invaginated into the artificial vagina and 3" to 4" at the open end are lubricated with sterilised jelly. The temperature of the water to be taken depends upon the liking of the bull, and season of the year. The modern artificial vagina types are also provided with an airscrew along with the water screw, which can be used for blowing the air between the two layers to create the desired pressure. The temperature of the artificial vagina is more important and should always be checked before making the collection. Too high a temperature may cause injury to the penis and the bull may refuse to serve in future, whereas at lower temperature, there may not be complete ejaculation and the whole ejaculate may be contaminated with urine.

Prior to collection, bulls are usually allowed to become excited by bringing the bull to cows or other dummy when it will smell and also will make attempts to ride.



During collection, the artificial vagina thus assembled, is held at an angle of 55° with the horizontal plane of the cow or dummy. It is so because the penis of the bull enters the vagina of

the cow at that angle. When the bull mounts the penis is quickly guided into the artificial vagina with the operator's hand. Care is taken not to touch the exposed part of the penis, as this stimulates the bull to ejaculate. After the bull dismounts, the artificial vagina is taken off the penis and kept in an upright condition after releasing the pressure by draining water and air out of it. This allows the ejaculate to flow from the cone to the vial, which is then detached from the cone and taken to the laboratory for examination. The size of the AV to be used depends upon the development of the penis. The AV should be long enough to allow the ejaculate to be deposited near the mouth of the collection tube in order to reduce sperm cell losses from cells remaining on the collection funnel and, to prevent injury to the penis by entry into the collection tube. Generally mature bulls require an outer rubber casing 40 cm in length and 6.4 cm in diameter, while yearling bulls require a casing 30 to 35 cm long and 5.1 to 5.7 cm in diameter. In case of goat and sheep the outer tube should be about 20 cm long and 5 cm in diameter.

Advantages of this method

- 1- Practically the whole ejaculate is collected in uncontaminated and natural stage.
- 2- It is free from the extraneous secretions.
- 3- A sterile condition of the apparatus ensures disease control.
- 4- The viability of the sperm is better.
- 5- No female is needed if dummy is a success.

## Disadvantages of this method

- 1- Occasionally it is difficult to get the males to serve the artificial vagina.
- 2- The apparatus involved is slightly costly and requires technical hands. The following Precautions should be taken while collection of semen is made by using AV.
- 3- Protect the collection vial from sunlight by placing a black cover immediately after collection.
- 4- Avoid contamination of the semen from water, lubricating jelly or other harmful substances.
- 5- Avoid cold shock by providing adequate protection for the collection tube and funnel.
- 6-

## Electro-ejaculation

The technique was first adopted in 1952 by Batelli for collection of semen from guinea pigs. By this method ejaculation of semen is brought about by inserting a probe or electrode in sire's rectum and stimulating nerves of the reproductive system by gradually increasing voltage in rhythmic fashion with a rheostat for a short period. successful use requires skill, experience, patience and the knowledge of individual requirement of the stimulation. At present there are a number of electroejaculators in the market of the world, which are either operated only on battery, or battery-cum-electric transistorized circuits. The method is used on males of certain species where the use of AV is not possible not practical. The widest use of electro-ejaculator has been observed in obtaining semen samples from large number of bulls and

rams during examination for breeding soundness. The method is also used to collect semen from bulls for AI purpose when the bull is extremely slow in serving the AV or physically incapable of mounting. Modern models of electro-ejaculators consists of a single rectal probe equipped with bipolar electrodes capable of producing ejaculation by electrical stimuli of the vesicular glands, ampulae of the vas deferentia, accessory sex glands, and the hypogastic plexus. The method of semen collection in bull] is as follows:

- 1- At the beginning the rectum is washed with 6 per cent sodium chloride solution.
- 2- The probe is then inserted up to about 12 inches and held in a position of rectal floor.
- 3- Alternate current increasing in voltage gradually from zero to 5 volts and returning again to zero within every 5 to 10 seconds is initially -passed.
- 4- The subsequent stimulation made progressively higher so that at about fifth stimulus a maximum of 10-15 volts is reached. Erection and ejaculation occur at 10 to 15, volts when 0.5 to 1 ampere current is passed. The source of electric current is AC/220-250 volts/single phase/50 cycles.
- 5-

#### Advantages

1. Semen can be collected from males that are too young or old or unable to mount due too weak or injured legs.
2. No female or dummy is required for collection.

3. Less chance of contamination.

#### Disadvantages

1. The methods are highly technical and need considerable skill and practice.
2. The semen generally gets contaminated with urine.
3. Some males resist too much to this method and refuse collection.
4. Sciatic nerves are temporarily affected during the operation but is relatively minor if the electrodes are kept over the ampullar region.