



Artificial Insemination in Goats

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Introduction

The goat industry is now becoming an emerging aspect of our country. Its consistency, on the other hand, is strongly influenced by the seasonality of goat reproduction, which causes changes in the availability of final products. Reproduction in goats is described as seasonal; the onset and length of the breeding season is dependent on various factors such as latitude, climate, breed, physiological stage, presence of the male, breeding system and specifically photoperiod. In tropical regions, goats are considered continuous breeders; however, restricted food availability often causes prolonged anoestrous and anovulatory periods and reduced fertility and prolificacy. Different strategies of breeding management have been developed to meet the supply needs and expectations of consumers, since both meat and milk industries are subjected to growing demands for year-round production. Artificial insemination (AI) involves collection of semen from a buck and transfer of the semen to the reproductive tract of the doe. Does can be inseminated with either fresh semen or with commercially available frozen semen. In goat production, this technique has been

limited to mostly dairy goat herds. However, meat goat producers have shown interest in learning this technique to accelerate genetic gain in their herds.

Advantages of AI

- AI is the best way to spread elite genetic material throughout a population. Semen can be collected from top bucks, frozen, and then transported throughout the world where it can be utilized by large populations to facilitate progeny testing. Progeny testing involves breeding offspring to determine their genetic merit.
- AI helps producers to utilize their prize bucks that may be physically injured and unable to mate.
- AI allows producers to increase their herds without purchasing and maintaining bucks or losing them to predators, injury, or illness.
- AI is effective in controlling diseases.
- AI is an important breed preservation process.

Disadvantages of AI

- The technician must be well trained in the anatomy, function, and



regulation of the doe reproductive tract to manipulate the reproductive function and estrus synchronization.

- AI requires special equipment and facilities.
- It requires a great deal of time to check heat that is crucial for a successful process. On average, a doe's heat phase lasts for 12 to 48 hours.
- AI increases capacity to disseminate undesirable genes in a population.

The success of AI is dependent on:

- The appropriate timing of insemination in relation to estrus (heat) and ovulation (release of eggs)
- The ability to efficiently collect and cryopreserve (freeze) sperm from quality bucks
- The seasonality of goat reproduction

The Doe's Estrous Cycle

Goats are spontaneously ovulating, polyoestrous animals. The doe's estrous cycle is the interval between two estrus or heat periods that lasts an average of 21 days. The *estrus* or heat can last from 12 to 48 hours. During estrus does are receptive to being mounted by bucks. For artificial insemination, it is important to identify when a doe is in heat. Producers are encouraged to utilize teasers, usually a vasectomized buck to identify a doe in heat.

The signs of a doe in heat are:

- Swelling of the vagina
- Seeking the buck
- Standing for mating by the buck, teaser, or by other does
- Frequent urination
- Flagging tail
- Vocalization
- Presents vagina with mucus discharge that appears crystalline at

the beginning, but may have a cheesy appearance near ovulation time.

Steps to Conduct Intrauterine AI in Does with Frozen Semen

- Identify the doe in heat and certify the correct time for AI.
- For a better access to the doe's cervical os, place doe in the stand, with the back legs up, raising its back and leaving its front legs in support and its neck and head toward the ground.
- If needed, wash the doe's vulva with clean water to remove any dirt, and dry the area with a clean paper towel.
- Introduce the vaginal speculum and be sure to check for the appropriately-sized speculum. If needed, apply a nonspermicidal lubricant or petroleum jelly to facilitate the introduction of the speculum in the vagina. To introduce the speculum, open the labia of the vulva with one hand and with the other hand, gently introduce the thinner extremity of the speculum. As soon as it is introduced in the vagina, use a little pressure to orient the speculum toward and down to the vaginal floor. Use light source to visualize the cervical os. Be sure to distinguish the cervical os from the pleats of the vagina.
- Examine mucus consistency and, if needed, remove excessive vaginal mucus with the speculum.
- If it is time for AI Determine which buck the doe should be inseminated to before thawing the semen.
- Thaw the semen. Prior to thawing the semen, use a thermometer to



check for water temperature (95 to 98° F) before withdrawing the straw from the tank. Never lift a canister above the frost line of the tank. When the straw is removed with a forcep or tweezers from the tank it should be placed immediately in the thaw bath.

- Do not expose semen to direct sun light.
- Do not refreeze semen that has been thawed.
- Remove straw from the tank for periods as brief as 5 seconds. If you cannot remove the straw at the first attempt, lower the canister back to the bottom of the tank for at least 30 seconds before trying again. Stay out of direct sunlight because ultraviolet light has a spermicidal effect that will kill the sperm cells.
- Rapidly deposit the straw in the thaw bath to protect it from the sunlight.
- Warm the barrel of the straw gun.
- Dry the straw with a clean paper towel.
- Cut the correct extremity of the straw or the opposite side of the cotton plug.
- Insert straw into gun; be sure to protect the straw from the sunlight and extreme temperatures.
- Place the plastic sheath over the gun barrel.
- Return to the doe, introduce a clean vaginal speculum, and remove excess mucus.
- Introduce the gun into the vagina to the direction of the cervical os, passing the gun through cervical rings until it reaches the uterine lumen, the interior of the uterus. If the operator encounters resistance in

accessing the interior of the uterus, deposit the semen in the exterior of cervix, and make a note of this in your records.

- Remove the gun speculum and leave the doe for a few minutes in the standing position before releasing her.
- Observe if reflux of the semen to the gun occurred.
- If possible, use a microscope to check for semen left in the straw. Check for sperm motility.
- Release the doe from the AI stand gently. Record information from empty straw before discarding.

Conclusion:

Artificial insemination seems to have a practical application to spread superior genetic material throughout the animal population. Stored and freeze semen can be used for insemination and transported globally. Artificial insemination made it possible to keep records on each cow so that non-breeders could be recognized and discarded.

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