

Semen Storage and Handling



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Introduction

Turkey breeders invest significantly in breeder tom management (housing, lighting, nutrition, selection, biosecurity, etc.) so that only those superior males possessing the most economically advantageous genetic traits are used as semen producers. Optimizing the utilization of the genetically superior toms by maintaining reproductive fitness, maximizing semen volume and semen quality, and increasing the hen:tom ratio will decrease the cost of producing a poult. It is common practice to store semen after collection from toms raised in stud barns, or in all-male barns located on the same farm as hens. Proper semen storage and handling is essential to avoid any significant drop in fertility or hatchability. The following procedure is a practical guideline for the storage of top quality semen.

Equipment Needed

- Ice packs/ice cubes
- Pyrex beakers/plastic bottles
- Aluminum foil
- Thermometers
- Foam sponge
- Microscope
- Spectrophotometer
- Centrifuge
- Syringes
- Agitator

Cooler Preparation

Cooler should be at 33-37°F (1-3°C) before semen is placed in agitation. To reach this temperature, the cooler should be prepared no less than 1 hour before semen is placed inside. Storage temperatures above 40°F (5°C) result in decline in semen quality.

- Place frozen ice packs on either side of the interior of the cooler.
- Put ice cubes in the bottom of the shaker box.
- Dampen foam sponge with clean ice cold water (sponge

can be refrigerated to keep it at a cool temperature before being dampened).

- Pour water into the shaker box (to ½ inch level) over the ice cubes.
- As the ice melts the water is absorbed into the sponge.
- The sponge should rest on top of the ice cubes.

Semen Collection and Preparation

Calculate correct amount of semen needed for each breeder facility. Provide approximately 5% extra to each breeder farm for wastage.

Example

2000 hens at a dosage rate of 18 hens/ml.

$2000/18 = 111.1$ ml of diluted semen

5% extra ($111.1 \times 0.05 = 5.5$)

Total of 116.6 ml of semen to be delivered

- Add 2cc of extender to the collection vial prior to the collection of semen. It is important that the temperature of the diluent be equal to that of the semen before mixing to avoid thermal shock. Only semen of good quality should be collected (thick pearly white). Extreme care should be taken to avoid collection of feces, urates and or lymph fluid. If unavoidable amounts of foreign material have been collected, the sample should be thrown away. Upon stimulation, only two (2) cloacal strokes should be made to extract the semen. This will minimize injury to the reproductive organ and maintain a high sperm count.
- Swirl semen and diluent together gently during the collection process.
- Measure semen and add it gently into a storage container (glass or plastic).
- Add the remaining amount of extender (remember that 2cc of extender has already been added).
- Mix semen and appropriate diluent at a 1:1 ratio. A 50 ml storage container should not have less than 10cc of extended semen to prevent drying, and no more than 16cc's to maximize the surface area with oxygen exchange.

- Because the semen is highly diluted, the viscosity is low and care should be taken as it will be more apt to run out of the end of the AI straw. Therefore, caution must be practiced to inseminate the complete dosage into each hen.
- Sperm cell concentration measurements are calculated most commonly with the use of a centrifuge or spectrophotometer. Other methods used in the evaluation of semen are the live-dead stain, and motility. A good sample of concentrated semen should have a minimum of 8 billion sperm cells per cc, 85% normal cells and 90% motility.
- The goal to keep in mind when using any of these methods is to know the number of viable sperm cells inseminated and to determine the dilution rate and/or to assure the proper sperm concentration is being inseminated per dose per hen.
- Place aluminum foil, with punctured 1/8" holes, over the top of the storage container. Never completely seal the top of the semen container. Label in order of preparation and place in cooler.
- Never have storage containers touching the ice in the coolers.
- Good quality semen can be stored with no loss of fertility. Special diluents are made for longer term storage, so check with the semen extender manufacturer or distributor when holding semen for extended periods of time.
- Gentle agitation of semen during storage will ensure that sperm cells are properly aerated. Agitation also reduces clumping of sperm cells during storage.

Semen Delivery

Semen deliveries should be based on the following guidelines:

- Transfer semen storage containers into the breeder farm agitator.
- Check temperature of farm agitator 33–37°F (1–3°C).
- Fill out delivery form and record time prepared, hens/cc and volume.
- Notify AI team of semen delivery times.

Cleaning of Equipment

- Beakers should be cleaned with mild soap and water.
- All equipment should be thoroughly rinsed with distilled water.
- The agitator and AI tube filler machine must be cleaned and wiped down with disinfectant and stored in a dry area. Particular attention should be given to all parts coming in contact with semen.
- Sponges should be squeezed out and refrigerated.
- It is a good idea to rotate the use of several sponges, allowing them to dry out.

When preparing semen containers for the next day, rinse them with 1–2cc of extender, swirl and discard the liquid.

Important:

Ensure that all semen containers are dry. Semen and water do not mix.

Conclusion

The ability to store turkey semen, has given the turkey industry economic rewards and great flexibility. Stored semen is distributed in cool containers across counties, provinces/states, and countries with minimal or no loss in fertility or hatchability. To maintain this success consistent, clear and practical procedures for semen handling are essential.

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