



Radiance COF by Hilltop Farm's  
Royal Prince out of Elite El-  
gible Crescent Moon by Contucci  
bred via AI at Century Oaks  
Farm in Timberlake, NC.

# BREEDING WITH AI

## *An Introduction*

By Lori Roets

No stallion? No trailer? No problem. Thanks to artificial insemination, or AI as it is commonly called, breeding is available to more equine owners than ever before. Artificial insemination has become widely accepted in virtually all breeds. A notable exception is Thoroughbreds that can only be registered if bred by live cover.

Denise Rowe of Century Oaks Farm in Timberlake, North Carolina ([www.centuryoaksfarm.com](http://www.centuryoaksfarm.com)) has been breeding Hanoverians by AI for the past ten years. Denise has several mares but does not stand a stallion. By using AI, Denise is able to breed her mares to any stallion, anywhere. She can vary the stallion from year to year, or stay with one producing particularly nice foals. Safety, convenience and stallion efficiency are often cited as benefits of AI.

Communication between the breeding farms is essential when selecting a stallion and it behooves the mare owner to ask questions such as: what is the first cycle conception rate for the stallion (not

the pregnancy rate)? Is the stallion available when the mare owner wants to breed? Many stallion owners only ship on certain days of the week or during certain months of the year. Is the stallion in competition? If he is away from the facility, collection may not be available when semen is needed. What is the notification requirement – beginning of heat or only when a shipment is required? Failure to pay attention to these details can cause a mare owner to miss a heat. Too many mistakes and the entire breeding season can be missed.

Once a stallion is selected, a breeding contract is executed between the mare and stallion owners. Stallion owners receive two separate fees. The stud fee, ranging from a few hundred to hundreds of thousands, pays for the right to breed to the stallion. The collection fee covers the cost of obtaining the semen and shipping it to the mare owner. A stud fee is paid once per breeding season and typically carries a live foal guarantee. A collection fee is paid for each individual shipment. For example, if it were necessary

to inseminate a mare on three heats before she becomes pregnant, three collection fees would be paid. Collection fees range between \$300-\$500 per collection.

There are many different collection techniques, but the breeding mount (also referred to as a "phantom" or "dummy") or ground collection using a handheld artificial vagina or manual stimulation is most common. Some breeding mounts are equipped with an artificial vagina, but many stallion owners still prefer to use handheld collection devices with them to increase the safety of the process.

Once semen has been collected, it must be handled carefully. An incubator is used to maintain the semen, and everything that will come in contact with it should be as close to body temperature as possible until it has been mixed with semen extender, a milk or egg-yolk based product – with or without antibiotics – which helps preserve the longevity of the semen for shipping.

Semen may be shipped frozen or cooled, depending on how well the stallion's semen ships and the distance which it must travel. For example, cooled transported semen can generally be used throughout the United States, but to breed a U.S. mare to a European stallion only frozen semen would be viable. However, Dr. Michael Harry, a Fayetteville, Tennessee veterinarian, says, "Only about 15% of all stallions nationwide breed successfully

with frozen semen."

As soon as the stallion is collected, a tiny sample of raw semen is extracted for evaluation and the remainder is mixed with extender. Breeders doing on-farm AI (where they have both the stallion and the mare) have a choice of using raw semen or using extender to minimize concerns with temperature shock. Stallion owners must experiment with a variety of extenders prior to shipping to determine which provides the best motility at 24, 48, and 72 hours in order to maximize the chances of conception when the semen is infused in the mare. Each stallion reacts with extender differently and may change over time.

Photo: Courtesy Hamilton Research



The Equitainer II tube style semen shipping container.

The raw semen sample is evaluated for sperm motility, velocity and concentration. The minimum shipping dose is considered to be one billion sperm so that, given a 50% die off rate, at least 500 progressive motile sperm (PMS) remain.

Semen can be packaged in baby bottle liners sealed with several elastic bands or in specially designed centrifuge tubes. The package(s) are then placed in a shipping container, like the Equitainer, designed to maintain the proper temperature.

The process for packaging frozen semen is similar but infusion doses must be placed in individual straws and stored in a specially designed liquid nitrogen storage tank. Care must be taken during

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transport and thawing to preserve the integrity of the semen.

Once the mare's veterinarian receives the shipment of semen, time is of the essence, for with each passing hour the viability of the sperm declines. Denise Rowe says, "The vet plays a critical role and affects the economics of breeding. Having a vet who is skilled in reproduction and is committed to inseminating the mare when it needs to be done rather than when it is convenient is essential to success. It can make the difference between having a breeding take on the first try and having to order a second shipment of semen. Also, synchronizing the cycles of your mares can help save you money, by enabling you to maximize the work done on a single farm visit."

Over his 33 years of experience, Dr. Harry has, on average, 600 mares a year under his care, with about 90% of them bred via AI. Dr. Harry says, "Mares are 55% reproductively efficient as compared to cattle which are closer to 70%. Due to factors like uterine tone, prior infections or fertility, on average it will take 1.6-1.9 heat cycles per pregnancy – or stated differently – 65-70% of mares will be able to get pregnant in one cycle."

The process of inseminating the mare is straightforward. The mare's tail is wrapped and the perineum is washed with soap and rinsed thoroughly with water. Using a small amount of non-spermicidal lubricant and a sterile palpation sleeve, the tip of the semen filled insemination syringe is guided approximately ½-1" into the uterus, the plunger on the syringe is depressed and the semen is deposited into the uterus. If multiple doses of semen were provided, a second dose can be given 24 hours later, assuming the semen is still viable.

Dr. Harry, like most vets, recommends ultrasounds at 14-16 days after insemination to determine if the breeding was a success. If not, this allows time to prepare to try again on the next heat.

The key to successful breeding through artificial education is being well informed. Many universities, such as Colorado State and North Carolina State University, offer short courses in equine reproduction. Another outstanding resource is [www.equine-reproduction.com](http://www.equine-reproduction.com), with a wealth of information including books, articles and links to a variety of reproductive resource providers. ■

Freelancer Lori Roets writes a regular equine column as the Charlotte Equine Examiner, available at [www.examiner.com/](http://www.examiner.com/) Charlotte. Email her at [lroets@yahoo.com](mailto:lroets@yahoo.com).



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