

# How to Collect Semen from Stallions While They Are Standing on the Ground

Barbara D. Forney, MS VMD and Sue M. McDonnell, PhD

Semen can be collected from most stallions standing on the ground. Either an artificial vagina or manual stimulation can be used. This can be especially useful for safe collection of semen from disabled stallions that are unable to mount or at risk of falling during mounting. It is also useful for certain management situations where a mount mare or dummy mount is not available. Relatively little training or practice are necessary for most stallions or for the stallion handler and collection technician. Some stallions can be trained to respond to conditioned stimuli so that semen can be collected in their stall without a stimulus mare. Authors' address: Equine Behavior Laboratory, University of Pennsylvania School of Veterinary Medicine New Bolton Center, 382 West Street Rd., Kennett Square, PA 19348. © 1999 AAEP.

## 1. Introduction

There are occasions in practice when we would like to collect semen from a stallion, yet it may be difficult or dangerous to allow the stallion to mount a mare or a dummy mount. Examples include disabled or injured stallions (with neurologic problems, hind end or back problems; after colic surgery; or with painful feet, back, neck, or knees), or in instances when an appropriate mount mare or dummy mount is not available. In this presentation, we will show two techniques for collecting semen from stallions while they remain standing on the ground. The first technique uses an artificial vagina (AV) and the second technique uses manual stimulation of the penis. The first technique may be a little easier to learn initially. The second may take a little more practice for the technician but has the advantage of requiring only a disposable nonspermicidal plastic bag to collect the sample. Each of these methods will be demonstrated using videotape.

## 2. Materials and Methods

Depending on the stallion's libido, it may be easier to start the stallion by using an estrous mare as the stimulus. Either initially or once experienced, some stallions will achieve an erection in response to a pregnant, anestrous, or diestrous mare, particularly when presented at a distance. Some stallions quickly learn to respond without a mare, using conditioned stimuli such as estrous mare urine, a specific conditioned auditory cue, or other situational cues. When using a mare to stimulate arousal of the stallion for ground collection of semen, best results are achieved when the mare is positioned so that the stallion becomes adequately aroused, but not close enough to distract the stallion from thrusting on the ground or so close that the stallion tries to mount the mare. For ground collection the stallion needs to lower his head to balance himself during thrusting. For the first few attempts or collections, the stallion may tend to step

---

## NOTES

forward or lift his front feet during thrusting. We have best results simply arranging the breeding area to accommodate the movement, rather than trying to restrain the stallion in place. The handler can also stabilize the stallion somewhat by applying gentle pressure with a hand on the near side shoulder of the stallion. Once experienced, even severely disabled stallions seem to “plant” themselves, find their balance, and efficiently ejaculate with similar number and strength of thrusts as would occur if mounted. Most do best with minimal head restraint and without a bit or chain through the mouth.

#### A. Ground Collection Using an AV

For ground collection using an AV, we find the Missouri style most useful because it is light and easily balanced, but any model can be used. For training, we typically start with a very warm, full, well-lubricated AV (50°C lumen when applied to penis). A field test for AV temperature is just about as hot as you are comfortable leaving your arm in the lumen for 5 seconds. The stallion is then teased until he has an erection and appears ready to mount. The AV technician approaches the stallion at the shoulder, alerts the stallion of the approach by running a hand along the stallion's side, and then slips the AV onto the stallion's penis. If the stallion does not immediately thrust, manual pressure is applied at the base of the penis and the AV gently nudged toward the base of the penis to encourage thrusting. Full stroking movements of the AV usually are unproductive and actually appear to discourage some stallions. With 6–10 well-organized pelvic thrusts, the stallion typically ejaculates. If the stallion does not ejaculate on the first try, each successive attempt brings more organized and persistent effort toward ejaculation.

#### B. Ground Collection Using Manual Stimulation

When collecting semen using manual stimulation, we use disposable plastic bags, which can be secured to the distal shaft of the penis with a loose band of tape (around the bag, not the skin). Plastic sleeve mitts (8 × 22 in) are available from Nasco, but it is important to check that the bags are nonspermicidal, as batches can vary. Another alternative would be to use a disposable AV liner. These are nonspermicidal, but more expensive. Some of the heavier plastics used for AV liners appear “off-putting” to some stallions. Thin film rectal sleeves are usually nonspermicidal, lightweight, and strong. The bag is attached with about 6–8 inches hanging below the end of the penis (maintaining a clean receptacle). Excess air is expelled from the bag to prevent “popping” of the bag as the horse thrusts. Some stallions respond to manual stimulation alone, but most learn quickest if hot compresses are applied with each hand. Disposable thin cellulose sponges (6" × 6") available at discount department stores can be used for the hot compresses when performing manual stimulation. The compresses are dipped

into a bucket of clean hot water (55°C) immediately before application. When the stallion is aroused to a level of mount readiness, the compresses are wrung out, and placed over each palm. Immediately, the left hand is cupped over the glans penis. It is unnecessary to squeeze with the left hand as it is functioning as the cranial wall of the vagina. Typically, thrusting begins as light pressure with the warm compress is applied against the distal glans. With a compress in the right hand, the base of the penis is then grasped with steady circumferential pressure (firm handshake, no stroking). With each thrust the right hand is gently squeezed. This hand functions as the vulvar muscles, which in the mare contract with each thrust. For most stallions, this is adequate stimulation to elicit thrusting and ejaculation. As ejaculation commences, the semen is directed into the distal (clean) portion of the plastic bag. The bag is pinched off proximal to the semen and taken to the lab.

### 3. Results

Our records (SMM) include over 500 different stallions that have ejaculated reliably with these techniques. This study has involved more than 100 different technicians. Approximately 30% of these stallions have ejaculated at the first session (within one to ten minutes) with either manual or AV stimulation. Of those stallions with moderate to high levels of arousal, over 80% have ejaculated with less than 30 minutes total training time. Some stallions with disabilities have required more training time, but overall most stallions have achieved reliable success within less than three 15-minute sessions with an experienced technician and handler, and within five sessions with novice handlers and technicians. Several farms in our consultation practice use manual or AV ground collection routinely for all stallions on the farm.

Once a stallion has ejaculated on the ground, it may go through a brief period in which it tends to thrust during washing of the penis or before the AV or the plastic collection bag is in place. With experience, most stallions appear to distinguish washing from semen collection and do not thrust early. Best results in teaching a stallion to wait have been achieved by using cooler wash water and by gently deflecting the penis downward (away from the belly). We find it counterproductive to physically or verbally punish the beginner for early thrusting. A common question concerns whether stallions exposed to ground collection of semen learn to ejaculate “on their own” (without the AV or manual stimulation). Generally, this has not occurred. Also, other than with severely disabled stallions, we have had no difficulty returning an experienced ground collection stallion to mounting for breeding or semen collection.

Except with rough handling, most stallions do not kick or otherwise show resentment of the AV, the plastic collection bag, or manual stimulation. Standing at or just behind the shoulder, with contact to the

side of the stallion, affords some safety for the collection technician.

Manual stimulation on the ground (or even when mounted) has been used to fractionate ejaculates. An experienced operator familiar with the sequence and pattern of the stallion's ejaculatory pulses can usually easily squeeze off the plastic bag after any number of jets.

The most common practices which appear to deter some stallions include: stroking the hands or the AV along the shaft; squeezing too firmly on the glans or base of the penis; using cool AV or compresses; overhandling the stallion at the head or mouth; and not allowing enough room to accommodate some forward steps by the stallion during thrusting.

#### 4. Discussion

Ground semen collection with an AV has been used for decades, mostly for disabled stallions. Drs. W.L. Cooper and R.M. Kenney<sup>a</sup> describe using AV ground collection for a disabled stallion early in 1980. They employed a teasing wall through which the stallion could lean to interact with a stimulus mare and support himself standing on the ground during thrusting. At that time it was thought that stallions required pressure against their chest to settle into thrusting adequate for ejaculation. Crump and Crump<sup>1</sup> originally described manual stimulation ground collection, a technique that they used for routine semen collection from a large number of stallions in a transported and frozen semen operation which began over 30 years ago. They typically do not use hot compresses, just the hands. In cold weather, they warm their hands by holding a plastic bottle of hot water just before approaching the stallion. The Crumps also typically train stallions to respond to conditioned stimuli in their stall, eliminating the need for teasing with a mare or moving the stallion out of his stall. These stimuli include a swab of estrous mare urine, the sound of

the plastic bag crinkling, the approach of the technician, and specific voice commands. McDonnell and Love<sup>2</sup> reported similar semen characteristics and training time for manual stimulation on the ground and traditional artificial vagina (mounted) techniques. They also reported that stallions easily can switch back and forth between techniques—ground, mounted, AV, manual, semen collection; most between ground semen collection and natural service.

For certain stallions and situations, ground collection can be done successfully and safely by a single person. Many farms use cross-ties or a single tether that allow the stallion to lower his nose nearly to the ground during thrusting, as for a handler on the head of the stallion. With well-mannered and with severely disabled stallions, we have worked alone safely without stallion restraint. Some farms routinely do ground collection in the stallion's stall. If a stimulus mare is needed, she can be an adequate stimulus when placed in an adjacent stall.

In summary, ground semen collection can be useful for safe collection of semen from disabled stallions that are unable to mount or are at risk for falling during mounting. It is also useful for certain management situations where a mount mare or dummy mount is not available. Although some farms employ this method routinely with normal stallions, it is not likely to replace traditional semen collection. Relatively little training or practice are necessary for most stallions or for the stallion handler and collection technician.

#### References and Footnotes

1. Crump J, Crump J. Stallion ejaculation induced by manual stimulation of the penis. *Theriogenology* 1989;31:341-346.
2. McDonnell SM, Love CC. Manual stimulation collection of semen from stallions: training time, sexual behavior and semen. *Theriogenology* 1990;33(6):1201-1210.

<sup>a</sup>RM Kenney, WL Cooper, personal communication.