



UNIVERSITY OF ILLINOIS
EXTENSION

Donkeys are Different: An Overview of Reproductive Variations from Horses

Debra J. Hagstrom, M.S., Equine Extension Specialist, University of Illinois
Written: January, 2004

In the world today it is believed there are approximately 44 million mules and donkeys. These two groups of equids are currently receiving a lot of attention as recreational animals in the United States. They very well may be the fastest growing part of the recreational equine industry. Mules in particular can be found doing everything from trail riding and packing, to dressage, racing, jumping and western pleasure. Donkeys, in many instances, are family pets and of course are a necessary ingredient in the production of mules.

Though commonly called a donkey in North America, ass is the correct name for members of *Equus asinus*. The name donkey comes from the old English word dunkey meaning an animal that is grayish-brown in color. A male donkey is referred to as a jack and a female donkey is called a jenny or jennet. Donkeys fall into three basic size ranges. Mammoth donkeys are those that at maturity stand more than 56 inches at the withers. Those donkeys that are less than 36 inches at the withers at maturity are referred to as miniatures. Standard donkeys fit in between the mammoths and minis. Some people divide this size group into small standards (36"-40"), standards (40"-48"), and large standards (48"-56").

The domestic horse has 64 chromosomes while the domestic donkey has 62. The resulting hybrid offspring of the mating of a horse to a donkey is an animal with 63 chromosomes. When a female horse (mare) is mated to a male donkey (jack), a mule is the result. The reverse cross, a female ass (jennet) mated to a male horse (stallion) is called a hinny. Each of these hybrids come in both sexes but is considered to be sterile due to the incompatibility of the maternal and paternal chromosomes. Despite being infertile, the female mule (molly) and female hinny do cycle, although it is typically extremely variable and erratic. Similarly, though the male mule (john) and male hinny do not produce spermatozoa they do produce testosterone and thus will display stallion-like behavior.



Donkeys are Different: An Overview of Reproductive Variations from Horses

Debra J. Hagstrom, M.S., Equine Extension Specialist, University of Illinois
Page 2 of 5, Written: January, 2004

There are of course similarities between donkeys and horses, being that they both belong to the same genus *Equus*. Nevertheless, there are some significant differences, particularly when discussing reproduction. The important differences in the male will be discussed first. Jacks typically have larger testicles and a larger penis than stallions. Though this seems like nothing more than an interesting tidbit, it is important to remember when castrating donkeys and mules. There are many references suggesting that donkeys and mules have a greater tendency to bleed after castration. It is believed that the larger testicles result in larger blood vessels supplying the testicles and thus a greater amount of tissue to remove during castration and a subsequent greater chance of blood loss. As a result, it is not recommended that a standing castration be performed on these animals. Additionally, some veterinarians prefer to use an emasculation tool that has a crushing action above and separate from the cutting surface to minimize the chance of bleeding. Furthermore, many donkeys have a thicker scrotum and consequently larger blood vessels in the scrotal tissue. So, for those veterinarians that cut off the bottom of the scrotum as part of the castration procedure, the risk of scrotal bleeding is increased as compared to horses.

Many donkey breeders are frustratingly aware of one peculiarity of jacks, which is the added time needed for them to achieve erection and ejaculation compared to horses. Experienced jacks usually need five to thirty minutes to complete the breeding act, while most stallions complete the act in ten minutes or less. It can take an extremely long time for a jack to cover a female, even when dealing with older jacks and breeding them to jennets. Some jacks may take hours to cover a female or never complete the breeding act at all.

Breeding a mare is not a natural, instinctual act for most jacks. Given their low libido, young inexperienced jacks and jacks that have not been raised with mares can be very challenging to use as breeding animals. Of course there are always exceptions, but generally a jack that has not been raised around horses will not be interested in breeding mares. Though no specific research has been done to investigate this problem, there is much anecdotal evidence. It is



Donkeys are Different: An Overview of Reproductive Variations from Horses

Debra J. Hagstrom, M.S., Equine Extension Specialist, University of Illinois
Page 3 of 5, Written: January, 2004

commonly known among donkey and mules breeders, that if a jack is raised with donkeys, mules and horses he will not naturally want to breed mares. However, if a jack is brought up in a "horse" environment by being separated from donkeys and mules at weaning and raised with horses he will have a much stronger affinity for mares. It has also been observed that in situations where more than one jack is on a farm, once one breeds a mare, the other jack(s) will often follow suit in a rather short period of time. Because a jack's interest in mares has to be cultivated so carefully, it is very rare to find a jack that will readily cover both mares and jennets. Therefore, it is recommended that separate jacks be used to breed mares and jennets. If you are interested in breeding a jack to both species you should consider artificial insemination. As with stallions, jacks can be trained rather quickly to collect with the use of an artificial vagina. Donkey semen can be handled similar to that of the stallion, using the same extender and storage techniques. Donkey semen can also be frozen for use at a later date.

There are both anatomical and cyclical differences seen in jennets compared to mares. For the horse, the average length of gestation is 335-345 days while in donkeys it is 360-375 days or more. Normal donkey foals have reportedly been born at 10 ½ months up to 14 months of gestation. The estrous cycle of jennets ranges from 23-30 days, whereas the mare has a slightly shorter cycle of 21-25 days. Additionally, jennets usually have a heat period that averages six to nine days. This can be substantially longer than what is seen in mares, as their heat may be as short as three days or last up to eight days. Ovulation in jennets occurs five to six days after the onset of estrus, whereas mares ovulate 12-24 hours before the end of estrus. Additionally, foal heat begins five to 13 days postpartum while mares don't typically begin foal heat until at least seven days after foaling. As a whole, jennets have stronger maternal instincts than mares and are exceedingly protective of their foals especially within the first few weeks of birth. Consequently, they are likely to be too upset by the presence of a jack to stand for breeding during foal heat in a live-cover breeding program. On the second or third heat after foaling, however, they are typically more relaxed, showing less concern for their foal and more interest in the jack.



Donkeys are Different: An Overview of Reproductive Variations from Horses

Debra J. Hagstrom, M.S., Equine Extension Specialist, University of Illinois
Page 4 of 5, Written: January, 2004

Donkeys tend to be more fertile than horses, having an average conception rate of 78% while mares average 65%. Furthermore, multiple ovulations are much more common in donkeys than horses. As a result, twinning occurs more frequently, especially in mammoth and standard donkeys. Researchers have found the incidents of twins to be as high as 40% as diagnosed via ultrasound at day 21 of pregnancy in small herds of jennets. Management of twin pregnancies in donkeys is similar to that of mares in that reduction to one embryo is attempted. If a veterinarian's attempt to manually crush one embryo is unsuccessful often the entire pregnancy will then be aborted. Just as mares have complications with carrying twin pregnancies to term, donkeys also experience like problems with twins.

Jennets have a longer cervix than mares, however, it is smaller in diameter. This, along with the fact that the donkey cervix protrudes into the vagina farther than in horses, may make artificial insemination more difficult than in mares. Jennets also have a high incidence of cervical adhesions, which is believed to be part of the reason donkeys have a more difficult time giving birth than mares. Foaling managers should remember that dystocia is more probable with jennets and they should be prepared to assist in a difficult birth to help ensure the delivery of a live foal.

Jennets are less likely to need a Caslicks procedure to prevent wind sucking and contamination of their vagina with feces. Anatomically, a jennet's pelvis is more sloped downward from front to back. This leads to the vulva being tipped at a more desirable angle so that the bottom of the vulva is more cranial in orientation than the top of the vulva. This slope also makes them less likely to have trouble with pooling urine in their vagina. However, it seems to make rectal palpation more challenging than in mares. Additionally, donkeys tend to have stronger rectal contractions. These factors seem to make it more difficult to detect early pregnancies by palpation.



Donkeys are Different: An Overview of Reproductive Variations from Horses

Debra J. Hagstrom, M.S., Equine Extension Specialist, University of Illinois
Page 5 of 5, Written: January, 2004

Heat detection is normally not difficult with jennets as they usually make it very obvious when they are ready to be bred. It is common for just the sound of a jack braying in the distance to prompt them to display signs of estrus. Jennets share some of the typical signs of estrus with mares including frequent urination and assuming the breeding stance with their hind legs spread apart. They will also lay their ears back and display the characteristic submissive chewing motion with their mouth. Jennets are also more vocal than mares during their heat period. They will even exhibit these signs of estrus in the presences of other jennets, especially if another female is in heat as well. Additionally, jennets often ride each other during estrus like cows, which is rarely seen among mares.

Although this article's focus has been the reproductive habits of donkeys, there is an important side note that must be mentioned for people interested in producing mules. It is very common for mares to find it incredibly upsetting to be approached by a braying jack. Breeders often tell stories about mares not wanting to stand for mounting by a jack even though they are showing extremely strong heat. It is not natural for a mare to allow a jack to breed her. In her attempts to successfully dissuade a jack from mounting, a mare could seriously injure the jack.

Therefore, it is advised that restraints be used on the mare to protect the jack, the handler(s) and the mare. Restraints may include twitches, breeding hobbles, a breeding chute, chemical restraints or any combination thereof to facilitate the natural cover of a mare by a jack in a safe manner.

Breeding donkeys, either to perpetuate the species or to create mules can be an interesting and exciting endeavor. In some areas of the country it has even proven to be quite lucrative. However, to be safe and successful it is important to become educated about the reproductive idiosyncrasies of donkeys, in addition to the challenges of breeding donkeys to horses.