Horse Breeding: Balancing Breed & Specific Goals with an Emphasis on Soundness

Recent tragic events, like the breakdown of the race horses Eight Belles and Barbaro in highly publicized races, have raised many questions regarding the causes of these tragedies. Many factors, including training techniques, medication rules, and track surfaces have been and will continue to be analyzed and discussed. But questions have also arisen regarding the genetics and breeding of these horses. As an equine veterinarian who sees a large number of horses each year, I see some firsthand examples of what both thoughtful and thoughtless breeding has yielded.

Over the years, the Thoroughbred breed has changed body type. The old style horse was taller and lankier, more of a distance runner. Today's horses are more heavily muscled, broad-chested and smaller boned. These horses may not have the skeletal structure to support the huge forces generated at high speeds. There are questions about racing statistics and how they relate to durability and soundness. Breeding stallions today on average have had fewer starts than counterparts from the past. The number of their progeny that make it to the track is smaller. The average number of races run by race horses in the country has decreased.

All of these indicators may show a trend toward a less sound, less durable animal intended more for a brief flash of stardom than for long term soundness. The bottom line is that breeding and genetics must be considered as part of the approach to reducing the number of this sort of tragedy.

Quarter Horses have suffered the effects of our intense selection for arbitrary characteristics at the cost of functional conformation and longevity. The well-known QH

stallion “Impressive” sired numerous massively muscled halter horses that repeatedly won in the show ring. Unfortunately, he also passed on a gene that coded for a defective muscle cell. This gene became very prevalent in halter horses, and resulted in the disease called Hyperkalemic Periodic Paralysis (HYPP) a/k/a “Impressive Syndrome” that was a fatal or debilitating disease for many horses.

More recently, HERDA (Hereditary Equine Dermal Asthenia or Hyperelastosis cutis) became prevalent in western performance quarter horses strongly line-bred from Poco Bueno stock. HERDA results from defective connective tissue underlying the skin. The effect of this disease is very elastic skin, which pulls and tears away from the underlying tissue. In this case, it was a matter of line breeding closely related horses until the prevalence of this recessive gene became great enough that the disease became an undeniable problem. Today, genetic testing allows breeders to detect carriers of both of these genes so to avoid using these horses in their breeding programs.

It is commonly said that “the foot and bone has been bred out of the Quarter Horse.” In certain lines, this is undoubtedly true and is evident in other breeds as well. A large percentage of American Quarter Horses today no longer have a job. They live standing in a stall or turnout and are fed twice a day. Some of them are shown, and a relatively small number are used as performance animals.

Due in part to this change in use, many horses are now bred for arbitrary characteristics that have no bearing on soundness, conformation or durability. Many are large bodied, heavily muscled horses with small feet. Cutting horse lines tend to be small horses with very light bone and joints that are not well suited to the pounding that they must endure. Some Arabian lines have been bred for elegantly refined heads and necks, while the rest of their skeletal structure has been deemphasized or simply ignored.

For each breed, there is opportunity for reflection on the good and bad that has been gained through selective breeding. Obviously, there are foals being born today that are great representatives of each breed. However, breeders should always remember to balance intense selection for winning performance with characteristics of durability, soundness and conformation.

What is the future of horse breeding? How can we be more effective in our selection such that we move these breeds in a direction that is sound for the long term? We should heed lessons learned from nature. Wild horses tend to be modest-sized, and have heavy foot structure and bone for their size. That is always a fallback position for a functional horse.

If you take on the responsibility to breed horses, take the responsibility seriously and think twice about what characteristics you are seeking to emphasize and deemphasize, by balancing the quest for novel or flashy traits with a solid basis in conformation and performance.

- Along with breed specific traits, all horse breeds should have good minds, feet, bones and general conformation. A beautiful coat or massive muscling doesn’t mean anything if not supported by a strong foundation of foot, bone tendon and joint.
- Understand the principles of conformation and recognize and understand the basics of lameness.
- Do not breed horses that have not shown fitness in every way, whether from a lameness standpoint, general health, behavioral or breeding standpoint.
- Where available, use genetic tests to ensure that detectable diseases are not passed down.
- Focus on the actual performance and longevity of potential sire and dam rather than the relationship to a well-known horse. Similarly, select sires based on their performance record, not the fact that they have a

familiar name on their pedigree or are a pretty color.

Most of what is discussed above relates to horse buyers as well. You drive the market for certain characteristics and you can help ensure that horses are bred to last by demanding soundness and good conformation. A purchase exam performed by a qualified veterinarian is an important part starting point. Through sound breeding choices we can all help try to produce a more sound and durable horse, and hopefully reduce the incidence of these tragedies.

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