

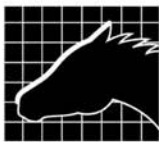
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Feeding the Elite Sport Horse at International Competitions

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INTRODUCTION

While much of the world focused on the 2008 Olympic Games in Beijing, the equestrian portion of the competition was taking place 1200 miles south in Hong Kong. Hong Kong was chosen as the equestrian venue because of quarantine issues related to importation of horses into Beijing. The 2008 Games were the fourth consecutive Olympics in which Kentucky Equine Research (KER) played a major role in the supply of feed, forage, and bedding, either as nutrition adviser (Sydney 2000) or as official supplier (Atlanta 1996, Athens 2004, Hong Kong 2008). These experiences have led to some interesting observations about how elite sport horses are fed and managed at the highest level of the game.

Olympic equestrian competitions are fairly small compared to many of the international competitions held around the world. A total of 217 dressage, show jumping, and three-day event horses representing 42 countries traveled to Hong Kong. Many countries such as the U.S., Australia, Germany, Great Britain, and Sweden fielded full teams of 14 horses (three dressage horses and one reserve; four jumpers and one reserve; and five eventers), while a number of nations such as Azerbaijan, Bermuda, Czech Republic, and the United Arab Emirates sent only a single horse and rider.

The type of horse used for each discipline varied considerably as did the feeding programs. Olympic dressage horses tend to be large, well-conditioned Warmbloods. These types of horses are typically fed feeds lower in energy density in an attempt to reduce excitability that is believed to be related to high carbohydrate intake. Three-day event horses tend to be lighter horses with a large proportion of Thoroughbred breeding. Because their level of exercise and energy requirements are greater, they tend to favor more energy-dense feeds. In many instances, these horses have more difficulty maintaining body condition. Olympic show jumpers are intermediate in body size, body condition, and energy requirement. They are typically the most widely traveled and adaptable to both new environments and new feeding programs.

The majority of the horses competing at the Olympics spend a great deal of their time competing in Europe, where they are fed a wide variety of feeds and forages. KER's challenge as official Olympic supplier was to provide feed, forage, and bedding that are acceptable to the competitors and that met the nutritional requirements of the horses under the environmental conditions present at the venue.

The geographic location of each Olympic Games dictates the specific challenges facing the feeding and management of the horses. Before the 1996 Olympics were held in Atlanta, the greatest concern centered on how heat and humidity would affect the horses because the competition took place in the middle of summer when the weather can be quite hot. Before those Games a large research initiative was undertaken at universities around the world in order to learn how to better manage competition horses in hot climates. Using management techniques developed from this research, the teams successfully dealt with the climate at the 1996 Olympics.

When the Games shifted to Australia in 2000, heat and humidity were not concerns, but transport stress became a major challenge because most of the horses competing were shipped great distances. The Olympics returned to Europe in 2004 when they were held in Athens. Transport was not a huge concern, and while Greece was hot, it was not humid. In hot, dry environments horses can efficiently dissipate heat by sweating.

Hong Kong represented a double-barreled challenge. First, most of the horses competing traveled by air more than 5000 miles from Europe. Second, the climate in Hong Kong during August is very hot and humid with temperatures reaching over 90° F (32° C) and 90% humidity. The combination of travel stress and a rapid diet change often leads to colic in horses. To reduce the likelihood of this occurring in Hong Kong, KER supplied the same hay which would be available at the Olympic venue to the horses while they were in quarantine in Europe.

The stables at the Sha Tin Equestrian venue in Hong Kong were constructed by the Hong Kong Jockey Club. Thoroughbred racing is extremely popular in Hong Kong, and a community of about 1200 racehorses resides year-round in stabling adjacent to the Olympic venue. The racehorses live in air-conditioned stables, and they experience very few problems related to heat stress. This technology was adopted for the Olympic stabling, and it proved to be quite successful. A number of competitors remarked how quickly and easily their horses settled into this stable environment. Of course, when the horses left the stables to train or compete, they sweated profusely since this is the horse's main mechanism to dissipate heat.

Horse sweat is very high in electrolyte content, and replacement of these key minerals is critical. KER provided two types of electrolytes for this competition. One was a powdered formula that mimicked the composition of horse sweat. This electrolyte was fed throughout training to replace sweat losses. The second was a paste electrolyte that was specifically formulated as a precompetition loading dose. KER research conducted before the Olympics showed that this type of preloading electrolyte stimulated water intake and rehydration after exercise.

Forage quality is a major concern among Olympic competitors. KER turned to Anderson Hay in Ellensburg, Washington as its hay supplier for the Olympics in Atlanta, Athens, and Hong Kong. Most Olympic horses eat grass hay, and the Pacific Northwest produces arguably the best-quality timothy hay in the world. KER has found that second-cutting timothy has a desirable nutritional profile (10% protein, 34% ADF, 57% NDF) for performance horses and is extremely palatable. The only complaints that have been lodged against this hay have come from Europeans who were worried that it must be too rich because of its green color. In addition to timothy, a few competitors used alfalfa hay, and ryegrass haylage was popular with some European horses.

Understandably, many competitors chose to bring their own compound feeds with them to the Olympics. For those that did not, KER supplied a menu of feeds suitable for horses competing in each discipline, including those in the Paralympics which immediately followed the conclusion of the Olympics. Equestrian Paralympic competition consists of dressage tests of varying difficulty depending on the disability of the rider. For these horses, calmness is a necessity, and their diets are typically quite low in energy density. Higher density formulas contained steam-flaked grains combined with fermentable fiber and fat. These feeds were manufactured by Pennfield Feeds in Pennsylvania, a feed manufacturer that specializes in highly palatable sport horse mixes.

To ensure freshness, the feed was transported to Hong Kong in refrigerated shipping containers. Extra mold inhibitor was also added to these formulas to prevent spoilage in Hong Kong's hot, humid climate. This proved to be important since a number of European feeds that were brought by individual teams became moldy before the competition ended. Lower energy-density formulas containing added chaff were manufactured in Australia for KER by Ridley AgriProducts.

As in Sydney and Athens, the Olympic horses consumed an incredible quantity of carrots in Hong Kong. More than eleven tons of fresh New Zealand and Australian carrots were fed over the course of the competition, averaging over five pounds of carrots per horse per day! Since carrots are almost 90% water, this level of carrot intake actually contributes little towards meeting any nutrient requirements other than vitamin A (beta-carotene).

The next major international equestrian competition will take place in Kentucky. The Alltech FEI World Equestrian Games (WEG), to be held at the Kentucky Horse Park September 25-October 10, 2010, are the world championships of the eight equestrian disciplines recognized by the Fédération Equestre Internationale (FEI) and are held every four years. The Games have never before been held outside of Europe, nor have all eight disciplines ever previously been held together at a single site—both firsts that will be achieved at the Kentucky Horse Park.

This competition is expected to attract 700-750 horses from 45-50 countries. Besides the Olympic disciplines of dressage, show jumping, and three-day eventing, WEG includes driving, reining, vaulting, endurance, and para-equestrian. The elite horses participating in these disciplines represent a wide range of breeds, body types, and nutrient requirements, and this makes the supply of feed to WEG an even more complex operation than the Olympics.

The marathon runners of WEG are the endurance horses. Just like their human Olympic counterparts, these horses tend to be light-framed and physiologically suited to go long distances at a relatively slow pace. At WEG, the endurance competition is run over 160 km (100 miles) in a series of six segments or "loops." The first five loops range from 22 to 40 km followed by a shorter (16 to 18 km) final loop. Between loops the horses must take a mandatory 30- to 50-minute break where they are examined by veterinarians to ensure they are fit physically and metabolically to continue. The dominant breed used in international endurance is the Arabian, which tends to have a high proportion of slow-twitch muscle fibers that are very efficient at burning fat. These horses usually consume high-fat diets along with high levels of forage.

At the other end of the equine spectrum are the vaulting horses. These horses tend to be large draft or draft-cross horses that have very easygoing temperaments. As with para-equestrian, these horses need to be steady and dependable as they are longed in a circle while gymnasts perform an assortment of acrobatic movements on their backs. Many of the vaulting horses are cared for by individuals with little experience in horse husbandry. These caretakers often require quite basic instruction about how to properly feed and manage a horse.

Reining horses are predominantly Quarter Horses that tend to be fairly short and heavily muscled. At the 2005 USEF Open Reining Championship, the average weight of six of the horses competing was 1180 lb (535 kg). In reining, competitors are required to run one of several approved patterns. Each pattern includes small slow circles, large fast circles, flying lead changes, rollbacks, backups, sliding stops, and fast, 360-degree spins.

The WEG combined driving event is open only to four-in-hand drivers. This means that each participant drives a team of four horses throughout all phases of the competition. The three phases are driven dressage, marathon, and obstacle or cones driving. This competition tests the fitness, obedience, and suppleness of the horses and the skill and competence of the drivers. Warmblood horses weighing around 1300-1400 lb (590-636 kg) typically are best as four-in-hand driving horses.

Temperatures in Kentucky in late September and early October tend to be similar to those experienced at the 2000 Sydney Olympics, which were ideal for the horses. Transport stress at WEG will again be a major challenge since the majority of the horses competing will come from outside North America. As with the Olympics, the major forage that will be used at WEG will be timothy hay from Washington State along with a variety of chaffs from Maine and haylage imported from Europe. Many teams will again choose to bring their own concentrates, but there will also be custom feeds available to closely match what the horses normally consume at home.

Our experiences at four Olympic Games and numerous world championships can be summed up in a single sentence: International riders expect the best of everything for their horses and whatever you do, don't forget the carrots!