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Put the Kibosh
on Foal Cribbing

Feeding the
Extremes: Ponies
and Draft Horses

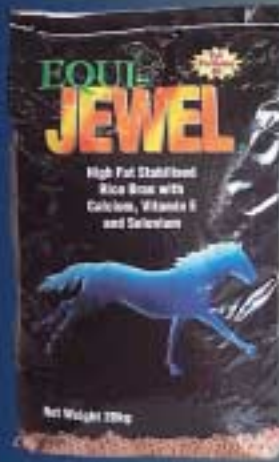
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VOLUME 6 ISSUE 3

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Equine Q & A

Equine Q & A

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Equine Q & A is the award-winning publication of Kentucky Equine Research. Its intent is to present informative and entertaining articles that advance the primary goal of Kentucky Equine Research and its worldwide affiliates—to ensure superior nutrition for all horses and ponies.

Equine Q & A features on its front cover a photograph by Catherine Bishop.

Contact KER Australasia for Subscription.



EQUINEWS

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Kentucky Equine Research Congratulates Team Member Champions

Australia's premier thoroughbred horse sales, the Inglis Easter Yearling Sales for 2003, held in Sydney, were dominated by NSW Hunter Valley studs Arrowfield and Coolmore.

Arrowfield prepared the two top selling horses in the sale. These horses sold for \$1.6m and \$1.3m respectively and were both sired by the late stallion, Sunday Silence.

Coolmore's Australian Champion sire, the late Danehill, sired 38 lots with the top seller fetching \$1m. Sunday Silence and Danehill topped the sale Sire Averages, with figures of \$1,1167,667 and \$342,500 respectively.

KER provides nutrition consultancy for both studs, who use customised supplement pellets formulated by KER and manufactured by Ridley AgriProducts.

A highlight of the Australian endurance ride calendar, the Tom Quilty Gold Cup -100 mile (160km) was run in Canowindra NSW, over the June Queen's Birthday long weekend. This ride was dominated by riders using feeds made by Team Member Ridley AgriProducts. The winner of the both the Heavyweight section and "Fittest Horse", Peter Toft riding Electra BBP Murdoch, and the 3rd placegetter in the Middleweight division, Penny Toft riding Bremervale Justice, both feed the concentrate sweet-feed Stablemaster Phar Lap.

The first 4 riders across the line finished together and were all from the one stable, Castlebar Endurance Arabians. These horses were fed a custom pellet designed by KER in association with South Australian Endurance Veterinarian, Dr Bill Harbison, and manufactured by Ridley AgriProducts. The riders included Meg Wade and Kristie McGaffin who were equal first in the overall ride and the Middleweight section, Jodi Knowles who won the Junior division and Cory Nix who was 6th overall and won the "Fittest Horse" trophy. In this event it is very unusual for the first 4 placegetters to come from one stable - that sort of success is testament to both meticulous preparation, and attention to detail within the feeding and nutrition program.

Belcam International was overwhelmed with the success of its inaugural Annual Premiere Young Warmblood Performance Horse Auction, held in late

June. Having recently relocated to the Gippsland region of Victoria, Axel and Belinda Renz (nee Klatte) had been busy developing their new property, but still wanted to provide buyers with a top class selection of their horses. Twenty-two young horses, bred from proven mare lines and imported stallions such as Contango II, Capone and Levantos I, were prepared for the auction. The horses were not presented under saddle, but had been extensively handled, and were either immediately ready to put under saddle, or start an in-hand showing career until they reached riding age. The auction was a great achievement, with all horses being sold on the day, to an appreciative and enthusiastic crowd of over six hundred people.

Axel and Belinda are committed to breeding Australian Warmblood horses equal to the highest European standards. To this end they have engaged KER and Team Member Ridley AgriProducts to assist in developing tailored feeding programs to ensure optimal growth of their Warmblood's. Their breeding horses are fed a customised supplement pellet which complements the region's outstanding pasture and maintains the vitamin and mineral status required to ensure perfect health and growth potential.

Western Australian galloper Northerly continues to receive accolades worthy of a champion. The outstanding thoroughbred has been crowned 2002-03 Horse of the Year by a panel of racing officials, edging out the ever-popular Lonhro. Northerly was also named Champion Middle Distance Performer and the publicly voted Australia's Most Popular Racehorse.

Kentucky Equine Research would like to congratulate team members Milne Feeds and Ridley AgriProducts for playing a small part in Northerly's success. Trainer Fred Kersley feeds the galloper on Milne Feeds Pegasus range of premium feeds during his preparation and lead-up races in Western Australia. While located in Victoria during his triumphant Spring Carnival campaigns, Ridley AgriProducts' Stablemaster range of feeds was combined with the existing Pegasus feeds to provide Northerly with a diet suited to Victorian racing conditions. ○○

Fuelling Champions Across the Globe



Photo: Jo Arbaciaer

From left to right:
Kristie McGaffin and Rowallan Miss Lilly
Meg Wade and Castlebar MacLeod
Amily Davidson-Daw riding Celsar Baydahl
Jodi Knowles riding Kurrajong Sapphire Desert Wind.

Kentucky Equine Research proudly congratulates Ridley AgriProducts in association with Dr Bill Harbison for being the feed suppliers for Meg Wade and Castlebar Endurance - who rode and trained the first four horses across the line in the 2003 Tom Quilty Gold Cup.



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ignophagia. Ligno-what? Lignophagia is the fifty-cent word for the ingestion of wood. In the horse, this usually expresses itself as wood chewing or cribbing.

Cribbing (also known as crib-biting and windsucking) and wood chewing are both vices or stereotypies, repetitive behaviors that seem to have no obvious purpose. Interestingly, stereotypies are not limited to horses. Other livestock perform stereotypies: breeding sows often bite the bars of farrowing crates, chickens and other fowl peck the feathers from one another, and cattle may exhibit tongue rolling (repeated extension of the tongue followed by rolling the tip back into the mouth). Wood chewing and cribbing are the two most prevalent stereotypies in equine populations. According to the results of six surveys conducted in various countries, it is estimated that 12% of adult horses wood chew and 4% crib. Wood chewing and cribbing are not synonymous, and the purest of equine behaviorists are quick to differentiate the two.

Wood chewing is simply the nibbling and splintering of wooden surfaces with the teeth; sometimes the wood is swallowed and sometimes not. This behavior is thought to spring from the horse's natural appetite for a varied diet. In the wild, horses often browse bushes and shrubs for roughage. Wood chewing is usually practiced in several locations, with horses showing little preference where and when to partake in the vice. This behavior is typically performed independently of other behaviors.

Putting the Kibosh on **CRIBBING**

Cribbing, on the other hand, is usually only one element in a behavioral sequence. For instance, horses regularly crib between mouthfuls of hay or grain or following the completion of a concentrate meal. True cribbers will set their upper incisors (front teeth) against a stationary object, arch their neck, and pull back, frequently emitting grunt-like vocalizations when bracing against the object. The characteristic sound is actually the expelling of air from the mouth; aerophagia, or ingestion of air, is not characteristic of cribbing, contrary to widely held beliefs. The posture these horses adopt during cribbing places considerable strain on the ventral muscles of the neck (those on the underside), the oesophagus, and the pharynx, a musculomembraneous passage that lies between the mouth and nasal cavity and serves both the respiratory and gastrointestinal systems. Horses devoted to the vice typically have one or two preferred places to crib in the stable or paddock.

Cribbing is not only destructive to wooden structures such as fence rails, stall and feeder ledges, and post tops, but it also affects the physical well-being of the horse. The vice can cause excessive wear of the incisors. Committed cribbers may actually wear their teeth to mere nubs, which can hinder their ability to graze, especially when pasture grasses are short. Because cribbers often prefer to engage in this vice rather than eat, some have a difficult time maintaining weight.

Cribbing can be financially detrimental when horses are raised with the intention of consigning them to public auctions. The majority of sale companies that sell Thoroughbreds and Standardbreds do so with a cribbing clause, meaning simply that the vice must be disclosed to all potential buyers. This declaration can often keep a horse from reaching a final bid reflective of its breeding or ability.

What provokes a horse to crib? Researchers remain divided in determining why horses partake in this vice.



Denver Brown

Noted equine behaviorist Sue McDonnell, Ph.D., founder of the equine behavior program at the University of Pennsylvania Veterinary School, mentions in her book *A Practical Field Guide to Horse Behavior: The Equine Ethogram* that horses very seldom crib in the wild. The rituals involved in domestication, therefore, seem to play a role in the development of the vice. Possible causes include confinement, low-roughage and high-concentrate diets, and limited grazing.

In foals, cribbing is often related to feeding schedule and composition of meals. Infrequent or interrupted suckling has been linked to low gastric pH, a scenario that may predispose foals to ulcer formation, especially when foals spend an unusual amount of time lying down. As foals mature, the introduction of concentrates into the diet is often blamed. Researchers have linked concentrate feeding with spikes in gastric acidity and subsequent ulceration of the stomach lining. Some owners relate that young horses begin cribbing during an illness, which may involve periods of inappetence and confinement.

Clinical signs of gastric ulceration in foals are sluggish growth, rough hair coat, pot-bellied appearance, teeth grinding, and colic. In severe cases, gastric ulcers may perforate and induce peritonitis, a widespread and usually fatal inflammation of the membrane that lines the abdominal cavity.

Breathing New Life Into An Old Theory

In the late 19th century, Edward Mayhew authored *The Illustrated Horse Doctor*, and in this text he proposes a remedy for crib-biting horses: “a lump of rock-salt in the manger (and) a large piece of chalk; should these be unavailing, always damp the food, and at each time of feeding, always sprinkle magnesia upon it, and mingle a large handful of ground oak-bark with each feed of corn.” Modern researchers revisited Mayhew’s theory, however unconsciously, and began pondering the notion of feeding a remedy for cribbing.

In a study conducted by the University of Bristol in the United Kingdom, scientists evaluated the effectiveness of an antacid on the incidence of cribbing in foals. The antacid used in the study was Neigh-Lox (Kentucky Performance Products, 1-800-772-1988).

Participation in the study was based on strict criteria. In order for foals to be considered, they had to be cribbing less than 20 weeks and no previous attempt to prevent cribbing, including surgery or electric shock treatments,

may have been tried. On-site inspections of the foals allowed researchers to determine if the subjects were true cribbers or merely dedicated wood chewers.

Thirteen crib-biting foals and eight control foals (non-cribbers) were included in the study. Of the cribbing foals, the average age at the onset of the vice was 153 days, and the average number of days cribbing prior to the beginning of the study was 89.

The horses were assigned to one of two diets, the control diet or the antacid diet. The control diet consisted of a forage (fresh and dried) and a typical concentrate containing

cereal grains (oats, wheat, and barley), wheatfeed, soybean meal, peas, full-fat linseed, vitamin and mineral supplements, and molasses. Six crib-biting and four control foals were given this diet. The remaining foals, seven crib-biting and three control, were offered the antacid diet, which consisted of the control diet and approximately 125 g of supplemental antacid divided between feedings.

Horses were observed several times throughout the three-month trial. In addition to visual observation, foal stomachs were examined endoscopically to determine their health during the first week of the trial and one week following the conclusion of the study.

A video record of each endoscopy was maintained, and samples of gastric fluid were taken to determine pH. Written descriptions of the findings were generated by the veterinary endoscopist and a second independent veterinarian.

Although few in number and generally mild in severity, gastric ulcers were detected in eight crib-biting foals at the onset of the trial, and profound ulceration was documented in another foal. At the conclusion of the trial, degree of ulceration had changed considerably in crib-biting foals that had received the antacid. In fact, horses fed the antacid diet had fewer ulcers and less inflammation than horses fed the control diet. Horses with mild ulcers at the beginning of the trial were ulcer-free after three months on the diet. Some foals ceased cribbing altogether once stomach lesions healed. Young horses fed the control diet showed either no change or worsened; none of the ulcers in these horses resolved.

This study demonstrates an obvious relationship between cribbing and gastric health. Crib-biting appears to be an attempt by horses to lessen the discomfort caused by ulcers; cribbing stimulates the flow of saliva, which reduces the acidity associated with concentrate feeding. As the stomach environment becomes healthy, there is less propensity for horses to crib. ☺



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GOING GLOBAL

In a room decorated with a World Equine Congress poster and a map indicating the direction and force of the major ocean currents, the directors of Kentucky Equine Research International (KERI) are outlining today's work and tomorrow's vision. Setting up delivery of equine-related goods and services to countries outside the United States is a complicated task that might prove daunting to less confident individuals, but Florencia Arrambide and Jill Hutchinson don't seem intimidated. Despite different accents and inflections, they speak with one enthusiastic voice: "This new venture is exciting!"

The sphere of international business is nothing new for KER, as the company has supplied products and services to Team Members in Europe, Asia, and other overseas locations for several years. A slow but steady expansion of this foreign trade made it necessary to think about how to standardize and streamline the procedures involved in worldwide equine commerce.

During the same period, KER secured roles in supplying horse feed to the Atlanta and Sydney Olympic Games and the World Equestrian Games (WEG) in Jerez, Spain. At that time there were no companies specializing in the procurement and shipping of feed, bedding, and other equine needs on a worldwide basis. In the midst of arranging the hundreds of necessary details involved in ordering and transporting tons of hay and feed, Dr. Joe Pagan, president of KER, realized that this service paralleled some of the international trade in which KER was already involved. The idea began to crystallize for a new company that could do more than just expedite trade with KER's established international customers.

Extensive media coverage of high-level equine competi-



Catherine Bishop

Trucks carry feed and supplies to coastal staging areas where they are packed into containers for shipment overseas.

tions such as the Olympic Games has resulted in greater public interest, and some of the top riders have become sports heroes in their own countries. Companies have stepped forward to offer sponsorship, but they often need assistance in delivering their products to riders as they compete in events all over the world. After working with riders, chefs d'equipe, veterinarians, and horse transporters at the elite level, Pagan was aware of their needs as well. KERI was established to develop the logistics of global equine commerce, providing coordination and service to feed distributors, athletes, support teams, sponsors, and event organizing committees.

Horses go right on eating, even in non-Olympic years, and one of the first objectives of the new organization has been to centralize and standardize the handling of international product orders. Jill Hutchinson, who manages the office and arranges all aspects of product transport, explained that this step was one of the most



Florencia Arrambide, general manager of KERI, enjoys traveling and experiencing varied cultures around the world.

crucial for the fledgling company's smooth operation. "KERI took over not only the global trade originally handled by Kentucky Equine Research and its marketing partner, Kentucky Performance Products, but also some of the clients who used to be served by Kentucky Equine Research Australasia," she explained. Because these clients were acquired over a period of several years and had been handled by various managers in widely separated offices, business procedures had little in common from one order to another. "It seems that each account was set up just a little differently as to shipping schedule, pricing, and other protocols," Jill said. "We're still in the early stages of sorting out the complications. Right now we're concentrating on standardizing the way we process orders from established customers. This will help to streamline the flow of business so we can provide the best service to new customers as well as our current clients. It may also show us ways we can consolidate overseas orders and deliveries."

Another important task for the KERI staff has been to identify the most reliable and economical methods to procure and transport supplies, both within the United States and abroad. A number of different firms had been used to move supplies across the country, prepare products for export, and arrange overseas transport by air or water. Narrowing this list to a few major firms, Jill said, has simplified this part of the business. "Most trucking companies can pick up and deliver merchandise anywhere in the coun-

try, but each company usually has a particular 'lane,' or region of the country, where it can offer the best prices on its standard routes. At KERI we are now using two or three truck brokers and one freight forwarder for almost everything we do."

KERI often calls on C.H. Robinson Worldwide, Inc., a truck broker handling shipments to the West Coast, to organize transport of the various pieces of an order to a consolidation point from which they will be routed overseas. For example, an Asian client might call KERI and place an order for several tons of ready-to-sell horse feed. To fill this order, KERI must arrange to send empty feed bags and a quantity of KER-formulated balancer pellets from North American Nutrition Companies, Inc. in Ohio. These materials must be delivered to Farmers Warehouse in California where the feed will be manufactured, bagged, loaded into a container, and sent to a pier for ocean shipment. Instead of putting in several hours of phone time to arrange these steps, KERI can place one call to the truck broker and be assured that pickup and delivery times, shipping routes, paperwork, and any other details will be planned and carried out by an experienced firm that handles such requests many times a day.

The next leg of the journey is the responsibility of Eagle Global Logistics, a freight forwarder. Eagle's personnel assist with documentation, customs, and other regulations. Some paperwork may start in the KERI office and be passed on to the freight forwarder. While most KERI goods travel by water, shipments that need to arrive more quickly are sent by air. Eagle handles arrangements for both types of transport.

With years of experience working for a central Kentucky company that shipped forklift equipment to nearly every corner of the world, Jill brought a store of valuable knowledge to her position at KERI. She has had extensive training in practices, terminology, and the intricacies of import and export documentation. Jill emphasized, "Absolutely nothing can move until the paperwork is in place!" Regulations vary from one country to another, and keeping up with the latest changes is another instance where the assistance of a freight forwarder is invaluable.

What does the international trade in forklifts have in common with shipping equine products around the world? In both cases, communication can be a challenge, according to Jill. Telephone messages are occasionally hard to decipher, especially when the caller may not be familiar with products, prices, and ordering procedures, but the widespread use of faxes and e-mail helps to ensure that transactions are clearly understood. Electronic technology also helps to close the gap between time zones, allowing orders to be placed 24 hours a day.

Language barriers are not a consideration for Florencia Arrambide, KERI's general manager. She's fluent in Spanish,

French, and English, and understands enough Italian and Portuguese to carry on a reasonable conversation. Florencia specializes in trade with South America and Europe, continents she sees as familiar neighborhoods. Born in Argentina, she earned an equine degree in England and now considers Spain to be her home address when she's not in the KERI office. "I've always been interested in cultures and customs of different countries," she said. "I guess this is a legacy from my grandfather. As the son of an ambassador, he traveled all over the world and developed a great enthusiasm for the variety of people he encountered. He picked the best parts of each culture and incorporated them into his lifestyle, and I've tried to do the same."

Five years' employment as a manager for a major British feed company was interesting, Florencia said, because she gained experience living and working in a non-Latin culture. "I learned to fit in and to appreciate the little things that make each place unique, and I picked up the skills to help other people feel comfortable in surroundings that are unfamiliar to them," she commented. "Working with and for people from Portugal to Finland, I came to see an advantage in not having a home in just one country. Now I'm happy when I can keep moving!"

Florencia brings impressive and varied credentials to her KERI assignment. She has a background in riding and show jumping, some technical training, years of management experience, and knowledge of the equine feed industry. Reviewing this potpourri, she commented, "I can analyze our business from many points of view—rider, stable manager, feed manufacturer, and international traveler—and

provide better service because I understand the needs of all the players and the way each one looks at a particular situation. For instance, in some countries there's a huge emphasis on pedigrees. To get a superior young horse, the experts spend a lot of time examining bloodlines and choosing the right stallion and mare for a mating. Then after the foal is born, the owners pay almost no attention to nutrition. The influence of feeding is just not something that's been considered very important in the development of a young horse. When things go wrong, it's seen as inevitable. There's no thought that many problems can be solved or even prevented."

Obviously, a feed dealer who doesn't understand this situation will not be effective in communicating with owners, no matter what language is spoken. Florencia emphasized that establishing business relations with horse owners in one of these countries must begin with a recognition that this type of cultural gap can exist. For Florencia, customer relations becomes a process of education in the light of understandings, attitudes, and differences. "To establish a business relationship with a client, I have to be perceptive enough to identify a need, and adaptable enough to meet it," she explained.

Florencia and Jill both emphasize the tremendous potential for KERI to expand in the next few years. Priority will be given to serving existing overseas clients. Visiting and talking with horse owners, farm managers, and feed manufacturers will identify ways KERI can provide help with formulation, ingredient procurement, logistics of product distribution, and the newest technologies such as growth-tracking programs. Already ideas have emerged for several new products that may find a ready market when they are developed.

The company is also interested in continuing to manage equine services for major national and international competitions. According to Florencia, this is a business prospect with almost unlimited potential. Because horses perform best when they are comfortable and relaxed, it is vitally important to change their routines as little as possible when they travel. If KERI can carry out its dream for the future, equine athletes arriving at an event halfway around the world will find their customary feed, hay, supplements, and bedding available as soon as they settle into their accommodations.

After hours of grooming, cleaning stalls, measuring feed, and toting bales, every horse owner knows the wonderful feeling of walking down the barn aisle, turning off the lights, and hearing contented horses munching hay as they relax for the night. The KERI managers would agree with horsemen all over the globe: "It doesn't get any better than this!" ☺☺



Coordinating the many details of worldwide commerce is just part of a day's work for office manager Jill Hutchinson.

Feeding the
Extremes



Almost all the guidelines on feeding and caring for horses are aimed at the middleweight or light horse population, those that weigh in at about 500 kilos or so, and little information is available regarding the equine extremes – ponies and draft horses. Generally speaking, horses are horses regardless of their size, but there are some differences in the nutritional requirements and management of these equids. In the last century, research centering around the nutritional requirements of horses has focused on light horses. Some investigations into the energy requirements of draft horses have been undertaken but requirements for other nutrients have not been explored. Little work has been done to ascertain the nutrient requirements of ponies.

Shamefully, the data used today to establish requirements of these equine extremes are often just simple mathematical extrapolations of what was found to be true for light horses. Half the amount for ponies, double the amount for drafts, right? So far these numbers do not appear to be out of range because signs of deficiency are rarely reported when the calculated requirements are met. As nutritionists become more aware of certain feed-related problems that are prominent in both ponies and drafts, however, the true differences in the equine extremes become apparent and adjustments to their feeding programs are necessary.

Similarities and Differences Between Ponies and Drafts

Despite the obvious differences in ponies and drafts, there are some similarities. Both ponies and drafts



Ponies ridden and shown on a regular basis may need more energy than what is supplied in forage.

appear to have a lower energy requirement than light horses, which is probably due to a slower metabolism. Further, these equines tend to have less spontaneous movement than their light horse counterparts, thus burning fewer calories at maintenance. The energy requirements of ponies, for example, have been measured and were found to be 10% lower than light horses. Owners and veterinarians that work with draft horses will attest to the fact that they too have at least a 10% lower energy requirement

than light horses that perform the same amount of work.

Ponies and drafts have comparable ease in maintaining and increasing body condition, depositing fat in similar places including the neck, over the back, and in the hindquarters, particularly around the tailhead.

Of course, there are distinct differences between ponies and drafts, with physical stature being the most



Ponies and drafts have more similarities than one might imagine. Many, for example, are easy keepers.

obvious. Ponies range from about 150 to 400 kilos while draft horses range from 600 to 900 kilos. Size alone explains the differences in the quantity of feed necessary to maintain the two equine extremes.

In terms of conformation, the two are often built differently because draft horses have historically been bred to pull heavy loads and ponies have been selected primarily for riding, especially of late. Exceptions include the Shetland, Haflinger, and a few other pony breeds revered for their pulling capacity.

Draft horses tend to have calmer temperaments and be more reliable than ponies. In fact, ponies are notorious for their intelligence and trouble-making ability. If draft horses, with their sheer bulk, acted like some ponies, horsemen would surely be in trouble.

Dietary Issues in Ponies and Drafts

Perhaps the most common nutritional problem encountered in drafts and ponies is undersupplementation of key nutrients. The classic diet of hay and oats lacks appropriate levels of vitamins and minerals. Problems with this diet may include imbalance of calcium and phosphorus if high amounts of oats are fed, and insufficient intake of zinc, copper, selenium, vitamin A,

vitamin E, and other key nutrients.

The purpose of feeding a commercial concentrate is to balance the vitamins and minerals in the diet and provide nutrients that may be low in the forage fraction of a ration. In order to formulate a commercial feed with the proper balance and content of nutrients, a certain target feeding range must be designated. Recommended feeding rates are included on the bag or feed tag. If less than the minimum amount is fed, insufficient amounts of essential nutrients will be consumed. The most significant problem with both ponies and drafts is that minimum recommended feeding rates for most commercial feeds will supply too many calories, resulting in obesity. Many drafts and ponies receive small amounts of concentrate, if any at all, and therefore inadequate quantities of vitamins, minerals, and possibly protein.

For instance, if a particular feed is designed to supply 2 mg of selenium when fed at 2 kilos per day and only 1 kilo per day is actually fed then the animal will consume only 0.5 mg of selenium. Many ponies receive significantly less than 1 kilo so imagine what the selenium status of the animal could be. The same holds true for all of the vitamins and minerals added to premixed feeds. Most commercial feeds are not designed with low-calorie needs in mind. Therefore, the average commercial feed is not a good fit for easy keepers such as ponies and draft horses.

Nutritionists have figured out several options to overcome these feeding challenges.

- Concentrate feeds are one option. The recommended allowances of concentrates are far smaller than those for average prepared feed, varying from 500 grams to 2 kilos. Concentrates are formulated without high-calorie ingredients, yet supply all of the protein, vitamins, and minerals needed to compensate for nutritional inadequacies of the forage. Concentrate feeds are excellent options if protein content of the diet is questionable and a few additional calories can be afforded.
- Feeding a well-fortified vitamin and mineral supplement is another alternative, particularly for the ultra good doer. Dose rates for supplements may be as low as 150 grams of pellets or 30 grams of powder. This is only useful if the horse or pony has enough protein in its diet. If the animal is fed low-quality forage and has no access to pasture, protein deficiency may be an issue.

- For the super easy keeper, a balanced mineral and salt blend designed to be fed free choice is a possible option, as long as the horses and ponies will eat it. If the animals refuse it, the recommended amount can be mixed in a small amount of concentrate and fed daily. The mineral mix should be designed specifically for horses. General livestock minerals are not properly balanced to meet the requirements of horses and ponies.

Another difficulty with feeding commercial feeds to drafts and ponies is that feeding rates may be given for the average 500 kilo horse without any suggestions for what to feed larger or smaller animals. Feeds that give the feeding rate as a percent of body weight are easier to dish out appropriately. For instance, if the minimum recommendation is to feed 0.5% of body weight and the animal weighs 680 kilos then he should be fed at least 3.4 kilos per day. It is important to know the weight of a feed and the weight of the animal to fine-tune the feeding program.

Nutritional Diseases Prominent in Ponies and Drafts

Drafts and ponies are not immune to nutrition-related diseases. Fortunately, ongoing research has identified many practical ways to manage these conditions.

- Equine polysaccharide storage myopathy (EPSM). EPSM is a heritable muscle disease in which muscle tissue



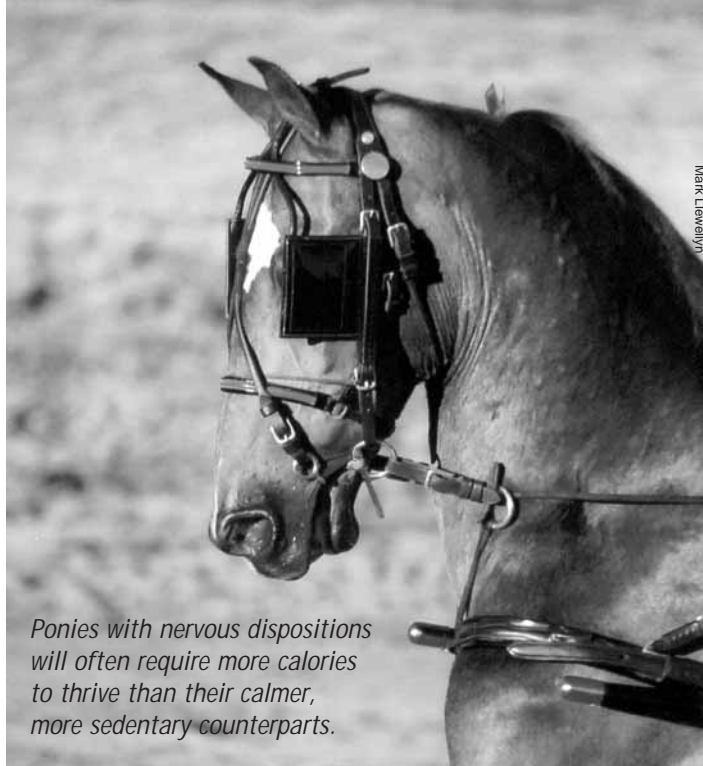
The nutritional requirements of draft horses depend largely on how much work is asked of them. An idle draft would need fewer calories than a horse worked regularly.

accumulates excessive amounts of an unusual form of carbohydrate called glycogen. The muscle cannot use this form of glycogen for energy. Signs of EPSM include frequent muscle soreness in mild cases and chronic tying up in severe cases. Shivers, a disease found in all types of drafts and draft crosses, may also be apparent. This disease is characterized by trembling and stomping of the hind legs, shaking of the tail, and quivering of the eyelids and ears.

- Cushing's disease. Cushing's is prevalent among ponies and occasionally found in drafts. This condition is caused by a tumor growing on or near the pituitary gland that interferes with hormone production and is common in older individuals. The incidence of Cushing's may be higher in ponies for the simple fact that many draft horses do not survive to the same ripe old age as many ponies.
- Laminitis. A devastating disorder of the hoof, laminitis is common in ponies and draft horses, although the cause of the disease may be different. Some ponies tend to be intolerant of starch or sugar in the diet, particularly the high sugar content found in young tender grasses. Exposure can set off an attack of laminitis, commonly called founder, in a matter of hours following ingestion of springtime pasture. Drafts can also founder for these reasons but more often it stems from excessive concussion on hard surfaces, a condition known as road founder. The most considerable difference in this disease between drafts and ponies is survivability. While ponies may suffer from chronic laminitis, they often recover. Draft horses, on the other hand, rarely survive a severe attack of laminitis. The damaged laminae often cannot support the bulk of the horse.
- Insulin resistance. This condition is characterized by the inability of glucose to gain entry into individual body cells. This results in chronically high levels of glucose and insulin in the bloodstream, which can have detrimental effects on the body. Often called pre-cushingoid syndrome, it is becoming more commonly recognized in both ponies and draft horses.

The dietary change most helpful in all these conditions is the replacement of starch and sugar calories with fiber and fat calories. Maintaining a high-forage diet is also pivotal. Fat and alternative fiber sources (like soy hulls or the beet pulp available in New Zealand) can be fed if additional calories are needed.

Several options for ridding starch from the diet have been tried in horses, some with more success than others. Multiple diets were tested extensively on horses with EPSM. Not only did these diets allay the symptoms of EPSM, some are also appropriate for horses and ponies prone to laminitis, insulin resistance, and Cushing's disease. The following dietary recommendation were elicited from various studies:



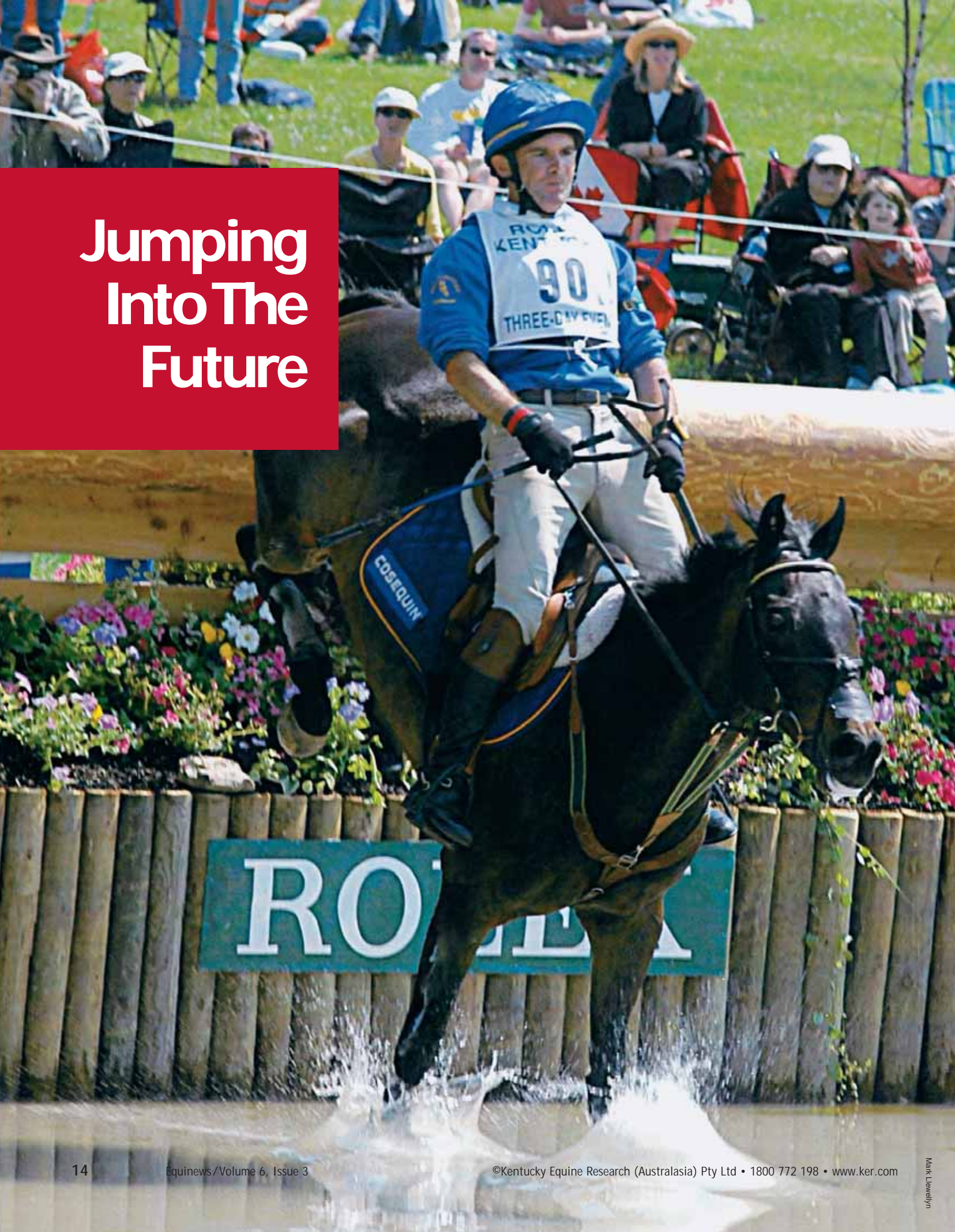
Ponies with nervous dispositions will often require more calories to thrive than their calmer, more sedentary counterparts.

- Commercial concentrates specifically designed to be high in digestible fibre and fat have been formulated and will become available in Australasia in August. These feeds are StableMaster Endurance (available in Australia) and NRM Race 13 (Available in New Zealand).
- Commercial complete feeds with added vegetable oil and vitamin and mineral supplementation is a possibility if specialized feeds are not available. Complete feeds are designed to meet part of the forage requirement, so they are higher in fiber than average concentrates. These feeds typically have high recommended feeding rates. When less substantial amounts are fed, additional vitamins and minerals will be necessary. Some senior feeds with high fiber content (greater than 15%) could be used in the same way. Additional fat is essential in this diet.
- Lucerne chaff with added rice bran, vegetable oil and a vitamin and mineral supplement is often the most readily available method of increasing fat and fiber. The limitation to this diet is the lower caloric content and the inability to supply adequate calories for the intensely worked horse or pony.
- Soaked beet pulp, rice bran, and a vitamin and mineral supplement eliminate it.

The challenges of feeding pint-sized ponies and gentle giants are many but may easily be overcome with careful attention to the needs of the animal and awareness of the many possibilities that exist for tailoring feeding programs to those needs.

Kentucky Equine Research provides free feeding and nutrition advice and assistance with preparation of tailored feeding programs on its Freecall Nutrition Hotline 1800 772 198. ☺☺

Jumping Into The Future



D Phillip Dutton attributes much of his success as an international three-day event rider to his upbringing in the outback of Australia. “I’d spend days chasing cattle, kangaroos and who knows what else, and knowing I’d have to walk home if I fell off was a huge incentive to stay on.” In all seriousness, Dutton points to his association with knowledgeable professionals as the most significant boon to his phenomenal rise to the top of an ever-growing sport.

“If you surround yourself with people who first do right by the horse, success will follow,” asserted Dutton, a two-time Olympic gold medalist. Dutton, now based in USA, counts the nutritionists at Kentucky Equine Research (KER) and the staff at Pennfield Feeds, a member of Team KER, as individuals partially responsible for his achievements.

Dutton is a longtime user of Enduroevent Ener-G, a feed

youngsters often grow into their athletic ability through a nurturing and supportive training program, Dutton believes he can achieve greater success with a cooperative, less-gifted horse than one that possesses superior athleticism though questionable work ethic.

The Making of a Champion

Once he has selected a prospect, Dutton designs a schedule that will ultimately see the horse compete in an internationally recognized three-day event called a CCI (concours complet internationale).

A three-day event is comprised of three distinct phases. As its name implies, the competition is conducted over a three-day period. On the first day, horses compete in dres-

A share of Dutton’s accomplishments no doubt reflects his ability to select young horses with the qualities necessary to advance through the upper levels of three-day eventing.

formulated by Kentucky Equine Research and manufactured by Pennfield Feeds of Lancaster, Pennsylvania. Enduroevent Ener-G contains optimal fat and fiber, which gives horses sufficient dietary energy to perform the volume of work asked of them, and little dietary starch, an ingredient that has been linked to muscle disorders in some equine athletes including event horses. High levels of starch may also cause excitability in horses prone to nervousness. “Enduroevent Ener-G provides enough energy for my horses to gallop forever while being quiet enough for dressage,” commented Dutton.

A share of Dutton’s accomplishments no doubt reflects his ability to select young horses with the qualities necessary to advance through the grueling upper levels of three-day eventing. The primary consideration is soundness. “If the horse is not sound, it’s simply not going to make it. A large percentage of Olympic gold medal-winning horses are in their teens, so they have withstood years of training,” said Dutton.

The second quality of consequence is trainability, described by Dutton as the horse’s receptiveness to daily training. This characteristic depends largely on inherent disposition. For instance, a horse is allowed to be alert to changes in his surroundings and to react accordingly, but it is unacceptable for that horse to spook repeatedly at the identical object. The horse must be amenable to certain environmental changes with little or no fuss.

Closely related to trainability is athletic ability, a trait not always readily discernible in young horses. Because

sage, a discipline that focuses on the development of strength and flexibility of the horse with ultimate goals of self-carriage and categorical harmony between horse and rider. For the three-day event horse, dressage is imperative because it teaches the horse to be obedient and comfort-



Phillip Dutton discusses the potential of this two-year-old Thoroughbred to become a three-day event horse.

able in adjusting its stride length, a characteristic essential for success on days two and three. On the second day of the event, horses compete in the cross-country test, which showcases the speed, endurance, and jumping ability of the horses. With only a few mandatory breaks, horse and rider teams will travel over 17.5 kilometres during the course of this day and will jump obstacles as high as 1.2 metres and as wide as 3 metres. The final day of competition is devoted to stadium jumping, a test that proves horses possess the appropriate fitness and control to negotiate a course of obstacles the day after an extraordinary endurance test.

Asterisks or stars are used to denote the difficulty of an event, with the four-star CCI (typically denoted as CCI****) being the most challenging. Only a handful of events, including the Olympic Games, are given the four-star designation worldwide.

Dutton begins working with horses at an early age. By the time the horse is four years old, however, he has created a rock-solid foundation built upon trust and confidence, two indispensable qualities that will be vital in years to come. As the horse becomes more and more educated on the flat, Dutton will incorporate small jumps and gymnastics into the program, gently moulding the horse into an all-around athlete.

The following year the horse will participate in several horse trials, competitions that usually combine all three

discipline is required to keep a horse healthy and competitive over several seasons. Following an international three-day event, horses are often given several weeks of downtime. In fact, some are given complete turnout until the fitness regime for the next competition must begin.

Breed Differences: Does It Matter?

Throughout his three-day eventing career, Dutton has had success with several Thoroughbreds including Simply Red, Cayman Went, and his two Olympic gold-medal winning mounts, True Blue Girdwood and House Doctor. He supposes Thoroughbred breeding will continue to have a profound influence on future stars of the sport despite the fact that the focus of the three-day event has shifted somewhat in recent years. Dutton described events of yesteryear as “serious endurance tests,” but today the speed and endurance phase is shorter, thereby placing more emphasis on other elements of the competitions. As the actual miles covered on the second day of competition become fewer and fewer, the jumping efforts and the technical questions regarding how to approach those obstacles have increased in difficulty.

Another facet of the three-day event that has risen in importance is dressage. When compared to their buoyant warmblood peers, most Thoroughbreds are simply average movers, concedes Dutton. Will the significance of dressage

It is not unusual for horses to compete at this highest level for several years, well into their teens, but a considerable amount of maintenance and discipline is required to keep a horse healthy and competitive.

phases of a three-day event into a shorter timeframe, usually one or two days. Horse trials are not as physically demanding as three-day events and offer opportunities to refine skills in a competitive atmosphere. When fit and sound, a horse is able to compete in several horse trials annually. The horse will continue competing in horse trials until he demonstrates the need to be challenged further.

As a six-year-old, a horse may compete in its first three-day events, most likely a CCI* in the spring and a CCI** in the autumn. Because an actual three-day event requires more preparation time and an extended break afterward, horses usually only compete in one or two per year. The following year, as a seven-year-old, the horse can conceivably run his first CCI***, assuming he handled the challenges of the previous season well.

By the time the horse is eight years old, he is ready to contest his first CCI****. It is not unusual for horses to compete at this highest level for several years, well into their teens, but a considerable amount of maintenance and dis-

alter the present course of discipline-specific breeding, inspiring the infusion of warmblood genetics? Probably not, according to Dutton. While warmblood crosses may fare well in the dressage phase, they may not possess suitable endurance, even for the shorter speed and endurance courses today. In the end, a “good-galloping horse,” regardless of the breeding, is essential.

Kentucky Equine Research purchased several Thoroughbred yearlings in the fall of 2002. One of the primary reasons for acquiring these horses was to investigate changes in bone tissue during growth and exercise. KER nutritionists are looking forward to presenting the exciting results of this research to the horse industry in the future. As the KER researchers wrap up these studies, the question of what to do with the now two-year-old geldings was broached. While they would always have a home and a use at the research facility, Dr. Joe D. Pagan, founder of KER, enlisted Dutton to evaluate the horses in early April to determine if their future may include a career in three-

The Horses— In Dutton's Words

Olympic champion Phillip Dutton evaluated several horses owned by Kentucky Equine Research in the spring. Pictured below are three two-year-olds and Dutton's comments about each.



Barney

Lineage: With Approval x Elle Lea by Elmaamul (Diesis)

Date of Birth: April 26, 2001

Weight: 425 kilos

Height: 15.2 hands

This guy is certainly the right color—grey! Although a well-balanced gelding, he isn't built particularly uphill. Ideally, I would like for him to come up more at the withers and be a bit stronger through the shoulder. When asked to move off, he exhibits loose, free action, moving across the ground with relative ease. He does not slam his feet to the ground, a sign that a horse may not be well suited for higher levels of three-day eventing. I believe this gelding may have a future in the sport.



Sam

Lineage: Repriced x Irresistible Imp by Imp Society (Barrera)

Date of Birth: April 18, 2001

Weight: 430 kilos

Height: 15.3 hands

My first impression of this horse is positive. He has a huge shoulder, a long neck, and is built uphill, which will enable him to better find his balance. When a horse has a longer neck, I think riders feel safer. He has a great expression with a bright eye. On the move, he is quite light off the ground, which will cause less concussion to his legs. He also shows sufficient bone for his size. Overall, I think this horse has real potential as a three-day event horse.



Larry

Lineage: Barkerville x A Golden Rose by Strike The Gold (Alydar)

Date of Birth: April 30, 2001

Weight: 417 kilos

Height: 16.01/2 hands

This is the tallest, leggiest horse of the group. He is fine-boned, and his long pasterns will likely give a comfortable ride. Those pasterns may predispose him to ligament problems, though. He is also slightly back at the knee (calf-kneed), which is a bit of a deficiency for horses that must work at speed on a regular basis. This gelding is a beautiful mover with quite nice action, even if he does paddle out a bit.

Catherine Bishop

Something to SHOUT About!

On April 3, Shout, the Quarter Horse foal introduced to readers in the last issue of Equineews, definitely had something to shout about! Late that spring evening, another colt was born. And unfortunately, Higgins, as he was to be christened, entered this world in much the same way Shout did—that is, under star-crossed circumstances.

Like Shout, Higgins was malpositioned in the uterus. He too was flipped on his back. Unlike Shout's dam, Higgins' mother is a huge, though gentle, 17.2-hand mare, so the veterinarian was able to successfully reposition the foal inside the mare and an emergency trip to the veterinary

clinic did not come to fruition, thankfully. But Higgins didn't exactly escape the delivery unscathed. Like Shout, he suffered several broken ribs, no doubt due in part to his large frame. While Shout fractured ribs close to his flank, Higgins' jumbled ribs were near vital organs, his heart and his lungs. So Higgins was handed the same sentence as Shout—mandatory stall confinement.

The weeks passed slowly, but in time the mares and their foals began to see the light of day, literally. Shout and his dam were first to gain access to a small grassy enclosure. Each day the duo would spend several hours basking in the sun. Within a



Shout frolics in his pasture in Versailles, Kentucky. According to Gro-Trac, Shout is gaining weight at a healthy rate.



Shout and Higgins meet for the first time. Though tentative at first, the two became fast friends.

week or two, the twosome began alternating time in the pen with Higgins and his dam. The mares were tolerating their confinement well, but the colts were beginning to express their youthful exuberance, particularly Shout, who loped circles around his mother in the pen to let off some steam. Eventually, Shout was introduced to a one-acre paddock. Shout was only in the paddock approximately a week before Higgins was allowed carte blanche exercise, so the time had come to turn the foals out together in a large pasture.

As foals often do, Shout and Higgins would have nothing to do with one another during the first week of being pastured together, and then slowly, ever so hesitantly, they began approaching one another. It wasn't long, however, before the standoffishness gave way to bouncing, bucking, and bolting, all the while becoming the best of friends. The colts were well over a month old by then, and the protective instincts of their mothers had slacked significantly. In fact, the matrons were happy to slip away from their charges every now and then.

By this time, the foals were old enough to have their hooves trimmed for the first time. In preparation for this, my friend and I began practicing picking up feet, starting with the front and ultimately the hind. Higgins was the perfect gentleman. Like his mother, he is docile and completely enamoured of his human contacts. And then there was Shout, who over the course of his short life had become sensitive to human touch anywhere except on his head and perhaps his neck. Touching other body parts was forbidden. Therefore, picking up his feet became an ordeal. I would pick up a front leg and he would begin leaning, so much so that on more than one occasion he landed in a heap on the ground. Once he would right himself, we would try again. He huffed and he puffed, and I really huffed and puffed and sweated.

The day of reckoning arrived. As predicted, the farrier was in and out of Higgins' stall in minutes, two to be

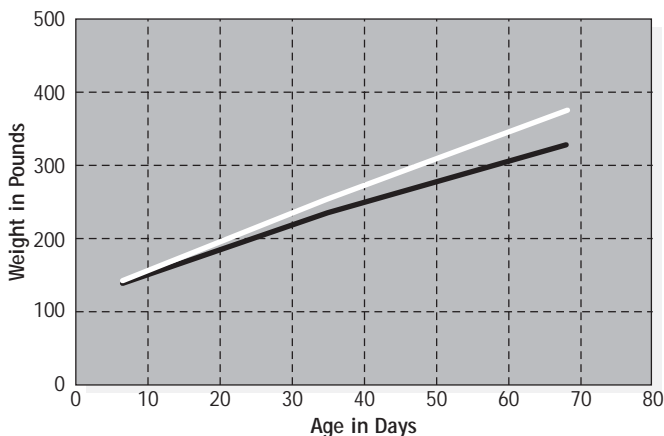
exact. And then it was Shout's turn. He tried to be a bully and he tried to fall over, but the farrier, a husky Irishman, would have nothing to do with Shout's evasive shenanigans and kindly set him straight whenever necessary. Needless to say, we're still working on picking up his feet. Now, I'm thinking of ways to shape Shout's willfulness to work in my favor. So far I'm coming up empty-handed, but I'm still thinking!

Shout and Higgins Weigh In

As it turns out, Shout is growing by leaps and bounds. The colt packed on about three and 1500 grams a day during his first month of life. On May 1, at 36 days of age, Shout tipped the scales at nearly 115 kilos, which is about 49 kilos more than he weighed at birth. Although this may seem extreme, it is actually a reasonable rate of gain for March-born colts in Kentucky. He is gaining a smidgen more weight than his peers of the same age and sex.

Higgins, on the other hand, weighed a walloping 110 kilos at 28 days of age. Colts of his age born in April usually hit the 93 kilos mark. This fact makes Higgins about 18% heavier than others his age. Higgins is not obese, in fact few foals are, but he possesses height and scope, likely a reflection of his tall, lanky mother.

Gro-Trac is the software that allows Kentucky Equine Research (KER) to compare Shout and Higgins' growth against that of many other foals. Over the course of twelve years, researchers at KER have accumulated the height and weight records for thousands of young horses. Researchers have crunched those numbers to arrive at averages for young horses of different sexes and ages. This database is continually changing as more data are entered monthly. ☺☺



Shout (white line) is growing steadily, as indicated by this graph. He remains larger than his average peer (black line).

Equine News Q & A

Is it safe to feed sunflower seeds to horses? If so, what nutritional benefits do the seeds provide?

Yes, whole sunflower seeds are safe for horses and ponies when doled out in moderation, but the type of seeds fed should be chosen carefully. Sunflower seed varieties fall into one of two categories, confectionery or oilseed. Confectionery sunflower seeds are primarily harvested and processed for human consumption, either as a shelled, roasted snack food or as dehulled seeds for the baking industry. Oilseed varieties, on the other hand, are grown to fill the demand for birdfeed and sunflower oil, a high-quality vegetable oil. Characterized by black hulls, oilseed sunflower seeds are appropriate for horses; confectionery varieties usually have striped hulls and are slightly larger than oilseed varieties. The hulls of the oilseed varieties are typically thinner and thus more digestible by horses. Oilseed varieties typically weigh more than confectionery types, likely due to the density of innate oil. This oil is a great source of dietary fat and is the primary reason most horsemen divvy out sunflower seeds to their charges. Whilst sunflower seeds contain about 20% protein, it is relatively poor quality and should not be relied upon as a major protein source for growing horses or breeding mares.

The amount of fat in sunflower seeds ranges from 26 to 45%; this disparity is due to differences in sunflower varieties. Therefore, sunflower seeds contain slightly more fat than rice bran (20%) but significantly less than plant or vegetable oils (100%). If a horse has developed an aversion to other fat supplements, which is often the case with vegetable oils, whole sunflower seeds may be an appropriate alternative.

No hard-and-fast guidelines for feeding sunflower seeds have been established. Many museli-style sweet feeds contain sunflower seeds, incorporated at the rate of 2-10% of the grain mix. From anecdotal accounts, feeding 500 grams (about two cups depending on seed type) per day seems to improve coat condition, one benefit of sunflower seeds. Giving more than this may present palatability issues, and horses, with their incredibly mobile lips, will be able to separate the seeds from other elements of the grain mix should they develop a distaste for them. As with the introduction of any new feedstuff to the ration, gradually increase the amount of sunflower seeds offered over a period of several days.

What are super fibres, and what are the benefits of feeding them?

Forages such as hay and pasture are well-known sources of fibre. Other feedstuffs are considered “super fibres” because they have energy levels much higher than typical forages. In fact, their energy values are only slightly less than those found in cereal grains such as oats and barley. Two super fibres now available in Australasia are beet pulp and soy hulls. Dried beet



Black oilseed sunflower varieties (left) are appropriate for horses as an added source of fat. Steer clear of feeding the larger striped seeds (right).

pulp is often used as an ingredient in textured feeds, or it is added by the handful to a premixed concentrate to boost the fibre content of a ration. The seed coats of soybean seeds are called hulls and are very much like the thin, skin-like structure that surrounds peas. These feeds are more digestible than traditional fibre sources. For instance, hay is 40-60% digestible, depending on its quality, and beet pulp and soy hulls are 80% and 75% digestible, respectively. Horsemen feed super fibres for a variety of reasons. Some horses will not or cannot eat large enough quantities of hay to fulfill fibre requirements. Dental problems, for example, may keep aged horses from consuming sufficient hay or pasture. When adequate forage consumption is an issue, caretakers should offer fibre in other forms. Horses on diets composed largely of concentrates (grains) may be unwilling to eat large amounts of hay. In these instances, fibre can be introduced into concentrates as beet pulp or soy hulls. Due to their high energy content, super fibres are also ideal for horses that have difficulty maintaining weight. Some performance horses also benefit from super fibres, especially those asked to perform at moderate speeds for long distances such as endurance horses. In addition to being a steady energy source for horses, super fibres help maintain intestinal health. Consumption of fibre can increase water intake, creating a holding tank of water and electrolytes in the hindgut. This reservoir may prevent dehydration and electrolyte depletion during an exercise bout.

Horses that do not tolerate diets high in starch may also benefit from super fibres. Horses afflicted with tying-up (recurrent exertional rhabdomyolysis - RER), or polysaccharide storage myopathy - PSSM) often find relief when fed diets low in starch. When super fibres are fed to these horses, much of the energy necessary to support exercise is derived from fibre and not starch.

NRM Race 13 is a new sweet-feed, containing beet pulp, and will become available in August in New Zealand. Also available in August, in Australia, will be StableMaster Endurance, a specialised endurance feed containing soy hulls. ☺☺

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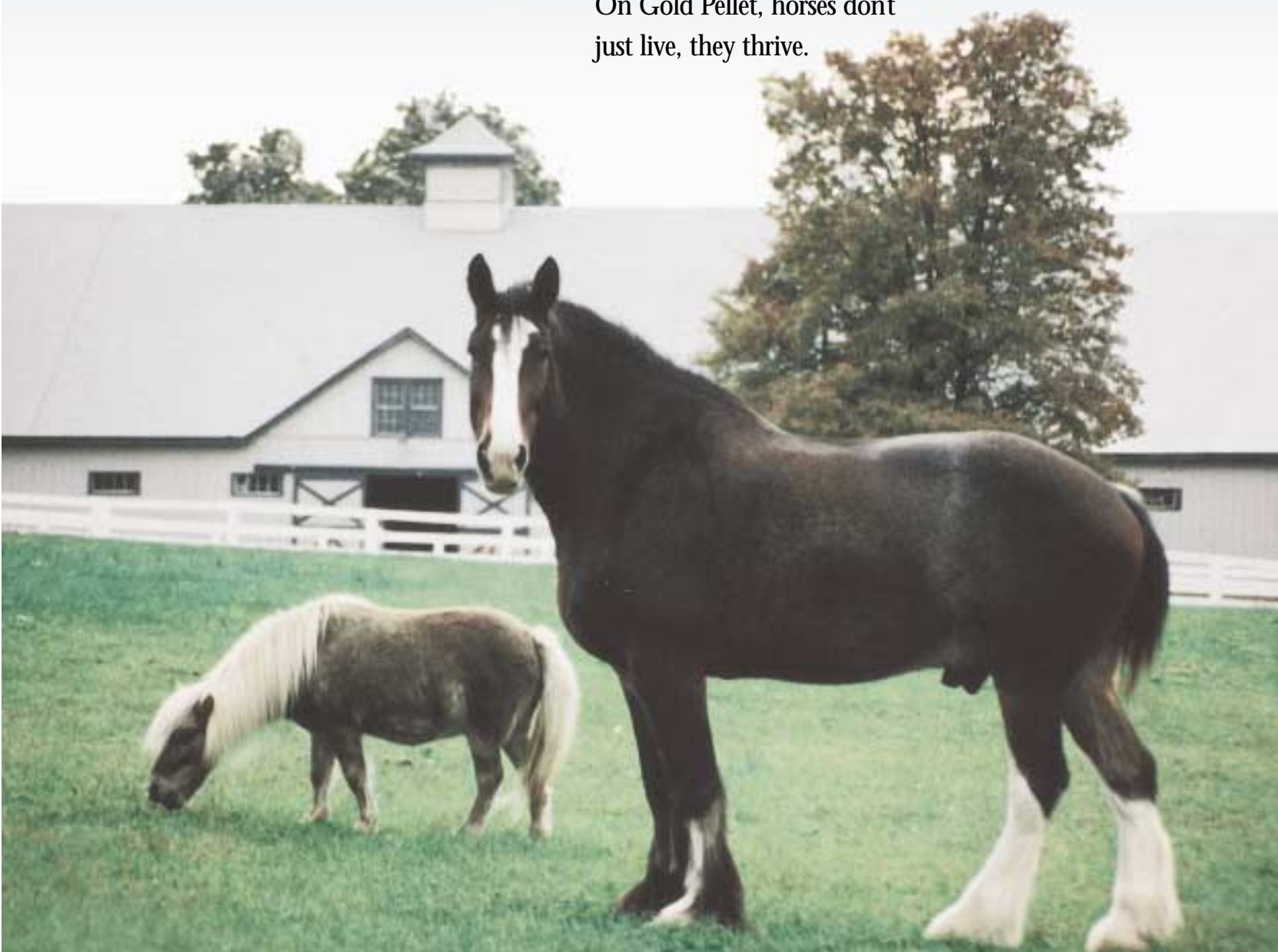
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