University of Kentucky

Bluegrass Equine DIGEST

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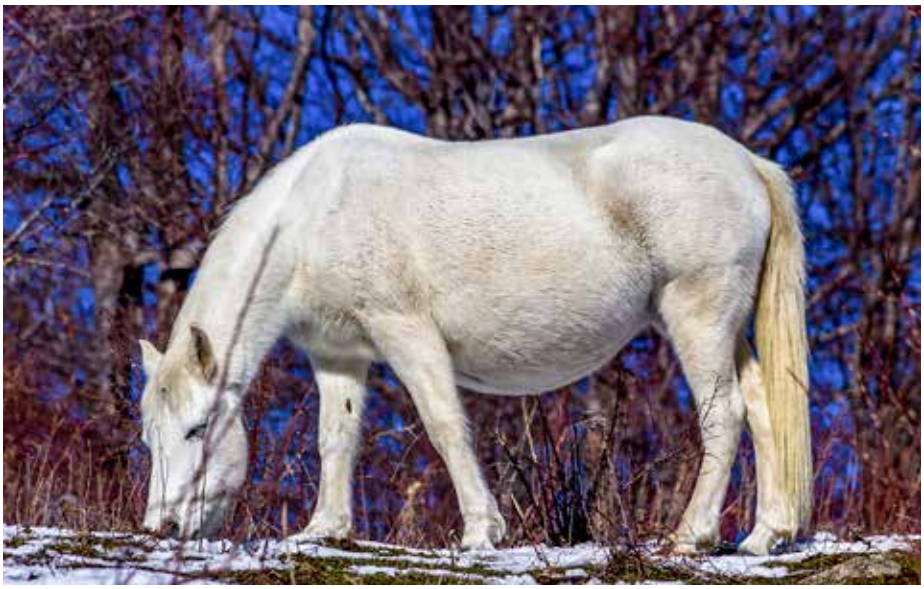
Understanding Gene Expression and Physiology During Pregnancy



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The University of Kentucky study resulted in several notable firsts.

A recently published study has resulted in a significant step forward in understanding the physiology of pregnancy. Shavahn Loux, PhD, a postdoctoral scholar within the University of Kentucky Gluck Equine Research Center, conducted this work in conjunction with fellow Gluck Center researchers and scholars Pouya Dini, DVM, PhD, Dipl. ECAR, ACT; Hossam El-Sheikh Ali, PhD; Theodore Kalbfleisch, PhD; and Barry Ball, PhD, DVM, PhD, Dipl. ACT, Albert G. Clay Endowed Chair in Equine Reproduction.

The study, titled "Characterization of the placental transcriptome through mid to late gestation in the mare," resulted in several notable firsts.

"This paper represents the first comprehensive look at gene expression in the placenta (fetal and maternal) in the middle to late time points of pregnancy and should provide researchers with vital information about the interaction occurring at the feto-maternal interface as pregnancy progresses," Loux explained.

"By better understanding the gene expression landscape during pregnancy, this work provides a significant step toward understanding the physiology of pregnancy, thereby aiding the identification of novel drug targets and reducing the incidence of late-term abortions."

She said the study also helps establish the horse as a valuable model for investigating biological communication between the developing fetus and the mother, or feto-maternal communication. The study demonstrated the ability to effectively separate maternal and fetal components of the placenta, with only a minimal amount of chorioallantoic (fetal membrane) contamination in the endometrium.

"The placenta is a dynamic organ which undergoes extensive remodeling throughout pregnancy to support, protect, and nourish the developing fetus," the study abtract reads. "Despite the importance of the placenta, very little is known about patterns of gene expression in placental cells beyond very early in pregnancy and after birth (postpartum)."

"I used a technique called RNA sequencing to analyze gene expression in the fetal (chorioallantois) and maternal (endometrium) aspects of the placenta at multiple gestational ages (4 months, 6 months, 10 months, and 11 months)," Loux said.

She and her collaborators found that within the maternal endometrium, 47% of genes changed throughout pregnancy, while in the fetal chorioallantois, 29% of genes underwent significant changes in expression. Through bioinformatic analyses, the researchers found that tissues were more similar than different, with about 95% of genes expressed in both tissues and great similarities between the most highly expressed genes. Genes expressed at the highest levels fell into a few broad categories, including endocrine and immune-related transcripts, iron-binding proteins, extracellular matrix proteins, transport proteins, and antioxidants.

"Overall, these data represent the

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first large-scale characterization of placental gene expression in any species and include time points from multiple mid- to late-gestational stages, helping further our understanding of gestational physiology," Loux said.

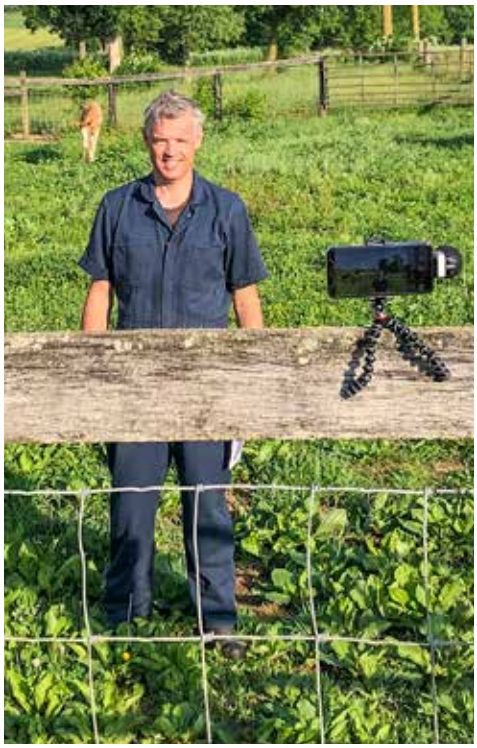
To see the published research article in its entirety, visit https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0224497 UK

>Holly Wiemers, MA, APR, is the communications director for UK Ag Equine Programs.

Nielsen Recognized With Winnie Award at 2019 International EQUUS Film Festival

When Martin Nielsen, DVM, PhD, Dipl. ACVM, Schlaikjer Professor of Equine Infectious Disease in the University of Kentucky's Gluck Equine Research Center, set out to educate horse owners about equine parasitology best practices in a novel way, he certainly didn't have any film awards on his mind.

But, after launching a series of 18 educational videos in October to inform horse owners, farm managers, and veterinarians about a range of equine parasitology do's and don'ts, Nielsen's #DewormDebunk video series earned him recognition at the 2019 International EQUUS Film Festival for Best Educational Film.



COURTESY UNIVERSITY OF KENTUCKY

The EQUUS Film & Arts Fest highlights and rewards the diverse and creative efforts of those who pay artistic homage to the horse. The festival, founded in 2013 by avid equestrian Lisa Diersen, is billed as the first event of its kind to offer a home to the storytellers of the horse world, with films, documentaries, videos, commercials, and shorts from around the globe and cultural elements of fine equestrian art and literature.

"My science communication strategy has made use of social media for many years, but this year I decided to try something different," Nielsen said. "I wanted to produce a series of short videos debunking common misconceptions and myths, one at the time. I wanted the videos to be around 45 seconds to make them Twitter-friendly but also to accommodate for the short attention span often observed online. And I wanted to make a point out of not needing elaborate equipment or technical assistance. These videos were all shot by an iPhone, and I edited them myself on my laptop computer."

Nielsen's videos fell into one of three categories: short videos addressing common misconceptions about parasite control; longer educational videos outlining important concepts in parasite control; and videos that inform viewers about current findings, research needs, and the importance of UK's equine research herds.

"As academics and scientists in today's world, we need to make an effort to communicate our research findings to our end users," he said. "We need to establish ourselves as the source of solid, evidence-based, and unbiased information. Communication on social media is a must for scientists because that platform is now an integrated part of society and where people acquire and exchange information.

"When we launched the series, I was contacted by Lisa Diersen. She strongly encouraged me to submit my videos to the festival in the educational category. Winning the

Masthead

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Past issues of the Bluegrass Equine Digest are available at www2.ca.uky.edu/equine/bed.

NIELSEN

Winnie Award is a wonderful recognition of our efforts to communicate about science in a social-media-friendly manner," he added. "I hope other scientists will follow suit and help provide good evidence-based information to horse owners, farm managers, veterinarians, and all kinds of horse enthusiasts across the world."

Topics covered by Nielsen the past few months include:

- Parasite control philosophy
- Deworm Debunk: Deworm at first frost?
- Deworm Debunk: Drug rotation
- Parasite refugia
- What's the right dewormer?
- Deworm Debunk: Five-day dewormers
- Deworm Debunk: Diatomaceous Earth
- Pasture hygiene
- Deworm Debunk: Confining horses
- How the weather affects parasite transmission
- Pasture management
- Deworm Debunk: Daily dewormers
- Deworm Debunk: Parasite egg counts
- Single horse considerations
- Does my horse have worms?
- Deworm Debunk: Checking the label
- The complexity of resistance genetics

View the videos on the Gluck Equine Research Center Facebook page at Facebook.com/GluckEquineResearchCenter or on the UK Department of Veterinary Science YouTube channel at https://www.youtube.com/channel/UCRzDz2GpXFsWEx4R-s5JN2A.

"Anyone can make a video and have it look decent, so there is really no excuse to not do this. I will certainly launch another series next year but perhaps experiment a little more with the format and duration," Nielsen said.

Find more information about the EQUUS Film and Arts Fest at equusfilmfestival.net. UK

>Holly Wiemers, MA, APR, is the communications director for UK Ag Equine Programs.

VIDEO LINKS

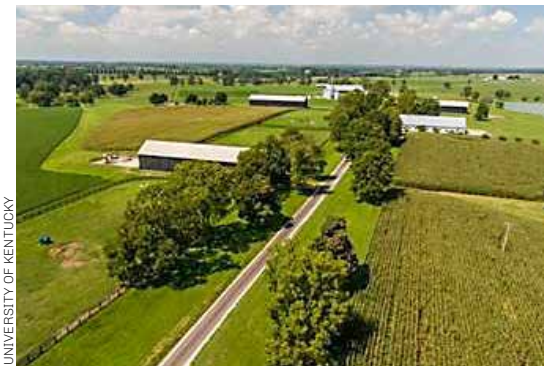
- How to approach parasite control: YouTube.com/watch?v=oLA43-l8Roo
- Deworm debunk 1: YouTube.com/watch?v=JsF8f7QdOrs

Kentucky Agricultural Receipts Hold Steady, Equine Ranks Second

Kentucky agricultural receipts will likely hold steady for the third consecutive year, despite trade concerns and relatively low commodity prices.

Agricultural economists from the University of Kentucky College of Agriculture, Food and Environment are projecting 2019 farm cash receipts to be $5.9 billion, equaling the past two years. Kentucky producers saw increases in equine, corn, wheat, dairy, and hemp receipts.

"While low commodity prices continued throughout 2019, sales were aided by better-than-expected grain yields in certain parts of the state," said Will Snell, PhD, UK agricultural economist. "We expect Kentucky agriculture cash receipts to slightly exceed $6 billion in 2020, with poultry, cattle, and hogs rebounding from 2019 levels. Trade developments and weather will ultimately dictate the 2020 market."



UNIVERSITY OF KENTUCKY

The equine industry experienced its third year of gains.

UK agricultural economists estimate Kentucky producers' net cash income will exceed $1.8 billion, which is slightly up from 2018 and largely due to two rounds of direct government payments producers received as a result of the Market Facilitation Program. The Trump administration created the program to support farmers amidst the ongoing trade war. Accounting for this program and other federal farm programs, Kentucky farmers might receive more than $300 million in direct government payments in 2019.

U.S. net farm incomes totaled $92.5 billion, which is a 10% increase from 2018. Payments from the Market Facilitation Program and crop insurance indemnities accounted for nearly one-third of U.S. net farm incomes in 2019.

"Despite an expected increase in 2019 net farm income, the national and Kentucky farm economies remain very vulnerable, especially if either experience low crop yields, additional trade disruptions, the elimination or reduction of Market Facilitation Program payments, higher interest rates, and/or a decline in asset values materializes," Snell said.

Despite a sales decline in 2019, poultry will remain Kentucky's top agricultural commodity, comprising 21% of all projected sales for the year. Equine, corn, soybeans, and cattle are expected to follow in that order.

The equine industry experienced its third year of gains, with receipts continuing to surpass $1 billion. UK agricultural economist Kenny Burdine expects the industry to continue to grow in 2020, provided the U.S. economy as a whole continues to be relatively strong.

"Kentucky is a unique state for marketing specialty crops, in that we have a larger portion of total sales coming from direct-to-consumer purchases rather than from the wholesale markets like larger producing states," said Tim Woods, PhD, UK agricultural economist. "So when the national economy is relatively strong and people have more disposable income and consumer spending is higher, direct-to-consumer markets tend to do better."

For the entire outlook, visit the UK Department of Agricultural Economics website at agecon.ca.uky.edu/sites/agecon.ca.uky.edu/files/2019-2020_ky_and_us_ag_outlook.pdf. UK

>Katie Pratt is a University of Kentucky Agricultural Communications Specialist. Source: edited UK College of Agriculture, Food and Environment news release.

Opossums: The Scourge of a Horse Owner's Existence?

Q Can you explain more about opossums and equine protozoal myeloencephalitis (EPM)? At one time we were all told that opossums are a host of EPM and help spread the causative parasite, but with the prevalence of opossums and horses in Kentucky, shouldn't it be an epidemic? Can you share insight into EPM, how it is contracted, and if opossums are, indeed, the scourge of a horse owner's existence? Is there any truth to the hypothesis that cats can spread it, too? And do we absolutely have to hate and wage war on opossums lest they cross our horses' fields and infect them? I know they have some benefits to our world since they eat so many ticks and almost never carry rabies due to their low body temp. I am tired of everyone I meet hating opossums and wanting to kill each one they encounter. Any information pro or con would be appreciated; maybe I am not as anti-opossum as I need to be.

A You are correct that opossums (not cats) are the host animals that transmit *Sarcocystis neurona*, the protozoan parasite that causes EPM. You are also correct that opossums are everywhere in the Bluegrass region, and they're not very selective in where they defecate (the mode of parasite transmission). So,

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it's not too surprising that many horses in this area (>75%) have been infected by *S. neurona*, as revealed by the presence of antibodies against the parasite circulating in their blood.

The disease is not an epidemic, however, because most horses are apparently able to control the infection. It would seem that there is a small subpopulation of horses that are susceptible to the disease. Unfortunately, we don't understand what factor(s) make horses more likely to progress to full-blown EPM when exposed to the parasite. It could be something intrinsic in the horse (for instance, its genetics), or it could be some external factor that causes the horse to be more susceptible (environment, nutrition, co-infection with a virus, etc.) Logically, a more complete understanding of this aspect of the disease would help us better control it, either through preventive measures (change in environment/nutrition), prophylactic treatment with a drug, or (ideally) with a logically designed vaccine.

Bottom line: Yes, opossums are the culprit that transmits the causative parasite of EPM to horses. While efforts to remove opossums will reduce the risk of infection on a farm, "nature abhors a vacuum," as they say, and new opossums are bound to migrate into areas where the population has been reduced. Thus, I don't think it's feasible to completely stop horses from getting infected. I can acquire several different pathogens from my dog and cat, but I don't intend to get rid of them because of it (although the cat does get on my nerves sometimes!). I do, however, keep the cat's litter box far from where food is stored, and I think the same logic applies to opossums. Make an effort to keep them out of the barn and away from your horses' food and water supplies. You won't completely prevent a horse from being exposed to the parasite, but perhaps less frequent exposure will also reduce the likelihood of EPM occurring.

Daniel K. Howe, PhD, UK Gluck Equine Research Center
University of Kentucky

Video: What Is Ergovaline and Where Is it Found?

Karen McDowell, PhD, from the University of Kentucky Gluck Equine Research Center, is an expert on tall fescue, having studied the plant for many years. Tall fescue is a type of grass that often has an endophyte fungus living on and in it. This endophyte produces a toxin, ergovaline, which can affect horses that eat it.

This video is the first in a series of three short presentations by McDowell on the topic. Here, you can learn about ergovaline, when and where it is found, and its seasonal fluctuations in pasture. McDowell also discusses how ergovaline can affect horses and what you can do to mitigate these effects.

You can view the video at Facebook.com/GluckEquineResearchCenter/videos/426472611617842.

Scientific name: *Lolium arundinaceum*

Scientific name: *Epichloë coenophiala*

Horse Feeding Basics

Providing a properly balanced equine diet is one of the most crucial parts of horse ownership, yet its complexity means it is frequently misunderstood or even overlooked. Whether you're the only one who cares for your horse or you rely on boarding facility staff to help, you should have a basic understanding of proper horse feeding to be sure your horse is on an acceptable nutritional plane. If you need help developing a diet to meet your horse's individual needs, your veterinarian, an equine nutritionist, and/or an extension specialist can be great resources.

For this article we've called on four equine nutritionists and extension specialists for their best feeding advice.

Evaluating Body Condition

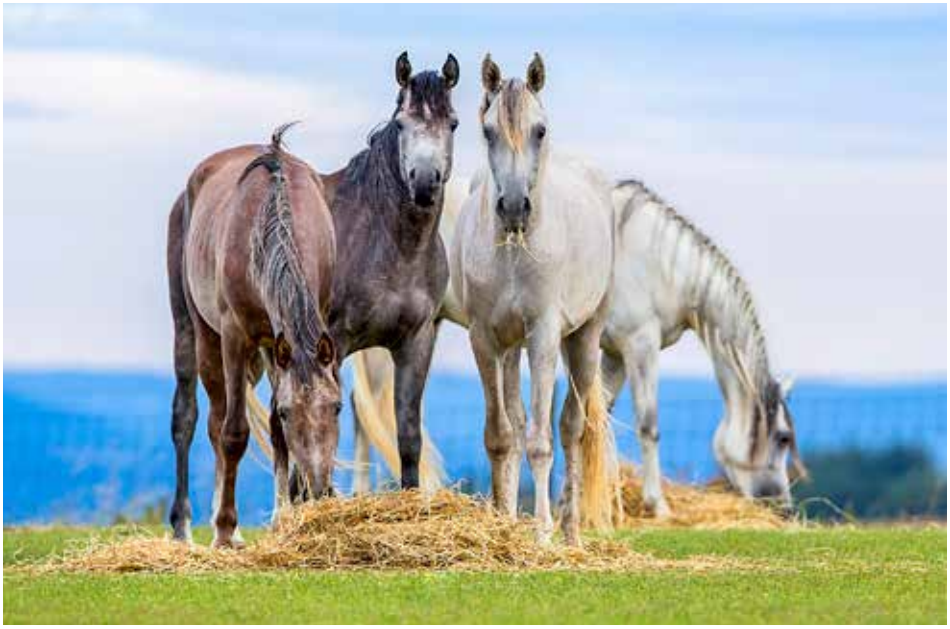
The first step in crafting a horse's diet, says Rhonda Hoffman, PhD, PAS, Dipl. ACAN, professor of horse science at Middle Tennessee State University, in Murfreesboro, is knowing whether he is healthy. "First, and most importantly, horse owners must be able to look at their horse and assess whether it is at a healthy weight or too fat or too thin," she says. "The eye of the feeder fattens (or thins) the horse."

Horse owners should acquaint themselves with the Henneke Body Condition scoring system that ranges from 1 (emaciated) to 9 (obese). The ideal body condition score is from 4 to 6.

"Five is ideal, and (these horses) should have moderate fat cover over the crest of the neck, behind the shoulders, over the ribs, and over the loin and tailhead," says Carey Williams, PhD, associate professor and associate extension specialist at Rutgers, the State University of New Jersey, in New Brunswick. "Ribs should be easily felt but not seen. This will help the horse owner determine if the horse needs to gain or lose weight."

Understanding the Math

Next, you will need to know how much your horse weighs to calculate how much to feed him and what. Unless you take your horse to a facility that has a large-enough scale, such as a veterinary clinic or commercial farm, you will need to calculate his estimated weight using a weight tape. The formula differs depending on whether a horse is a young growing horse, a pony or draft breed, lactating or pregnant, in heavy work, underweight, or overweight. However, the general calculation for the average light horse breed is:



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Horses should consume 1.5-2.5% of their body weight daily in forage.

Body weight in pounds = (Heart girth in inches x Length in inches*) / 330

**Length of the horse is measured from the point of the shoulder blade to the point of the rump.*

"A weight tape placed moderately tight (you should still be able to fit a few fingers under the tape) around the highest point of the withers around the girth area will give you a weight estimate plus or minus 50 pounds," says Williams. Taking a measurement every two weeks should reflect any weight changes.

Bob Coleman, PhD, BSc, assistant professor and extension horse specialist at the University of Kentucky, in Lexington, suggests using technology to determine a horse's weight. "There are a number of formulas, and more recently the University of Minnesota released an app called the 'Healthy Horse,'" he said. "This allows horse owners a means to measure their horse and get an estimate of what it currently weighs and then an estimate of the horse's ideal weight. That tells the owner where they are at and if the horse needs to gain, lose, or stay the same."

Weight, along with age, amount of exercise, climate, body condition, reproductive status, type of horse (light horse, for example), etc., all affect a horse's energy and nutrient requirements—the amount of calories, protein, fat, vitamins, and minerals he needs to consume.

Start With Forage

Coleman and Williams suggest that horses consume 1.5-2.5% of their body weight daily in forage, with "easy keepers" on the lower end of that range (the "air ferns" of the horse world) and "hard keepers" (those who have trouble keeping on weight) on the higher end.

"Forage is the basis of all feeding programs, as this is a primary source of the basic nutrients needed," Coleman explains. "Now, with that said, one can provide more than the horse needs, say with good pasture when a horse is at maintenance. The pasture intake is hard to limit unless you either restrict access to the pasture or use a grazing muzzle."

So how do you know how much your horse is eating when he is out to pasture? Williams says a 1,000-pound horse in light work can consume 20 pounds of forage—grass and hay—per day. "You can assume that if they are out (to pasture) for eight hours, they will eat approximately one-third of their daily intake, so the remaining two-thirds of the day they are in the stall, they could eat the remaining, roughly 13-14 pounds."

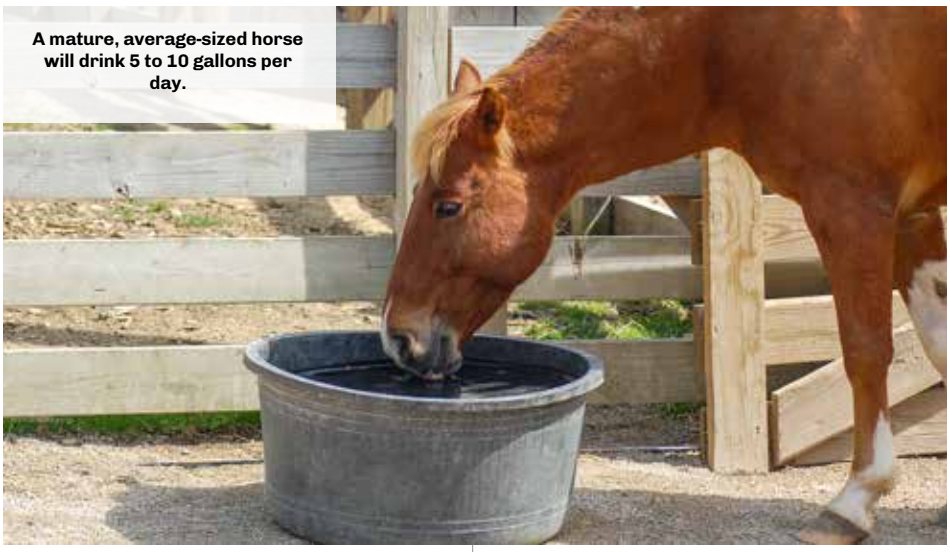
Offer as much as possible of this remaining amount as other forms of forage, such as hay, and then only add grain if your horse needs it to meet his energy needs.

Laurie Lawrence, PhD, professor in the Department of Animal Sciences at

the University of Kentucky, says owners should remember that pastured horses are subject to dietary changes associated with pasture availability. Therefore, additional hay might be necessary if pasture quality declines.

If a horse is accustomed to always being on pasture, Hoffman says the owner will need to introduce any supplemental hay and/or grain into the diet gradually. The same is true for returning horses to pasture in the spring as well as in the fall after a frost: Do so gradually, as sugar levels in grasses increase during these times, which can, in turn, increase a horse's colic or laminitis risk. In these situations, "start with a couple of hours at a time for two to three days, and then increase that by two hours every three days until the horse is out as long as you wish it to be," Hoffman suggests. This also allows the microbial population in the horse's gut that aids in food digestion to adjust to the pasture.

Feeding high-quality hay free-choice in addition to pasture could exceed some horses' nutrient requirements, warns Coleman. He recommends owners learn about the nutrients that different forage types provide. For instance, a legume hay, such as alfalfa, is higher in calories, protein, and calcium than grass hay of a similar maturity. Grass hay usually provides all the calories the "average" horse needs.



A mature, average-sized horse will drink 5 to 10 gallons per day.

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Hoffman suggests owners enlist their hay or feed dealer or local extension specialist to perform a nutrient analysis on their hay. "This $20-30 investment is small compared to the price of hay and feed, and it can help you better understand what sort of feed to buy to balance the nutrients in the hay," she says. "If your hay is nutrient-rich, you can likely save money (by feeding) a less-expensive grain. As well, it is easier to justify a higher calorie, higher protein, more expensive grain concentrate if your hay is lower in nutrients."

Horse owners all have their own hay preferences, but Coleman says his top choice is a mixed alfalfa-grass hay that meets many different horse classes' requirements, from growing to performance to senior horses. Williams prefers a grass hay that meets the needs of a horse in maintenance, which includes 8-10% protein and adequate levels of vitamins and minerals.

Regardless of your choice, know how much hay you're feeding by weight, not volume, says Williams. Feeding hay by volume (e.g., two flakes per feeding) can result in inconsistencies, because flakes can weigh different amounts. Also inspect hay for brown, black, gray, or white spots, which are indicative of mold. Quality hay should be pale to medium green and not smell dusty, dank, or moldy, Hoffman says.

Does Your Horse Need Grain?

As mentioned, if your horse is not getting all the nutrients he needs from forage, then you might need to add a concentrate feed to his diet.

"Exercise increases the amount of calories a horse needs," says Lawrence. "Growing horses have comparatively higher needs for calories, amino acids,

The Top Equine Nutrition Do's and Don'ts

Our four sources offered up their top do's and don'ts when feeding horses:

DO maximize forage in the diet before adding any grain.
DO feed by weight and not volume.
DO feed hay in a feeder to minimize wastage, which could be up to 50% if hay is fed on the ground.
DO pay attention to pecking order when feeding in a group setting so that a bully doesn't get the bulk of the food, leaving a submissive horse with almost nothing. If group-feeding in a pasture setting, DO arrange feed buckets in a circle at least 30 feet apart to give each horse space.
DO put out an extra bucket of grain if feeding a group of four or more so the submissive horse can move to another bucket if needed. The same is true for hay feeders.
DO make changes to a horse's diet slowly, over a one- to two-week period.
DO feed grain based on current activity level and adjust as activity levels change.
DO feed on a set schedule so as not to upset the horse's GI tract.
DO feed grain mixes formulated especially for horses. Feeds labeled for horse consumption must be balanced to meet the minimum nutritional requirements for the type of horse listed on the label.
DON'T feed more than 11 pounds of grain per day, or 4-5 pounds of grain per feeding, or the horse's colic risk increases sixfold.
DON'T worry about too much protein making a horse hot. Only 10% of the horse's energy comes from protein, so it is a very insignificant source.
DON'T feed supplements unless they are needed.
DO read supplement labels to make sure too much of one nutrient isn't causing a toxicity in the horse's diet.
DON'T feed grain just to feed grain. A good-quality forage will meet the dietary needs of most horses that are not in serious work.

minerals, and vitamins than most mature horses. Nutrient requirements also increase during gestation and lactation. Diets for pregnant and lactating mares must contain adequate nutrition or the mare will rob her own body stores to some extent to support fetal growth or milk production."

Lawrence adds that good-quality commercial feeds usually contain adequate amounts of vitamins and minerals for the class of horse the label specifies. Again, feed by weight.

"If you obtained a commercially manufactured sweet feed and looked closely, it will probably contain some pellets," explains Lawrence. "In many cases these pellets contain the nutrient fortification in the diet, particularly in vitamins and minerals. This pelleted material is often referred to as a 'balancer,' because it is used to provide a balanced nutrient profile in the feed. Some feed companies sell this type of pellet alone and call it a 'ration balancer.' If a horse is getting all the calories he needs from forage alone, feeding a small amount of the ration balancer will ensure that he gets all of the minerals and vitamins as well." Coleman recommends feeding one to two pounds daily if using a pelleted balancer, based on the horse's body condition and nutrient needs.

As for the choice of grain, Hoffman suggests horse owners choose a commercially mixed and balanced grain concentrate rather than feeding basic grains, such as oats, or trying to mix your own feed to save a few bucks. Without a nutritionist's help, chances are you're going to end up with a feed that does not provide balanced nutrition or that your horse must eat more of to get enough nutrients.

"As a general rule where grain is concerned, you get what you pay for," Lawrence adds, suggesting that you might have to purchase a mid-range to above-average priced feed to get the best balance between cost and quality ingredients and nutrients.

Water and Salt

Due to their size, horses must consume a large volume of water to keep their bodies functioning normally. A mature average-sized horse will drink 5 to 10 gallons per day. Of course, factors such as exercise, hot temperatures, humidity, sweating, pregnancy or nursing, and increased hay intake multiply the amount of water a horse needs, sometimes up to three or four times the normal amount.

Make sure your horse always has free access to plenty of fresh water. Without enough water, impaction colic becomes a big risk, and an extended time without water can even result in kidney failure, brain damage, or organ shutdown.

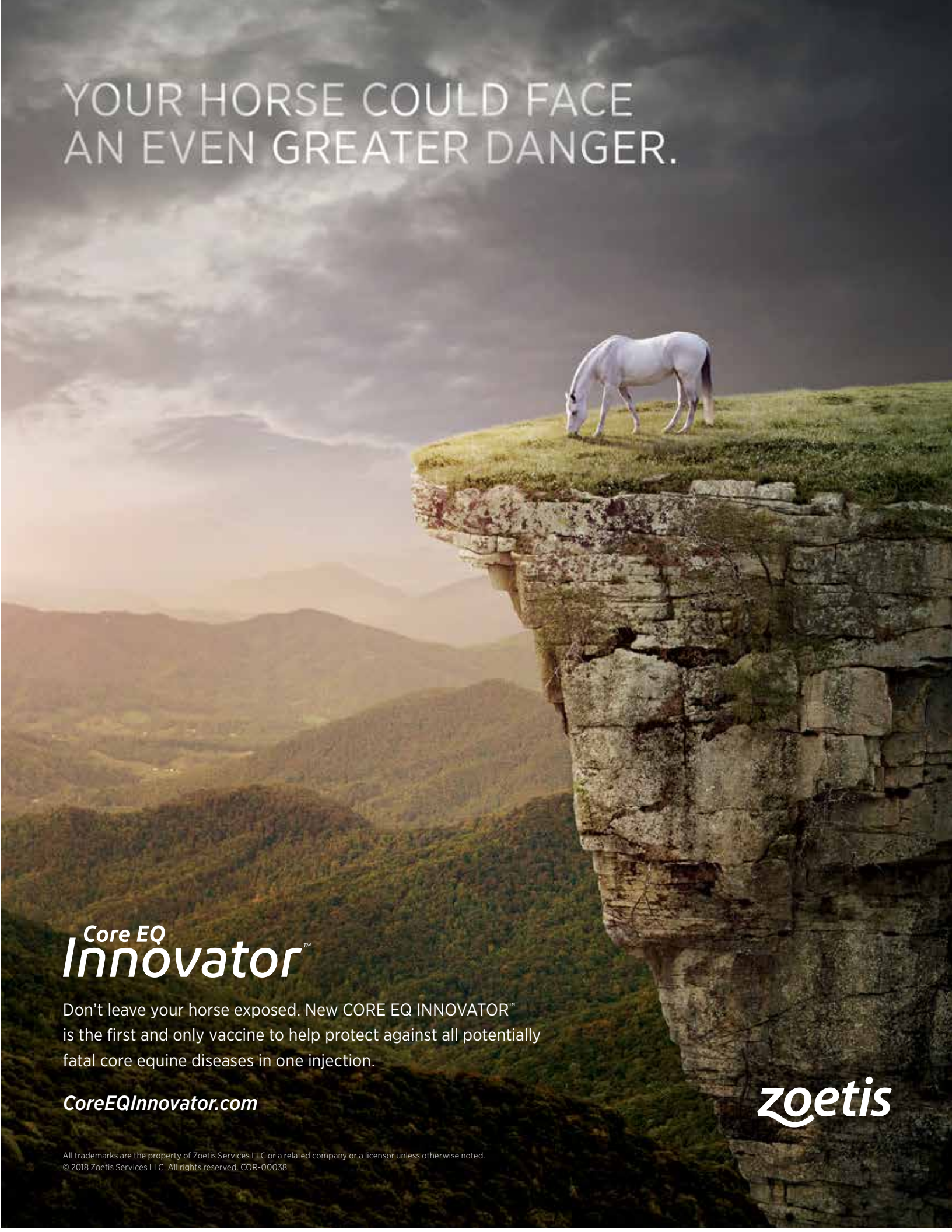
"Horses will typically drink two quarts (half a gallon) of water for every pound of hay they consume," says Williams.

Nutritionists also recommend that horse rations contain 1.6-1.8 grams of salt (sodium chloride) per kilogram of dry feed matter (what feed would weigh if all of the moisture were to be removed). Owners can provide additional salt through a mixture of one-third trace mineral or plain salt top-dressed on feed and two-thirds free-choice dicalcium phosphate (e.g., a salt block). This allows horses to meet their calcium and phosphorus needs as well, because these nutrients are not included in trace mineral salt blocks.

Take-Home Message

If you are new to feeding horses, check with your veterinarian or an equine nutritionist to make sure his diet offers the nutrients he needs. Otherwise, he could develop serious health problems. UK

>Sarah Evers Conrad is the Digital Content Editor at Horse Illustrated and Young Rider and the founder of All In Stride Marketing. Previously, she's worked for The Horse Media Group, the Certified Horsemanship Association, and the United States Equestrian Foundation.



Extension Agents Host 13th Annual Pastures Please!!

University of Kentucky Ag Equine Programs will host a Pastures Please!! pasture maintenance workshop from 5:30 to 8:30 p.m. EST Jan. 27 at the Fayette County Extension Office, 1140 Harry Sykes Way, Lexington. The event is free, and snacks will be provided prior to the event.

Horse owners, farm owners, and farm managers will have the opportunity to listen to several informative talks from forage experts, including how to make the best of your investment in hay, managing weeds for pasture renovation and establishment, year-round establishment, and a panel of people sharing how pasture improvements have impacted their farms.

RSVP to your local county agent or to the Fayette County Extension Office at 859/257-5582 or dl_CES_Fayette@email.uky.edu.

UK Ag Equine Programs is part of the College of Agriculture, Food and Environment. UK

>Holly Wiemers, MA, APR, is communications director for UK Ag Equine Programs.

Note From the Editor

This issue marks the 127th consecutive month we've brought UK equine research to you via our content partner *The Horse* and newsletter sponsor Zoetis. When we set out on this journey 10 ½ years ago, we never imagined we'd have more than enough content to fill a monthly publication or how much interest horse owners had in learning about the university's equine research happenings.

From the nitty gritty details of scientific discovery to fun topics like weeds and minerals and pastures, it's been more than a pleasant discovery on both counts. With two American Horse Publications wins for top e-newsletter in the corporate category, as well as several runner-up designations over the years, it's obvious this publication hit its mark. We very much appreciate you for your readership and *The Horse* for helping facilitate that opportunity.

All good things must come to an end, though, as innovation and change are overarching goals for us all. This will be the last issue of the Bluegrass Equine Digest. It's not an end to UK sharing its equine research, however. Stay tuned for some exciting new projects, both in conjunction with our longtime collaborating partner *The Horse*, as well as from our program directly. Visit UK Ag Equine Programs' website at equine.ca.uky.edu and TheHorse.com to discover new ways we'll be sharing important information about equine scientific discovery.

Happy Holidays, with much appreciation for your readership and support,

Holly Wiemers, MA, APR
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