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College of Agriculture,
Food and Environment

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Equine Science Review is a monthly College of Agriculture, Food and Environment newsletter that highlights important equine work happening at the University of Kentucky.



Photo courtesy Dr. Jimmy Henning.

UK GLUCK CENTER, VDL PRELIMINARILY IDENTIFY NOVEL ROTAVIRUS

Researchers at the University of Kentucky's Maxwell H. Gluck Equine Research Center and the Veterinary Diagnostic Laboratory have preliminarily identified a novel Rotavirus associated with diarrhea in very young foals.

This virus could not be detected using current diagnostic tests for equine Rotavirus A and appears to be different than the virus strain used in the currently available commercial vaccine.

Efforts are underway to better characterize the virus and determine its role in the current outbreak of diarrheal disease. Additional investigations are also underway at UK to identify other possible causes, and researchers are sending out an epidemiological survey to farms to better understand the outbreak.



PHOTO BY MATT BARTON, UK COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT.

Both the Gluck Center and the Veterinary Diagnostic Lab recommend strict biosecurity protocols as the best protection strategy at

this time.

See the [March 19 news release](#) for more information on this issue.

EASTERN TENT CATERPILLAR EGG HATCH NOW UNDERWAY IN KY

Eastern tent caterpillars have begun to hatch, with the first instances being seen in Southern Kentucky this week and expected in Central Kentucky by early to mid-next week and Northern Kentucky a few days to a week after that, according to entomologists in the University of Kentucky College of Agriculture, Food and Environment.

According to Jonathan Larson, PhD, UK extension entomologist, after spending about nine months as eggs in masses on twigs of wild cherry and related trees, the first tiny eastern tent caterpillars of the season are now leaving their eggs. The egg hatch



PHOTO BY MATT BARTON, UK COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT.

normally occurs at forsythia bloom, which is just beginning.

The larvae are among the first insects to become active in the spring and are well-equipped to cope with Kentucky's erratic temperature swings.

According to UK's entomology researchers, egg hatch occurs over several weeks in early spring. This increases the chance for survival in case of late freezes. The caterpillars grow and develop when the temperature is above 37 degrees F. Their preferred food plants are wild cherry, apple and crabapple, but they may appear on hawthorn, maple, cherry, peach, pear

and plum as well.

When mature, the 2- to 2.5-inch long, hairy caterpillars have a habit of wandering from their host trees to seek protected areas to spin their cocoons, or to seek additional food if their natal tree becomes defoliated.

ed. At such times, they may crawl along fence lines and into pastures. Consumption of large numbers of caterpillars by pregnant mares caused staggering foal losses in the Mare Reproductive Loss Syndrome outbreak of 1999-2001. MRLS can cause early- and late-term foal losses or weak foals. UK researchers conducted studies that revealed horses will inadvertently eat the caterpillars when present in pastures and feedstuffs. It is the caterpillar hairs, specifically the cuticles of those hairs, that embed into the lining of the horse's alimentary tract. Once that protective barrier is breached, normal alimentary tract bacteria may gain access to and reproduce in sites with reduced immunity, such as the fetus and placenta.

If practical, farm managers should move pregnant mares from areas where wild cherry trees are abundant to minimize the chance of caterpillar exposure. The threat is greatest when the mature caterpillars leave trees and wander to find places to pupate and transform to the moth stage.

Eastern tent caterpillars are also a nuisance to people living near heavily infested trees. The nests and defoliation are unsightly,

and the caterpillars may wander hundreds of yards in search of protected sites to spin cocoons and pupate.

"Managing ETC in small ornamental trees, such as flowering crabapples, is easy. Just wear a pair of grocery store plastic bags like mittens, climb a stepladder, pull out the tents, turn the bags inside out to 'bag' the caterpillars and stomp them," said Daniel Potter, PhD, UK entomology professor. "Pruning out nests in ornamental trees sounds great, but in reality, by the time they are noticed, they're often in branch crotches where pruning will compromise the symmetry of the tree.

"Spraying the flowering fruit and decorative trees preferred by the caterpillars can be a bee hazard – and with some products, a label violation – because the trees are in bloom with bees visiting them at the same time eastern tent caterpillars are active," he said.

According to Potter, caterpillar management around horse farm paddocks comes down to keeping pregnant mares away from infested trees and either removing or not planting preferred host trees near paddocks. In addition to those preventive measures, controlling

the caterpillars with insecticides may be warranted in some settings. That may require treating tall trees that are difficult to spray.

For the latter scenario, professional arborists treat via trunk injection. Products labeled for eastern tent caterpillar control include Tree-äge (emamectin benzoate), Inject-A-Cide B (Bidrin), Abacide 2 (abamectin) and Lepitect (acephate). Applicators should read and follow all label instructions. All four of those injectable products are labeled for use on horse farms.

For farms that are interested in prevention over the winter months, Larson recommended farms search for and destroy egg masses before they hatch.

"Egg masses can be seen over the winter, they look like sparkly, pyrite gum wrapped around twigs and branches," he said.

For more information about how to assess trees for egg masses, the UK Entomology publication, *Checking Eastern Tent Caterpillar Egg Masses*, is available [here](#).

| *Holly Wiemers, MA, APR, is the communications and managing director for UK Ag Equine Programs.*

VETERINARY STUDENT AND GLUCK STUDENT INTERN WINS PRESTIGIOUS SCHOLARSHIP



OLIVIA WALKER, LEFT, WITH DR. CARLEIGH FEDORAKA.

Veterinary student Olivia Walker from the Lincoln Memorial University School of Veterinary Medicine, a program affiliated with the University of Kentucky Gluck Equine Research Center and Veterinary Diagnostic Laboratory, was recently awarded the Nandi Scholarship by the American Society for Theriogenology. The scholarship recognizes a veterinary student in their final year who shows superior potential to impact

the field of reproduction (theriogenology).

Walker has spent the last three summers as a research intern with Carleigh Fedorka, PhD, postdoctoral scholar at the Gluck Center, where she collaborated on numerous projects with the reproduction group and earned status as co-author on five scientific articles. She will be presented the award, along with \$10,000, at the annual theriogenology conference in July.

INFECTIOUS OR CONTAGIOUS – WHICH IS IT?

Infectious. Contagious. You have probably heard these words several times in your life, maybe even used them. While similar and related, they are often used interchangeably or incorrectly and there is a difference. The distinction between the two is this: all contagious diseases are infectious, but not all infectious diseases are contagious.

The literal definition of infectious is “the process or state of being infected with a disease.” And to infect means “to affect or contaminate someone or something with pathogenic microbial agents.” Pathogenic meaning disease producing, and microbial referring to viruses, bacteria or other microorganisms. To simplify infectious, it basically means germs get into the body and spread, causing sickness. Contagious diseases are infectious diseases that can be transmitted through direct bodily (close) contact with an infected individual or their bodily discharges, or an object or surface they have contaminated (i.e. COVID-19). Other infectious diseases, however, are transmitted indirectly such as by mosquitoes (malaria) or ticks (Lyme disease).

The Big Picture

Contagious diseases are spread by contact, while infectious diseases are spread by infectious agents. So when something is contagious, it is also infectious because some contact exposed you or your animal to the infectious agent. Something infectious however is not always contagious. Confused yet? You can be infected with food poisoning (you ate the potato salad



ISTOCK PHOTO.

that sat out in the sun), but food poisoning isn't contagious (you aren't going to pass your food poisoning to someone else or your animals with just a simple contact). Suppose you are near someone sneezing quite a bit and they have an obviously stuffy nose. Well, if you have contact with that person and then you develop the sniffles and sneezes, it was contagious. It was also infectious because the way sniffles and sneezes are contagious is usually through an agent such as a virus or bacteria. If that person's symptoms were caused by allergies though, they aren't contagious because you can't catch allergies.

Since disease is spread by pathogens such as viruses, bacteria, fungi, parasites and other microorganisms, biosecurity at your farm is key to prevention. Having a solid plan in place to keep pathogens away from your farm or property, animals and personnel is key. The major components for your program are (adapted from USDA-APHIS):

General Signs of Animal Dis-

eases of Concern:

- Sudden, unexplained deaths in the herd or flock
- Severe illness affecting a high percentage of animals
- Blistering around an animal's mouth, nose, teats or hooves
- Unusual ticks, maggots or other insects
- Staggering, falling or central nervous system disorders
- Abortions or still births

Control Access to Your Property

- Have only one combined entrance and exit to your farm if possible.
- Keep property gates locked at all times.
- Make sure all visitors check with you prior to entering your property or visiting your animals.
- If you have a large number of visitors, keep track of who visits your farm. Make sure all visitors sign in at arrival and sign out at departure.
- Only allow essential vehicles

and visitors to enter the farm and keep these vehicles in a separate area away from animals.

Biosecurity Precautions

- When a new animal moves onto a farm, be sure that the health status and the source of the animal is known.
- New animals or animals returning to a farm should be separated from the rest of the herd for approximately two weeks. This can be difficult in some cases. If you are unable to completely isolate the animals, keep them in a pen or stall farthest from the rest of the stock, keep feed and water buckets or bowls separate, avoid nose to nose contact with other stock. For horses or stock that need to be exercised or worked, remove other animals from the pen, arena or paddock and set up a time for the new stock to have access to the area.
- Keep vehicles, such as milk, feed and livestock trucks, from driving through areas where animals are housed or feed is kept.
- Wash hands thoroughly before/after handling livestock.
- Ask visitors to provide information about recent farm and animal contacts; deny entry if they have been to an area or farm of concern.
- Clothing worn on farms in other locations/countries should be washed.
- All footwear should be disinfected before entering and after leaving an animal housing area.
- Discourage visitors from walking through feed mangers and having physical contact with animals.
- Report morbidity and mortality events to your local veterinarian or to the state

veterinarian's office.

Provide Disposable Protective Clothing

- Make sure visitors entering your farm have clean clothes or you can keep a supply of disposable clean coveralls and boot/shoe covers for visitors.
- If you haul your own animals, wash your truck, clean and disinfect boots and change coveralls before returning to your farm.
- In general, don't borrow or share equipment. In cases where there are no other options, clean and disinfect the equipment prior to use and make sure to repeat these steps prior to returning the items.
- If it is necessary to be around the animals of another farm, consider wearing protective clothing such as coveralls, and boots that can be cleaned and disinfected before you enter the property and removed when you leave.

Provide Disinfectant for Incoming Visitors

- Provide visitors with a tub of disinfectant and a brush for scrubbing shoes for use before they
- enter your property, or provide shoe covers.
- Vehicles entering and leaving your property should be kept away from animal areas or have their tires washed with disinfectant.

Additional Steps

- Control your companion animals and poultry.
- Control pests such as rodents and wild life.
- Keep garbage and other waste from supplies and animal housing.
- Evaluate feed purchased or brought onto the property and

fed to animals.

- Practice security and cleanliness in feed storage.

The take home message.

With infectious diseases, it's all about spreading germs. They can be spread in many ways, such as through direct contact with an infected person or animal or by direct contact with a contaminated object, consumption of contaminated food (salmonella) or water (cholera) or exposure to disease carrying insects (West Nile, numerous others).

With contagious disease, it's all about contact. The bottom line: have a good biosecurity plan in place on your farm/veterinary practice. Good hygiene, solid insect and parasite controls as well as limiting contact with suspect or new animals/people can help cut down disease problems. If any issues are noted or arise, don't wait; call your veterinarian, state veterinarian or extension agent. USDA can be reached toll-free at 1-833-663-8732.

| Jackie Smith, PhD, MSc, MACE, Dipl AVES, is an epidemiologist based at the University of Kentucky Veterinary Diagnostic Lab. Emma Adam DVM, PhD, DACVIM, DACVS, is based at the University of Kentucky Gluck Equine Research Center and Veterinary Diagnostic

PASTURE MANAGEMENT BEGINS WITH GOOD SCOUTING

As spring arrives, many horse owners' attention turns to their pastures. This is when many start haphazardly throwing seed and fertilizer and herbicide on the ground, which often leads to frustration in the fall and winter, when little has changed. Having spent the last 11 years evaluating pastures and training others to do so, I believe good pasture management begins with knowing what you have.

Pasture Scouting 101

First, "scouting" does not include looking over the fence as you drive out of the farm; there's only so much even a trained eye can see from the road. For example, by walking pastures in late February or early March, you would be able to see newly germinated buttercup plants, which is also the ideal time to spray for them. But if you wait until the yellow flowers are visible from the road, then it's too late to spray. Effective scouting means getting out and walking across the pasture, and ideally this should be done on a regular basis. Below are some things I look for when scouting pastures.

- Desirable grasses – You do not have to know what everything out there is, but you do need to know what you're trying to grow, and what it looks like. For Central Kentucky, this usually includes Kentucky bluegrass, orchard grass and tall fescue. Your local county extension agent can likely show you how to identify these grasses, or check out our species pages on the UK Forage Extension website at <https://forages.ca.uky.edu>.
- Grass color and density – This time of year, color is a great

indicator of plant health. Cool season grasses should be turning a deep, vibrant green color. If they are pale or yellowed, there may be a soil fertility issue, or in some years, lack of rainfall. Warm season grasses are likely still brown and stand out easily. For annual warm season grasses, such as crabgrass and foxtail, seed heads may still be visible from last year, although these plants will be dead. Grasses may not be especially tall, but they should be dense.

There is no need to overseed dense grass pastures. Seedlings need sunlight to germinate and grow, so if you can't see many large spaces (at least 6 inches) of open ground, seeding is not worthwhile. So carefully consider if overseeding is necessary, because fall is typically a better time of the year. (Figure 1)

- Legumes – Legumes can really tell you a story. Red clover typically indicates better than average management, particularly if you see a fair bit of it, because it doesn't survive well under heavy horse grazing. Sprinkles of white clover throughout a pasture are ideal, but large patches of pure white clover are signs of overgrazing in the past, and likely locations of weeds or bare soil



FIGURE 1, BECAUSE THIS PASTURE HAS BEEN GIVEN SUFFICIENT REST IN RECENT YEARS, IT HAS THICK GROWTH AND A HEALTHY GREEN COLOR. OVERSEEDING THIS PASTURE WOULD BE A WASTE OF TIME AND SEED. PHOTO COURTESY KRISTA LEA.

- Weeds – The most common question I get is, "What/when should I spray my pastures?" Regular scouting is essential for answering this question because what you have and what you've had in the past can change how you approach weed control. No herbicide controls all weeds, especially without harming desirable grasses. Instead of trying to identify every weed in the pasture, look for the most common and troublesome two to three species and focus on them. They may be the most prevalent, or the largest or the fastest growing. Identify these weeds, and then select an herbicide that will control as many of the top three as possible. For timing, it



FIGURE 2, THICK STANDS OF WHITE CLOVER ARE A CLEAR INDICATION OF OVERGRAZING, AND LIKELY THE LOCATION OF SIGNIFICANT WEED ESTABLISHMENT IN THE NEAR FUTURE. PHOTO COURTESY KRISTA LEA.

depends on the weed species, so determine the best timing for the specific weeds in your pastures. Weeds present will vary from one pasture to the next, so consider each pasture separately. For a list of more common weeds in Kentucky, as well as the best herbicides and time frames for control, check out [Broadleaf Weeds of Kentucky Pastures -AGR 207 by Dr. J.D Green](#). Always read and follow all herbicide label recommendations.

More on weeds – What weeds are present tell a lot about past pasture management. Here are a few that I often see and what they typically mean:

- Buttercup – Overgrazing, particularly over winter, as this weed germinates

in late winter and flowers in early spring.

- Nimblewill, with few broadleaf weeds – Aggressive spray program and poor overseeding success. Spraying created bare spaces and nimblewill spread into those spaces because horse do not graze nimblewill.
- Dandelion and plantain – these are normal weeds in horse pastures, and horses eat them. As long as they aren't extremely prevalent, do not worry about these.
- Broomsedge – rare in horse pastures, but will pop up in poorly fertilized pastures.
- Wild violet, horse nettle,

mare's tail and thistles – These are tough to control, so their presence, even in smaller quantities, suggests the need for more aggressive herbicides.

- Seed head – This one is simple; all seed heads are bad – or at least, undesirable. Weed seed heads will only plant more weeds and should be mowed off. When grasses begin to produce seed heads, they shift energy to producing seeds, meaning the leaves below do not grow well, and the overall pasture quality decreases dramatically. Additionally, most of our grasses are very poor at naturally reseeding themselves. Finally, the toxic components in tall fescue are concentrated in the stem and seed head. Essentially, no good comes from seed heads.
- Inconsistent pasture height – Horses are spot grazers, preferring to return to the same areas again and again to graze and avoid other areas completely. This decreases forage utilization, increases bare soil (leading eventually to weeds in their preferred areas) and also creates large variation in nutrient distribution. To reduce this issue, rotationally graze pastures and spread resources, such as gates, water, feed, hay and shade across the pasture. Mow when horses are first moved out of the pasture before rest, allowing for even regrowth. Drag pastures after mowing to distribute manure and help ensure that large amounts of grass are also distributed to remove thatch. Dragging when it is hot and dry is best, as is holding horses off the pasture for 21 -28 days.
- Soil type – there is a whole area of science, and collegiate competitions, for being able to identify soil type by touch and sight, but this level of understanding is not necessary for the average horse owner.

When I give owners a soil map of their land, they often look at it confused at first, then it begins to make sense. Areas with poor soil types often correlate with areas that “never grow much grass” and changes in soil type often follow contours and slopes. Soil maps provide great insight to the capacity of the ground below, but regular and critical observation of pastures can give you a similar picture. Consider soil type when planning fencing, barn and driveway locations as well as stocking rates in pastures. UK publication [Estimating Carrying Capacity of Cool-Season Pastures in Kentucky Using Web Soil Survey](#) includes a step-by-step guide to pulling a soil map of a farm and calculating carrying capacity of horses.

Things pasture scouting won't tell

There are a few things that, no matter how many years of experience you have, walking a pasture simply will not answer.

- Soil fertility – While there are a few plant species that can hint to poor soil fertility, they will not tell you how to remedy it. Only a properly collected soil sample can tell you how much phosphorus, potassium and lime are needed on your pastures. Sample every two to three years and apply only as needed. Nitrogen can be applied every year without a soil test in most cases and, for cool season grasses, fall is the recommended time to apply.
- Tall fescue toxicity – Another area where your eyes, and your horse’s nose, can’t tell you much. When considering toxic tall fescue, there are two components to consider independently. First, infection

level, a percentage of plants infected, is actually easy to predict. After testing more 3,000 pastures, I can say with confidence that if you didn’t plant an endophyte free or novel endophyte tall fescue, then you will have Kentucky 31+ toxic tall fescue. However, if you, or someone else, has planted a different type of tall fescue, only an endophyte test will tell. In addition, the toxic compound in tall fescue also cannot be determined by visual inspection and is nearly impossible to predict. Ergovaline, the most common toxic component, varies by time of year, environmental condition, pasture management and unpredictable factors. Testing is the only way to determine how toxic the plants are at that moment.

Resources for Pasture Scouting

In many cases, just a simple walk through a pasture, done fairly regularly, is enough to inform you about the health and productivity of your pasture. Below are a few resources that might help you.

- If you are wanting more structure, consider using the UK Horse Pasture Health Scorecard. This is an evaluation tool modeled after a similar tool used by NRCS to objectively evaluate and compare pastures. It includes a five-point scale of 10 categories, many of which I listed above. You can download a draft of this score card on the [UK Forage Extension website](#) under the Equine Tab. A final extension publication with this scorecard is expected to be released soon.
- There are many apps that can be downloaded and used to identify plants. Some use a dichotomous key, others work off photographs. I’ve seen

several that work well, but my favorite is called PictureThis and is quite accurate using pictures alone. It is available for download on iOS and Google markets and has a free and paid version.

- If you are new to walking pastures, consider calling your local county extension agent and ask them to walk a few pastures with you. They will likely be able to identify many of the grasses and weeds and talk more specifically about exactly what they see.
- Finally, the UK Horse Pasture Evaluation Program is available to those in the state of Kentucky. For this program, trained undergraduate and graduate students will collect more systematic observations of grasses and weeds present, and make recommendations for seeding, spraying and fertilizing. For more information and a quote, visit <https://forages.ca.uky.edu/equine> or contact me at Krista.Lea1@uky.edu.

Whether you take a walk just for this purpose, or look at plants while you walk to catch horses or find a lost halter, simple observation can answer so many questions about your pasture. With the weather getting warmer and the sun shining brighter, now is the perfect time to get in the habit of scouting pastures and making plans for fall renovations.

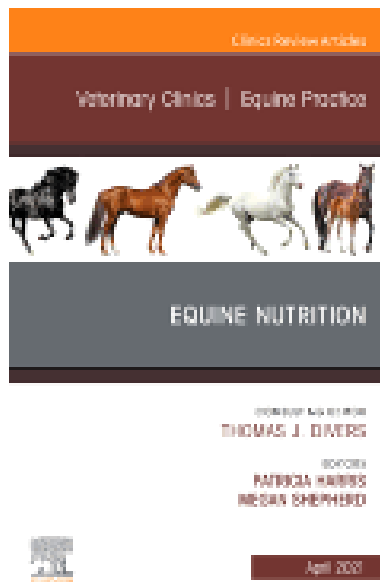
| *Krista Lea, MS, plant and soil research analyst and coordinator of the UK Horse Pasture Evaluation Program, UK's Department of Plant and Soil Sciences, provided this information.*

URSCHEL CO-AUTHORS NUTRITIONAL INFLUENCES ON SKELETAL MUSCLE & MUSCULAR DISEASE REVIEW

Kristine Urschel, PhD, an associate professor in the University of Kentucky's Department of Animal and Food Sciences, in conjunction with colleague Erica McKenzie, BVMS, PhD, DACVIM, DACVSMR, professor in the Department of Clinical Sciences at the Carlson College of Veterinary Medicine, Oregon State University, recently co-published a review paper titled, "Nutritional Influences on Skeletal Muscle and Muscular Disease," in the April issue of the *Veterinary Clinics of North America: Equine Practice*.

According to Urschel and McKenzie, proper nutritional management is necessary for the growth and maintenance of muscle mass, to support muscle contraction, to promote muscle recovery following exercise and in the management and prevention of muscular disorders. Key nutrients needed to support muscle include protein, carbohydrates, fat, vitamin E and selenium.

In the review, the authors stated that appropriate nutritional management is essential to the development and maintenance of healthy skeletal muscle throughout the lifespan of a horse. Energy is necessary to support muscle growth, maintenance and activity. Provision of adequate high-quality protein is critical because protein is the major non water component of skeletal muscle. Muscle mass can decrease with age as the tissue becomes less sensitive to the anabolic stimuli, and nutritional interventions to prevent this phenomenon are not known for horses. Similarly, feeding protocols that might optimize post-exercise muscle protein synthesis and glycogen repletion in horses have



yet to be defined.

Horses are prone to several heritable muscular disorders that can be successfully managed by restricting nonstructural carbohydrate (NSC) intake for most disorders, or dietary potassium intake for HYPP. Vitamin E and selenium deficiency also remain important causes of muscular disease in horses and deserve appropriate attention in balanced feeding plans.

The paper overviews muscle fiber structure and physiology, the regulation of muscle protein synthesis, primary fuel sources and metabolism, protein and energy for muscle growth and maintenance, muscle in aged horses, muscle ergogenic supplements and muscular disorders influenced by nutrition.

The review can be found online [here](#).

| *Holly Wiemers, MA, APR, is communications and managing director for UK Ag Equine Programs.*

ALFALFA WEEVIL POPULATIONS EXPLODING



According to University of Kentucky extension entomologists Ric Bessin, PhD, and Raul Villanueva, PhD, recent warm weather has resulted in the emergence of alfalfa weevil larva across the Commonwealth of Kentucky. It is critical that alfalfa growers scout fields immediately and prepare to apply insecticides as soon as the economic thresholds have been reached.

For more information on alfalfa weevil scouting and control, please visit the [Kentucky Pest News website](#) and see ENTFACT-127: Alfalfa Weevil Field Sampling Program.

Begin scouting for alfalfa weevils when the growing degree days in your county reach 190 or more. You can calculate GDD at the UK Ag Weather [website](#).

PARAPROBIOTIC EFFECTIVE AGAINST LARGE ROUNDWORM PARASITES

Martin Nielsen, DVM, PhD, Dipl. ACVM, Schlaikjer professor of Equine Infectious Disease, associate professor in the University of Kentucky Department of Veterinary Science at the Gluck Equine Research Center, and his team are collaborating with leading scientists at the University of Massachusetts and U.S. Department of Agriculture on a project investigating the effects and safety of a naturally occurring bacterial dewormer.

A free-living bacterium, *Bacillus thuringiensis*, produces a family of crystal proteins to combat its competitors. Some of these proteins have very potent activity against parasitic worms. In a newly published study, the team documents high efficacy of these bacterial proteins against roundworm parasites of pigs and horses. Foals naturally infected with high levels of *Parascaris* spp.



PHOTO COURTESY DR. MARTIN NIELSEN.

parasites were treated with a single dose, which eliminated all parasites. The foals did not show any signs of adverse reactions to the treatments. This is a culmination of a project that was launched years ago as a crowdfunding project under the

title, “Let the Germs Get the Worms.” The project has since been funded by the USDA, and the germs are, indeed, getting the worms.

Full access to the scientific article can be found [here](#).

GENE EXPRESSION IN THE EQUINE PLACENTA

Pouya Dini, PhD, spent several years at the Gluck Center as a visiting scholar and now serves as a faculty member at University of California, Davis. One of the projects that he worked on while with the Gluck Center was recently published in the scientific journal *Proceedings of the National Academy of Sciences of the United States of America* (PNAS).

Dini and his team identified genes whose transcription is biased to either the paternal



or maternal chromosome in the equine placenta. Overall, this study contributes to a better

understanding of regulatory processes in placental function, evolution and disease, using horses as a model for eutherian mammals’ placenta.

The full paper can be accessed [here](#).

REPORTING DISEASE EVENTS

This May and June, billions of In an era of globalization of trade and expansion in the volume of international movement of horses for the purpose of competing in performance events or for breeding, the need for reporting disease events by countries worldwide has never been more important.

The continued growth and success of the equine industry is critically dependent on the timely sharing of information on disease occurrences, if horses are to move internationally with minimal impediment. Movement can only take place in an environment in which the risk of disease transfer, inherent in trade between countries, can be mitigated to an acceptable and safe level.

Disease transfer can take place either from an imported equid to the resident population in the importing country, or vice versa, where an imported horse is infected following entry into a country. Critical to mitigation of disease transfer in either instance, is the availability of information on the disease status of the exporting and importing countries.

In turn, mitigation is dependent on each country assuming responsibility for reporting occurrence of equine diseases listed by the World Organisation for Animal Health or Office International des Epizooties (OIE), to that organization. It is in a country's best interest from an international trade viewpoint, to notify the OIE of occurrences of listed diseases in a timely, transparent and detailed manner. Moreover, there are equine diseases additional to those listed by the OIE that warrant international reporting because of their animal health significance and potential economic impact.

Two entities, the International Collating Centre (ICC), Newmarket, United Kingdom, and Réseau d'Épidémiologie

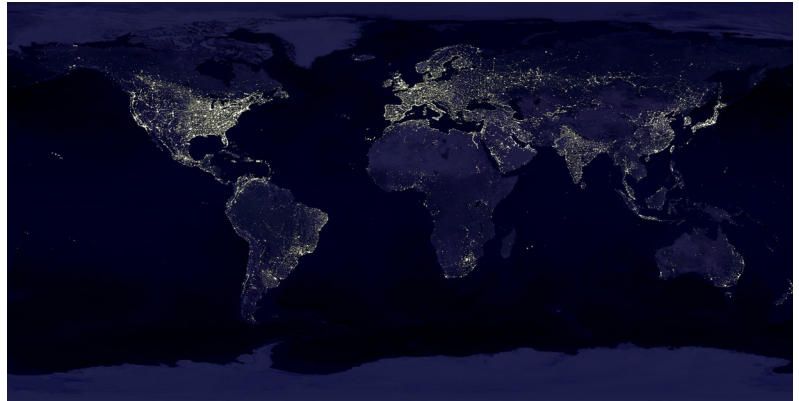


PHOTO BY PEXELS.

en Pathologie Equine (RESPE) in France currently post alerts on the internet of confirmed occurrences of OIE listed as well as other equine diseases as they are reported from different sources.

An increasing number of countries besides the UK and France have developed national equine surveillance and reporting programs such as the Equine Disease Communication Center (EDCC) in the USA, that serve as reference sources of reliable information, reporting disease events for their respective equine industries in a timely manner.

Notwithstanding the widely acknowledged importance of international reporting of equine disease events, regrettably only a small number of countries do so on a regular basis. All countries need to be encouraged to participate in the sharing of disease events via current channels of communication such as the OIE (official) and the ICC or RESPE (unofficial). Timely reporting and dissemination of such information is crucial to contain disease outbreaks and minimize the risk of international spread of diseases. Furthermore, addressing deficiencies in the known global distribution of various equine diseases will require more widespread participation by countries; this is critical if

the health of equine populations worldwide is to be safe-guarded in the longer term.

Not to be overlooked in any consideration of the need for access to information on the occurrence of equine diseases at a national and international level, is the importance of periodic surveillance of a country's resident equine population for a particular disease or range of diseases. Surveillance provides a snapshot of the disease status of a country's equine population at a point in time.

This is exemplified by two such studies cited in this publication. One involves two extensive surveys by the Korean Animal and Plant Quarantine Agency and the Korean Racing Authority and the other a survey by the Japan Racing Association and Japanese horseracing industry.

| Source: April 2021 *Equine Disease Quarterly* Commentary by Peter J. Timoney, MVB, MS, PhD, Professor, Frederick Van Lennep Chair in Equine Veterinary Science at the Gluck Equine Research Center.

UK TO HOST FENCING SCHOOLS IN MAY

The University of Kentucky will host two regional fencing schools this spring to help livestock producers learn the newest fencing techniques and sound fence construction.

The 2021 spring schools will occur May 11 at the Christian County Extension office in Hopkinsville and May 13 at the Daviess County Extension office in Owensboro. The schools begin at 7:30 a.m. CDT and conclude at 4:30 p.m. CDT.

Chris Teutsch, PhD, UK forage extension specialist, started these one-day events in 2018 in Kentucky to help producers improve their herd management.

“If you have ever driven around the countryside, there are a lot of fences but not a lot of well-constructed ones,” said Teutsch, extension associate professor in the UK College of Agriculture, Food and Environment. “One of the goals of this school is to help people get the basics of fencing down. That way they can build a strong, durable fence that will last 25 or 30 years, or if they decide to hire a contractor to build it for them, they will know what a well-constructed fence looks like.”

UK specialists and fencing industry experts will use a mixture of classroom instruction and hands-on demonstrations to teach producers the basics of a well-built fence. An added bonus of the school is that the techniques producers learn can help them qualify for cost-share dollars from the Natural Resources Conservation Service for new fence construction.

Each school is limited to 30 participants, and the cost is \$30 per person. This cost covers lunch, a fencing notebook and safety gear. Participants are encouraged



FENCING SCHOOL INSTRUCTORS JODY WATSON FROM ACI DISTRIBUTORS AND CLAY BREWER FROM STAY-TUFF FENCING DEMONSTRATE PROPER POST DRIVING TECHNIQUES AT A PAST KENTUCKY FENCING SCHOOL. PHOTO BY CHRIS TEUTSCH, UK FORAGE EXTENSION SPECIALIST.

to bring leather gloves for the hands-on portion of the school. Those interested in attending can register online [here](#). for the Hopkinsville school and [here](#) to attend the Owensboro event. Producers can also get the registration form from their local extension office and mail the registration form and payment to Carrie Thrailkill, UK Research and Education Center, 348 University Drive, Princeton, KY, 42445.

Producers are encouraged to register early, as spots will fill quickly. The registration deadline for each location is two weeks prior to the workshop.

During the event, participants must follow current masking and social distancing guidelines.

The Kentucky Forage and Grassland Council, UK Cooperative Extension Service and Kentucky Master Grazer Educational Program organize and sponsor the schools. Additional sponsors include the UK Grain and Forage Center of Excellence, Kentucky Agricultural Development Fund and the Kentucky Beef Network.

Industry partners include Stay-Tuff Fencing, Gallagher USA, ACI Distributors and Applegate Manufacturing.

| *Source: March 30 news release. Katie Pratt is an agricultural communications specialist with UK's College of Agriculture, Food and Environment.*

UK'S EQUINE SCIENCE REVIEW CELEBRATES ONE YEAR

One year ago last April, in the first few uncertain months of the pandemic and lockdown, the University of Kentucky launched a new publication, the Equine Science Review: highlighting research & outreach efforts at the University of Kentucky. The Review is a monthly newsletter from the University of Kentucky College of Agriculture, Food and Environment that highlights the important horse-related work happening at the university. UK is home to world-class research and service excellence in equine health, safety, nutrition, pasture and forages, economics, engineering, environmental compliance and many others.

Some of the notable story highlights from the past year include:

COVID-19

[Commentary: COVID-19 and its Significance for the Horse](#)

[Equine Innovators: COVID-19 and the Equine Economy with Dr. Jill Stowe](#)

[A look at equine markets amidst COVID-19](#)

[Commentary; COVID-19 and Horses](#)

[Gluck Equine Researcher Assists in FDA Approvals for COVID19 Testing Device](#)

Infectious disease

[Equine Innovators: African Horse Sickness with Dr. Peter Timoney](#)

[African Horse Sickness: Potential Threat for Disease-free Countries](#)

[UK Gluck Center and Industry Leaders Respond to Uptick of Foal Diarrhea Cases](#)

Reproduction

[UK Department of Veterinary Science Responds to Nocardioform Placentitis](#)

[Researching the Normal to Better Predict the Abnormal: How One Researcher is Using Her Background in Reproductive Immunology to Better Understand the Leading Cause of Equine Abortion](#)

[Zero confirmed equine lept abortions, A 30-year first, demonstrates power of research leading to a successful vaccine](#)

[Update on Nocardioform Placentitis](#)

[Novel Biomarker for Ascending Placentitis: IL-6](#)

[Nocardioform White Paper, Video Recordings Released](#)

Parasitology

[UK Launches New Parasitology Video Series and Takes a Journey Through a Horse's Life](#)

[Ivermectin and Moxidectin Resistance Discovered in North America](#)

[Collaborative Study Finds Climate Change Will Accelerate Drug Re-](#)

HIGHLIGHTING RESEARCH AND OUTREACH EFFORTS AT THE UNIVERSITY OF KENTUCKY

APRIL 2020
ISSUE #0001

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CA.UKY.EDU/EQUINE
@UKAGEQUINE ON FACEBOOK/TWITTER

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Currently no reports of the virus infecting or causing disease in horses.

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First instances seen in Central Kentucky March 12.

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[Resistance Development and Affect Parasite Burdens in Horses](#)

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[Studying Rotational Falls to Find Solutions and Improve Eventing Safety](#)

[Promising developments in quest to prevent catastrophic racehorse injuries; UK study shows association between mRNA biomarkers and catastrophic injuries in Thoroughbred racehorses](#)

[Equine Innovators: Racetrack Surfaces with Dr. Mick Peterson](#)

[Developing a More Effective Measurement Tool; UK Researcher Working to Make Horseracing Safer Through Measurements on Track Surface Consistency](#)

[Follow-up UK mRNA Biomarker Study Will Build on Promising Research into Preventing Catastrophic Racehorse Injuries](#)

[Leading Horseracing Organizations Partner with UK to Support Research Efforts to Improve Surface Safety](#)

[Helmet Safety and Connection of Horseshoes to Osteoarthritis Issues are Two Focus Areas for UK Engineering Seniors](#)

[UK Students Working to Develop Safety Standard for Equestrian Helmets](#)

Pasture and Forage

[Tall Fescue Risk Measured Through Field and Manure Measurements](#)

[The Tenacity of Buttercup](#)

[Complete pasture renovation](#)

[Is rained-on hay any good?](#)

[Which Grasses Should You Plant in Your Pastures? Seed Selection for Pasture Renovation](#)

[Watch for Blister Beetles in Hay](#)

[Roots: Building Healthier Pastures from the Ground Up](#)

[Pasture Renovations will Help Horse Farm Implement Rotational Grazing](#)

[Rotational Grazing on Horse Farms](#)

[Cost SAVING Moves for Winter Pasture](#)

[Optimizing Existing Forage Resources](#)

[An Equine New Year's Resolution: Better Pasture Management](#)

[Justifying Kentucky 31 Tall Fescue No More](#)

[Control Efforts for Poison Hemlock and Buttercups Begin in Late Winter](#)

Nutrition

[Equine Innovators Podcast Features UK's Dr. Laurie Lawrence on Equine Nutrition Research](#)

Genetics and genomics

[Inbreeding and Genomics](#)

[Harnessing the Power of Big Data Holds Promise for Equine Precision Medicine](#)

Analytical chemistry

[UK's Gluck Equine Research Foundation Looking to Future with Equine Biological Passport Program](#)

Science Sleuths: the science that shapes diagnostic tests

[PCR: what's behind commonly used acronym?](#)

[What Does 'Statistically Significant' Actually Mean?](#)

[Wanted Dead or Alive – Does PCR Supersede Traditional Techniques?](#)

[What Does Ro Mean?](#)

[PCR, qPCR – What's the Difference?](#)

[The Science That Shapes Diagnostic Tests: Endemic, Epidemic or Pandemic?](#)

[Zoonotic? It Might Not Mean What You Think it Means.](#)

[Vaccines - Where Would we be Without Them?](#)

Aged horse research

[One Year in, MARS Equestrian™ Fellow at UK's Gluck Center Continues to Help Older Horses](#)

[Research Shows that PPID Horses Experience Altered Immune Function](#)

[UK Gluck Center Launches National Survey on Horses Aged 15 Years and Older](#)

[Equine Innovators Podcast Features UK's Dr. Amanda Adams on Older Horse](#)

Management

[If you Build it, Will They Come? Undergrad Research Project Studies Horses' Inclination to Seek Shade at Certain Temperatures](#)

[Undergrad Research Project Studies Horses' Inclination to Seek Shade at Certain Temps and Times of Day in Central Kentucky](#)

[2020 Sustainability Challenge Grant Program: Aerated Manure Compost Facility for the Smaller Horse Farm Operation](#)

Insects and pests

[Asian Longhorned Tick Found in Kentucky](#)

News

[UK, TheHorse.com Launch New "Equine Innovators" Podcast](#)

[Adoption of Uniform Terminology Assists in Legitimizing Equine-assisted Services \(EAS\)](#)

| *Holly Wiemers, MA, APR, is communications and managing director for UK Ag Equine Programs.*