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Windrow Composting for Parasite Control and Waste Management

A group of University of Kentucky (UK) College of Agriculture equine researchers published a study recently in *Veterinary Parasitology* showing that windrow composting is effective and practical for parasite control and waste management on horse farms.

The research team consisted of Jessica Gould, graduate assistant; Mary Rossano, PhD, assistant professor; Laurie Lawrence, PhD, professor; Rosalyn Ennis, research assistant; and Steffanie Burk, graduate assistant, all from UK's Department of Animal and Food Sciences, as well as Eugene Lyons, PhD, professor, from the Department of Veterinary Science.

According to the researchers, the study produced compelling evidence that windrow composting (the production of compost by piling organic matter or biodegradable waste into long rows called windrows) is an efficient and effective way of managing equine waste products while eliminating *Parascaris equorum* contamination. *P. equorum* is a parasitic nematode (worm) in horses that is abundant worldwide and is commonly referred to as the ascarid, or roundworm.

The parasite usually infests horses younger than 18 months, and heavy infestations can be severe or even deadly. The infestation occurs when the young horse ingests larvated eggs (the stage that is infectious) present in pastures, paddocks, stalls, and on feeding and watering equipment. Eggs present in the environment can remain viable for years, so pastures and facilities used for foals and yearlings accumulate *P. equorum* and are a source of infestation for each new foal crop.

Anthelmintic (dewormer) use has long been a common and recommended practice on horse farms for parasite control. However, emerging drug resistance in parasites supports the need for alternative control methods that reduce environmental contamination with larvated eggs. Scientists have determined that a well-rounded control program for *P. equorum* should include maintenance of pastures, manure, stalls, horses, and equine traffic on the property. One practice that addresses most of these issues is waste composting.

UNIVERSITY OF KENTUCKY

Here, a tractor turns the windrow composting pile on the farm used in the study.

Articles of Interest

Composting farm waste, both animal-derived and other expendable byproducts (bedding, landscaping waste, etc.), is a waste management practice for equine facilities that has become one of the most utilized and accepted technological alternatives for decreasing the overall volume of these materials. For some farms, composting this waste and subsequently using the final product as fertilizer and landscaping material might also be more cost-efficient than paying for its transport off the facility.

However, such practices might potentially increase contamination of the farm environment with *P. equorum* eggs and also increase the risk of affecting animals. Foals exposed to pastures where caretakers used horse manure as fertilizer have been shown to have a significantly higher risk of testing positive for *P. equorum* in a fecal egg count evaluation.

Windrow Composting ...

Prior to the UK study, previous research had shown that within well-managed composting systems temperatures reach levels that inactivate pathogens such as parasites. Studies investigating temperature's effects on sewage sludge, for example, indicated that for every 10°C (50°F) increase in temperature above 20°C (68°F), the amount of time to 99% inactivation of helminth eggs of the *Ascaris* genus, of which *P. equorum* is a member, decreased significantly.

With that in mind, UK researchers set out to see if windrow composting was capable of killing *P. equorum* eggs in manure and stall bedding. Because composting is a thermogenic (heat-producing) process capable of disinfecting or sanitizing its components of intestinal pathogens, the UK researchers theorized that it could be used to eliminate *P. equorum* eggs' viability.

Composting is a thermogenic process capable of disinfecting its components of intestinal pathogens.

The goal of the study was to test a windrow composting system as it was used on a Central Kentucky horse farm. Under the farm's normal working conditions, past windrow composting piles usually decomposed completely between 10 to 12 weeks, without season of the year impacting the composting process significantly.

Equine manure, soiled bedding, and other organic waste material used to build the experimental windrow were provided from stalls housing only horses previously confirmed negative for *P. equorum* eggs. Ingredients incorporated into the compost pile were balanced to create a 30:1 carbon to nitrogen ratio for optimum decomposition. Sealed packets containing *P. equorum* eggs were placed in the windrow under two different exposure conditions. Half were buried in the center of the windrow for the duration of the experiment and were only removed when the pile was turned. The other half alternated between the center of the windrow and resting on top. The alternating treatment was designed to mimic the way materials get redistributed when the compost is turned.

The farm staff's typical daily windrow management included taking internal temperature and carbon dioxide readings from multiple locations across the same compost row. If temperatures were greater than 50°C (122°F) or if the carbon dioxide readings were greater than 17%, the compost row would be mechanically turned and aerated with a specialized tractor-operated device. The farm management evaluated compost row moisture, and if moisture was deemed too low, they added water during mechanical aeration. Whenever the pile was aerated, sample of packets of *P. equorum* eggs were removed from the windrow and brought to the laboratory to be tested for viability. The study continued for 36 days while composting conditions and parasite viability were recorded.

The farm manager disclosed that while the recommended composting format was usually implemented, day-to-day farm operations occasionally limited the amount of attention given to windrow management. Thus, at certain times when aeration or additional water might have been necessary, it did not always occur. Because the researchers' objective was to test the composting system as it is used by the operation, the investigators did not interfere with the farm staff's management decisions regarding the windrow to insure it would best replicate their normal operation. Rather, maintenance events were recorded as they occurred.

During the study, the high average temperatures, both minimum and maximum, produced inside the windrow in the first 16 days of the experiment indicated the high metabolic activity of microflora carrying out decomposition in the windrow. Mean temperatures within the first 16 days closely resembled the optimal temperatures for composting, which tend to vary from 45-50°C (or 113-122°F). By Day 8 of the study, the researchers deemed all the *P. equorum* eggs in both treatment groups nonviable. This was well before the composting process had slowed enough for the temperature to drop below the optimal range.

Both the width and the height of the windrow decreased steadily over the duration of the composting process. The overall decrease in the material's volume demonstrated that the process accomplished one of the main goals of waste management: volume reduction. This was also consistent with typical compost production at the cooperating farm, indicating that the experimental windrow was representative of their method.

The results of the study demonstrate that under normal conditions at a working horse farm, windrow composting can be a very effective way to reduce *P. equorum* transmission, manage waste, and utilize that waste as a safe nutrient source for pastures. UK

>Holly Wiemers, MA, is communications director for UK Ag Equine Programs. Research information was provided by Jessica Gould; Mary Rossano, PhD; Laurie Lawrence, PhD; Rosalyn Ennis; and Steffanie Burk, all from the Department of Animal and Food Sciences, as well as Eugene Lyons, PhD, professor from the Department of Veterinary Science.

Annotating the Equine Genome

The Thoroughbred mare Twilight, whose DNA served as the basis for sequencing the horse genome, achieved world fame in 2009 when an international team of researchers published a paper in the journal *Science* analyzing her DNA. Determining the whole horse genome sequence was a major leap forward in equine genetics. Now, Matthew S. Hestand, a postdoctoral scholar at the University of Kentucky, is taking the next step and asking about the information the genome contains.

Hestand's research focus is transcriptomics (RNA products of genes that provide templates for cells to synthesize proteins) based on next-generation sequencing of protein-coding RNA, under the supervision of James MacLeod, VMD, PhD, professor of veterinary science at the Gluck Equine Research Center. Hestand's research has continued efforts in MacLeod's lab to identify and characterize gene structures within the horse genome sequence, as well as look for differences in the genome that

Equine Genome ...

are found across different horses.

"To put it simply, you can think of the horse genome as a large toolbox full of tools and additional filler," Hestand said. "At first glance, the box is a mess of tools and other items, with the initial challenging step being to identify each individual tool, or gene in our case, from the pile. We found nearly 67,000 structures, some of which represent different structures for the same gene.

"Once we can separate out a tool, we can then look at its shape and begin to learn about its function," he continued. "There may be some genes that exist in multiple copies with small differences between them. These can be viewed as multiple screwdrivers that also have slight differences and, hence, slightly different performance, such as a flathead versus a Phillips screwdriver, to remain in the toolbox analogy."

Hestand said that with new technology that has become available, researchers can now base these structures on evidence using current advanced DNA sequencing technologies. "Originally, most of the gene structures in the equine genome were based on predictions," he explained. "The new experimental data confirms and refines these predictions, while also providing evidence to support 'new' genes in the horse."

Hestand and colleagues identified 488 genes in horses that were similar to those found in dogs, cows, and humans, but were not found in Twilight's genome.

According to Hestand, identifying these gene structures is the first step in characterizing a gene and its function. Variations between horses also provide a list of changes in the genomic alphabet that likely have some phenotypic (physical expression of a genetic trait) affect.

"In our current study we also found approximately 140,000 small changes in the genome, a small subset of which may affect how a gene performs," he said. "This concept can be illustrated by established examples like some of the genes that control coat color, where one variation of a gene might control for a chestnut color and another variation might control for a black color."

As the catalog of gene structures and variations refines and expands, researchers will have an updated reference to identify changes across many different animals that contribute to their appearance, performance, disease, disease resistance, etc., Hestand concluded. UK

>Those involved in this project and their affiliations: Matthew S. Hestand, Stephen J. Coleman, PhD, and James N. MacLeod VMD, PhD, Gluck Equine Research Center, Department of Veterinary Science, University of Kentucky; Ted Kalbfleisch, PhD, Biochemistry and Molecular Biology Department, School of Medicine, University of Louisville; and Zheng Zeng and Jinze Liu, PhD, Department of Computer Science, University of Kentucky.

>Shaila Sigsgaard is a contributing writer for the Bluegrass Equine Digest.

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The Horse: Your Guide to Equine Health Care

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Tips for Environmentally Friendly Muck Storage

Horse people have always been ahead of the curve when it comes to being good stewards of the land. But sometimes, in the rush of our busy lives, we let this go to the wayside. Horse farms generally are not considered livestock operations, and in the past many of these farms have been able to avoid state and federal environmental regulations. But now, there is increasing scrutiny of horse farm manure management practices. Now is the time to protect your farm against potential compliance violations.

The reason for the increasing scrutiny is clear: More than 48% of the rivers and

Muck Storage ...

streams designated as impaired by the United States Environmental Protection Agency are impaired because of agricultural nonpoint source pollution—the type of pollution that cannot be attributed to single drainage from a pipe or discharge point. The federal Clean Water Act (CWA) requires each state to create and enforce a set of water quality standards. Under Section 319 of the CWA, states must assess and manage nonpoint source pollution. This pollution can occur on agricultural operations when precipitation runs off pastures, cropland, manure piles, and other surfaces and picks up nutrients, sediments, and chemicals. Once these pollutants reach surface and ground water sources they can harm aquatic and land-based ecosystems and can cause human and animal illness or even death.

Dealing with the up to 50 pounds of manure, 10 pounds of urine, and 20 pounds of soiled bedding each horse produces daily (depending on bedding type and number of times cleaned per day) can be the least rewarding part of the job, but it must be done. Here are some tips to help you deal with your muck piles in an environmentally friendly and compliant way:

- Keep muck away at least 300 feet away from streams, ponds, sinkholes, and wetlands.
- Roof manure storage facilities. Surface runoff and precipitation can infiltrate muck piles, potentially creating pollution problems downstream.
- Seal with concrete the areas where muck piles will be placed—and don't forget the sides! This stops nutrients and pathogens within the manure from leaching into the ground, which can seep into groundwater. Concrete is an incredibly strong material that can withstand scraping and muck wagon traffic. Walls will help you contain and constrain your muck piles.
- Manure storage facilities should be large enough to safely hold all muck produced between land applications or until it is hauled away.
- If you don't have your manure hauled away, develop and implement a nutrient management plan (NMP). These plans can help you monitor nutrients, such as nitrogen and phosphorus, which are applied to soils. When excessive nutrients are present in soils they can run off to water sources, causing harmful eutrophication (the "choking out" of aquatic life) and health problems in livestock and humans. Further, having an NMP ranks you above those without one if you are applying for technical, design, or cost-share assistance from the National Resources Conservation Service.

Contact your local conservation district to determine if you need any additional conservation or agricultural water quality plans. Having a plan in-hand can protect you if your farm is called in on a complaint. UK

>Stephanie Mehlhope, MA, within University of Kentucky's Biosystems and Agricultural Engineering, and Steve Higgins, PhD, director of animal and environmental compliance for the Kentucky Agricultural Experiment Station, provided this information.

STUDENT SPOTLIGHT

LINGSHUANG SUN

From: **Mudanjiang, Heilongjiang, China**
Degrees: **Veterinary Medicine, Northeast Agriculture University, 2003**

Lingshuang Sun came to the University of Kentucky Maxwell H. Gluck Equine Research Center because of her interest in infectious diseases of large animals, including horses. "To work with horses seemed the best choice initially, but it truly turned out to be a perfect decision," she said.

Gluck's ranking among the top institutes in equine diseases, as well as its location in Lexington, Ky., made it perfect for working with horses, Sun explained.

Sun's research field is immunology with a focus on regulating interferon gamma expression in foals and its role in resistance to *Rhodococcus equi*. *R. equi* is one of the most serious causes of pneumonia in young foals and is of great concern to breeding farms. Adult horses are resistant to *R. equi*, whereas foals exhibit an age-related susceptibility. This susceptibility is associated with decreased expression of interferon gamma, an important protein produced by the immune system that is necessary for *R. equi* resistance. Increased expression of interferon gamma is associated with increased resistance to *R. equi* infection.

For her dissertation research, Sun characterized the molecular regulation of interferon gamma expression. Her results were the first to show that interferon gamma expression increases following exposure to microbes in the environment.

Sun said the next research step might be to identify the microbial components that promoted interferon gamma expression in the foals.

"Ultimately, if we could find a way to increase interferon gamma expression in foals, we could significantly prevent mortality and economic losses due to *R. equi* infections," she said.

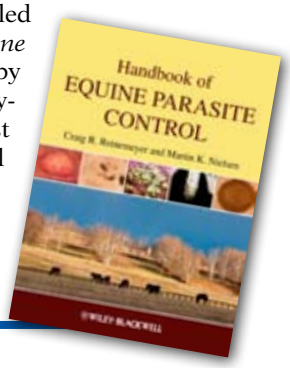
Sun plans to either continue postdoctoral training in the United States or return to China and continue academic research. UK

>Shaila Sigsgaard is a contributing writer for the Bluegrass Equine Digest.

Gluck Researcher Publishes Equine Parasite Control Handbook

Veterinary practitioners, laboratory and veterinary technicians, farm managers, and other equine professionals frequently request updated information on and guidance for equine parasite control. Changing recommendations and the existence of several unsupported myths make it challenging to define a proper parasite control program.

A new book titled *Handbook of Equine Parasite Control*, by Craig R. Reinemeyer, PhD, of East Tennessee Clinical Research, in Rockville, Tenn., and Martin K. Nielsen, DVM, PhD, EVPC,



Parasite Control Handbook ...

Dr. Martin Nielsen co-authored the handbook with Dr. Craig Reinemeyer.

assistant professor in the Department of Veterinary Science at the University of Kentucky Gluck Equine Research Center, compiles all the available scientific material and translates it into practical updated information about controlling parasites in horses.

Both authors spent years in equine veterinary practice before pursuing an academic career in equine parasitology. They are both board certified in veterinary parasitology and have published widely in the field.

"With increasing frequency, we had people asking for something to read to provide them with the missing information about equine parasitology," Nielsen said. "Craig and I agreed that no single publication encompassing all the needed information was out there, and that we simply had to write that book ourselves."

The book features 20 factual case stories with accompanying questions and suggested answers.

"These cases should help illustrate the concepts presented in the book and will hopefully help the reader to digest the information," Nielsen explained. "We expect that many will probably start by reading those case stories and then use those stories to guide them to which of the 13 preceding chapters they need to read."

The handbook covers all relevant information about the parasites infecting horses and their biology as well as performance and interpretation of diagnostic methods, treatment approaches, and drug resistance. It will be published by Wiley-Blackwell and be available in paperback as well as ebook format. Expected release date is Nov. 13, 2012. UK

>Shaila Sigsgaard is a contributing writer for the Bluegrass Equine Digest.

WEED OF THE MONTH

Common name: **Henbit, *Lamium amplexicaule* L.**
Purple deadnettle, *Lamium purpureum* L.
Life Cycle: **Winter annual**
Origin: **Europe**
Poisonous: **No**

Henbit and purple deadnettle are winter annual species of the same genus, and people frequently confused the two. Both species are often called henbit. These weeds germinate in the fall and sometimes in the spring. They are found throughout the eastern United States. These weeds thrive in both cool-season and warm-season forage grasses. Both species also grow in fine turf, orchards, gardens, landscapes, and cultivated crops.

Henbit and purple deadnettle are nontoxic weeds.

Henbit flowers are pink to red and occur in 6- to 10-inch tall clusters in the upper leaf stalks. Purple deadnettle flowers grow near the tops of the plant and are less purple than henbit flowers. The most striking difference is that the purple deadnettle's upper leaves and stems are very red in appearance.

These weeds are relatively easy to control with several herbicides; however, mowing is ineffective. Consult your local Cooperative Extension Service personnel for herbicidal control in your area. UK

>William W. Witt, PhD, a researcher in Plant and Soil Sciences, provided this information.

Former UKVDL Bacteriology Chief Receives National Award

Mike Donahue, PhD, served the University of Kentucky College of Agriculture Veterinary Diagnostic Laboratory (UKVDL) for 41 years before he fully retired in 2012. After his long and distinguished career, the veterinary medical community recognized his significant contributions to the field.

Donahue recently received the American Association for Veterinary Laboratory Diagnosticians (AAVLD) Thermo-Scientific Award for Excellence in Diagnostic Veterinary Microbiology. The association presented the award Oct. 19 at its national meeting in Greensboro, N.C. The award recognizes distinguished scientists for service and research accomplishments resulting in new scientific findings that advanced veterinary medicine and animal health.

UKVDL director Craig Carter, DVM, PhD, Dipl. ACVPM, nominated Donahue and said his knowledge of infectious diseases in animals, especially horses, is extensive and his clinical savvy made him effective in working with clients.

Donahue completed a doctoral degree in microbiology at the University of Missouri in 1971 and joined the UKVDL as bacteriology section chief shortly after the lab opened. He then built a comprehensive microbiology diagnostic service from the ground up in support of Kentucky animal agriculture and the signature Bluegrass horse industry. He attained the rank of full professor in 1989.

"In my opinion, he ranks as one of the most scientifically prolific veterinary diagnostic microbiologists in the United States, especially in the equine species," Carter said.

While at UK, Donahue char-

National Award ...

acterized the role of specific bacteria in mare reproductive loss syndrome. He understood and diagnosed many equine-specific diseases including nocardioform placentitis in mares, equine pericarditis, equine abortion and premature birth, equine arthritis and osteomyelitis, and the microbiology of the equine placenta.

"The UKVDL is a full-service laboratory with a very heavy caseload, often involving 20 or more large animals (mostly horses and cattle) for necropsy in one day," Carter said. "Most bacteriologists are happy to simply get their diagnostic casework out in a timely and accurate fashion, which he always did. But this wasn't enough for Mike. During his 41-year career he found the time to serve as the co-author of 63 peer-reviewed scientific articles in veterinary microbiology and wrote four seminal book chapters."

"He ranks as one of the most scientifically prolific veterinary diagnostic microbiologists in the United States."

Dr. Craig Carter

Carter added that Donahue also wrote dozens of lay and extension articles and gave more than 40 presentations at scientific conferences. He served as principal investigator or co-investigator on at least 16 significant research projects that have added to the understanding and knowledge base of infectious diseases, some of which have been devastating to the food, animal, and horse industries.

Donahue has been very active in organized veterinary medicine, serving on three AAVLD working subcommittees on anaerobic techniques, mycoplasmosis, and antibiotic susceptibility testing. He served as chair of the United States Animal Health Association's committee on leptospirosis. In addition, he has served as a reviewer for the *Journal of Clinical Microbiology, Journal of Equine Veterinary Science, Journal of Veterinary Diagnostic Investigation, Research in Veterinary Science*, and the Grayson-Jockey Club Research Foundation. Donahue served on seven graduate student committees, taught a graduate course in microbiology, and conducted numerous field investigations. Because of his contributions to veterinary medicine, he was named an honorary member of the Kentucky Veterinary Medical Association.

"To be certain, Michael Donahue has had a stellar career as a veterinary diagnostic bacteriologist," Carter wrote in his nomination letter. "His contributions are lauded by scientists the world over. His work has truly advanced the field of bacteriology in veterinary medicine. He has delivered more than four decades of outstanding diagnostic service that have greatly benefited the animal industries of Kentucky." UK

>Aimee Nielson is an agricultural communications specialist within UK's College of Agriculture.

CEM: An Insidious and Potentially Pervasive Disease

Ever since initial reports of its discovery in England and Ireland in 1977, contagious equine metritis (CEM) has given rise to considerable concern among horse breeders in many countries. The contagiousness of the disease in breeding populations, ability to cause widespread short-term infertility in the mare, and the occurrence of the carrier state in both stallion and mare are all concerns about CEM, one of the most internationally regulated equine diseases.

The rediscovery of CEM in the United States in December 2008 reawakened awareness and concern about the disease and led to the most extensive epidemiologic tracing and diagnostic testing of any prior CEM event in the country. Several important findings were to emerge from these investigations.

Perhaps most disturbing was that the source of CEM was traced to a Warmblood stallion imported into the United States in late 2000, which had not been detected on pre- or post-entry quarantine and testing. On retrospective analysis, the causal agent of CEM, *Taylorella equigenitalis*, was found to have spread to 22 stallions, one gelding, and five mares, all of which were subsequently found to be carriers of the organism.

It should be emphasized that at no time over an eight-year period have there been any reports suggestive of CEM in mares following artificial insemination with semen from these stallions. Of major concern was the circumstantial evidence implicating indirect transmission of *T. equigenitalis* to the 22 stallions and one gelding through the use of contaminated fomites at different semen collection centers. Collectively, these findings serve to underscore the insidious and pervasive nature of CEM and the need for greatly improved biosecurity measures in facilities that engage in semen collection of stallions.

Of singular importance in preventing future CEM events in the United States or other CEM-free countries is the need for a highly reliable means of screening stallions and mares for the presence of the carrier state and sufficient monitoring to ensure the prescribed testing protocols are properly administered. Ideally, this should be an integral part of the pre-entry testing requirements implemented in the exporting country.

Experience over the years, however, has shown the need to complement pre-entry testing with additional post-entry quarantine and testing in the importing country. Had such a system not been in place in the United States, CEM would have been reintroduced multiple times, primarily through imported carrier stallions, the majority culture positive for streptomycin-sensitive strains of *T. equigenitalis*. This brings into question the reliability of the pre-entry testing performed on these and perhaps other imported stallions and mares.

Current pre-entry and post-entry quarantine and testing requirements for CEM, especially of stallions, are logistically burdensome and costly for owners and breeders. Accordingly, every effort should be made to develop more reliable means of detecting the carrier animal that are more sensitive, specific, and rapid than present testing procedures. The value of molecular-based tests, such as polymerase-based assays, need to be fully explored side by side with classical technologies. UK

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[1] Market Dynamics Inc, February 2011

[2] Data on file, Study Report No. B671-08-004.R, Pfizer Inc.

Graduate Program in Veterinary Science Unites Passions

With new tools and discoveries rapidly emerging in every area of equine research, it is an exciting time to be an equine scientist. Students enrolled in programs such as the University of Kentucky's (UK) Graduate Program in Veterinary Science at the College of Agriculture are uniquely positioned for immersion in research that will advance understanding of equine infectious diseases, genetics, reproduction, pharmacology, parasitology, and musculoskeletal disease.

Who Applies?

A typical graduate program applicant has both a passion for scientific investigation and for horses, said Daniel Howe, PhD, Director of Graduate Studies at UK's Department of Veterinary Science. "We are looking for students who are interested in doing research and have interest in helping horses and the equine industry," he said. A passion for horses is not an absolute requirement, but many are drawn to the program due to an interest in horses and research. "Passion for the horse tends to make students more enthusiastic about their work," he added.

The program draws 20 to 30 applicants each year. Of those, said Howe, about 15 are truly competitive. Five students were accepted last year, and five are starting in the program this coming year.

Competitive students have good undergraduate preparation in the life sciences. It is critical that applicants have taken courses in chemistry, biochemistry, physics, and mathematics. Some applicants already have professional degrees. "Students with veterinary degrees who have the urge to get into research do a fantastic job," said Howe.

> **"We emphasize equine health, but our main goal is to train students to be scientists."**
>
> Dr. Daniel Howe

Master of Science Program

In the master's program, the student chooses an advisor and research area, which culminates in a master's thesis and final exam. The master's degree curriculum provides a solid preparation in the subject matter and tools required to do research in academia or industry. Master's program graduates are likely to be those working at the laboratory bench doing the hands-on experimentation.

PhD Program

The PhD program provides more extensive training in the methods and creative thinking required for scientific investigation. The PhD candidate will complete more thorough and in-depth research. "The expectation is that someone with a PhD will become an independent scientist and go on to run a research program," explained Howe. "Very likely, they won't spend much time in the lab, but will supervise research in academic institutions or industry."

Students with a PhD from the program are competitive for any postdoctoral position in the life sciences, said Howe. "We emphasize equine health, but our main goal is to train students to be scientists," he said. "We hope they will continue to work in the equine field, but it is important that they be qualified for other research areas. We want to make sure they have a well-rounded education and training in being a scientist so they can go into other fields if they choose, or where the opportunities arise."

Students who attend the graduate program are prepared to make important contributions to equine science. Last spring the Maxwell H. Gluck Research Center celebrated its 25th year as the only research center in the United States where the entire faculty conducts full-time research in equine health and disease. "We are in a unique position here," said Howe. "If you have research interest in equine health, I don't believe you can do any better than the Department of Veterinary Science at the Gluck Center." UK

>Nancy Zacks is a freelance writer with an MS in Science Journalism from the Boston University College of Communication.

UK Lecture Series Presents Olympian Reed Kessler

Reed Kessler, the 18-year-old equestrian phenomenon who became the youngest competitor in the 2012 Summer Olympics equestrian field and the youngest U.S. Equestrian Team member in history to compete in the Games, will speak at the University of Kentucky (UK) Ag Equine Programs' Distinguished Industry Lecture Series Nov. 15. Sponsored by Hagyard Equine Medical Institute, the event will take place at 6:30 p.m. EST in the Ag Science Building's Seay Auditorium on UK's campus. It is free and open to the public.

COURTESY THE KESSLER FAMILY

Reed Kessler has quickly climbed the show jumping ranks.

Kessler, who now calls Lexington home, helped her team secure a sixth place finish in show jumping in the London Games. She is also the current U.S. Equestrian Federation National Show Jumping co-champion.

Team USA lists Kessler's other career highlights as winning the Show Jumping Hall of Fame Junior Jumper Championship at the FTI Winter Equestrian Festival and the bronze medal at the 2010 Adequan FEI North American Junior and Young Rider Championships.

Because of her age, Kessler only became eligible to ride in top-level competitions in January 2012, but has quickly climbed the ranks. Her list of accomplishments over just the past year is lengthy. A small subset of that list includes finishing seventh in the World Cup Qualifier at the Pennsylvania National Horse Show; fifth as part of Team USA in the Nation's Cup at the Masters in Spruce Meadows; 10th in the Euro Grand Prix in Gijon, Spain; 1st in the Prix Vicompte Arthur in Chantille, France, the Pfizer Horse Heath Series at Spruce Meadows, and the Hagyard World Cup Qualifier in Kentucky; second in the Hagyard Grand Prix of Kentucky; third in the Olympic Observation Trial in Kentucky; U.S. Olympic Committee Female Athlete of the Month in March; and winner of the U.S. Olympic Selection Trials.

"Featuring Reed Kessler for this series is exciting," said event coordinator James MacLeod, VMD, PhD, John S. and Elizabeth A. Knight chair and professor of veterinary science in the UK College of Agriculture's Gluck Equine Research Center and past director of UK Ag Equine Programs. "It is an honor to pay tribute to Reed, and we hope the public takes advantage of this special opportunity to learn more about this accomplished young equestrian."

Reed graduated this year as a straight-A student from the Professional Children's School in New York City, which enrolls sixth through 12th-grade students who are actively pursuing challenging goals while attending school. Its students include actors, musicians, dancers, and athletes.

In 2012 Kessler and her family purchased a 125-acre parcel of Cobra Farm off of Newtown Pike in Lexington and relocated from New York City.

The Distinguished Lecture Series began in the fall of 2009 and has become a signature program of UK Ag Equine Programs. It is designed to showcase important figures from the equine industry in an informal setting. Dan Liebman, past editor-in-chief for *The Blood-Horse* magazine, has interviewed all of the participants, and Dan Rosenberg, of Rosenberg Thoroughbred Consulting, has served as emcee. Hagyard Equine Medical Institute has sponsored all but one of the events.

"We are very appreciative of the sponsorship of Hagyard Equine Medical Institute for this signature event," said Nancy Cox, MS, PhD, associate dean for research in UK's College of Agriculture and administrative leader for UK Ag Equine Programs.

Past series participants include former Keeneland President Nick Nicholson in November 2009, accomplished equestrienne Nina Bonnie in April 2010, Keeneland's Ted Bassett in April 2011, and Zenyatta owners Jerry and Ann Moss in September 2011. UK

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

UPCOMING EVENTS

Nov. 8

Kentucky Equine Networking Association (KENA) Meeting. Networking 6 p.m., dinner 6:30 p.m., Clarion Hotel, Lexington, Ky. Equine Business vs. Hobby: What is the Law? www.kentuckyhorse.org/kena

Nov. 15

Lawsonia intracellularis and Equine Proliferative Enteropathy Symposium, 1-5:30 p.m. with cocktails and hors d'oeuvres from 5:30-7:30 p.m., Veterinary Diagnostic Laboratory. Register at www.epesymposium.eventbrite.com

Nov. 15

Distinguished Industry Lecture Series featuring Reed Kessler, 6:30 p.m., Seay Auditorium. At 18, Kessler was the youngest person in show jumping history to compete at the Olympics. She and her USA teammates finished 6th in the 2012 Olympics. Event sponsored by Hagyard Equine Medical Institute.