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Summer Insects: Flies, Ticks, Wasps, and Bees

Following heavy rains throughout April and May in Kentucky, June's high temperatures mark summer's early arrival. And with the heat, haze, and humidity come bugs, including several types of flies, ticks, and stinging pests. Because many insects and their relatives are potential disease carriers, horse owners should know which ones are simply nuisances and which could potentially be dangerous to equine health.

"The general warming trend we are experiencing has a big impact on our insect populations,"



Horses will stomp their feet, kick, and swish their tails to deter biting flies.

said Lee Townsend, PhD, University of Kentucky College of Agriculture entomologist. "Add moisture to the heat and you have the potential for greater problems, so it's important to review some of the key pests to anticipate."

The Ubiquitous Fly

Flies are common pests whose persistent biting can make horses nervous, difficult to manage, and sometimes dangerous to work around when the horse stomps his feet, kicks, and swishes his tail to deter insects. Biting flies also can interfere with grazing, and animals can potentially injure themselves if they run to escape being bitten. Vigorous stamping is another fly-related issue; the repetitive force can cause hoof cracks and contribute to loose and lost shoes.

Most biting flies are attracted to movement, dark surfaces, carbon dioxide, and warmth—which is how they find horses.

"Horse flies are sun-lovers and rarely enter barns or shady areas, so grazing animals at night and stabling or providing shelter during the day can provide effective relief," Townsend said.

House flies are potential carriers of human and

animal pathogens and can also be a nuisance to neighbors. House fly maggots are found in moist material such as manure, garbage, or rotting hay, and their development takes seven to 14 days.

Stable flies resemble house flies but have a prominent beak that delivers a distinctly painful bite. Stable flies usually attack the flank or below the knee, causing horses to stomp their hooves and/or kick at their belly. Stable fly maggots develop in decaying organic material, such as

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a mixture of straw, spilled feed, hay, and water/urine, with a reproductive cycle of 21-25 days.

Fly control is not easy. "There's no magic solution for fly problems, but recognizing problems early and correcting them if possible will go a long way toward keeping fly numbers manageable," Townsend said.

Eliminating breeding sites is key to successful stable fly and house fly control. Clean and remove manure from barns and paddocks once a week to break flies' life/reproductive cycles. Spread removed manure and muck in a thin layer where appropriate, or compost it. Promote good drainage, and prevent wet areas from forming around waterers. Insecticides can help reduce house and stable fly populations, but this is a temporary remedy. A good fly management program should ensure that wet and warm organic materials are removed promptly and should encourage thorough drying to prevent breeding site proliferation.

Townsend's suggestions for dealing with flies are as follows:

- Use screens in feed and tack rooms and in stall window/doors;
- At entryways, install fans that blow down and out to keep flies from entering barns;
- Use insecticides if a fly problem has developed (this is only a temporary fix, as it does not address the root issue—namely that flies have access to moist breeding material). Follow the manufacturer's instructions carefully for proper insecticide use;

- Use fly traps and sticky paper to capture flies;
- Consider using a commercial firm that specializes in fly predator release programs; and
- Bring horses into barns during the day to provide them with fly relief.

Ticks

Ticks are blood-sucking relatives of insects that attach to a host (human, horse, dog, etc.) for sustenance. Some can transmit diseases such as ehrlichiosis, Lyme disease, and piroplasmiasis and cause skin irritations and even anemia (low red blood cell count).

“There's no magic solution for fly problems, but recognizing problems will go a long way toward keeping fly numbers manageable.”

Dr. Lee Townsend

Ticks can be found in woody areas that have heavy growth and brush, which harbor mice (another important tick host). Removing brush to let sunlight in and keeping pastures well-trimmed can make paddocks inhospitable to ticks.

The lone star tick and American dog tick are the most commonly found tick species in Kentucky, and both will attack horses, Townsend said. If you spot a tick on a horse, remove it promptly

using tweezers and a straight pulling motion to ensure removal of the entire tick. Do not twist or squeeze, and do not use petroleum jelly, matches, or other similar removal methods.

Repellents and insecticides containing permethrin or cypermethrin are very irritating to ticks and will provide several hours of tick protection for horses. Check the lower body, especially the legs, and mane regularly to prevent infestation.

Wasps and Bees

Paper wasps often build open nests under barn eaves and other protected places, according to Townsend. Late spring is the best time to watch for these nests and destroy them as they are being established. This reduces the chances for accidental encounters and possible stings in late summer or early fall.

Honey bees occasionally become a problem around water troughs, especially during very dry summers.

"Bees need water to air condition their colonies and will recruit other bees to a reliable source," said Townsend. "In some cases they seem to be aggressive toward horses that are nearby."

For more information, see University of Kentucky publications ENTFACT – 511, ENTFACT – 513, ENTFACT – 514, www.ca.uky.edu/gluck/q_apr11.asp and www.ca.uky.edu/gluck/q/1999/july99/q_jul99.htm#ticks. **UK**

Karin Pekarchik is an editorial officer in Agricultural Communications Services.

THE CHANGING FACE OF MOSQUITO-BORNE DISEASES

Mosquito-borne virus infections pose a continuous and expanding threat to equine health in the United States and internationally. The majority of equine mosquito-borne diseases in the United States today are preventable by immunization; however, the delivery of preventive health care to the equine industry can be improved.

In the last 40 years two arthropod-borne equine pathogens were introduced into the United States. The virulent 1AB epidemic strain of Venezuelan equine encephalomyelitis (VEE) virus made its entry in 1971 with much warning and time to prepare. It was eradicated by strict local quarantines, large-scale aerial spraying for vectors, and extensive mandatory immunization of equids. The effective response was accomplished at great expense because VEE was judged an important equine as well as human disease.

On the other hand, West Nile virus (WNV), first seen in the United States in 1999, was unanticipated and challenged the U.S. diagnostic infrastructure. Once the virus spread from the initial epicenter in New York state, it quickly established itself in multiple mosquito species and a diversity of susceptible vertebrates. This establishment caused unprecedented viremia (presence of viruses in the blood circulation) levels in some bird species and high mortality rates in numerous bird species. Its transcontinental

WEED OF THE MONTH

Common name: Johnsongrass

Scientific name: *Sorghum halepense* L. Pers.

Life Cycle: Perennial

Origin: Eurasia

Poisonous: Yes

Johnsongrass is a coarse-textured perennial grass that grows well in pastures, landscape beds, gardens, fields, and roadsides and is highly competitive for soil water in these sites. This weed was introduced into the southern United States as a forage grass, escaped into cultivated fields, and subsequently invaded other sites. Johnsongrass is robust and can reach heights of 10 feet under good growing conditions. Individual leaves can be between 10-25 inches long, and the root system is fibrous and dense.

Johnsongrass reproduces from seeds and underground rhizomes (creeping rootstalks). Seeds germinate most readily at soil temperatures above 65 degrees, while rhizomes begin growth at temperatures less than 60 degrees. Each panicle (flower cluster along the stem) produces several hundred seeds, which remain viable in the soil for more than 20 years. The rhizomes can reach several feet in length and persist for three years or less under Kentucky conditions. Prolonged cold periods (less than 15 degrees) can kill rhizomes, especially if they are on the soil surface.

Johnsongrass toxicity—which might cause neurologic problems and lower spinal cord damage in horses—can occur from prolonged grazing or from a horse ingesting it as a contaminant of hay. Thus, try to remove johnsongrass from paddocks and fencelines.

Johnsongrass is not easily controlled without killing desirable forage grasses. Small patches can be removed by hand or by digging the rhizomes. Mowing will prevent seed head formation but does not kill the plant because of the extensive rhizome growth underground. Remove any mowed johnsongrass from the paddock to prevent ingestion by horses. Spot spraying is effective. Consult your local Cooperative Extension Service personnel (www.csrees.usda.gov/Extension) for control methods in your area. **UK**

William W. Witt, PhD, a researcher in the University of Kentucky Plant and Soil Sciences department, provided this information.



Johnsongrass

(MOSQUITO-BORNE DISEASE ...)

spread was unparalleled. A safe and effective vaccine to protect horses against the now-endemic WNV was rapidly developed and conditionally licensed in August 2001. Manufacturers have since produce several additional WNV vaccines.

Eastern equine encephalomyelitis (EEE) virus is the arbovirus of great concern to horses and humans because of high case-fatality rates (approximately 40% in humans and 90% in horses). The distribution and host range of this virus has not changed significantly over the last 20 years. Safe and effective EEE vaccines for horses are widely available. Regrettably, the vast majority of cases in horses each year continue to be in animals that have had no history or an incomplete history of EEE immunization. Although the capability of stimulating durable protective immunity against EEE with a single immunization would be welcome, available vaccines provide an excellent level of protection if administered appropriately. The American Association of Equine Practitioners considers both WNV and EEE of such significance that it recommends the vaccines against those diseases be considered “core vaccines.”

Although the United States has not had a VEE case since 1971, the risk of its reintroduction remains. The virus exists as multiple subtypes in nature (I-VI), and while subtypes 1AB and 1C are the epidemic strains of the virus, the endemic 1E subtype caused clinical disease and deaths in horses in southwestern Mexico in 1993 and 1996. Recent outbreaks of a horse-virulent

Expect changes in mosquito-borne disease epidemiology in the future, because a single mutation can:

- Change the insect host range of a virus;
- Alter the vertebrate host range of a virus;
- Affect a virus' pathogenicity;
- And mutation is a constant finding in insect-transmitted RNA viruses.

strain in Central/South America serve as a reminder that active surveillance must continue.

It's been nearly 20 years since the last reported case of Western equine encephalomyelitis (WEE) occurred in the U.S. The fact that the virus is en-

demically in some of the Western states should not be overlooked; mutations could yield strains with greater potential for epidemic disease.

Active surveillance and reporting must remain at a heightened level to prevent or limit the spread of “exotic” vector-borne diseases that could affect horses. Furthermore, increased education and awareness of the value of vaccination in preventing major equine diseases are critical. **UK**

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Reprinted from the Equine Disease Quarterly, UK Department of Veterinary Science.

KENTUCKY'S LIVESTOCK GET EARLY DOSE OF HEAT STRESS

With above-average June temperatures, Kentucky's livestock are dealing with heat stress conditions earlier than usual. Tom Priddy, extension agricultural meteorologist and University of Kentucky (UK) Ag Weather Center director, said Kentucky temperatures were averaging about 90 degrees during the early part of June.

“Combined with the moist air from the Gulf of Mexico Kentucky has been experiencing this spring, the end result has been hot and muggy conditions,” he said. “This has caused livestock heat stress to reach the danger category earlier in the year than normal.”

In early June the state had yet to get into an emergency level of livestock heat stress on a wide scale; however, some isolated areas farther west have come close. Priddy said hotter conditions this early in summer are not unheard of—even last year the state experienced an above-normal June.

“This June, just like last, is expected to stay above normal temperature-wise,” Priddy said. “The short-term outlooks agree with this, showing warmer-than-normal conditions for next week to continue all across the southeastern United States.”

Priddy said the long-term outlook for the end of June through August is the complete opposite of predicted normal temperatures. He bases this prediction on El Niño-like conditions he expects to occur over the summer, and which some models forecast.

(HEAT STRESS ...)

“Right now we are in a waning La Niña phase, going into neutral conditions,” explained Michael Mathews, UK College of Agriculture staff meteorologist. “During an ENSO (El Niño Southern Oscillation) neutral phase over the summer Kentucky weather tends to be more near its seasonal norms in temperature and precipitation. Looking to the end of summer and beginning of fall, models are showing equal chances for the development of El Niño or a return to La Niña.”

For Kentucky livestock producers and horse owners, high heat over the summer can be a big problem. The USDA estimates that over the past decade, several heat events in the Midwest have cost the cattle industry alone more than \$75 million.

The UK Agriculture Weather Center has a livestock heat stress index that suggests the potential risk of loss or injury involved with transporting livestock in a danger or emergency heat stress situation, versus transporting animals under no heat stress risk.

“The danger level suggests there will be a 25% greater chance of loss or injury to the livestock in transit as opposed to when there is no danger from heat,” Priddy said. “Emergency level means a 45% greater chance of injury or loss in

transit. The index we currently use is based solely on the actual air temperature and relative humidity or dew point, much like the heat index. For livestock in transit these two factors are the main elements affecting them.”

Priddy went on to say that for livestock in fields, other factors such as wind and solar radiation affect how warm or cool the animals feel.

“With the expansive Mesonet (automated weather stations designed to observe mesoscale meteorologic phenomena) across the commonwealth, we here at the UK Ag Weather Center can now use this index to more accurately show heat stress on livestock,” Priddy said. “The Mesonet measures relative humidity, temperature, wind speed, and solar radiation at over 55 stations across the state. Forecasting maps for this heat index will also be available using forecast values from the National Weather Service.”

The current and forecast livestock heat stress is available in the Precision Ag Forecast at <http://weather.uky.edu>. 

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

EQUINE FIELD DAY

The University of Kentucky (UK) Equine Initiative held its third annual equine field day June 7 at Shawhan Place in Paris, Ky. Close to 200 people participated in the event designed for horse and horse farm owners. Highlights included talks about facility design, weed control, strategic deworming and spraying, seeding, and mowing pastures. Additionally, equine businesses and organizations were on hand to provide information to attendees.

Clockwise from left: Matt Koch, part owner of Shawhan Place, opens the 2011 UK Equine Initiative third annual equine field day; Gus Koch speaks about facility design to equine field day participants as horses from Shawhan Place look on; Ray Smith, PhD, professor and forage extension specialist at the UK, as well as chair of the committee that organized the event, demonstrates selecting equipment and horse pasture management; and Bill Witt, PhD, a researcher in UK's department of plant and soil sciences, demonstrates controlling weeds in horse pastures.



POST-RAIN TIPS FOR HORSE OWNERS

Central Kentucky is finally getting a break after two months of heavy rain, according to University of Kentucky (UK) staff meteorologist Michael Mathews, and horse owners should now assess the lingering effects of all that wet weather.

This April in the Commonwealth was the wettest ever, nearly doubling the previous record set in 1972. At 12.04 inches, rainfall totals were 7.7 inches above normal. The sustained heavy rains during the last three weeks of April flowed

into May, which also had above-normal rainfall of 6.8-7 inches. Meteorologists predict June, July, and August rainfall to be normal, with temperatures below normal, except for predicted temperatures slightly above normal in June.

“The rain has been good for pastures and they are growing vigorously,” said Ray Smith, PhD, professor and forage extension specialist at UK. “The downside is that it has been too wet to spray weeds. Pastures with a high-stocking density may be torn up and may have some decline. But moderately grazed, well-drained pastures have loved the rain and cooler weather.”

Smith said most people missed the ideal

window (March) for planting cool-season grasses (Kentucky Bluegrass, orchardgrass) because of weather events, and they will now have to wait until fall.

“Many were not able to seed or overseed last fall because of the drought, so now there may be bare spots where weeds can grow,” Smith said. “In preparation for seeding in September, spray weeds two months in advance but be sure to check herbicide labels for specific guidelines for application.”

He said weeds to look for include plantain, dock, poison hemlock, crabgrass, and foxtail.

Another missed opportunity due to the

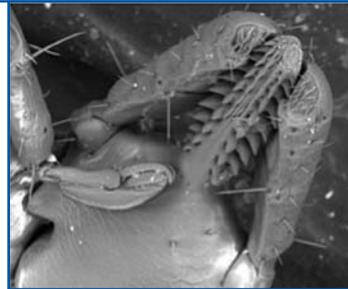
Dealing With Ticks

Ticks are not only unsightly, they can also transmit diseases such as ehrlichiosis, Lyme disease, and piroplasmiasis. Severe infestations can cause skin irritations and even anemia (low red blood cell count).

Ticks spend most of their lives on the ground in areas with some shade and humidity and congregate along trails, in overgrown areas, and in margins of wood openings. They avoid direct sunlight and low humidity; thus, keeping brush cut back and clipping pastures will make areas inhospitable for ticks and less attractive to deer and other mammals that might transport ticks.

Repellents and insecticides containing permethrin or cypermethrin will provide several hours of protection for horses. These insecticides are very irritating to ticks, causing them to drop off before attaching to the horse. “Natural” products such as botanical oils might provide some temporary protection.

Check horses thoroughly for ticks, especially on the lower legs and under



A scanning electron microcopy of tick mouthparts.

the mane. Large American dog ticks are easy to find, but smaller ticks can be overlooked. Applying insecticide/repellent to horses before turnout will help dislodge missed ticks.

Ticks wander on animals for some time before they settle and begin to feed. Barbed mouthparts, along with cement secreted by the tick, allow it to attach firmly to the skin. Removing a tick requires a firm but steady pull. After donning latex or nitrile gloves, grasp the tick very closely to the skin

and apply steady traction. While patience is required, this method is most likely to remove the entire tick from the skin.

Once attached, ticks cannot just decide to “let go,” even if encouraged with a hot match tip, fingernail polish, or other home remedy. Thus, there is no substitute for simply pulling the tick off the horse. **UK**

Lee Townsend, PhD, is a UK College of Agriculture entomologist.

Reprinted from the Equine Disease Quarterly, April 2011, Volume 20, Number 2, University of Kentucky, Department of Veterinary Science.

POST-RAIN TIPS ...)

rainfall was harvesting high-quality hay in mid-May, Smith said. While farmers still have a good window to cut and dry hay, the quality and digestibility will be lower because the hay is overly mature. Subsequent cuttings' quality will depend on weather patterns, but Smith said if there is adequate rain, farmers should have a good second cutting.

"Because of the late cutting, look closely at the nutritional quality," Smith said. "Any hay cut during May could have mold and dust issues. And hay that was rained on after cutting will have nutrient loss."

Smith believes that hay fields prepared and sprayed out to plant corn and beans might lead to hay shortages.

Managing environmental systems after heavy rain is also important, according to Steve Higgins, PhD, director of environmental compliance at UK's Agricultural Experiment Station.

"Part of good horse management is ensuring that environmental systems are being addressed properly," Higgins said. "Some of the basic issues for horse people are to practice rotational grazing, create traffic pads around gates and entrances, feed off the ground, drain water away from buildings, and encourage riparian (river bank) areas."

The recent wet weather can also cause management issues. According to Fernanda Camargo, DVM, PhD, equine extension professor at UK, and Laurie Lawrence, PhD, professor in the department of animal and food sciences at UK, "horsing around" on muddy ground can cause

Post-Rain Checklist

- Watch bare spots to prevent a profusion of weeds in fields that were not reseeded in March due to the weather. Seed or overseed during fall.
- Check the quality of first-cutting hay closely, which could have low digestibility, mold, and dust.
- Review your stocking rate to eliminate stress on pasture grasses.
- Limit erosion by placing gates, waterers, feeders, and shelter on high ground.
- Use a sacrifice drylot.
- Groom often to prevent fungal infections.
- Make sure vaccinations are up-to-date.
- Exterminate rats and mice, which might move into barns and houses during rainy periods.
- Clear debris that floodwaters carry into pastures.
- Remove any rotten hay or vegetation, which could cause botulism (a rare disease caused by a neurotoxin produced by the bacterium).
- Review your environmental systems, and develop your water quality plan as required by law. (Visit www.ca.uky.edu/awqa for a tool to help with self-certification.)

a horse to fall, bow a tendon, or pop a splint. To prevent injury, Camargo and Lawrence advise caution on slippery slopes and with young horses.

UK Cooperative Extension Service's "Horses and Rain" (www.ca.uky.edu/agc/pubs/asc/asc183/asc183.pdf) offers more management tips, including:

- To prevent skin problems that crop up in rainy weather, groom thoroughly and often, which gives the coat and skin time to air out and dry.
- Have shelter available, or consider bringing your horse in for part of the day.
- Review your vaccination schedule with your veterinarian, since standing water can lead to a high incidence of mosquito-borne illnesses

such as Eastern and Western equine encephalomyelitis and West Nile virus.

- Rodents seek dry shelter during floods, often moving into barns and houses. Rodents can carry leptospirosis and should be exterminated. Never dispose of rodent carcasses by throwing them into pastures or anywhere near horses. Doing so can attract varmint such as opossums, which can transmit equine protozoal myeloencephalitis (EPM).
- Floodwaters also carry garbage such as baling twine, broken bottles, plastic bags, and soda bottles. Remove these potentially dangerous items from pastures promptly. **UK**

Karin Pekarchik is an editorial officer in Agricultural Communications Services.

UK AT EQUINE SCIENCE SOCIETY SYMPOSIUM

Several equine researchers from the University of Kentucky (UK) College of Agriculture attended the Equine Science Society (ESS) symposium May 31-June 3 in Murfreesboro, Tenn. The National Association of Equine Affiliated Academics (NAEAA) was held in conjunction with ESS May 30-31.

ESS is held every two years in different locations and promotes quality research on equine nutrition, reproductive physiology production, and management, teaching, and extension. The event is set up to establish effective communication among researchers, teachers, extension, and production personnel.

Following are titles of research presented at ESS by UK researchers (in bold below). The abstracts were published in the May/June 2011 issue of the *Journal of Equine Veterinary Science* (www.j-evs.com/current).

Laurie Lawrence, PhD, professor in the Department of Animal and Food sciences in UK's College of Agriculture, co-authored several studies. They included:

- Basal insulin and glucose concentrations in gestating and lactating mares, **SM McCown, M Brummer, S Hayes, JE Earing, and LM Lawrence.**
- Effect of selenium depletion on oxidative stress in mature horses, **M Brummer, S Hayes, JE Earing, SM McCown, and LM Lawrence.**

- Nutrient and dry matter intakes of broodmares fed high forage diets, **SM McCown, M Brummer, S Hayes, JE Earing, and LM Lawrence.**
- Techniques, equipment and considerations applied in equine digestibility experiments M. Edwards, **LM Lawrence,** and C. O'Connor-Robison.
- Growth rates in 3- and 4-month-old foals during the summer in Central Kentucky, **L Strasinger and LM Lawrence.**
- The effect of endophyte-infected tall fescue on weanlings, **BE Davis and LM Lawrence.**
- Factors affecting live foal rates of Thoroughbred stallions in Kentucky, **BE Davis and LM Lawrence.**

Lawrence collaborated with several other UK faculty members, including Mary Rossano, MS, PhD, assistant professor in the Department of Animal and Food Sciences, and Eugene Lyons, PhD, Department of Veterinary Science, in the study, "Effects of windrow composting on the viability of *Parascaris equorum* eggs within the interior of the windrow," **JC Gould, MG Rossano, ET Lyons, and LM Lawrence.** She collaborated with David Horohov, PhD, William Robert Mills chair and professor at the Gluck Center, and others to research "Selenium depletion reduces vaccination response in horses," **M Brummer, S Hayes, SM McCown, AA Adams, DW Horohov, and LM Lawrence.**

Horohov's Gluck Equine Research Center laboratory collaborated with researchers at Rutgers,

The State University of New Jersey, University of Pennsylvania, and Michigan State University on the study titled, "The effect of exercise training on insulin sensitivity and fat and muscle tissue cytokine profiles of old and young Standardbred mares," NR Liburt (Rutgers, The State University of New Jersey), MN Fugaro (Centenary College), EK Wunderlich (Rutgers, The State University of New Jersey), JL Zambito (Rutgers, The State University of New Jersey), **DW Horohov, A Betancourt,** RC Boston (University of Pennsylvania), KH McKeever (Rutgers, The State University of New Jersey), and RJ Geor (Michigan State University).

Horohov's laboratory also collaborated with others at UK, including Kristine Urschel, PhD, an assistant professor in Animal and Food Sciences and lead for the project, "The effects of non-steroidal anti-inflammatory drug administration on systemic and muscle inflammation in mature and aged horses," **AL Wagner, RB Ennis, A Betancourt, AA Adams, DW Horohov, and KL Urschel.**

- Other projects Urschel co-authored included:
- Supplemental leucine's influence on plasma glucose, insulin, and amino acid responses in Quarter Horse yearlings by LC Etz (Pennsylvania State University), NM Lambert (Pennsylvania State University), JT Sylvester (Mars Horsecare US Inc.), **KL Urschel,** and WB Staniar (Pennsylvania State University).
 - Amino acid concentrations in late lactation mares' milk, **SL Tanner, AL Wagner, RB Ennis, and KL Urschel.**

■ Postprandial changes in plasma free amino acids in weanling horses, **RN Digianantoni, AL Wagner, SL Tanner, RB Ennis**, PA Harris (WALTHAM Centre For Pet Nutrition), JT Sylvester (Buckeye Nutrition), and **KL Urschel**.

There were also two studies conducted by Gluck Center faculty and graduate students, including one by the infectious disease and genetics/genomics group when Udeni Balasuriya, BVSc, MS, PhD, professor of virology at the Gluck Center, and PhD candidate Yun Young Go collaborated with Ernie Bailey, PhD, professor in the Department of Veterinary Science.

■ Genome wide association study for susceptibility of horses for *in vitro* infection with equine arteritis virus, **YY Go, U Balasuriya**, and **E. Bailey**.

Mats Troedsson, DVM, PhD, Dipl. ACT, director of the Gluck Center and chair of the department of veterinary science, led a reproduction study. Ed Squires, PhD, Dipl. ACT (hon.), director of the Equine Initiative and executive director of the UK Gluck Equine Research Foundation, was also included in the proceedings:

■ Fertility of mares inseminated with frozen/thawed semen centrifuged through a single layer density gradient, **KL Cerny, S Hughes, JR Campos, MHT Troedsson**, and **EL Squires**.

In another Gluck Center study Teri Lear, PhD, associate professor in the genetics/genomics group at the Gluck Center, and Judy Lundquist,

a research technician, collaborated with Terje Raudsepp, PhD, an assistant professor at Texas A&M and local practitioner and Gluck Foundation Board member Stuart Brown, DVM:

■ A chromosome translocation [64,XX,t(2;13)] in a Thoroughbred mare with repeated early embryonic loss, **TL Lear**, T Raudsepp (Texas A&M), **J Lundquist**, and S Brown (Hagyard Equine Medical Institute).

Other UK studies included:

■ Effect of ivermectin and fenbendazole on fecal egg count reduction among foals in Virginia by AC Carrington (Virginia Tech), JL Carrington (Virginia Tech), **JC Gould**, RM Brooks (Virginia Tech), CA Porr (Virginia Tech), and RK Splan (Virginia Tech).

■ Developing an assessment plan in an animal science department, **S Burk, M Rossano, E Vanzant, W Silvia**, and **R Harmon**. **UK**

Jenny Blandford is the Gluck Equine Research Foundation assistant at the Gluck Center.

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UPCOMING EVENTS

June 30, 4 p.m.

Dept. of Veterinary Science Equine Diagnostic Research Seminar Series, Veterinary Diagnostic Laboratory, Erdal Erol, DVM, MSc, PhD, head of diagnostic microbiology at UKVDL, will speak about diagnostic tests for bacteria and viruses.

July 2-9

Kentucky State 4-H Horse Show, Kentucky Fair & Expo Center, Louisville, Ky.

July 11-16

75th Annual Junior League Charity Horse Show, The Red Mile, Lexington, Ky.

July 19, 6 p.m.

Kentucky Equine Networking Association (KENA) meeting; Clarion Lexington-North

July 21

UK College of Agriculture All Commodity Field Day, Princeton, Ky.

July 22-23, 7:30 p.m.

Quarter Horse Racing, The Red Mile, Lexington, Ky.

July 28, 4 p.m.

Dept. of Veterinary Science Equine Diagnostic Research Seminar Series, Veterinary Diagnostic Laboratory, Virginia Tech's John Robertson, VMD, MS, PhD, Director of the Center for Comparative Oncology, will speak about equine melanoma.



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