

Hot, Dry Weather Requires Revised Management Strategies for Horses

With the intense weather and drought hitting many places in the United States this summer, University of Kentucky (UK) College of Agriculture experts are recommending horse owners take stock of their pastures and consider other management options such as hay supplementation.

According to Laurie Lawrence, PhD, a nutrition researcher and faculty member in the UK Department of Animal and Food Sciences, the combination of high heat and low moisture has caused cool-season grasses like Kentucky bluegrass and orchardgrass to dry up in many horse pastures. Dry pastures mean low forage availability for grazing horses and a potential need for supplemental hay.

While many locations have now begun to see beneficial moisture, there are many other areas still experiencing drought.

“A brief pasture walk can reveal whether a pasture has edible grass or just green weeds,” Lawrence said. “If it is not clear whether there is adequate grass for horses in the paddock, the best test is to offer hay and see whether horses consume it.”

First place a few flakes of hay in the pasture, and then observe the horses. “If they devour the hay in a short time, then pasture quality is probably poor and hay is needed,” Lawrence said. “If the hay is untouched or is mostly wasted, then it may not be needed. But, just because it is not needed now doesn’t mean it won’t be needed in a few days or a week.”

The amount and type of hay that should be fed depends on the type of horse and the condition of the horse and pasture. For mature idle horses in good body condition, a mid-maturity grass or grass-legume mix hay will provide

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High heat and low moisture have caused many cool-season grasses to dry up.

an adequate substitute for pasture during the summer months. However, feed more nutritious hay to lactating mares, foals, and weanlings. Legume hays or early maturity grass-legume mixes are suitable for horses with higher requirements. Also feed hay with a higher nutritive value to horses with a low body condition (too thin).

A mature idle horse will generally eat about 20 pounds of pasture or hay forage per 1,000 pounds of body weight per day, said Lawrence. Lactating mares will eat about 5 to 10 pounds more; and an allowance should also be made for their nursing foals. Because pasture might provide some of the needed forage, the amount of hay fed each day could vary. A common recommendation is to adjust the hay offered

Hot, dry weather

to an amount that horses will clean up between feedings.

Horses with high nutrient requirements also usually require some concentrate supplementation, such as sweet feed or pellets, in addition to hay and pasture; do not substitute concentrate, however, for all hay or pasture as this could result in gastrointestinal problems.

Providing hay is not just important for the horse's nutritional state, Lawrence said. If hay is available in the pasture, it provides a substitute forage source for horses and might reduce overgrazing. Overgrazing, particularly when plants are already stressed by heat and low moisture, can negatively affect long-term pasture productivity.

Although cool-season grasses might not be growing in the pasture during this hot, dry period, less desirable plants still thrive. When pasture conditions are poor, hungry horses might be more likely to eat weeds or toxic plants. Also, plants that might not normally cause a problem can become toxic to horses during stressful growing conditions, or when a period of rain follows a period of drought.

For example, young shoots of johnsongrass that emerge when a rain follows a long drought period can be toxic to horses, and hungry horses might chew on thorny weeds or bushes and sustain mouth injuries. When horses can satisfy their hunger with hay or desirable pasture plants during good growing conditions, they will be less likely to consume toxic or harmful plants, Lawrence said.

Along with adequate forage, horses

should have access to plenty of clean water. Normal pasture plants are high in moisture, but during hot, dry conditions, their water content decreases greatly. Similarly, hay has very little moisture, so horses usually drink more water when eating dry forage than when they are consuming succulent pasture.

Horses also maintain body temperature by evaporative cooling from sweat. Sweat is mostly water but also contains several electrolytes, particularly sodium, chloride and potassium. Most forages provide potassium but not much sodium or chloride, so in addition to providing plenty of water, horses should have access to a salt lick. **UK**

>Laurie Lawrence, PhD, a researcher in the University of Kentucky Animal and Food Sciences Department, provided this information.

Equine Emerging and Surging Diseases: What's on the Horizon?

Hindsight is often 20/20, but foresight is a far more valuable skill when trying to protect our horse population from infectious and even noninfectious diseases.

"Emerging and re-emerging diseases are an omnipresent threat to horse industries throughout the world," says

Peter J. Timoney, FRCVS, PhD, professor and former department chair and director of the Gluck Equine Research Center at the University of Kentucky.

Both new (emerging) diseases and older diseases rearing their heads (re-emerging) to strike again can devastate

equine populations and cost the industry millions of dollars.

This is why veterinarians and researchers throughout the world monitor and track disease spread carefully in equids worldwide.

By definition, an emerging disease is one that is either



An equine herpesvirus-1 particle

(1) new to a specific population, like West Nile virus (WNV) was to the United States in 1999, or (2) a disease that has not been recognized previously (e.g., mare reproductive loss syndrome in 2001).

When attempting to determine whether a disease is truly emerging, researchers consider several factors.

"We first need to decide whether a disease is truly novel or not," said Timoney. "It is possible that the disease has been around for a while, but that we hadn't recognized it until improving our surveillance and diagnostic tests. Further, we also need to confirm that the infective agents we suspect are causing disease are really the primary pathogen (disease-causing organism) and not simply opportunistic organisms."

For example, the bacterium *Proteus mirabilis* was mistakenly reported to cause contagious equine metritis in 1977, but it turned out that *P. mirabilis* was actually a secondary or opportunistic pathogen

What's the Next West Nile?

Experts' eyes are shifting from Africa to Southeast Asia and they are pointing fingers at Japanese encephalitis (JE) as the next big disease threat.

Like WNV, JE is a mosquito-borne illness that causes encephalitis (inflammation of the brain) in multiple species, including horses, humans, and certain bird species (which serve as the virus' reservoir). Like WNV, *Culex* spp. of mosquitoes primarily transmit the virus, and the disease is spreading from the temperate and tropical regions of Asia to Australia, Indonesia, New Guinea, and Pakistan. The equine case fatality rate can range from as low as 5% to as high as 40%, and residual neurologic signs can negatively impact the horse's future lifestyle.

JE is the most important viral encephalitis affecting humans in Asia, as approximately 50,000 cases are diagnosed each year despite the availability of an effective vaccine.

"While the disease has the potential to have a significant public health and veterinary medical and wildlife impact were it to be introduced into North America, the extent and magnitude of the impact would likely be mitigated by whatever background level of immunity already exists to its very close antigenic relative, West Nile virus," Timoney added.

Specific vaccines against JE are capable of inducing protective immunity in humans and horses but are only available in countries where the disease is endemic (prevalent).

In lieu of JE, the list of "other" diseases not currently recognized in the United States that could potentially spread to North America is fairly extensive and include African horse sickness, Venezuelan equine encephalomyelitis, glanders, dourine, and surra.

Emerging, Surging Diseases

that flourished only after a primary infection with *Tylorella equigenitalis*, the true causative bacteria.

Scientists believe many factors contribute to emerging disease spread, such as environmental factors (e.g., drought, El Niño) and the international movement of people, horses, and insect vectors that transmit disease.

"It is also worthwhile considering whether the overuse or abuse of antibiotics has contributed to the emergence of certain diseases, such as methicillin-resistant *Staphylococcus aureus* (MRSA)," Timoney proposed.

Several diseases are currently emerging in horses, contributing to loss of equine life and economic implications including cost of treatment, testing, vaccine development. Luckily, only few emerging equine diseases recognized since 1969 have any public health significance and are therefore not a threat to human health.

Once Bitten, Twice Shy

As if the worry about a new disease bearing its fangs and wreaking emotional and economic havoc on the North American horse industry isn't enough, experts advise that re-emerging diseases are an equally important threat.

"Re-emerging diseases are those that have been experienced before but have reappeared in a more virulent (severe) form or whose epidemiology has changed in some significant respect," Timoney explained.

One of the best examples of a re-emerging disease of concern to the U.S. horse industry is the neurologic form of equine herpesvirus type 1 (EHV-1), called equine herpesvirus myeloencephalopathy (EHM).

"Since 2000 there has been an increase in the number of outbreaks and cases of EHM—the vast majority of which are believed to be caused by specific 'neuropathogenic' strains of the virus," noted Timoney.

Neuropathogenicity of one particular EHV-1 strain is linked to a single change in one of the virus' genes controlling its replication.

Based on data compiled by the late George Allen, PhD, from the University of Kentucky, the total number of confirmed EHM outbreaks in both the U.S. and the U.K. from the '70s and '80s was only 14,

but from 2001 to 2006 there were 33 confirmed outbreaks. Most of those in the United States (26) involved the "mutant" form of EHV-1 virus that causes EHM.

According to Timoney, even though more updated statistics are unavailable on the overall number of EHM outbreaks that have occurred over the past seven years, there is no doubt that disease incidence has continued to increase in the interim.

"EHM is not the only re-emerging disease of importance in horses," Timoney added. "Nocardiform placentitis and (resulting) abortion can also be a disease of economic significance in breeding populations in some years."

A Worldwide Problem

"As evidenced by the West Nile virus, no longer is any country remote from the risk of incursion of any pathogen," Timoney concluded. "Fewer and fewer infectious diseases are currently considered restricted in their worldwide distribution."

According to Timoney, this makes risk analysis, communication, surveillance, and prompt reporting of disease outbreaks valuable tools to "safeguard the health integrity of a nation's equine industry." **UK**

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MASTHEAD

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Creating Hardened Surfaces in High-Traffic Areas

When it comes to creating the best environment for their horses, owners have a lot to think about. However, what lies beneath their animals' feet generally isn't one of them, said Stephen Higgins, PhD, director of Environmental Compliance for the Agricultural Experiment Station at the University of Kentucky's College of

STUDENT SPOTLIGHT

NAME: JULIANA ROBERTA CAMPOS

From: Brazil

**Degrees and institute where received: DVM,
Sao Paulo State University, Brazil**



Graduate student Juliana Roberta Campos said being a huge fan of horses and equine research made her choice to seek a masters' degree at the University of Kentucky Gluck Equine Research Center an easy one.

Campos' research focuses on equine viral arteritis, a venereal contagious disease of equids. The virus is known for establishing persistence in the reproductive tract of 30-70% of infected stallions, which can become carriers and shed the virus in their semen for a variable period of time, Campos said.

"The focus of my research is to study the mechanisms of establishments of equine arteritis virus (EAV) persistent infection in the stallion and to see the effect of the virus on semen quality during acute infection," she said. "If we have a diagnostic tool which can distinguish between carrier and noncarrier stallions before infection with the virus, we could give more attention to those stallions that are predisposed to become carriers in research programs for the control of the disease."

Currently, there isn't a national program available for EVA prevention and control or any requirement regarding EVA for importing horses into the United States. This leaves the horse population in this country very vulnerable to an EVA outbreak that could cause great economic loss in the equine industry, Campos said.

Campos' anticipated graduation is in fall 2012. She hopes to pursue a PhD thereafter. **UK**

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

Hardened Surfaces

Agriculture. Even so, he said creating surfaces that minimize pasture damage and reduce horses' health risks should be on owners' priority list.

Higgins explained that when a horse is standing, his hoof places approximately 27 pounds of pressure per square inch (PSI) to a surface. That surface pressure increases to 48 PSI when a horse walks. When several horses congregate around soft surface feeding and watering areas they can create mud. Over the long term, heavy equine traffic on muddy surfaces increases soil compaction, prohibits desired vegetation growth, and promotes weed infestation. These muddy conditions also expose horses' hooves and legs to bacterial infection and force animals to expend more energy, in turn increasing their need for feed, water, and forage.

It's better, said Higgins, to provide animals with an all-weather, multipurpose surface that can support the weight and continuous traffic near gateways, feeding areas, and other places horses congregate. These so-called "hardened

surfaces" incorporate heavy-use pads or compacted gravel around concrete near high-traffic areas. Owners can create hardened surfaces by installing geotextile fabric in high-traffic areas, then covering that material with gravel.

Made from polypropylene or polyester material, geotextiles are permeable fabrics used to strengthen soil and reduce erosion. In combination with gravel (also called dense grade aggregate), geotextile fabrics create a surface that can withstand heavy traffic from horses, humans, farm equipment, and other vehicles.



These hard surfaces reduce pasture damage.

Placing the fabric before adding gravel is crucial to the surface's long-term performance, Higgins said. "If the geotextile is not used, the rock material will sink into the ground over time and mud will seep up through the voids, eventually creating the same problem the pad was built to remedy," he said.

The combination has construction-related economic benefits as well. "The use of geotextile fabric allows area pads to be constructed using much less gravel because the fabric acts as reinforcement," Higgins said. "This means that these pads can be constructed using less rock than if rock alone was used."

Owners can also construct hardened surfaces using footing materials that will self-harden such as soil cement, lime-stabilized soils, or coal combustion products. Higgins advised against using Class I sand to create a hardened surface unless dense grade gravel is placed beneath it for support. Typically, gravel pad installation requires placing the pads, wetting them, then compacting them with a smooth drum roller. Allow soil cement and coal combustion products to cure for about seven days before use.

Local conservation district personnel can advise horse owners about which materials are readily available locally. They can also advise owners about local best practices for installing hardened surfaces, Higgins said.

Once in place, owners should maintain hardened surfaces by removing any deposited manure or uneaten hay, Higgins said. "Owners should try not to scrape up the gravel (when removing manure and uneaten hay)," he said. "but it's hard to avoid some removal."

Assuming normal wear and tear, owners should top-dress the pad with gravel, water it down, and compact it once every five years, he said.

Finally, owners who install hardened surfaces not only create better environments for their horses, but also comply with state and federal agricultural air and water pollution regulations, Higgins said. And there's a cost benefit, too. "Considering the reduction in feed costs and reduced risk of disease, doing the environmental stuff increases your production," Higgins said. **UK**

>Pat Raia is a professional journalist who has covered horse industry and equestrian topics for a number of publications. Her background includes riding, showing, and training Saddlebred horses.

Gluck Center Develops New PCR Assay for EHV-1

Kathryn Smith, a graduate student in the laboratory of Udeni Balasuriya, PhD, MS, BVSc, professor at the University of Kentucky Gluck Equine Research Center, has developed and validated a new real-time polymerase chain reaction (PCR) assay. This assay can detect and discriminate between neuropathogenic (causing or capable of causing disease of nervous tissue) and non-neuropathogenic equine herpesvirus type 1 (EHV-1) strains in nasal swab samples.

All EHV-1 strains can potentially induce respiratory disease as well as abortion in mares, but only specific neuropathogenic strains can cause large-scale outbreaks of neurologic disease. Several years ago, researchers linked a single nucleotide mutation in viral DNA polymerase encoding gene (open reading frame 30 [ORF30]) to neuropathogenic EHV-1. Identifying this particular mutation led the Gluck Center's late George Allen, PhD, to develop a real-time PCR assay (E2) to diagnose EHV-1 infection in horses. The PCR assay (E2) distinguishes between potential neuropathogenic and non-neuropathogenic EHV-1 strains and identifies any viral DNA in the horse's nasal secretion revealing an active virus shedding. However, the assay was found to yield false negative results and, thus, the sensitivity was not as high as desired for detecting low amounts of virus particles in clinical samples.

"Now we have developed and validated an improved and more reliable new real-time PCR assay for diagnosing EHV-1," Balasuriya said.

The new and improved real-time PCR assay (E1) has been evaluated and compared to the E2 assay using 76 archived EHV-1 isolates and 433 clinical specimens from cases of suspected EHV-1 infection. Scientists developed the new assay (E1) by redesigning primers and probes to detect and differentiate neuropathogenic and non-neuropathogenic EHV-1 strains, said Balasuriya.

Balasuriya says the E1 is 10 times more sensitive than the E2 and can detect down to 10 virus particles in one sample. Test comparisons indicate that E2 lacks adequate sensitivity for routine diagnostic applications and consequently generates more false negative results.

"The greater sensitivity and accuracy for detection of EHV-1 makes this improved test an important diagnostic tool to be used during outbreaks of EHV-1," Balasuriya said. "A rapid reliable diagnosis is crucial in order to ensure biosecurity and immediate quarantine measures when an outbreak occurs."

Of all the infectious viral diseases, EHV-1 is considered the most costly to the equine industry, giving rise to large-scale outbreaks and losses every year. EHV-1 can cause a variety of clinical signs including acute upper respiratory disease with fever, abortion, and neurologic disease. Most horses have been exposed to EHV-1 early in life and consequently establish a latent infection, sporadically shed virus, or exhibit only a few clinical signs. They become silent carriers showing no clinical signs of illness but can potentially cause new infections in foals and young horses. What makes EHV-1 tricky is the virus' unique ability to stay dormant and reappear later when stressed horses might shed infectious virus particles. **UK**

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

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° Fahrenheit, while rhizomes begin growth at temperatures less than 60°. Each panicle (flower cluster along the stem) produces several hundred seeds, which will 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°) can kill rhizomes, especially those located on the soil surface.

Johnsongrass toxicity—which might cause neurologic problems and lower spinal cord damage in horses—can occur from prolonged grazing or if a horse ingests 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 for control methods in your area. **UK**

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

UKVDL 2012 Forage Nitrate Testing Guidelines

The University of Kentucky Veterinary Diagnostic Laboratory (UKVDL) performs forage nitrate/nitrite testing and accepts samples from veterinarians, extension agents, and producers. Toxic nitrate accumulation in forages is a real concern this season due to current drought conditions.

A panel including both nitrate and nitrite analyses costs \$15

Forage Nitrates

per sample, and turnaround time is one to three business days.

Sample Collection Guidelines

Proper sample collection is crucial for interpreting results accurately. The sample should represent what animals will be eating, so collect the entire part of the plant that will be consumed. Collect a number of smaller samples to form a large representative composite sample. If different regions of a field were treated/fertilized differently, then submit separate composite samples for each region. Sample different cuttings, batches, or fields separately, and submit them as separate samples.

Submit at least a pound of total composite sample. More sample is better than too little, so when in doubt collect more. Be sure to mark each bag legibly with forage/sample type and identification information.

Nitrate concentrations tend to be higher in the stalks and at the base of the plants than in the leaves. Grains, seeds, and leaves do not accumulate significant nitrate levels. Plants with high stem-to-leaf ratios are the most likely to cause nitrate intoxication.

Dry forage (hay or bedding) Use a hay probe to take core samples. Randomly select 10 or more bales that are representative of a cutting/batch. Take one or more core samples per bale, and mix all the cores to make one large composite sample.

Silage, balage, haylage Use a hay probe to take core samples if possible. Randomly select 10 or more bales that are representative of a cutting/batch. Take one or more core samples per bale, and mix all the cores to make one large composite sample. Reseal the hole created in the wrap with tape after sampling. For bagged silage, select at least 10 representative areas to sample. If core sampling is not possible, unload some silage material and collect large handfuls from 10 or more different locations. Mix to form a large composite sample.

Corn stalks Cut the stalks at the anticipated harvest level and submit the entire part of the stalk that will be fed. Collect stalks from several areas of the field. Five to 10 stalks are recommended. Stalks can be cut or folded prior to shipping. Alternatively, if the corn stalks are going to be chopped, you can collect representative samples from the fresh chop.

Or, if shipping volume is an issue, only submit the bottom halves of the stalks, but remember the result will be higher than the actual overall average nitrate concentration for the entire plant.

Pasture grasses Collect handfuls of forage from 10-20 different areas in the field. Cut the grass at the anticipated harvest or grazing height, and submit the whole part of the plant that will be ingested. Mix thoroughly to make one large composite sample.

Grains do not accumulate nitrate, so nitrate testing is not typically performed on grains.

Sample Storage and Shipment Guidelines

Place moist samples (fresh green grasses, silage) in plastic bags and place them immediately in a cooler on ice or ice packs. Keep these samples chilled or frozen until shipment, and ship them with ice packs. Place dry samples, such as corn stalks and hay, in paper bags and keep them at room temperature until shipped; ice packs are not needed for shipping

dry samples. Regardless, ship samples as soon as possible after collection to avoid reduced nitrate levels. Ship samples overnight, or deliver directly to the laboratory. Storing moist plant samples in plastic bags at room temperature can result in bacterial growth and reduced nitrate, resulting in inaccurate test results.

Laboratory Submission Guidelines

Please see the [UKVDL website](#) to download the current accession form (see link for "Forms" on the homepage, and click the links for "New Standard Accession Form" as well as the "New Standard Accession Continuation Form" when sending multiple samples from one farm). [UK](#)

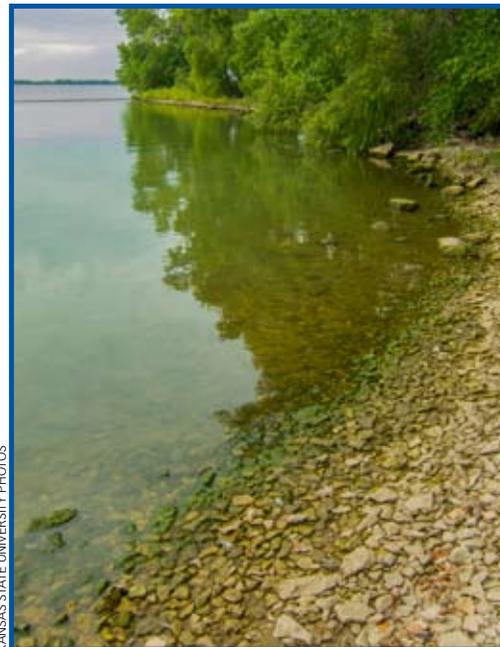
Visit www.uky.edu/Ag/GrainCrops/Briefs/nitrate_testing2012.html for more information on nitrate issues. For nitrate questions, contact Cindy Gaskill, DVM, PhD, clinical toxicologist at the UKVDL at 859/257-7912 or cynthia.gaskill@uky.edu.

>The University of Kentucky Veterinary Diagnostic Laboratory provided this information.

TOXIN TOPIC

Blue-Green Algae Poisoning

Blue-green algae, or cyanobacteria, poisoning occurs when horses ingest water containing excessive toxin-producing blue-green algae growth. Of the more than 2,000 identified species of blue-green algae, at least 80 are known to produce toxins poisonous to animals and humans. Many



Blue-green algae growth

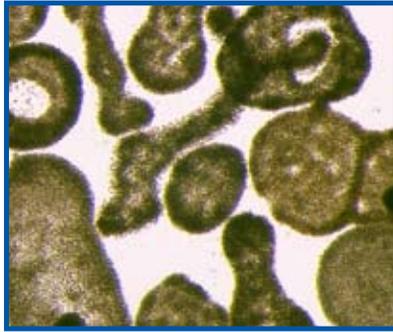
more species and toxins have yet to be identified. Heavy blue-green algae growth or blooms occur when water sources are contaminated with excessive nutrients, especially nitrogen and phosphorus, and when weather conditions are hot and dry. In farm settings, stagnant ponds contaminated with fertilizer runoff or manure and urine are prime places for blue-green algae blooms to occur.

The most common blue-green algae species in North America associated with poisoning are *Anabaena*, *Aphanizomenon*, *Oscillatoria*, and *Microcystis*. Not all strains of these genera are capable of producing toxins, and in those that do toxin production is sporadic. Environmental factors such as water temperature, sunlight, water pH, and nutrient concentration affect toxin production. Intoxications are most common in the summer and early fall when water temperatures are warmest.

These algae can produce several major toxins including potent neurotoxins that cause clinical signs such as muscle

Toxin Topic

tremors, respiratory distress, seizures, profuse salivation, diarrhea, and rapid death within minutes to hours. Other algae can produce hepatotoxins (toxins affecting the liver) that can cause acute death or a more delayed death after signs of acute liver failure occur. Photosensitization, a skin condition affecting nonpigmented areas of skin, can occur in animals that survive the acute stages of



Microcystis is one of the most common species of blue-green algae in North America

liver damage. Other types of algal toxins occur in other regions of the world. Blue-green algae toxins are released when algal cells are damaged and die in the water (e.g., after water is treated with an algacide such as copper sulfate), or when ingested water reaches the animal's digestive tract and disrupts cells, releasing the toxins.

Most animals exposed to blue-green algae toxins die acutely. Treatment is supportive and symptomatic. In some cases animals can recover, but death typically occurs so quickly that the animals are found dead near the water source.

It is impossible to tell visually if a water source contains blue-green algae or to determine which species are present without laboratory analysis. Blue-green algae blooms often impart a blue-green sheen to water, but not always, and bluish-green biomass accumulations in water are not always blue-green algae. Even when blue-green algae are present, toxic compounds may or may not be produced. Some water testing laboratories and veterinary diagnostic laboratories can test water for blue-green algae and several algal toxins.

Preventing blue-green algae poisoning is important. The following steps can help minimize the risk of algae poisoning in your animals:

Provide constant access to clean, clear fresh water, and fence off or otherwise prevent access to stagnant, scummy ponds. Do not allow

animals to contaminate the water with feces and urine.

- Prevent fertilizer or manure runoff into water sources.
- If a water source is treated with an algacide such as copper sulfate, prevent animal access to the water for at least a week or longer to allow any released toxins to degrade.
- When traveling with animals, do not allow them to access murky, scummy ponds or other suspect water sources. **UK**

>Cynthia Gaskill, DVM, PhD, clinical veterinary toxicologist at the University of Kentucky Veterinary Diagnostic Laboratory, provided this information.

Extension Celebrates 100 Years of County Agents

Whether they rode up to a farm on a horse-drawn buggy or offered advice on the bed of a pickup truck, county extension agents have been providing unbiased, research-based information to Kentucky farmers for a century.

“Even though we are a hundred years old, the University of Kentucky Cooperative Extension Service is seeking to find and serve people where they are and in ways they want to receive information,” said Jimmy Henning, director of the Kentucky Cooperative Extension Service. “Today, that includes the farm visits and the smartphone. In addition, programs have expanded to encompass youth, families, community development, and even fine arts.”

Charles Mahan was hired as the first full-time county agent in agriculture in the fall of 1912 in Henderson County, even though Congress' Smith-Lever Act didn't establish the Cooperative Extension Service until 1914. His annual salary of \$1,400 was split between the county and the U.S. Department of Agriculture's Office of Farm Management. During his first year he worked via horse and buggy. After that, local leaders bought him a red motorcycle so he could visit farmers more efficiently.

Six more agriculture agents were hired by spring 1913. The

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100 Years of County Agents

first home demonstration agents, now called family and consumer sciences extension agents, were hired in early 1914 on a short-term basis. They worked through the summer teaching food preservation techniques to women and girls. From the late 1930s until the early 1950s, those who worked primarily with counties' young people held the title of assistant agent in agriculture or assistant agent in home economics. In the 1960s these agents officially became county 4-H agents. However, J.M. Feltner is listed as a district 4-H club agent for Eastern Kentucky based out of Laurel County in 1917.

Mahan left the state for a brief period to take extension jobs in Indiana and Ohio. When he returned in 1920 he became the state supervisor for Kentucky Cooperative Extension county agents. In a speech he wrote after returning to Kentucky, Mahan said one of his job's biggest functions was to "develop sane, safe, local leaders who can be trusted to think things through, see both sides of the question, and give wise council and leadership to their fellow men." To that extent, he helped determine that extension agents' function should be primarily education, offering unbiased, research-based information to their clients. This continues to be the Cooperative Extension's philosophy today.

For Warren Thompson, becoming a county agent was his goal from a young age. As a boy growing up in Fulton County in the '20s and '30s, he watched his parents work with extension agents on various projects, and he participated in 4-H, which was led by H.C. "Corley" Brown, Fulton County agriculture agent from 1930-1933.

"I held county agents in such high esteem," he said. "They were bright,

listened, and worked with everyone. Corley Brown was so full of vigor and vitality. I wanted to be just like him."

After graduating from the University of Kentucky and working as an assistant county agent for a short period, Thompson was hired as the Hickman County agriculture and natural resources extension agent in the spring of 1943.

"The biggest task for an agent was to try to find people who were not satisfied and wanted a better way to do things,

"The biggest task for an agent was to try to find people who were not satisfied and wanted a better way to do things, and parents who wanted better lives for their kids."

—Warren Thompson

and parents who wanted better lives for their kids," Thompson said.

Thompson said county agents helped bridge the communication gap between the university and rural Kentuckians. As agent, he worked with producers in his county to plant hybrid corn, cross-breed cattle to improve genetics and milk production, and plant tall fescue to control soil erosion. While it would be 30 more years before researchers understood the tall fescue endophyte's effects on cattle, Thompson worked with producers to seed legumes so cattle could graze the fescue without becoming sick.

During this time only Clinton, the Hickman County seat, had telephone service, and it wasn't always functional. To get the latest information from the university, Thompson attended every UK field day he could in Princeton and Lexington. He shared this information with farmers during farm visits, through articles he wrote for the local newspaper, and by word of mouth. He convinced producers to let him perform on-farm demonstrations by the road so everyone could see them.

Today, communication is much improved, but UK specialists still have on-farm research trials, and the majority of agents still write weekly columns in the newspapers and makes farm visits. They also use the latest communication tools including the Internet, social media, and YouTube to provide farmers with the most current information.

Few people can attest to extension agents' quality of work better than Charles Mahan's descendants. A century later, his grandson and great-grandson continue to be heavily involved with Cooperative Extension and agriculture in Central Kentucky.

"My grandfather helped establish the connection between Extension and Farm Bureau, and as a former state director of Kentucky Farm Bureau I see the value of the two organizations working together," said

Jim Mahan. "By serving on the Agricultural Development Board, I know that the investment the Governor's Office for Agricultural Policy made in agriculture communities across the state couldn't have been done without the Extension Service."

Jim Mahan's son, John, and Nick Carter, Fayette County agriculture and natural resources extension agent, worked together before Carter became an agent, as he was John Mahan's banker.

"I've always been a part of their operation in providing them with service and education," Carter said. "I've also pointed them to specialists at UK."

Since Carter became an extension agent, he and John Mahan have worked together on crop production issues such as lodging in corn and fungicide applications and economics related to the Mahans' agricultural operation.

Jim Mahan has served on the Fayette County District Extension Board and continues to serve on the Fayette County Extension Council. The Mahans and Carter worked to incorporate agriculture back into the Lexington Lions Club Bluegrass Fair.

"Agriculture is Nick's passion, and it shows through his dedication to his job," said John Mahan. "There has been more than one occasion when Nick and I have studied an issue in a crop by the lights of a pickup truck." UK

>Katie Pratt is an Agriculture Communication Specialist at the University of Kentucky.

New Kentucky Drought Resources Website

The University of Kentucky College of Agriculture has launched a Kentucky Drought Resources webpage. This site will provide up-to-date information related to the drought's effects on the state's agriculture sector as well as UK resources for farmers who have been affected by drought.

It is available at <http://drought.ca.uky.edu>.



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2012 Kentucky Equine Survey's Final Fundraising Push

As the 2012 Kentucky Equine Survey enters the final stages of data collection, a second and vitally important piece of the project intensifies. The deadline for the project to secure funds from the state's equine industry in order to receive matching funding from the Kentucky Agricultural Development Fund is a little more than a month away.

The University of Kentucky's Ag Equine Programs and the Kentucky Horse Council have partnered on the 2012 Kentucky Equine Survey, a statewide comprehensive survey of all horse breeds. The study is being conducted in conjunction with the University of Louisville's Equine Business Program and the Kentucky field office of the U.S. Department of Agriculture National Agricultural Statistics Service. The last comprehensive study of this type was conducted in 1977.

"We just crossed over the halfway point of raising \$100,000 from Kentucky's equine industry and wholeheartedly thank our industry partners who have led these efforts," said Jill Stowe, PhD, associate professor in agricultural economics at UK and project lead. "Our Sept. 1 deadline for raising the remaining funds is coming quickly, and we are looking for other industry partners to step up and help this important project reach its full potential."

"This study is critical to every horse activity in Kentucky and will create a rich and unbiased set of data that should be a foundation for decisions by policymakers, educators, investors and business leaders for many years to come," said Nancy Cox, PhD, associate dean for research in UK's College of Agriculture, Kentucky Agricultural Experiment Station director, and administrative leader for UK Ag Equine Programs.

The study's cost is \$600,000. The Kentucky Agricultural Development Fund committed \$300,000 to the project, with \$100,000 of that funding contingent on a match of \$100,000 from Kentucky's horse industry and organizations. The UK College of Agriculture committed \$200,000 for the study.

The bulk of the budget goes directly to the Kentucky field office of the National Agricultural Statistics Service, an agency that conducts this type of research regularly and is able to provide the highest level of confidentiality to participants.

Early financial support for this effort has come from the Kentucky Horse Council, Kentucky Quarter Horse Association, North American Equine Ranching Information Council, Kentucky Thoroughbred Association/Kentucky Thoroughbred Owners and Breeders,

"This study is critical to every horse activity in Kentucky and will create a rich and unbiased set of data."

— Dr. Nancy Cox

and Kentucky Thoroughbred Farm Managers Club. Additional financial support has been given or pledged by Alltech, Equine Medical Associates, Farmers Feed Mill, Keeneland, Kentucky Association of Equine Practitioners, Kentucky Dressage Association, Kentucky Equine Education Project, McMahon & Hill Bloodstock LLC, Mountain Pleasure Horse Association, Northern Kentucky Horse Network, Sierra Farm, and Webster Pharmaceuticals. Additionally, the Kentucky Horse Council continues to raise money through a grassroots campaign where private horse owners donate \$10 on behalf of their horse. Personal donations have also come from Mary Anne Cronan, Lisa Lourie, Norm Luba, and Nancy Stephens.

"We are grateful to all of the individual donors who have thus far given to this project, whether the amount was large or small," said Ginny Grulke, MS, executive director of the Kentucky Horse

Council. "Every dollar donated results in two dollars going towards the survey. Donations are also tax-deductible, a financial bonus for the horse owner."

The survey, mailed in June to 15,000 Kentucky horse owners, is now due. Horse owners who have not completed and mailed in their information are urged to do so quickly. Representatives from the National Agricultural Statistics Service will begin to make phone calls to those who haven't yet submitted their printed information.

The purpose of the study is to get an accurate inventory of all horses in the state by breed and use and to describe their economic impact at the farm and community levels, through races, shows, trail rides, and other events. The survey requests information relating to capital investments on the farm and in farm equipment to better assess the full economic value of Kentucky's horse industry. Horses being inventoried include those on farms owned by the horse owner as well as those boarded at equine boarding and breeding facilities.

The survey asks for information about the breeds of horses in Kentucky, their uses, and their estimated value. Other questions include the number and value of horses sold or purchased in 2011 as well as approximate expenses for horse care, including wages, taxes, feed, bedding, health, supplies, farrier, insurance, boarding, and training fees.

All farm and individual names are confidential and will not be available to any state or federal agency, nor to UK, U of L, or the Kentucky Horse Council. Summary results from the survey are expected in December 2012, with in-depth economic impact results becoming available during early 2013.

More information about the 2012 Kentucky Equine Survey can be found at www2.ca.uky.edu/equine/kyequine-survey or on Kentucky Horse Council's website at www.kentuckyhorse.org. 

>Holly Wiemers, MA, is Communications Director for UK Ag Equine Programs.

"We are grateful to all of the individual donors who have thus far given to this project, whether the amount was large or small."

— Ginny Grulke, MS

Dates Set for Gluck Center 25th Anniversary and Equine Research Hall of Fame

The University of Kentucky (UK) Gluck Equine Research Center will hold the Equine Research Hall of Fame on Sunday, Sept. 23, and the Gluck Center 25th anniversary celebration on Monday, Sept. 24. The Equine Research Hall of Fame awards dinner location is to be determined; the Gluck Center 25th anniversary celebration will be held at UK's E.S. Good Barn.

Established in 1990, the Equine Research Hall of Fame honors international scientific community members biennially who have made equine research a key part of their careers, recognizing their work, dedication, and achievements in equine research. The Gluck Center is home to the Equine Research Hall of Fame. Equine Research Hall of Fame nominees can

be living or deceased, active or retired.

The Gluck Center is celebrating 25 years as a named center focused on improving the health and well-being of the horse by having lectures, a luncheon, and an open house. The world-renowned Gluck Center, within the Department of Veterinary Science in the University of Kentucky's College of Agriculture, is the only scientific institute in the United States where almost all faculty conduct full-time equine health and disease research.

Department of Veterinary Science faculty developed six of the 10 major vaccines currently used to protect against equine infectious diseases. They are among a long list of other accomplishments with an international impact on equine research.

UPCOMING EVENTS

July 26, 4 p.m.

University of Kentucky Department of Veterinary Science Equine Diagnostic and Research Seminar Series, Amanda Adams, PhD, and Macarena Sanz, DVM, MS, Dipl. ACVIM, will speak about the stress of weaning. Veterinary Diagnostic Laboratory, Lexington, Ky.

August 4, 4-8 p.m.

Hat's Off Day, Kentucky Horse Park, Lexington, Ky.

August 30, 4 p.m.

University of Kentucky Department of Veterinary Science Equine Diagnostic and Research Seminar Series, Craig Carter, DVM, PhD, Dipl. ACVPM, will speak about equine leptospirosis. Veterinary Diagnostic Laboratory, Lexington, Ky.

The year's events kicked off in January with the inaugural UK Ag Equine Programs' UK Equine Showcase and 3rd Annual Kentucky Breeders' Short Course at the UK Veterinary Diagnostic Laboratory. The UK Gluck Center Equine Reproduction Facilities grand opening at Maine Chance Equine Campus was held in February.

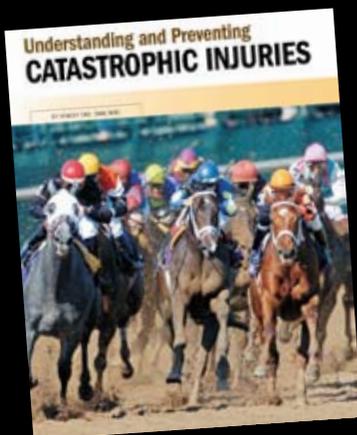
The events will conclude with the 9th International

Conference on Equine Infectious Diseases to be held Oct. 21-26 at the Hilton Lexington/Downtown Hotel.

The Gluck Center's mission is scientific discovery, education, and dissemination of knowledge for the benefit of the health and well-being of horses. **UK**

>Jenny Blandford is the Gluck Equine Research Foundation coordinator at the Gluck Center.

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