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## Growing your Bedding: The Good, the Bad, and the Ugly

Property owners across the country commonly harvest their overmature pastures for horse bedding. While this practice can have economical and health benefits for the horse, it can also have potential complications.

### The Good

When farm owners find themselves with more pasture than they need, mowing it down doesn't have to be the only management option. Allowing pastures to grow to full maturity (seed-head stage) and then harvesting them can produce quality bedding for stalls or run-in sheds. This material is simply overmature or low-quality hay because it is allowed to grow beyond the normal harvest window for hay production.

Many farms that use this practice report reduced incidences of colic because the horses will consume the bedding after they run out of hay in the stall, thus mimicking continuous grazing. And by harvesting pastures farms are able to grow their own bedding at a fraction of the cost of purchasing straw or shavings.

### The Bad

Bedding harvested from pastures in the Southeastern, South-central, and Northwestern United States is likely to contain tall fescue. Tall fescue can be

infected with a fungal endophyte (*Neotyphodium coenophialum*) that can produce ergot alkaloids, some of which are harmful to pregnant mares.

Ergovaline, the most common ergot alkaloid found in infected tall fescue, varies in concentration throughout the year depending on weather conditions and pasture management. It also varies within the plant. Infected tall fescue's stems and seedheads often contain higher levels of ergovaline than the leafy part of the plant, meaning ergovaline levels will be high when pastures are harvested at full maturity, as they are for bedding.

However, ergovaline is sensitive to light and heat, and levels will often drop in bedding material during the drying process. Research results and case studies have found exceptions, though, when ergovaline concentrations have remained high even after baling. For this reason, test bedding (or hay) containing infected tall fescue for ergovaline concentration before using it for broodmares.

### The Ugly

Many grasses can also be infected with the fungus *Claviceps* sp. Unlike the better-known tall fescue endophyte, this fungus is identifiable in plants by the appearance of dark purple or black kernels on the seedhead called

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ergot bodies. While *Claviceps* sp. and endophytes are not related, they both produce ergot alkaloids that can be harmful to broodmares.

*Claviceps* sp. are common in cereal grains such as cereal rye and barley but can also be found on grass seedheads such as ryegrass and occasionally tall fescue. These alkaloids are not distributed throughout the infected plant, but instead are contained in the ergot body, which can complicate testing. Alkaloid concentrations in these bodies can be significantly higher than what is found in tall fescue and, therefore, quite dangerous to horses.

### Growing Safe Bedding

Given these challenges, the easiest solution is to avoid using grass bedding for pregnant mares. However, you can implement some simple management changes that can reduce the risk of complications and allow you to still utilize this cost-saving practice even among broodmares.

**1. Know if your pasture contains tall**

## Growing Your Bedding

**fescue** Tall fescue is a bunch-type grass, dark green in color, with serrated leaf edges and prominent veins. If a pasture contains more than 10% tall fescue, it should be tested for endophyte infection levels every year. While infection rates will not vary greatly from year to year, increases are common and should be monitored. Contact your local county extension agent for help with identification and testing, or see “Forage Identification and Use Guide” at [uky.edu/ag/forage/foragepublications](http://uky.edu/ag/forage/foragepublications).

- 2. Test infected bedding** If you produce bedding (or hay) from endophyte-infected tall fescue pastures, test this material before using it for broodmares. You can still use high-testing lots for growing horses or barren mares and save the safer material for broodmares.
- 3. Inspect pastures for ergot bodies in late spring** Testing can detect ergot bodies in your pasture. Accuracy of the results depends on whether the small sample taken for testing actually included ergot bodies. The best time to detect ergot bodies in the pasture is before harvest. Once seedheads



Ergot bodies appear as dark purple or black kernels on the forage's seedhead.

are visible, take a moment to walk through pastures and inspect them for ergot bodies. If you find them, do not use this material with pregnant mares. A variety of laboratories across the country offer tall fescue testing. A few are listed below. Endophyte tests will look for the presence of the fungal endophyte that produces ergot alkaloids. Ergovaline tests will quantify the amount of ergovaline in the material.

**Agrinostics Ltd. Co.**

P.O. Box 882  
Watkinsville, GA 30677  
[www.agrinostics.com](http://www.agrinostics.com)

**Iowa State University Veterinary Diagnostic Laboratory**

1600 South 16th  
Ames, IA 50011  
[www.vetmed.iastate.edu/diagnostic-lab](http://www.vetmed.iastate.edu/diagnostic-lab)

**Oregon State University Endophyte Service Laboratory**

139 Oak Creek Building  
Corvallis, OR 97331  
[www.oregonstate.edu/endophyte-lab](http://www.oregonstate.edu/endophyte-lab)

**University of Kentucky Regulatory Services**

103 Regulatory Services Building  
Lexington, KY 40546-0275  
[www.uky.edu/ag/regulatoryservices](http://www.uky.edu/ag/regulatoryservices)

**University of Kentucky Veterinary Diagnostic Laboratory**

1490 Bull Lea Rd.  
Lexington, KY 40511  
[www.vdl.uky.edu](http://www.vdl.uky.edu)

**University of Missouri Veterinary Medical Diagnostic Laboratory**

P.O. Box 6023  
Columbia, MO 65205-6023  
[www.vmdl.missouri.edu](http://www.vmdl.missouri.edu)

Managing and monitoring pastures properly can result in the safe production of quality hay or bedding for all livestock classes. **UK**

>Krista Lea, MS, and Ray Smith, PhD, professor and forage extension specialist, both within the University of Kentucky Department of Plant and Soil Sciences, provided this information.

## Lessons Learned about Equine Welfare

Each month, a distinguished researcher or veterinarian lectures on a timely equine topic as part of the University of Kentucky Department of Veterinary Science's Equine Diagnostic and Research Seminar Series. Recently, Tom Lenz, DVM, MS, Dipl. ACT, senior director of equine veterinary services for Zoetis and former chairman of the Unwanted Horse Council, spoke on the current state of equine welfare:

It's a statement that Lenz has said before, and it's one he'll say again: "The more

you know about unwanted horses, the more complicated the issue becomes."

That sentiment rings true for equine welfare in general, something Lenz said the public began taking interest in back in the early 2000s, when they learned that

American processing plants were slaughtering so-called unwanted horses for human consumption in foreign countries. Following public outcry, U.S. horse processing was eventually shuttered.

But the public's interest in horse welfare didn't stop

there. In fact, it's continued through to the present day and will likely remain in the future. So what have we learned about equine welfare since the issue first gained national attention?

**Why is Equine Welfare So Complicated?**

"We're a pretty smart group of people," Lenz said of the veterinarians and other horse industry leaders who've worked to improve equine welfare throughout the years. "So what's so hard ... about making good equine welfare decisions?"

"Since 1971 we've been trying to stop soring. In rodeos, the (animal) injury rate per run is 0.004%, but every major city has protests when the rodeo comes to town. And carriage horses—most cities



## Equine Welfare

have very strict regulations regarding horse and medical care, and yet there's always an effort to get rid of them."

Lenz said several factors complicate our ability to find solutions to the unwanted horse and equine welfare issues, including:

- Differences in opinion regarding whether we should consider horses livestock or companion animals (Lenz notes that many horse industry members consider horses livestock, as there are generally more funds available for research on disease control for livestock species as opposed to companion animal species);
- The ongoing debate about whether horses should be processed for meat;
- Aggressive campaigns by animal activist groups;
- Urbanization (As urban populations rise, farm/rural populations decline, Lenz said; further, many urbanites don't have a good understanding about how to care for large animals); and
- Possibly the most complicating factor, the American public's love affair with the horse (in other words, uninformed people with few to no ties to the equine industry care for horses and want to have a voice in how they are treated).

But, based on these complicating factors, Lenz said we've learned some things that could help lead to solutions in the future.

### What We've Learned

Lenz said the primary take-away he's come home with is that each person's views on animal welfare are "conditioned by our personal knowledge base and life experiences."

For example, Lenz said he grew up in a situation where his family's horses lived outside all day, every day, unless they were foaling, sick, or injured. On the other hand, his wife, also a veterinarian, grew up with show horses that spent much of their time in well-maintained stalls. As a result, Lenz said he believes horses are healthier if they can spend as much time outside as possible, while his wife thinks horses are better housed in well-maintained stalls for part of the day, especially during the winter.

"We all look at this through different eyes," he said, "and there's not a right or wrong answer."

## MASTHEAD

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### ■ The Horse: Your Guide to Equine Health Care

Alexandra Beckstett, Managing Editor  
Brian Turner, Layout and Design

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Lenz also said he's learned that it's crucial not to focus too closely on one single welfare criteria but, rather, to look at the whole picture.

He illustrated this point using chickens:

- While chickens housed in laying cages have more movement restrictions than house chickens or free-range chickens, he said, they also have easy access to food and water, are easily observed, don't get tangled up in aggressive interactions with other chickens, and have minimal disease.
- Housed chickens, on the other hand, have more room to move and access to feed and water, but there's a higher incidence of aggression and cannibalism between birds; it's difficult to monitor individual chickens; and there's an increased disease risk compared to chickens housed in laying cages.
- And finally, he said, while free-range chickens have large areas to roam and enclosures for sleeping and eating, they tend to be aggressive and cannibalistic; they're exposed to the elements, pests, and predators; and they have an increased disease risk because they're consuming whatever they can on the ground.

So, which group of chickens experience the best welfare?

"Overemphasizing a single criteria—such as how much room chickens have to move—can actually backfire and cause welfare problems in other areas, such as nutrition, disease control, etc.," Lenz said "The answer lies somewhere in the middle."

Lenz said he's also learned that animal welfare is genuinely important to people on all "sides" of the issue—everyone genuinely cares for animals.

People in animal-related businesses—such as veterinarians and farmers—care for their animals because it's how they make a living and tend to use facts to make decisions rather than emotions, Lenz said. These individuals deal with cost, production efficiencies, and profits and sometimes view their animals as instruments for human use, he said. The public sometimes interprets these factors to be cold or uncaring, he added.

The public also tends to view animals as companions rather than utilities, Lenz said. Their vision of animal welfare is similar to how they view their own welfare, he said, and they want to protect animals, but they're not always sure



## Equine Welfare

what that means or entails.

Animal-rights activists, Lenz said, are driven by a genuine desire to make sure animals are treated well, but many are not familiar with the industries and animal care practices.

And many public officials want to be re-elected and face the challenge of dealing with stakeholder influence when considering bills aimed at regulating animals and their care, he said. But these individuals also aren't always familiar with the animals and how they're cared for.

Finally, Lenz said, he's learned the public view animal welfare as a moral and ethical issue rather than a scientific one.

### In a Perfect World

"In a perfect world we'd base animal welfare decisions on science, health,

## Important Points to Remember

Before one can fully understand the equine welfare issues currently facing the horse industry, there are a few important points to remember. Tom Lenz, DVM, MS, Dipl. ACT, shared the following terms and what they represent:

- **Welfare** The physical and physiological state of an animal.
- **Good welfare** An animal's physiologic, psychological, and safety needs have been satisfied.
- **Unwanted horse** Any horse that is no longer wanted by its current owners because it's old, injured, sick, unmanageable, or simply fail to meet the owners' expectations.
- **Rights** An animal's rights are different from its welfare. Rights are defined as freedom from thirst, hunger, and malnutrition; freedom from discomfort; freedom from pain, injury, and disease; freedom to express normal behavior; and freedom from fear and distress. [UK](#)

biologic function, and normal behavior," Lenz said.

But because of the current wide-sweeping views on welfare as an ethical issue, this is difficult to achieve. So, Lenz said, it's important to look for common ground when trying to find solutions for equine welfare issues.

"Decisions regarding welfare must be made to balance science and ethics," he said. "Science informs people, but it can't make them decide. Emotions and misinformation will override science and fact."

He also said we must communicate with people who hold the opposite viewpoints, even if we don't agree with them.

"Peoples' viewpoints are valid, and we have to try to come to common ground, even if that doesn't match our own opinions," he said.

And finally, he said, we must continue working to improve our horses' use and well-being and be willing to make changes—even hard changes—when they're indicated. [UK](#)

>Erica Larson is the news editor for TheHorse.com.

## GRAD STUDENT SPOTLIGHT

### ASHISH TIWARI

**From:** India

**Degrees:** BVSc & AH, College of Veterinary Science, JNKVV, Jabalpur, India  
MVSc (Vet. Microbiology), Anand Veterinary College, AAU, Gujarat, India

Influenza virus is one of the important pathogens of animals and humans. Viruses have always intrigued Ashish Tiwari and inspired him to pursue a career researching influenza virus.

The laboratory of Thomas Chambers, PhD, professor of veterinary virology at the University of Kentucky Gluck Equine Research Center, is the only OIE (World Organisation for Animal Health) reference laboratory for equine influenza in the Western hemisphere and one of the best places to work on influenza virus, Tiwari said.

One of the major complications and causes of mortality during influenza infection is bacterial pneumonia. Secondary bacterial pneumonia during equine influenza could potentially be fatal or at least significantly reduce recovery rates, resulting in significant economic losses to the equine industry. Tiwari is exploring how influenza virus modulates the host innate immune system for secondary bacterial infection.

"In my PhD project I am investigating how influenza virus inhibits a cytokine (IL-23/IL-17) response, which is important in the antibacterial defense in the lungs of the host," he said.

Tiwari is also investigating whether external supplementation of IL-23 could help prevent secondary pneumonia and possibly hasten recovery as well as reduce the associated mortality. The project is funded by Kentucky Equine Drug Research Council.

"In addition to my project, I have worked on development of a real-time PCR-based diagnostic assay for influenza viruses, and I have also studied the molecular epidemiology of equine influenza virus," he said.

With emerging drug resistance among bacterial populations, it is important to develop alternative treatment strategies. Results from this study will identify the targets that could help prevent and/or treat secondary bacterial infections even in the case of a drug-resistant infection, Tiwari said.

After finishing his PhD, Tiwari said he would like to pursue his research interests in virology with emphasis on antiviral immunity. [UK](#)



>Shaila Sigsgaard is an editorial assistant for the Bluegrass Equine Digest.

## Update: Balasuriya's EVA Research

Udeni Balasuriya, BVSc, MS, PhD, professor at the University of Kentucky Gluck Equine Research Center, recently spoke at a UK Equine Forum meeting where he discussed "Equine Infectious Diseases in the Genomic Era: Identification of Putative Host Factors Associated with EAV (Equine Arteritis Virus) Carrier State in the Stallion."

EAV is a virus that causes equine viral arteritis (EVA), an upper respiratory tract and reproductive disease in horses. EAV can be transmitted by respiratory or venereal routes. Clinical signs of EVA include skin rash; watery eyes; swelling of the eyes; edema (fluid swelling) on the legs, sheath, and scrotum; and establishment of persistent infection in stallions. Most EAV infections are subclinical in nature but animals develop moderate to severe clinical signs. The severity of

## Balasuriya's EVA Research

the clinical signs is determined by many factors, including the strain of EAV, route of infection, age, sex, breed, immunity, climate, and management practices. Standardbreds and European Warmbloods have the highest seroprevalence, or disease occurrence within a population, followed by the American Saddlebred. Thoroughbreds and American Quarter Horses have low seroprevalence of EAV.

Balasuriya's research focus is to identify the viral and host factors involved in the establishment of an EAV carrier state in the stallion. The identification of the host factors was made possible by sequence analysis of the equine genome from EAV carrier and noncarrier stallions. Balasuriya's work has identified two genes that may be associated with the establishment of EAV carrier state in stallions. These two genes encode for two proteins (CXCL16 and CXCR6) that are present in equine cells associated with the immunity. This research is important to the equine industry because of EAV's threat to the breeding industry. Persistently infected stallions can transmit the virus to susceptible mares during breeding and precipitate EVA outbreaks. Furthermore, virus can be transmitted to a naive recipient mare via embryo transfer from a donor mare inseminated with EAV-infective semen.

In early 2013 Balasuriya was awarded a five-year \$2.9 million grant from the U.S. Department of Agriculture to identify genetic factors responsible for the establishment of EAV. The grant is titled "Identification of genetic factors responsible for establishment of equine arteritis virus carrier state in stallions."

A portion of the grant will fund the Controlling EAV and Other Infectious Agents in Stallions, Semen and Embryos symposium organized by the UK Gluck Equine Research Center on Nov. 22, 2014, at the Embassy Suites in Lexington. For more information about this event and to register, visit [eavsymposium.eventbrite.com](http://eavsymposium.eventbrite.com). **UK**

>Hannah Forte is a communication intern with the UK Ag Equine Programs and Gluck Equine Research Center and undergraduate student majoring in community and leadership development at UK.

## WEED OF THE MONTH

**Common name:** Horsenettle  
**Scientific name:** *Solanum carolinense* L.  
**Synonym:** Warm-season perennial  
**Origin:** Southeastern North America  
**Poisonous:** Yes

Horsenettle is distributed widely across most of the United States, especially in the eastern half and the western coastal states. This relatively low-growing perennial is easily recognized by its erect to spreading growth habit. The stems and leaves contain sharp prickles that inhibit grazing and make hand-weeding undesirable. Horsenettle flowers are white to pale violet with yellow anthers. Seeds are encased in a berry that is initially green but turns bright yellow at maturity. The berry might persist for several months before decomposing to release the seeds. Horsenettle also reproduces from spreading, fleshy rhizomes. This weed grows most often in poorly managed pastures.



Horsenettle control is challenging, and mowing is generally ineffective. Herbicides are available to provide effective control when applied in August and September. Consult your local Cooperative Extension Service personnel for herbicidal control in your area. **UK**

>William W. Witt, PhD, a professor emeritus, in plant and soil sciences at the University of Kentucky, provided this information.



UK COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

## UKAg Roundup Wrap Up

The 2014 UK College of Agriculture, Food and Environment Roundup was held Sept. 3-6 in and around the E.S. Good Barn on the south end of UK's campus, and UK Ag Equine Programs staffed a booth there. Roundup is an annual event put on by the Agriculture and Human/Environmental Services Alumni Association to promote the College and encourage social interaction among students and faculty. This year's event included a Rotary luncheon, legislature day, staff appreciation day, and alumni activities.





## UK to Host Free Racetrack Injury Prevention Symposium

The University of Kentucky Gluck Equine Research Center and UK Veterinary Diagnostic Laboratory (UKVDL)—two UK Ag Equine Programs—will host a free Racetrack Injury Prevention Symposium on Monday, Oct. 20 from 1:30-5 p.m. at the UKVDL.

The Racetrack Injury Prevention Symposium will offer an in-depth look at current efforts to reduce injuries in race horses. The event is targeted toward veterinarians and anyone else with an interest in the topic. Registration is not required.

The symposium is sponsored by Merck Animal Health. Other sponsors include Boehringer-Ingelheim, Kentucky Association of Equine Practitioners, and *The Horse: Your Guide to Equine Health Care*.

Three hours of Continuing Education has been approved by the Kentucky Board of Veterinary Examiners for veterinarians and veterinary technicians. CE sheets must be signed at the meeting to receive credit.

The UKVDL is located at 1490 Bull Lea Road in Lexington. For more information, contact Jenny Evans at jenny.evans@uky.edu or 859-218-1089. **UK**

>Jenny Evans, MFA, is the marketing and promotion specialist senior at the Gluck Equine Research Center.

## Deworming Dilemma

**Q** I need advice about deworming our horse. He lives alone in a 2-acre pasture, but he is hauled to a public barn for exercising. Our vet has advised us to cut back on the every-other-month deworming schedule after a manure sample showed he had no worms. How often should we deworm? Would you please recommend which medication we should use?

*Marty Ward  
Medford, Ore.*

(Continued on page 7)

### RACETRACK INJURY PREVENTION SYMPOSIUM SCHEDULE

<b>1:30 p.m.</b>	Welcome and Introductions Dr. Ed Squires, PhD, Dipl. ACT (hon.), Professor, UK Gluck Equine Research Center
<b>1:45-2:45 p.m.</b>	The Kentucky Horse Racing Necropsy Program: Our mission, our methods and a view to the future Dr. Laura Kennedy, DVM, Dipl. ACVP, Assistant Professor, UK Veterinary Diagnostic Laboratory
<b>2:45-3:45 p.m.</b>	Inflammatory gene expression in racehorses in training: Adaptation or portent of injury Dr. David Horohov, PhD, Interim Director of the UK Gluck Equine Research Center and Interim Chair of the Department of Veterinary Science
<b>3:45-4 p.m.</b>	BREAK
<b>4-5 p.m.</b>	Evolving strategies to prevent catastrophic injury in the Thoroughbred racehorse Dr. Mary Scollay, DVM, Equine Medical Director, Kentucky Horse Racing Commission

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## Deworming Dilemma

**A** Thank you for asking this highly relevant question. I fully agree with your veterinarian. To deworm a horse every other month is a serious overtreatment. In the best case it is not needed and is a waste of medicine and money and, at worst, such treatment regimens inevitably lead to resistant parasites.

You do not mention your horse's age, but I assume he is an adult. Adult horses most often require only one or two treatments a year, and many may not need any treatments at all. If he is in good health and a fecal sample does not reveal any parasite eggs, there is simply no incentive to treat.

In your case there is one additional reason to assume that your horse will not require much deworming: The fact that he lives alone means the only source of infection is himself. If he does not shed many parasite eggs and the pasture is spacious, the infection pressure will be extremely low. Going to a local barn for exercising is unlikely to contribute to parasite infection, since these are acquired when grazing on pasture, not while active in a riding arena or when kept in a stall.

My recommendation for an adult horse is to have a veterinarian perform a fecal egg count twice a year—typically before and toward the end of the grazing season. As a general guideline, treatments can be performed if the egg count level is above 200 eggs per gram, but your veterinarian may set the threshold a bit lower or higher. Based on this, your horse is likely to not need any treatments at all, and I would have no worries with that as long as he is healthy and you continue to perform your two fecal egg counts every year.

When you do decide to deworm, I can give you no general recommendation regarding choice of drug for treatment. It fully depends on which potentially resistant parasites might be present. The only way to find out is to take another fecal sample 14 days after deworming and then see if the egg count was reduced satisfactorily. So my recommendation would be to start testing the drug that you would typically use. If it works fine, then continue with that. If not, you would need to change to a drug with a different mode of action.

*Martin Krarup Nielsen  
DVM, PhD, Dipl. EVPC*

## UPCOMING EVENTS

### October 10, 10 a.m.-12 p.m.

The 13th Mary Passenger Memorial Lecture on equine medicine and surgery, with Drs. Ernie Bailey and Elwyn Firth.

### October 9, 6:30 p.m.

Equine Research Hall of Fame ceremony, University of Kentucky Hilary J. Boone Center. Contact Jenny Evans at 859/218-1089 or jenny.evans@uky.edu for more information.

### October 20, 1:30-5 p.m.

Racetrack Injury Prevention Symposium, Veterinary Diagnostic Laboratory, Lexington. Speakers: Drs. Laura Kennedy, Mary Scollay, and David Horohov.

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## UK ESMA Welcome Back BBQ: A Bouncing Good Time!

The University of Kentucky Equine Science and Management undergraduate degree program kicked off the fall semester with its annual Welcome Back Barbecue at the E.S. Good Barn on Monday, Sept. 15. More than 175 students, faculty, and staff attended the event, and student organization Block and Bridle provided the food.

Students had an opportunity to learn more about UK's various equine-related clubs and teams and participate in bouncy horse races, hilariously called by Kentucky-based Quarter Horse exhibitor and announcer Chuck Givens.

Returning this year was the Equestrian Olympics event, in which 15 teams took part. Three- or four-member teams took turns participating in games relating to UK's equine clubs and teams. These games included a three-legged jumping course, bouncy horse hula hoop roping, an obstacle course, and "late to the show," where participants had to hurriedly dress in one of four types of disciplines' clothes as part of a timed relay. The team with the fastest time in all four games won. Each team member of the first place team received a trophy, ribbon, and candy. Other teams received ribbons and candy. **UK**

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



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