



Southern Equine Consortium

Providing research-based information for horse owners and equine operations in the Southeast region.

Vol. 3 No. 2 Issue Date: September 2018

Table of Contents

Management of External Parasites in the Horse
pg. 1

Forage for Thought
pg. 3

Trail Safety & Etiquette
pg. 5

Managing Carbohydrates from Grazed Pastures for Horses with Metabolic Disorders
pg. 6

Managing Moody Performance Horses
pg. 7

Microchipping
pg. 8

Management of External Parasites in the Horse

Mattea Much, mattea.much@gmail.com, Texas A&M University

Introduction

Horses of all ages, breeds, and disciplines are plagued by the overwhelming presence of external parasites. These insects can inhabit several distinct locations on the horse's body and are able to reproduce rapidly with a consistent supply of fresh manure, damp hay, and open sores. Flies, ticks, and mosquitoes not only irritate animals and their owners, but also serve as vectors for potentially devastating diseases.

External parasites, termed 'ectoparasites', live on the surface of their host's body. They may feed off of blood, secretions, and manure. These insects are able to travel several miles to different hosts with ease. Although parasites may individually consume a relatively small meal from an animal, sheer numbers from an infestation and the frequency from which they feed can have a drastic impact on the host. Horn flies have been known to consume up to 10 μ L of blood per meal, with 24-38 meals per day for each fly¹. In cattle, studies have shown that a fly infestation can cause decreased grazing time, reduced lactation (resulting in smaller weaned weight of offspring), elevated pulse, and damaged skin¹.

The humid southern climate and prolonged mild winters provide an ideal reproductive environment for many insects. House flies, for example, thrive in 95°F weather during the larval stage². These insects are flexible during the maturation stage, and may burrow in damp manure in order to meet their thermoregulatory requirement. Once the maggot has fully developed, it may travel up to 50 feet to find a drier and cooler location to begin its pupal stage. With a lifespan reaching 2 months, females laying up to 500 eggs each, and nearly 20 lifecycle generations per year, it is easy to become overwhelmed by the potential scope of a fly infestation.

Disease Transmission

Due to the close proximity of people and their animals, the concern for unsanitary conditions and shared vectors created by an ectoparasite infestation may be a concern for horse owners. House flies are estimated to be the carrier of over 100 diseases³. They have adapted to survive off multiple feed sources (feces, raw food, and garbage) from which they will potentially land on human food prior to consumption. The waste and vomit from this insect may contain Salmonella, E coli, Shigella, and dozens of other harmful pathogens³.

Ticks are another common vector and may transmit neurologically debilitating pathogens. Lyme Borreliosis, a disease found in deer ticks, is well known for affecting dogs, people, and horses. Typically seen along the eastern border of Texas, Lyme disease may cause joint swelling as well as neurological symptoms in the host⁴. Deer ticks are also known to carry the bacterium *Anaplasma*, which develops into either Human or Equine Granulocytic Anaplasmosis⁵. Other common ticks include the Spinose Ear Tick and the Tropical Horse Tick (both of which do not utilize humans as a host). The Spinose Ear Tick typically affects wildlife and livestock animals by inhabiting the ear canal. Although there is no known direct disease transmission through this species, the affected animal may develop a secondary infection from an auditory canal maggot infestation⁶.

Mosquitoes also serve as a common vector for potentially devastating diseases. The three strains of Equine Encephalitis (Eastern, Western, and Venezuelan) are transmit-

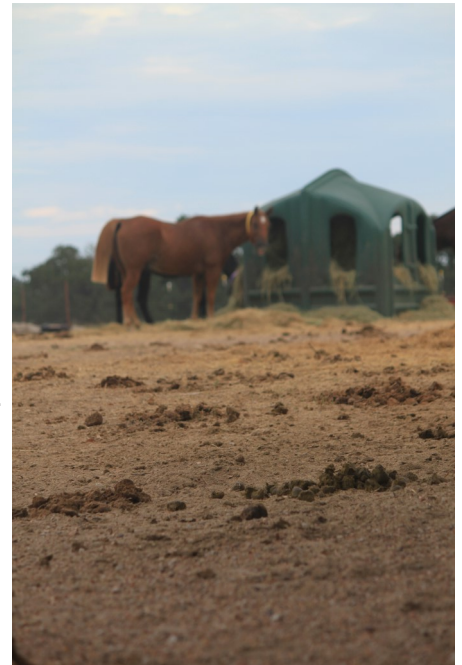


Photo credit: Mattea Much

Editors:

Dr. Neely Walker
nwalker@agcenter.lsu.edu
LSU AgCenter

Dr. Carissa Wickens
cwickens@ufl.edu
University of Florida

ted to horses or other mammals via infected mosquitoes. The Eastern Equine Encephalitis Virus (EEEV) has been seen in human hosts. Although transmission to humans is rare, approximately one third of infected people die from this disease, while survivors often experience long-term neurological damage ⁷.

Facility Management for Pest Control

A number of basic management practices can be applied for horse owners and stable managers to control the reproductive habitat of ectoparasites. Abundance of manure is a major factor contributing to fly infestations. On average, a horse weighing 1100 pounds will produce 55 pounds of manure daily. Insects such as the stable fly and house fly may reproduce in moist environments such as untreated manure. If animals are housed in stalls, their environment will require greater attention. Manure should either be buried, disposed of, or spread across pastureland in a layer of less than 3 centimeters ⁸. A house fly's ideal setting is 75-80% moisture content in manure. If the manure's



Photo credit: Mattea Much

moisture falls to 65% or less, the females are much less likely to lay their eggs there because larva will struggle to survive ⁹. Stable flies are also known for reproducing in wet bedding and decomposing forage. Thorough mucking and removal of urine-soaked hay will help considerably in reducing the developing populations of insects.

Special consideration should be given to herds where pastureland is rotated between horses and cattle. Although horses can be affected by horn flies, this insect requires manure from cattle in order to reproduce ¹. Once manure piles have had sufficient time to dry out, fly larva will be unable to develop in that environment. Harrowing pastures is a practice that can increase the longevity of acreage and desiccate parasite larvae if carried out in warm and dry weather. After a pasture is harrowed, it should stay uninhabited for 6 weeks in order to allow the manure to dry, parasites to die, and forage to recover for future grazing ¹⁰.

Pastures and ranchland containing tall unkempt plants serve as a prime habitat for ticks. Keeping weeds and grasses mowed will help limit the tick population in your land. Piles of wood debris and leaves should also be eliminated as these may serve as habitats for tick-carrying rodents. If Lyme disease or Anaplasmosis are concerns in your region, limiting the presence of deer on your land is necessary. Establishing an electric fence to deter the presence of wildlife and planting deer-resistant plants may help with this.

Standing water is another common element in keeping livestock, and can often be a contributing source to the mosquito life cycle. Mosquitoes oviposit on water surfaces or substrates floating in bodies of water. If re-fillable troughs are the animals' main source of water, these should be scrubbed out often enough to prevent algal growth. Certain species of larvivorous fish have also shown success in keeping mosquitoes at bay, but livestock managers should still check water sources often to remove dead fish and clean built-up excrement.

Equine-Specific Pesticides

Numerous products exist for horse owners to deter flies from interacting with their animals. Fly sprays are one of the most commonly used products to control fly irritation on horses. Another topical product that comes in an oil may be applied to specific locations on the animal every 14 days to combat mosquitoes, ticks, gnats, and flies. Typically, the active ingredients in these products are Pyrethrin, Permethrin, and Cypermethrin. All of these chemicals act as neurotoxins on insects by exciting their nervous system then paralyzing them.

Summary

Regardless of age, gender, or discipline, insects can cause irritation and disease to any horse. Understanding the life cycle and habitat of different pests will help in eradicating them from your land. Although the diseases transmitted by flies, ticks, and mosquitoes can be damaging to your animal's health, following recommended management practices including keeping horses up to date on core vaccines will aid in reducing the incidence of pest-related diseases.

References

- Fitzpatrick, D., & P.E. Kaufman (2011). Featured Creatures: Horn Fly. Retrieved from http://entnemdept.ufl.edu/creatures/livestock/flies/horn_fly.htm
- Sanchez-Arroyo, Hussein & J.L. Capinera. (2017). Featured Creatures: House Fly. Retrieved from http://entnemdept.ufl.edu/creatures/urban/flies/house_fly.htm
- Merchant, Michael. (2016). Indoor Flies and Their Control. Retrieved from <http://agrillifeextension.tamu.edu/wp-content/uploads/2016/05/how-to-get-rid-of-flies-in-house.pdf>
- Straubinger, Renhard (2016). Overview of Lyme Borreliosis. Retrieved from <http://www.merckvetmanual.com/generalized-conditions/lyme-borreliosis/overview-of-lyme-borreliosis>
- Dumler, Stephen, C. Kyoung-Seong, et al. (2005). Human Granulocytic Anaplasmosis and Anaplasma Phagocytophilum. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0737080613003067>
- Texas A&M Agrilife Extension. (2017). The Tick APP. Retrieved from <http://tickapp.tamu.edu/ticks/spinoseeartick.html>
- CDC. (2016). Technical Fact Sheet: Eastern Equine Encephalitis. Retrieved from <https://www.cdc.gov/easternequineencephalitis/tech/factsheet.html>
- Texas A&M Agrilife Extension. (2017). House Fly. Retrieved from <https://texasinsects.tamu.edu/house-fly/>
- USDA Soil Conservation Service. (2017). Chapter 3: Agricultural Wastes and Water, Air, and Animal Resources. Retrieved from <https://www.wcc.nrcs.usda.gov/ftpref/wntsc/AWM/handbook/ch3.pdf>
- Equine Applied and Clinical Nutrition. (2013). Chapter 18: Pastures and Pasture Management.
- EPA Archive. (2006). Reregistration Eligibility Decision for Pyrethrins. Retrieved from https://archive.epa.gov/pesticides/reregistration/web/pdf/pyrethrins_red.pdf
- EPA Archive. (1997). Reregistration Eligibility Decision for Diflubenzuron. Retrieved from https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/red_PC-108201_1-Jun-97.pdf

Forage for Thought: The Most Important Thing in Your Horse's Diet

Taylor L. Hansen, University of Florida, tlhansen@ufl.edu

Forages and other roughage sources are one of the most important components of the equine diet. The average horse can eat 25 Lb of hay or graze up to 100 Lb of grass in a day! Roughage sources can supply most of the energy and nutrients needed for a horse to survive. Additionally, fiber from roughage is key to maintaining gut health and motility. Even for horses with high nutrient demands (for example growing horses, lactating broodmares, or horses in heavy to intense work), roughage sources should still make up the majority of the horse's diet.

The Foundation of the Equine Diet

There are a variety of roughage sources in the equine diet. Forages, such as grasses and legumes, are the primary roughages fed to horses. In well-managed pastures, horses have access to fresh forages. Alternatively, forage may be preserved as hay or haylage. Hay can be further processed into chopped hay, hay cubes, or hay pellets. These processing methods make forage easier to feed in some areas or to horses with special dietary concerns (for instance, an older horse with limited chewing ability).

Types of forages include grasses and legumes (Figure 1). The most common species of grasses and legumes differs by location in the United States. Pasture grasses in Florida include bahiagrass, bermudagrass, and annual ryegrass. Bahiagrass and bermudagrass are warm-season grasses because they grow best in warm, tropical climates. Annual ryegrass, a cool-season grass, is typically seeded into pastures to provide fresh forage over colder, winter months. Orchardgrass and timothy hays are common cool-season grasses shipped to the southeast from northern or western regions in the country. Alfalfa and perennial peanut are legume hays fed to horses in the southeast, but some clover species are found in pastures. Often, cool-season grasses and alfalfa are grown and harvested in mixtures, and then sold as grass/alfalfa hay.

Although forages may be the most common roughage source, other alternative roughages are popular in equine diets. Beet pulp and soybean hulls are left over products from agricultural processing of sugar beets and soybeans, respectively. The fiber concentrations of beet pulp and soybean hulls are relatively high, indicating these alternative roughages can substitute for some of the forage in a horse's diet. Both can be fed alone, but they are often mixed into commercial concentrate products to increase the amount of fiber in the diet.

Nutrition Facts

Roughages contain many nutrients that the horse utilizes for daily function. The concentrations of nutrients such as carbohydrates, protein, vitamins, and minerals will vary greatly depending on the roughage source. Roughages are high in structural carbohydrates, often referred to as fiber. The most prevalent types of fiber in roughages are cellulose, hemicellulose, lignin, and pectin. These fibers are part of the plant cell wall, acting as glue and scaffolding. In general, roughages have low concentrations of nonstructural carbohydrates such as starch and sugar.

Fiber Type: Decoding the Forage Analysis

Unlike commercial grain mixes, most roughage sources don't come with a feed tag. The best way to analyze the nutritive value of roughage is to send a sample to a laboratory for nutrient analysis. A good analysis starts with collecting a representative sample. The National Forage Testing Association provides guidelines related to best practices when sampling forages (www.foragetesting.org). A typical lab analysis will include crude protein, digestible energy, and some mineral concentrations. There are several measurements of fiber that may be included in a nutrient analysis.

Crude fiber (CF)	An approximation of fiber concentration based on portion of sample that is resistant to chemical breakdown. Reported on feed tags, but other measurements of fiber explain roughage fiber more accurately.
Neutral detergent fiber (NDF)	Measurement of cellulose, hemicellulose, and lignin in sample. A good representation of overall fiber concentration in grasses but underrepresents fiber concentration of legumes and other roughage sources.
Acid detergent fiber (ADF)	Measurement cellulose and lignin in sample. Can be used to estimate hemicellulose concentration of feed by $\text{hemicellulose} = \text{NDF} - \text{ADF}$.
Lignin (ADL)	Measurement of indigestible component of feed sample.
Total dietary fiber (TDF)	A measurement from human nutrition that may be most applicable to horses. Includes hemicellulose, cellulose, and lignin along with soluble fibers (pectin, gums, etc.) not included in NDF. Not available at most animal feed testing laboratories.

Within forages, generally legumes have a greater nutritive value than grasses. Legumes typically have higher concentrations of digestible energy, protein, and some minerals and lower fiber concentrations compared to grasses. Protein concentrations of grasses, particularly warm-season grasses, are largely controlled by pasture or hay management. Well-managed grass fields with proper fertilizer applications have greater protein concentrations than fields without fertilizer applications. Fresh forage typically has higher concentrations of vitamins than preserved forages. Other roughages such as beet pulp and soybean hulls have similar feeding value to legume hays.

Turning Filler into Fuel

The equine digestive tract can be broken down into two main sections, the foregut and the hindgut. The foregut is similar to a human digestive tract consisting of the esophagus, stomach, and small intestine, whereas the hindgut differs greatly from the human colon. The equine hindgut includes the cecum, colon, and rectum. The cecum and the large colon combined are approximately 21 to 24 gallons for the average Lb horse and account for over half of the equine digestive tract. The massive hindgut is responsible for digesting fiber from roughage sources.

Horses don't directly produce the digestive enzymes needed to breakdown dietary fiber; however, over a billion microbial organisms in the hindgut are able to digest fiber. The microbial organisms have a symbiotic relationship with the horse. The hindgut of the horse is a suitable environment for the microbes that provides a steady source of food, mainly ingested forage or other roughage. The microbes use the fiber from roughage to support microbial growth while creating by-products such as heat, gas, volatile fatty acids, and vitamins. This process of fiber digestion is known as microbial fermentation. Volatile fatty acids are absorbed in the hindgut and converted to energy by the horse. The energy from volatile fatty acids provides up to 80% of a horse's daily energy requirement. Additionally, B-vitamins and vitamin K can be absorbed and subsequently used by the horse.

Functional Fiber

Although there is no known fiber requirement for horses, fiber intake and feeding forage to horses is linked to positive health outcomes. Good feeding management and feeding roughage can often prevent digestive disorders such as gastric ulcers and colic. Horses take almost 5 times longer to eat hay than grain, increasing saliva production and time food is in the stomach. Both saliva and feed buffer stomach acid, reducing the risk for gastric ulcer formation. Horses with constant access to pasture and forage are 3 times less likely to have a gastric ulcer than horses with limited access to forage and pasture. Access to roughage helps maintain a healthy microbial community in the equine hindgut, which can reduce the incidence of colic.

Forages and other roughage sources have reduced digestible energy concentrations compared to grain. For overweight horses, reduced calorie intake is vital to achieve a healthy weight. Limiting grain intake and selecting hay with a lower nutritive value reduces calorie intake. A greater quantity of lower nutritive value hay can be fed to overweight horses, preventing digestive disorders while trimming waistlines.

An up and coming use of fiber is the development of prebiotics. Prebiotics are preferentially fermented substrates used by the gut microbial organisms linked to health improvements. Prebiotics are a hot topic in human nutrition and have been gaining popularity in the animal feed industry. Effective prebiotics for humans may differ from good candidate equine prebiotics due to major differences in digestive physiology. Equine researchers are actively exploring the potential of prebiotic fibers to increase horse health and digestive function.

Clearly, fiber is more than filler in equine diets. Fiber from roughage is an important energy source for horses and also helps maintain gut health. Because of the variety of roughage sources available to horse owners, feed selection can be paired with an individual horse's nutrient requirements to maximize the amount of roughage in the diet. Combined with good feeding management, a diet consisting mainly of forage is key to happy, healthy horses.



Figure 1. Forages are diverse. A grass hay like orchardgrass has long slender leaves, whereas legumes such as alfalfa have broad leaves and distinct stems. In addition to discernible appearances, grasses and legumes differ in nutritional composition.

Trail Safety & Etiquette

Dr. Mark Russell, University of Arkansas

mrrussell@uaex.edu

This time of year brings many opportunities for trail riders to get their horses out and have some fun. With more and more trails being shared with other activities, here are some helpful tips to keep in mind while riding:

Desensitize your horse to scary situations you may encounter on the trail in a safe environment, such as an arena.

- A hat or coat falling from a horse in front and spooking the ones behind.
- Trees and/or brush rubbing against the horse can cause them to spook.

Improper mounting and dismounting.

- Practice getting on and off your horse. Teach him to stand still while getting on and while getting off.
- It's ok to lunge them first. Some horses need a little warming up before you get on. Find a safe and clear area to lunge.

Think about fitness level of the horse.

- Consider the amount of time you plan to ride. If going to be gone more than a couple of hours, plan a break for both horse and rider.
- Keep his initial outings from being marathons. Don't make his first trail rides so long that they exhaust him, mentally or physically.

Reevaluate your horse's saddle fit on the trail.

- A good arena saddle doesn't always make a good trail saddle.
- Keep your tack in good repair. You don't want a cinch or bridle to break out on the trail.

Tying a horse with too much slack.

- A horse can create slack in a lead rope, causing them to get entangled.
- Never tie with bridle reins. Besides broken equipment, your horse can severely injure his mouth if he pulls back while being tied in a bridle.
- Keep a halter on under the bridle or carry one in a saddle bag.

If your horse isn't used to riding alone, build up his confidence by going out for short jaunts frequently, working up to longer rides as his confidence grows.

- Gradually introduce him to traffic where you can control the situation.
- Pair him up with a veteran trail horse--preferably a horse he already knows.
- Consider spacing between you and the horses around you. Some horses aren't bothered by close horses, while others can become agitated.

Leading your horse over an obstacle.

- The risk: He could knock down and trample you if he jumped to follow you.
- Use all effort to stay on the horse when trying to go through or over an obstacle.

Dismounting on the downhill side of a steep trail. The risk: If your horse slips or slides, he could fall on you.

- Use careful consideration when choosing a place to dismount. Level areas are best.

Riding across footing you can't see. The risk: Thick underbrush can conceal holes, wire, and other hazards; murky water can hide bogs or debris.

- Many trails may have old fences that haven't been maintained in a number of years and consequently are difficult to see.
- Dangerous terrain in general should be avoided unless you and your horse have experience.
- Crossing creeks is perfectly normal, but rocks can be slippery.

Riding with a tie down or martingale.

- These aids can be helpful but are also a potential hazard and can become entangled in brush.

Riding during hunting season. The risk: Your horse could be mistaken for game, or you could end up in the path of a stray bullet.

- Wear clothing that makes it easier to see you and your horse.

At water stops, wait until all horses are done drinking before leaving the watering place.

Negotiate road crossings as a group so that no horse is left behind on the other side of a busy roadway.

Switch positions in your group from time to time.

- Most experienced riders in front and in back.
- Keep the least experienced horses and riders in the middle of the group.

Don't let them run or run home or back to trailer/camp.

- Check with other riders before asking your horse for a faster gait.
- Some horses are herd bound, so keep that in mind as you navigate the trail.
- If they want to run home, do some sidepassing and two tracking to divert their energy into another direction.
- Lagging behind will cause him/her to want to run, so try to keep up with the group.

You and your horse should have mastery of basic skills in the arena. You should have whoa and go, steering, and control at all gaits. If you use protective legwear for your horse, make sure it can withstand the rigors of trail riding. You shouldn't come home with burrs and/or sand in your horse's boots or wraps.

When you set out, always let someone know where you are going and when you expect to be back!

Managing Carbohydrates from Grazed Pastures for Horses with Metabolic Disorders

Dr. Marcelo Wallau, Dr. Lori Warren, Dr. Carissa Wickens, Dr. Jose Dubeaux and Dr. Doug Mayo
University of Florida/IFAS Extension, mwallau@ufl.edu

As extension specialists, we are often asked about nonstructural carbohydrates (NSC) in forages and the potential risks grazing poses to insulin-resistant horses. Numerous blog posts and reports have been written on the topic, alarming horse owners everywhere. However, for horses managed on pastures in the Southeast (e.g. Alabama, Florida, Georgia), is over-consumption of NSC actually a problem?

Nonstructural carbohydrates are a form of energy reserve in plants, and include simple sugars, fructan and starch. The major source of NSC in a horse's diet is usually from grains, which range from 60 to 85% starch, and commercial concentrate feeds, frequently containing molasses and other ingredients to increase palatability. In forages, the concentration of NSC depends on plant type, management, and season of the year, typically highest in the spring and fall when growth is slow and seedheads are present. Temperate climate forages (e.g. orchard, timothy, or our cool-season species here in the Southeast, such as oats, ryegrass and clovers) tend to have more NSC (around 16%) than our warm season grasses (around 8%), such as bahiagrass and bermudagrass.

Several factors are known to contribute to the development of metabolic disorders in horses, including genetics (Morgans, Arabians, ponies, and Spanish breeds are most affected), overfeeding (of anything, not just grain), overweight/obese animals (those prone to being “easy keepers”), and lack of exercise. The most common metabolic disorders are Cushing's Disease (*pituitary pars intermedia dysfunction*) usually associated with aging, and equine metabolic syndrome (resulting from the genetic and management factors described above). What these two conditions share in common is insulin resistance (similar to, but not exactly like Type 2 diabetes in humans), making horses susceptible to secondary diseases such as laminitis or founder. These horses tend to be more sensitive to sugar, starch, and fructan in the diet. Not all horses have these problems. In fact, the frequency of laminitis in horses is low, ranging from 2 to 5% (Kane et al., 2000) and normally is related to horses which have a predisposition, either genetic or acquired from sub-optimal management practices.



Photo caption: Warm season pasture grasses contain lower sugar content (around 8% NSC compared to 16% NSC on average in temperate forages/cool season grasses). Even so, pasture access might need to be limited to help control calorie intake. Limiting grazing time may cause some horses to overeat when they are turned out, so consider using a grazing muzzle or feeding horses some hay before turnout to slow intake. Photo Credit: Amy Parker

(working or athlete) need a more nutrient dense diet to meet their requirements, while most leisure horses' nutrient requirements can be met primarily by forages and a vitamin-mineral supplement. Nevertheless, the low NSC content of most warm season forages in the Southeast region represent a low risk, even for horses with pre-disposition for metabolic disorders.

For horses with metabolic disease or a history of laminitis, feeding diets with less than 10% NSC is recommended. Reducing NSC in the diet can be accomplished by cutting back on grain consumption and any other sort of treat containing high sugar levels. For lush pastures containing cool-season forages, there may be a need for limiting pasture access and timing turnout to occur in the period from late night to early morning when sugar and fructan levels in the grass will be at their lowest. For pastures containing the Southeast's warm-season forages, NSC is less of a problem, but pasture access might need to be limited to help control calorie intake. Note that limiting grazing time may cause some horses to overeat when they are turned out, so consider using a grazing muzzle or feeding horses some hay before turnout to slow intake. These approaches combined with monitoring horses' body condition and weight will allow owners and farm managers to safely utilize forages in feeding horses diagnosed with metabolic disorders.

Although the incidence of insulin-resistance is relatively low, many people worry about the health of their horses housed on pasture. What is important, however, is to provide a balanced diet which is in accordance with the category and use of the animal: growing, lactating and active horses

The following are some additional references and suggestions for further reading on this topic:
Kronfeld DS, Harris PA. 2003. Equine grain-associated disorders (EGAD). Compendium on continuing education for the practising veterinarian. 25:974–83.
Lameness and laminitis in U.S. horses. 2000. USDA: APHIS: VA, CEAH, National Animal Health Monitoring System. Fort Collins, CO. Contract No.: N318.0400.
Kane AJ, Traub-Dargatz J, Losinger WC, Garber LP. 2000. The occurrence and causes of lameness and laminitis in the U.S. horse population. San Antonio TX: Proceedings of the 46th AAEP; Nov 26–29; p.277–280.
Longland, A.C., and B.M. Byrd. 2006. Pasture Nonstructural Carbohydrates and Equine Laminitis. J. Nutr. 136(7): 2099S–2102S
Wickens, C. 2016. Monitoring Body Condition in Horses: [Helpful Smart Phone Apps for Horse Owners](#).

Managing Moody Performance Mares

Dr. Neely Walker, nwalker@agcenter.lsu.edu
Louisiana State University Agricultural Center

Behavioral problems, temperament changes, lack of focus, and pain are just a few of the symptoms horse owners have reported while their mares are in heat. These changes are so common that most people believe that reduced performance issues in mares are caused by hormonal changes. Unfortunately this belief has caused many to place higher emphasis on gender and discount more important performance factors.

Mares are seasonally polyestrous, meaning they are able to have multiple estrous cycles throughout the spring and summer, and exhibit behavioral estrus or “heat” 5 to 7 days out of a 21 day cycle. During a normal cycle, mares may display the following symptoms due to an increase in estrogen:

- Excessive urination
- Winking
- Squealing
- Tail Swishing
- Attitude Changes
- Kicking
- Colic (associated with the pain caused by ovulation)



While each mare is unique and will display different behavioral changes it is important to recognize normal behavior during the estrous cycle to manage the symptoms appropriately. Additional examinations, such as ultrasonography, may be required to accurately determine estrus in the mare that has silent or covert estrous cycles. Your veterinarian should also do a thorough physical exam to rule out any medical problems that are not related to the estrous cycle. Once it is concluded that the behavioral change is due to hormonal fluctuations during estrus, multiple treatment options are available.

Research has shown that there are safe, effective methods to control estrus.

- **Hormone Administration-** Progesterone is the hormone responsible for suppressing estrus. The most commonly administered progesterone form is altrenogest or Regu-Mate. This supplement is given once daily by mouth at a dose of 1 mL per 110 lbs of body weight and will typically suppress estrus in mares 2-3 days after beginning the treatment. To maximize the effectiveness of this supplement, treatment should begin 3-4 days prior to an event and continued to ensure estrus suppression. *NOTE* Female horse owners/barn managers must be careful when administering Regu-Mate as it can disrupt the menstrual cycle, prolong pregnancy, or cause miscarriage.
- **GnRH Therapies-** Another method to control reproductive function in mares is through the use of Gonadotropin-releasing hormone (GnRH) therapies. Ovarian activity is regulated by the pulsatile release of GnRH. Immunization of mares with a GnRH vaccine results in a decrease in ovarian activity, fertility, and estrous behavior for 25-30 weeks. Vaccination of mares against GnRH is an effective, safe and reversible method to control estrus however, the duration of estrus suppression is not as predictable as daily hormone administration.
- **Implants-** Intra-uterine devices can be used to prolong the luteal phase and prevent estrus for variable lengths of time. The use of a 35mm sterilized glass marble will cause the suppression of estrus in mares. This treatment causes a sustained level of progesterone. Although no damage was caused by the use of this treatment and mares were able to return to normal after removal, research has shown varied success with this treatment and therefore is usually not very reliable.
- **Ovariectomy-** This is the removal of the mare's ovaries and is considered the last resort for estrus suppression in mares. Unlike the previously mentioned treatments this procedure is permanent and will result in the loss of any future offspring. This procedure will be effective in reducing behavioral issues only if they are related to hormone fluctuations.

While mares do experience behavioral changes more frequently than geldings do, it is important to recognize the cause of the unwanted behavior. If the change is due to hormone fluctuations multiple management techniques are available to mitigate the overall effects of estrus on performance. Taking advantage of the available treatments may assist your “moody” mare with her overall performance and demeanor. If you are interested in any of the available treatments, contact your local veterinarian.

References

1. Pryor P. & A. Tibary. 2005. Management of Estrus in the Performance Mare. *Clinical Techniques in Equine Practice* 4:197-209
2. McCue P. 2003. Estrus Suppression in Performance Horses. *Journal of Equine Veterinary Science*. 23(8):342-344.

Microchipping

Dr. Rebecca McConnico, rmconn@LaTech.edu, Louisiana Tech

With the growing occurrence and unpredictable nature of natural disasters many horse owners are looking for ways to protect these precious animals. In addition to hurricanes, floods, and fires, horse theft is also giving horse owners cause to look for guaranteed methods of identifying their horses should they become separated. The procedure has been common in dogs and cats for some time but is more recently gaining popularity in the equine world.

Microchip implantation is safe, simple, inexpensive and should last a horse's entire life. The cost is generally less than \$75 and the chips currently being manufactured are functioning for 25 years or longer. The tiny, non-migratory chip is the size of a grain of rice and takes only seconds to implant with a small syringe. The chip is implanted halfway between the horse's poll and its withers, just below the mane in the nuchal ligament on the horse's near (left) side. The injection site is cleaned and disinfected prior to injection and sometimes shaved (although not necessary), ensuring little to no occurrence of an adverse reaction.

The microchip is encapsulated in glass and is etched with a unique 10-digit alpha/numeric one-of-a-kind code that is logged into a database. A special handheld scanner, often referred to as a "wand", is used to read the microchip through the skin of the animal. The scanner reads the number on the chip through radio frequency identification technology at a frequency of 125 megahertz. Although there are several different companies manufacturing these microchips, most scanners are now considered universal as they are engineered to read this common frequency.

Microchipping became especially important in the aftermath of Hurricane Katrina when many horses were separated from their owners and needed to be identified in order to be reunited. In the 1990s, Louisiana became the first state to require mandatory identification for all horses. Many horse owners opted for microchips over lip tattoos or brands. One of the many reasons is because unlike brands or tattoos, microchips cannot be altered once they are in place so if a horse is stolen and his physical appearance changes, there is no concern that he could be mistaken for another animal. Microchipped equine flood victims from the Historic Flood of 2016 made the process of reunification of horses with owners, much more rapid in Louisiana.

Because every horse in Louisiana is required to have a negative Coggins test (states along the Mississippi River, like Arkansas, Texas, Oklahoma, and Louisiana were historical hotbeds for Equine Infectious Anemia), the veterinarian implants a microchip and records the information along with the Coggins paper. That information is kept together as permanent identification, serving the purpose of a passport without the ability to misplace it.

