4-H MEMBER GUIDE

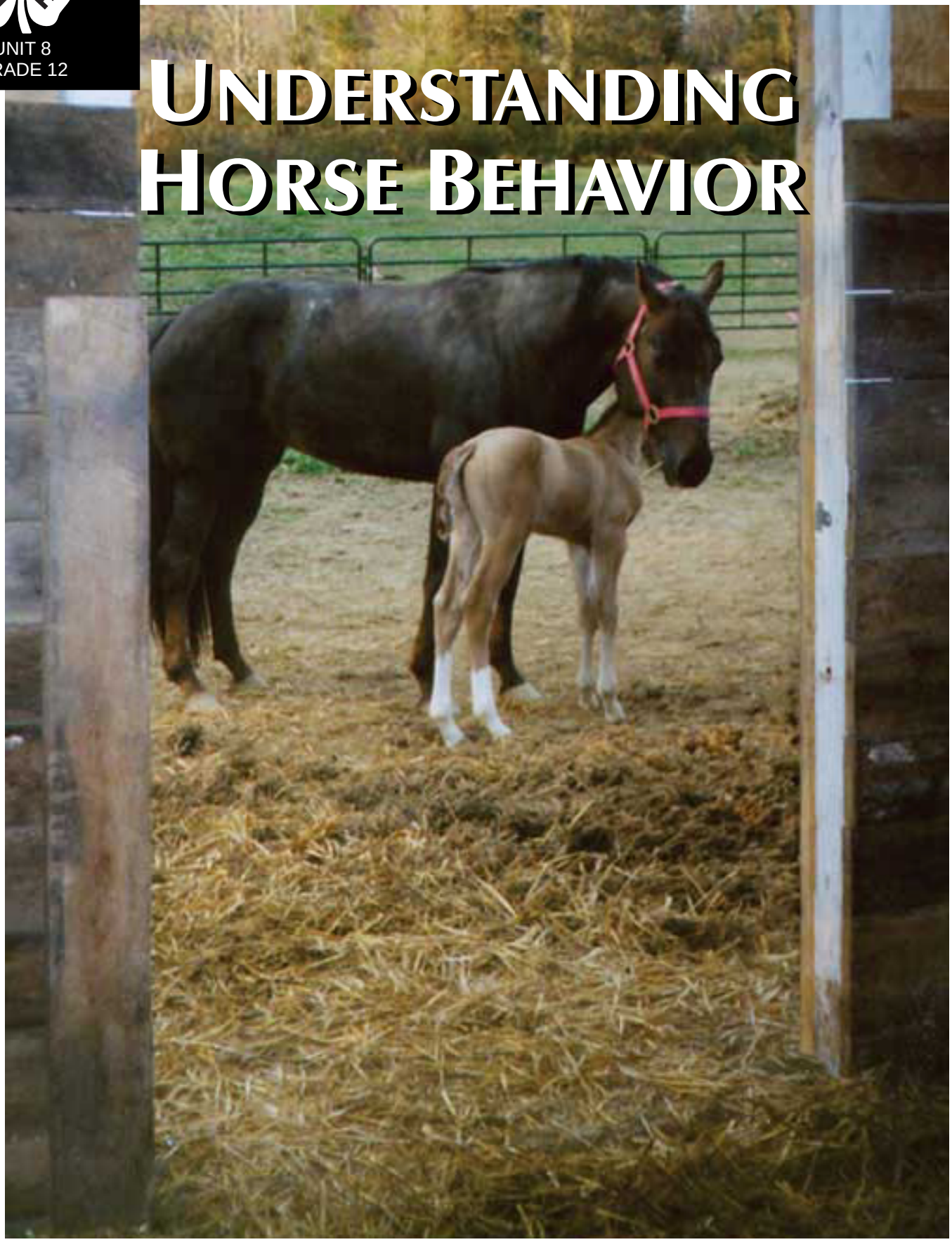
UNIT 8
GRADE 12

Agricultural Extension Service
Institute of Agriculture

HORSE PROJECT

PB1654

Understanding Horse Behavior



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SKILLS AND KNOWLEDGE TO BE ACQUIRED

- Improved understanding of why horses behave like horses
- Applying basic behavioral knowledge to improve training skills
- Learning to prevent and correct behavioral problems
- Better ways to manage horses through better understanding of horse motivation

OBJECTIVES

To help you:

- Be more competent in horse-related skills and knowledge
- Feel more confident around horses
- Understand the applications of basic knowledge to practical problems

REQUIREMENTS

1. Make a project plan
2. Complete this manual
3. Work on this project with others, including other 4-H members, 4-H leaders, your 4-H agent and other youth and adults who can assist you in your project.
4. Evaluate your accomplishments

cover photo by Lindsay German

UNDERSTANDING HORSE BEHAVIOR

Prepared by: Warren Gill, Professor
Doyle G. Meadows, Professor
James B. Neel, Professor
Animal Science Department
The University of Tennessee

INTRODUCTION

The 4-H Horse Project offers 4-H'ers opportunities for growing and developing interest in horses. This manual should help expand your knowledge about horse behavior, which will help you better under stand why a horse does what it does. The manual contains information about the basics of horse behavior, horse senses, domestication, mating behavior, ingestive (eating) behavior, foaling-time behavior and how horses learn.

Some of the topics are advanced, and are for senior level members, but all 4-H'ers might find parts of this manual interesting. Activities at the end of the manual, however, are designed for older members. The focus of this manual will be on behavioral characteristics that have management and training implications for 4-H'ers who want to improve their knowledge of horse behavior.

PLANNING YOUR PROJECT

Planning is an important part of any 4-H project. After you have looked through this manual, take the time to think about what you would really like to learn or do in this phase of your horse project. For example, do you want to improve your knowledge of horse behavior so you are better able to care for and train your horse, or is your primary goal more related to your future career objectives (or both)? Use the "4-H Project Plan" form at the back of this manual as a tool for insuring you have the best possible experience in this 12th-grade project.

THE BASICS OF HORSE BEHAVIOR

Because horses use their senses to interact with their environment, this section includes definitions and a brief overview of horse senses. Horses have unique and fascinating behavioral characteristics which have contributed to their development, survival and present-day value as a companion to people. The successful 4-H Horse Project member should learn to understand horse behavior, and apply this knowledge to all facets of interaction with horses.

Ethology is the scientific study of animal behavior. Technically, ethology is the study of animals in their natural habitat, but most behaviorists agree that the behavioral traits of domestic horses are relatively similar to horses before domestication.

Behavior can be defined as the animal's response to its environment. Because domestic horses exist in a relatively controlled environment, their response is fairly predictable.

Several things make a horse unique in the animal kingdom.

- Horses are strongly social. They are herd animals, which are at a higher comfort level when they maintain a visual contact with other horses.
- Horses are herbivores. They eat plants. They rely on grazing grasses and leaves for feed.
- Horses typically show a tendency for imitation between young and old.
- Horses are seasonal breeders and, as a consequence, foaling patterns occur.
- Males tend to form a separate male sub-group structure at certain times of the year.
- Horses are considered prey species within the animal kingdom.
- Horses are capable of strong pair-bond relationships.

Much of what makes a horse behaviorally unique is related to being a herbivore (plant-eating animal) and a prey species. To understand this, consider a how horse's feeding behavior differs from a carnivore's (meat-eating animal) feeding behavior. Carnivores spend a greater proportion of their time stalking food and less time consuming food. Horses spend a greater proportion of their time consuming food and less time searching for food. Carnivores typically must attack and subdue their food before consuming it; horses merely graze and browse. These and many other feeding behavioral traits can be logically assumed to provide a basis for much of what makes horses different from carnivores. Carnivores are aggressive, horses passive. Carnivores are anatomically suited for killing other animals; horses are anatomically ideal for grazing and browsing. Carnivores can kill horses. Horses are less likely to kill carnivores and are more likely to try to escape from a carnivorous threat.

TYPES OF BEHAVIOR

Animal behaviorists have classified the social behavior of horses (and other animals) into the following categories:

Contactual Behavior - behavior related to seeking affection, protection or other benefits by contact with other animals. Communication behavior (see the section on communication) is sometimes considered as a separate category.

Ingestive Behavior - behavioral activities associated with eating and drinking.

Eliminative Behavior - behavioral activities associated with defecation and urination.

Sexual Behavior - behavior related to mating between males and females.

Epimeletic Behavior - behavior related to giving care and attention, most common between a mare and foal, but also between other horses, such as horses standing together under shade and "switching" flies from one another.

Allelomimetic Behavior - behavior related to mimicry; contagious or infectious behavior such as when one horse copies the behavior of another. If one horse starts running, for example, others are likely to join in. This may be a defense maneuver that is typical of wild horses.

Investigative Behavior - behavioral activities associated with curiosity; the exploration of the surroundings or objects. Horses are noted for using all their senses to thoroughly "check out" any new item, horse or place with which they are presented.

Agonistic Behavior - behavior associated with conflict or fighting, including anger, aggression, submission and flight from conflict. Sometimes behaviorists separate this into two categories (aggression and fearfulness).

Dominance \ Submission - behavioral activities often referred to as "pecking order," because the early behavioral work in this area was done with poultry. Dominance hierarchies are extremely prevalent in the social order of horses. Dominance is generally established through agonistic behavior, and may be extremely violent (such as fighting between stallions) or as simple as threatening looks (ear pinned back, squeals, sudden moves in the direction of the submissive animal). If the lower-ranked (submissive) animal has room to escape, there will often be no contact, and the hierarchy is therefore established or maintained with little or no fighting.

HORSE SENSES

The senses are an important part of what makes horses behaviorally distinct. Animals share the five basic senses: vision, audition (hearing), olfaction (smell), gustation (taste) and touch. The senses are the tools that an animal uses to interact with its environment. As such, the senses can be considered starters of behavior.

There is a temptation to relate human senses to horses, but horses and people have basic differences in how they see, feel, taste, smell and hear their environment. We do not completely understand horse senses, but the things we have learned have greatly added to our horse knowledge. A review of this information can be helpful in understanding horses.

photo by Richard Maxey

Horses have a very large eye and a very large pupil.

VISION

Did you ever look at a horse eye to eye? If you have, you probably noticed a few things. First, they have a very large eye and a very large pupil. Second, the eyeball is placed more to the side of the head, which gives horses a wider field of vision.

Predator species, such as dogs and coyotes, have eyes placed toward the front of their head. This narrows their total field of vision but it increases their binocular (using two-eyes) visual field. Binocular vision gives the predators better depth perception and a more concentrated field of vision. Prey species, such as horses, sheep and cattle, have a much wider visual field. With only slight head movement, horses can scan their entire surroundings. If there is a threat, the behavioral response is generally to flee.

Much of the width of the visual field that horses see is observed with only one eye. This is called monocular vision. When a horse sees an object with its monocular vision, it will tend to turn toward it so that both eyes can see it (with binocular vision), and the ears can better hear it. There is sometimes a brief visual shift as the horse switches from monocular to binocular vision, which sometimes causes an unexplained "spooking" of the horse.

The size of the pupil improves the ability of a horse to pick up movement. The large size provides a built-in wide angle lens effect which is further enhanced by the placement of the visual receptors in the retina. The total effect is better side (peripheral) vision. The horse can see movement very well.

Does the horse sacrifice visual accuracy to get a wider field of vision? In general, yes, but the answer to the question is not clear. Current thought is that, while the horse sees practically all the way around its body, the image is not as clearly defined as what humans see, especially within four feet. This, plus the fact that a horse cannot see directly below its head, may explain why horses often raise their

photo by Richard Maxey

A horse will turn toward an object so that both eyes can see it (binocular vision).

head to observe close objects. Conversely, a horse tends to lower its head to observe faraway objects.

In spite of the wide field of vision, there is a "blind spot" directly behind the horse. People should avoid approaching a horse from behind, because their presence may not be detected until they are close, and this could startle the horse. Some horses may instinctively kick in this situation. If approaching a horse from the rear cannot be avoided, make a soothing noise to announce your presence. Do not "sneak up" on a horse from behind.

Another question often asked is do horses have color vision? For many years it was believed that both horses and cattle were color blind. If horses can distinguish colors, it is unlikely that horses' ability to see color is equal to other species, such as humans.

HEARING

In spite of its importance, there is limited information about the auditory (hearing) sense of horses. We know horses are sensitive to high-pitched noises and the release of stress-related hormones in response to sudden loud noises such as firecrackers or barking dogs. Horses become nervous and difficult to handle when stress hormones are elevated, so it may be useful to avoid loud or shrill noises when handling or moving horses.

The horse can amplify and pinpoint sound with its ears. Sound arrives at each ear at slightly different times, which allows the horse to use sound as a means to tell where the sound came from. The horse can then move its ears, head or its entire body to tell more about the source of the sound. This skill is probably as important as sight and smell for keeping the horse, as a prey species, alive.

photo by Richard Maxey

A horse can amplify and pinpoint sound with its ears.

photo by Lynne Scott

A horse can rotate its ears independently from front to side to pinpoint a sound.

SMELL

The horse's sense of smell (olfactory) may be the most difficult for humans to understand. Horses have a more highly developed sense of smell than humans, and they use their ability to distinguish different odors more in their everyday lives.

Horses use their sense of smell in a number of ways. Horses use smell to identify other horses, particularly when a mare uses smell to pick out her foal from a group. Another common use of smell is during mating. The stallion constantly checks mares to detect the ones in heat (estrus). The classic head-raised, lip-curling behavior of the stallion (bulls and rams, also) as he smells females is called the **Flehmen** response. This trait, which may be occasionally observed in females, is due to a special organ (vomeronasal organ) above the roof of the mouth, which humans do not have.

Horses probably use their olfactory sense to locate water and identify subtle or major differences between pastures and feeds. Smell also triggers behavioral responses. There are, for example, horses that do not like the smell of tobacco smoke or may react negatively to the odor of certain medications.

Some people believe that horses can sense when a person is afraid — which is probably true — and this is often referred to as horses' ability to "smell fear." It is possible that the horse can smell some small change in the fearful human, but it is equally likely that the horse can sense the human nervousness via other senses.

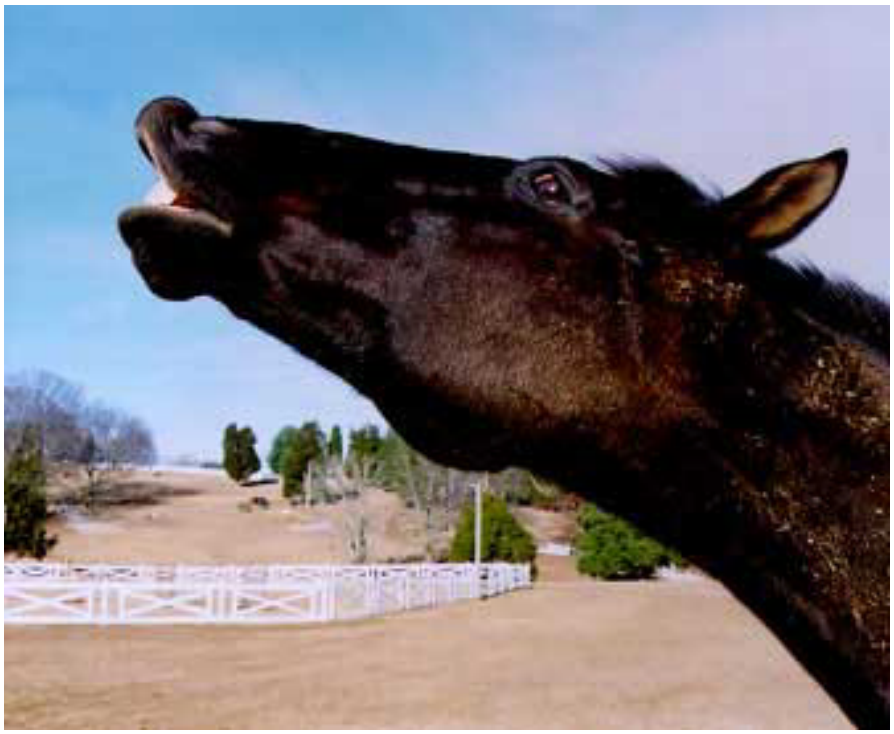

photo by Richard Maxey

The raised-head, lip-curling behavior usually displayed by stallions during mating is called the Flehmen response.

Horses will use their sense of smell to select fresh feed in preference to spoiled feed. The next time you are tempted to dispose of moldy feed or hay by feeding it to a horse, try smelling it yourself. Then remember, if it smells bad to you, it may smell worse to the horse. (This may not always work, however, because some molds, such as highly poisonous aflatoxins, cannot be detected by humans.)

TASTE

The sense of taste in horses is probably not as important as the sense of smell, and it is difficult to separate behavioral responses that are due primarily to taste from responses caused by the olfactory sense. Using their sense of taste, however, is part of why horses can tell one feed from another. When presented with a variety of feeds, horses will select certain feeds over others. In practical situations, such as under grazing conditions with multiple forage species present, the horse will select different types and species than either sheep, goats or cattle.

There have been experiments to determine if animals have "nutritional wisdom." This is based on the premise that horses will attempt to eat feeds that provide them with the nutrients needed. In most cases, however, horses are unlikely to balance their own ration when provided a variety of feeds. If possible, they will consume feeds at a level far higher than necessary to provide essential nutrients. For example, salt is often provided to meet horses' requirement for sodium; however, horses will often consume many times the amount of salt needed to meet the requirement. Fortunately, there is no evidence that over consumption of salt will cause health problems if adequate water is available.

photo by Richard Maxey

Horses enjoy special treats, such as carrots or alfalfa cubes.

photo by Richard Maxey

Placing a salt-lick in a paddock will help a horse satisfy its sodium requirements.

TOUCH

The sense of touch is certainly well developed in horses, and is one of the most important senses in terms of human interaction with horses. The nose, lips, mouth and possibly the ears are the most sensitive areas to touch and, consequently, most readily lend themselves to feeling behavior. Although hooves do not respond to touching, they should not be regarded as without feeling. In fact, various parts of the hoof are able to feel touch, as anyone who has shod horses or trimmed hooves can relate.

Other areas of the body are also sensitive to touch. The flanks for example, are particularly sensitive, and can pick up a light signal from the rider. The ribs are also sensitive, as are the withers and back.

Understanding the degree to which horses are sensitive to touch can be valuable to the trainer. For example, knowing that horses can feel the slightest touch with their lips underscores the importance of developing "a light touch" on the reins, and making certain that bridles be correctly fit to the horses head and mouth. Knowing that the horse can feel the slightest shift of weight in the saddle illustrates why the rider's position is important as the mount is guided toward a jump or other maneuver. Poor position, exaggerated movement or excessive force are confusing to horses and result in poor performance.

The sense of touch is undoubtedly important in interaction between animals. Foals seek bodily contact with their dams (mothers), and mares respond to the touching behavior of their foals in various ways, including milk let-down in response to the nuzzling/suckling stimulus of foals.

Another example of horses' sensitivity to touch is related to electric fences. Anyone who has used electric fences with a variety of grazing animal species knows that horses are very sensitive to electricity. To use electric fences with horses, the wire should be placed approximately at nose height. High-quality, well-grounded chargers should be used, and horses should be trained to the fence by introducing them to a well-constructed permanent electric fence for their first experience.

photo by Lynne Scott

A rider's position is very important, because horses can feel the slightest shift of weight in the saddle or pressure from the rider's leg.

The Role of the Senses in Training

The horse must rely on its senses in order to perceive the signals (often called cues) that the rider is giving. Touch and sound are the primary senses which are used.

This is not a horse training manual. There are a number of training publications, often developed by breed organizations or successful trainers, which can provide more detailed information about how to train your horse. However, understanding the behavioral basis that the horse has for recognizing cues through its senses can be helpful in training.

The basic steps for using senses in training are:

Stimuli - The trainer / rider initiates a cue, thus providing a stimulus to the horse.

Sense - The horse "senses" the stimulus

Response - The horse responds to the stimulus with an action

Reinforcement - The trainer

"reinforces" in a positive way by rewarding the correct response and in a negative way by discouraging an incorrect response.

Good trainers recognize that each horse has its own "combination" and will develop at its own pace. Intelligence, individual energy level, previous experience and many other factors may affect response. Patience, repetition and building in small increments of success will give the best results. Over-use of negative reinforcement may yield a horse that is prone to nervousness. Use positive reinforcement more than negative if long-term development is desired. Do not expect reasoning powers that are beyond the powers of the horse to give.

An extremely well-trained horse that was trained by a professional is likely to "come untrained" when ridden by a novice if reinforcement schedules are not maintained.

photo by Richard Maxey

Horses can often display aggressive behavior when being fed.

photo by Richard Maxey

Unfamiliar situations such as boarding a trailer can make horses jumpy and nervous.

HORSE COMMUNICATION

Horses communicate in many ways, including visual displays, sounds and even through smell (Heird, 1998). Understanding how a horse communicates is important to the 4-H Horse Project member for three important reasons:

1. Diagnosis of medical problems - Learning how a horse behaves when it is sick is important not only so you will know it needs attention, but also because certain behaviors are linked with specific problems. Naturally, a veterinarian or other experienced person may need to be called upon for more detailed information, but it is never too soon for a young person to start learning to tell the difference between normal, healthy behavior and the behavior of sick animals.

2. Assessment of Emotional State or Temperament - As your experience and skill in assessing horse behavior increases, you will find that you can "read" a horse's emotional state. This knowledge can be applied when assessing how "friendly"a new or unknown horse is, or it can be used to tell if a horse you ride every day is in an unusual mood or is experiencing emotional difficulty. Sometimes a horse is reacting to the presence of another animal, or it can be related to something as simple as the weather.

3. Safety - Horses usually communicate a warning before they cause harm. Learning the communication signals — ears back, head lowered, teeth bared, turning into a "kicking" position, tail swishing, etc.— that warn of danger are important in avoiding harm. Nervous or "jumpy" behavior can possibly be as danger-

ous as aggressiveness. Learn to recognize the signals that could result in harm, whether it comes from the horse you are riding or one that is being ridden by someone else in your vicinity.

Learning by Application: Write a short story about something related to horse senses or basic horse behavior that applies to your horse, a horse belonging to a friend or a horse story you have read. If possible, share this experience in a 4-H meeting.

DOMESTICATION AND BEHAVIOR

Horses and humans have been closely associated for a long time. Horses were probably the fourth or fifth species to be domesticated. Man's best friend, the dog, was the first species to be domesticated, with sheep and goats approximately tied for second in the domestication race. Horses were not far behind, and have proven to be a worthwhile addition to the human-animal family.

It is difficult to know exactly when domestication occurred, but domesticated horse remains have been dated to some 6,000 years ago. By 3,000 years ago, the domestic horse had spread to Europe, Asia and North Africa.

It is clear that domestication of the horse is a complicated story about the development of a complex, elegant relationship. Experts have proposed the following stages in the process of domestication of horses:

- Loose ties of animals with man, but no controlled breeding.
- Confinement and breeding in captivity, with separation from wild horses allowing a distinct domestic race to develop.
- Selective breeding by man for certain features with occasional mating to wild forms.
- The gradual intensification of the development of different breeds with desirable economic characteristics.

These steps occurred over thousands of years with the bond between man and horses being gradually strengthened with each generation.

Genetic selection during the process of domestication led to the development of breeds. There is considerable variability in behavioral traits between breeds. For example, certain breeds tend to be more active, while others are more docile. The Thoroughbred, is known as a breed with a strong tendency to be alert, even nervous. Other breeds, such the Tennessee Walking Horse, are known for being calm. Quarter Horses and Morgans are intelligent, while Shetland ponies are protective. Behavior, as related to the utility of the breed in question, has been selected for as certainly as size, muscling, skeletal structure or speed.

Horses may have behavioral problems, but most of these are preventable or correctable with some understanding of horse behavior. In reality, properly trained horses present few behavioral problems. In fact, horses are so gentle that they are outstanding companions for 4-H youth. Thousands of young people show horses each year with little chance of injury by an aggressive animal. Most accidents are not due to aggressive horses, but are more likely related to an improper or unusual action by the handler. The large number of young people who ride horses every day is probably the best "proof" of the high degree to which the horse has been domesticated into the human pack/herd.

MATING BEHAVIOR

Behavior is an important aspect of reproduction, and an understanding of the basics of reproductive behavior can lead to management applications that can improve reproductive success. In this segment, the complex behavioral patterns related to mating will be addressed.

Puberty

Puberty is the attainment of sexual maturity. In fillies, this can be as early as nine or 10 months, but is usually 12 to 15 months. Stallions are 15 months or older before they can successfully breed. Behaviorists have noted that both stallions and fillies (less frequently) may exhibit sexual display before the reproductive tract is physiologically mature. Therefore, pregnancy cannot occur. Conversely, some fillies may cycle, but not exhibit estrus.

Estrus (Heat)

Estrus, or heat, is the period of the reproductive cycle when the mare ovulates and, if bred, is likely to conceive. A behaviorist would define estrus as the "behavioral state when the female seeks and accepts the male."

The average length of the estrus cycle, or the period from heat to heat, is 21 days, but can vary from 19 to 26 days. The duration of the estrus period is typically a week (actually about 6 days), but varies from two to 10 days. The foal heat, or postpartum estrus, typically occurs six to nine days after foaling, but may be as early as five days or as late as 15.

It is important for the mare owner to recognize the behavioral signs of estrus. Some signs are general, including restlessness, hyperactivity, less time devoted to eating and resting and more time

"running the fences." Other signs, such as frequent urination, straddling (squatting) posture and clitoral "winking" are more specific and are often not as obvious in early stages of estrus.

Some mares are more likely than others to exhibit overt signs of estrus. Older and more experienced mares are more likely to exhibit clear signs of estrus. Maiden mares are considerably more likely to cycle without visible signs of heat.

The presence of stallions increases the behavioral display of estrus in mares. People who keep only one or a few mares often have difficulty in identifying the onset of estrus. Sometimes such small operations may benefit from having a single stallion (sometimes a pony is preferred) around as a "teaser," to stimulate estrus display. The use of a teaser stallion in larger breeding operations is routine to stimulate mares into a receptive state before the introduction of the breeding stallion.

Seasonal Breeding Behavior

Horses exhibit seasonal breeding patterns. In general, they are referred to as "long-day breeders," because as the days increase in length in the spring, they come into heat. Mares are also called "seasonally polyestrous" because they have multiple cycling periods. The most likely breeding season for horses is the spring or summer. Since light is a factor in controlling the seasonal breeding pattern, horses are sometimes called "increasing-light" breeders. Most studies have indicated a tendency toward anestrus (not cycling) in the winter months; however, some mares may cycle during this time as well
.

Courtship and Mating

Mares will cycle several times during the breeding season if they are not bred or if they fail to become pregnant. The heat period (mentioned previously) is about a week, but the most intense estrus behavior, when the mare is most sexually receptive to the stallion, is about three days.

Mares in heat may actively seek out and attempt to stay in the vicinity of the stallions. There may be few other signs of estrus early in the heat period. As the heat period progresses, the mare may become more active in her courtship behavior. During the peak of estrus, the mare may sniff, lick or nuzzle the stallion. A mare in heat is likely to urinate frequently, particularly if a stallion is investigating. She is also likely to raise her tail and assume a breeding stance. A mare may exhibit the urination response to the stallion whether she is in heat or not; however, if she is not in heat, she will usually leave the vicinity of the stallion or turn on him with threat behavior. If she is in heat, she may passively accept the attention of the stallion, occasionally turning her head to observe the stallion's activities. The classic behavioral display of the stallion when it "checks" a mare is to lift its nose into air and curl its upper lip. This is called the "Flehmen" response.

Stallions exhibit certain additional stereotypical display patterns. They will often be impatient, alert, hyperactive and restless. Vocalization is common. The stallion will frequently nudge the mare, apparently to signal readiness and to assess her "firm stance" response. In addition to nudges, some stallions may smell and bite over the mare's body. Most behaviorists consider the display as being more important in the courtship process than odor recognition.

Dominance Effects

Dominance patterns are very much a part of horse breeding behavior, particularly in natural environments. One stallion will typically dominate the breeding of a band of mares and competing stallions will be banished to form their own separate band — until one of them become old enough, brave enough or tough enough to defeat the dominant stallion.

In modern breeding establishments with numerous, separately stalled breeding stallions, all the stallions are used for breeding. Dominance, nevertheless is in evidence. Most breeding barn managers can tell you which stallion is dominant or "the boss."

Libido

Libido is the term which is used to denote sexual drive or the degree of sexual urge of animals. A stallion with a high libido will exhibit an eagerness to mount and attempt to breed a mare. In natural situations, stallions exhibit a wide range of libido levels, from zero activity to the extremely aggressive stallion who sacrifices all other pursuits in favor of searching for and breeding estrus females. Either extreme may cause problems, and young stallions are more likely to exhibit extremely low or high libido.

Older stallions are likely to decrease the intensity of sexual display behavior, but are often more efficient in mating. Impotence is frequently observed in older stallions, but may be caused by factors other than age (such as injury).

Learning by Application: Write a short story about something related to this section that applies to your horse, a horse belonging to a friend or a horse story you have read. If possible, share this experience in a 4-H meeting.

BEHAVIOR AT FOALING TIME

Behavioral traits associated with the birth process (parturition) are deeply rooted in the ancient development of animals. A basic assumption is that animals have evolved behavioral strategies that insure their survival. During the birth process, both the dam and her offspring are in a weakened state, and are susceptible to attack by predators. Steps are taken to increase their safety. In general, these steps may include location of safe sites for the birthing process, quickening the process, protecting the process, minimizing evidence of the process and achieving rapid recovery.

There are few things more disappointing than the death of a foal. Most of these losses occur during or shortly after parturition (foaling). Many of the causes of foal death are related to behavior.

Researchers have studied many aspects of horse behavior before, during and after foaling. The serious student of horse ethology, for example, can find studies that detail behavioral traits of the fetus. The following information should help the 4-H member have a better understanding of the behavior of the mare prior to giving birth. This information includes the behavior of the mare before foaling, the behavior of the mare at foaling time, the behavior of the mare after foaling and the behavior of the foal during the period after birth.

The Behavior of the Pre-Parturient Mare

4-H'ers who have a number of mares should learn to recognize the behavioral patterns that are characteristic of a mare that is about to give birth. Mares will generally foal after an 11-month gestation, but this is highly variable. Studies have shown a range of gestation from 315 to 387 days, with an average of about 341 days. There is evidence that smaller breeds tend to have shorter gestation periods. One study, for example, found ponies had a gestation of 336 days.

The foaling date can be determined from a combination of a calendar estimate of gestation and by watching for physical signs of approaching gestation, such as distended udder, swelling of the vulva and teat secretions. Behavioral changes in late gestation are generally minimal, and may not be observed until shortly before birth.

The first sign that can be observed — but not always — is the tendency for the mare to isolate herself from the rest of the herd. One study conducted with free-ranging horses showed that mares may separate as far as three miles from the herd, while another study in a desert environment found that many of the mares foaled near the herd. Younger mares were less likely to seek isolation. Mares foaling in pens or stalls will often seek a corner or an area that offers the most privacy.

Mare Behavior at Foaling Time

Mares prefer privacy at foaling time. If possible, mares will delay birth until human observers are not around. Mares generally foal at night. One study, for example, indicated that approximately 80 percent of foals were born between midnight and 6 a.m.

Mares become restless during the first stage of foaling. They will not eat, they may walk in circles, look back toward their flank, and switch their tails. Some mares lie down and stand up repeatedly. This restless period is usually shorter for older mares. As labor progresses, mares may assume a straddling, crouching position, and they may urinate frequently. When the mare starts expelling fluid, she may exhibit the Flehmen (lip-curling) reflex.

The second stage of parturition, actual birth, is usually shorter in duration than the first stage. Shortly before the foal is born, the mare may sweat profusely, especially around the flanks. If she is disturbed, the mare may temporarily delay the birth process. This is why observers of the foaling process are cautioned to keep interference to a minimum as long as the birth process is proceeding normally. The mare may be standing or laying down as contractions begin, but she usually is flat on her side by the time heavy straining is initiated. The foal is usually born within 12 to 18 minutes of heavy labor.

First-foal mares are more likely to have labor that extends over an hour, but handlers should be ready to assist if it goes much longer than an hour. If mature mares are in labor for more than one-half to three-fourths of an hour, assistance may be needed.

After the foal is born, the mare will continue to lie on her side for another 15 to 20 minutes. This time is important for the mare to rest and to serve as a period for the blood from the placental tissues to pass into the colt. A mare who is disturbed during this period may rise prematurely and sever the umbilical cord. This is why it is wise to avoid disturbing the mare for at least 15 minutes after a normal delivery.

Handlers should also be aware that a normally gentle mare is likely to become nervous and protective during the first hours after giving birth. The mare may, in her protectiveness, become aggressive enough to be dangerous to people.

Mare Behavior After Foaling

The post-foaling period is often called the third stage of the birth process. If there has been a normal birth, mares will stand some 15 to 20 minutes after the birth of the foal and begin to nuzzle and lick. This period, referred to as the "critical period" by behaviorists, is an important time for establishing the dam/foal bond.

The licking and cleaning behavior, which usually starts at the head, serves to stimulate the foal while also drying it. The cleaning is probably also part of the initial bonding process, and is typically accompanied by vocalizations and a thorough visual and olfactory examination of the foal by the mare. New-born offspring learn to recognize their dam by her voice.

The process by which the newborn foal learns to recognize its dam is called imprinting. The cleaning/licking is also accompanied by nuzzling, which appears to assist the foal in learning to stand. The mare usually starts the licking at the head, so that by the time she has reached the rear, she is able to assist the standing process by the nuzzling.

The mare normally remains close to her newborn offspring. This is in contrast to other common livestock species. Cattle, for example, tend to find hiding places for calves while the cow seeks food. Sheep and goats tend to place their offspring in play groups while grazing nearby. The mare and foal tend to remain in close proximity at all times.

The afterbirth is usually expelled within an hour or two after birth. Another contrasting characteristic between mares and other livestock is that mares are not typically interested in consuming placental tissues. Again, the mare is truly focused on her new foal. The mare is likely to not appreciate anything that interferes with her companionship with her new best buddy.

Mares can identify her foal within hours of birth. Odor is the primary recognition factor. The most significant identification is usually made when the mare smells the rear area of the foal.

Foal Behavior after Birth

The foal may stand as soon as 30 minutes, usually after several failed attempts. As soon as it is steady on its feet, often within an hour of birth, the foal will start looking for its first meal. Teat-seeking behavior is persistent, although somewhat random — the foal does not "know" exactly where the teat is located. However, with the gentle assistance of the mare, the foal will find the teat, quickly understand its purpose and "know" how to suckle. Suckling behavior is instinctive in mammals.

The experienced mare will orient her body so that her udder is available to the foal. She may even shift the orientation of her hind legs to further assist the foal.

photo by Lindsay German

A mare will remain close to her foal at all times.

Within the first two hours, foals start breathing (within seconds), lift their head (within 5 minutes), attempt to rise (within 10 minutes), actually stand (within 55 minutes), vocalize (within 45 minutes), defecate meconium (within 30 minutes), first suckle (within 1 hour), first walk-run (within 90 minutes) and take their first nap (within 2 hours).

Understanding normal behavior helps 4-H'ers understand abnormal behavior. If, for example, colts haven't defecated their meconium within the first few hours, they should be given an enema or their lives could be endangered.

Occasionally, there is abnormal maternal behavior that may result in management problems. One problem is the rejection of the foal by the mare. The mare may butt or kick the foal or move away to prevent suckling. The 4-H'er should make certain there is not a physical cause responsible for the rejection, such as an udder infection. Often it is simply desertion, in which the mare shows no interest in the foal and wanders away from the birth site. Whether the desertion is temporary or permanent, it creates a management problem. Temporary rejection can result in the failure of the foal to consume colostrum (first milk), which is desirable because the antibodies which colostrum contains are absorbed only during the first hours of the foal's life. Intervention by the owner is recommended. The owner should gently restraint the mare during suckling until the foal is accepted.

Foals suckle frequently during the first few weeks. Estimates range from one to two times per hour, with each session lasting as long as three minutes. Anyone who has ever bottle-fed a healthy foal will testify, a young equine can suckle with considerable vigor. As foals grow older, the frequency and duration of the suckling sessions decreases, probably because they become more adept at suckling and less dependent on the mare. Foals will stay close to the mare in the first weeks of life, but will gradually begin exploring and developing social groups. By the end of the third month, they will spend approximately 60 percent of their time with others. They will also start consuming feed or pasture at an early age, as early as two weeks. By the time they are three to four months of age, they may be obtaining as much as 50 percent of their nutrient intake from sources other than their dam.

By five to seven months, over 75 percent of their nutrients may come from non-milk sources. This is one of the reasons that it is generally recommended that foals be weaned at about six to seven months of age.

Learning by Application: Write a short story about something related to this section that applies to your horse, a horse belonging to a friend or a horse story you have read. If possible, share this experience in a 4-H meeting.

FEEDING BEHAVIOR

At the beginning of this publication it was mentioned that the behavioral definition of a horse includes reference to the fact that the equine is a grazing animal. In other words, the way the horse eats is an integral part of what makes a horse a horse. Since the horse is an ungulant, it is predictable that much of the behavior that is demonstrated is related to the consumption of forages.

Behavior has direct effects on consumption patterns, feed availability and the selection of feeds. Horses devote more time to eating than to any other behavioral activity. Feed and forage are generally expensive items in the budget. There is probably no other single factor as important to the well-being and productivity of the horse than the feed and forage it consumes.

Basic Feeding Behavior

Horses have to consume feed and water in order to survive. Beyond survival, consumption of the correct amounts and proportions of feedstuffs allow horses to thrive and be productive. In this section,

photo by Richard Maxey

Horses spend approximately five to 10 hours per day grazing.

we will review the relationships between nutrition and behavior, as well as feeding/grazing patterns and feedstuff selection by horses.

Relationship Between Nutrition and Behavior

Feed consumption is motivated by hunger, but the methods and patterns of feeding are governed by behavior. Mare nutrient requirements, for example, increase during late pregnancy and lactation; therefore the demand for consumption of feed is higher (assuming there is no change on nutrient density of the ration). Horses also demonstrate increased appetite when work load increases. The horse compensates for this increase in demand by increasing the rate of eating.

If the quality or quantity of available feed is low or horses are being worked hard, the horse often cannot increase the rate of consumption enough to meet demand. This is where human management plays an important role. The owner should compensate for the imbalance and increase the feed and/or improve the feed quality.

It would be a mistake to oversimplify the relationship between nutrition and behavior. For example, there have been numerous attempts over the years to attribute "nutritional wisdom" to horses and other livestock. This is based on the idea that a horse will select a diet that is more nutritionally correct. Unfortunately, this is often not the case. The horse selects a diet based upon a variety of factors (discussed in a later section), with nutritional value being of little importance in the food selection process.

Time allotment for ingestive behavior

The time that horses spend consuming feed is governed by a number of factors. Grazing time depends primarily on: (1) type and availability of forage, (2) consumption behavior, and (3) the level of nutrient demand.

If feed is limited — during periods of drought or when horses are fed a restricted feed allowance — the horse will eat when feed is present or can be found. When abundant feed is available, horses will develop patterns of consumption behavior. These patterns of eating are developed in response to daylight/darkness cycles and other environmental cycles, and are apparently influenced by learned behavior as the horse grows and develops.

Most studies indicate that heaviest grazing will occur in the hours around dawn and in the late afternoon, near sunset. Night grazing also has been observed, and is likely to increase in the summer. Temperature can alter grazing times. When daylight temperatures become extremely warm, horses start and stop their grazing earlier in the morning on hot days. Cold weather alone apparently has little effect on daily grazing patterns; however, heavy rain, strong wind and/or snow cover may significantly alter grazing patterns.

Most estimates of time spent grazing fall between five and 10 hours per day. In general, horses spend less time grazing good quality pasture, but this is not always true. For example, although horses may graze poor quality pasture longer to meet nutritional requirements, horses on high quality pastures may consume forage for much longer than is necessary to meet needs. Overgrazing can lead the problem of horses becoming over-conditioned (fat) on pasture, because they are consuming more than they need to meet their nutrient requirements.

The problem of over-weight horses is most likely to occur when nutritional demands are lowest, such as in early pregnancy or when a working or show horse is "turned out to pasture." It may be necessary to restrict access to pasture if horses are becoming over-conditioned.

Other factors influence grazing time

Feeding concentrate supplements, for example, may reduce forage consumption. Thin horses may consume more than fat horses,

photo by Richard Maxey

Horses need clean water available to them at all times.

and this is at least partially explained by increased grazing time.

Typically, horses do not drink water frequently — hence the old saying "you can lead a horse to water but you can't make it drink." In natural environments, grazing patterns are often set to allow access to water once or twice per day. When horses do drink, they tend to take in a considerable amount, often in some 15 to 20 large swallows.

Selectivity

Horses have a relatively large mouth and remarkably flexible lips. They typically harvest the portion of the pasture plant they are interested in consuming by biting it off between their upper and lower incisors. They are able to graze close to the ground and are also able to comfortably adapt to browsing — picking the leafy material from bushes or other plants. These anatomical/behavioral combinations result in the ability of horses to be selective about what they consume. The horse will often select the most tasty part of the hay and leave the stems and undesirable portions.

If an abundance of pasture is available, horses will be very selective. As the amount of available forage decreases, the degree of selectivity will decrease. If a number of different varieties of forages are available, horses are more likely to demonstrate marked selectivity. However, if only one forage is available or if there are only a few species available and these are of similar acceptability to the horses, there will be little selectivity.

It is interesting that some excellent forages are not preferred by horses, and may be the last to be selected when others are available. One such example is alfalfa. Many reports indicate that when horses are provided a choice between grass and alfalfa, they will often select the grass first, even though alfalfa is nutritionally superior. However, when other forages are exhausted, the horse will quickly adapt to the alfalfa. Some researchers speculate that boredom or a desire for change is the reason why horses are occasionally observed selecting clearly inferior forage in the presence of abundant superior forage.

Sight, touch, taste and smell are used by the horse in selecting the forage species it will consume. Taste is the sense that is most likely to influence selection. Indications are that odor plays a relatively minor role. Sight is probably used primarily to recognize conspicuous forage species and to orient the approach to those species, but sight apparently is not important in influencing selectivity. Horses eat leaves in preference to stems and green, succulent material in preference to dry, coarse material. Hunger tends to decrease selectivity.

Grazing Patterns

A number of factors can affect the grazing pattern. The location of water, for example, can have an important effect on grazing patterns. In arid zones, the water source is the center of grazing activity and the primary determinant of grazing the grazing area. The area near the water may become overgrazed, even damaged and eroded, because of the influence of the water source on grazing pattern. Social factors, such as the development of a home or territorial area can inhibit movement of horses on large ranges. The social rank of the horses can determine which horses obtain the choicest grazing sites or best access to supplemental feed or water.

Learning by Application: Write a short story about something related to this section that applies to your horse, a horse belonging to a friend or a horse story you have read. If possible, share this experience in a 4-H meeting.

photo by Richard Maxey

In the winter it is important to provide supplemental forages, such as alfalfa for good nutrition.

ABNORMAL BEHAVIOR/VICES

Do you have a bad or irritating habit, such a nail-biting or snapping your gum? Horses also pick up bad habits, which are usually referred to as vices. Animal behavior experts often refer to vices as stereotypies, because they are often rooted in the behavioral nature of the animal. Understanding that vices are behaviorally based, stereotyped behavior may assist in preventing and/or treating these problems. Common vices include the following:

- **Wood-chewing**. This occurs with both stabled and pastured horses, and can be due to a lack of fiber in the diet, or it can be due to boredom.
- **Cribbing**. This term is sometimes confused with wood-chewing, but is more serious. Cribbing actually involves the grasping of a surface (often wood) with the teeth and swallowing air. This behavior can cause horses to lose weight, and it makes them more prone to colic. Cribbing is sometimes incorrectly referred to as wind-sucking, but "wind-sucking" is a problem of mares when air is pulled into the vagina.
- **Stall-kicking**. This behavior involves a horse habitually kicking or pawing the walls and/or floor of its stall. This behavior often intensifies near feeding time.
- **Weaving, circling or head bobbing**. Weaving is the shifting of the horse's body from side to side. Circling and head bobbing are self-describing. All of these, and other habitual movements may simply be annoying or can become so persistent that they actually result in a tired and listless animal.

Correcting behavioral vices can be difficult. Punishment is almost never effective, and may result in worsening the condition. Try to determine the basis for the problem. For example, if the animal is chewing the planks on the stall because of a lack of fiber in the diet, simply feed more hay, possibly of a slightly lower quality, with more fiber. If the animal is chewing because of simple boredom, providing additional stimulus may decrease the wood chewing. Also, it may be helpful to put a barrier, such as wire or metal flashing, over the favorite chewing place, or put a deterrent, such a hot pepper sauce, on the wood. Sometimes, a change in stall or allowing more pasture time will help.

Cribbing is even harder to correct, but more important to find the solution. Sometimes, a cribbing strap placed around the throat will make swallowing difficult enough that it curbs the habit. It also is possible to muzzle the horse with a special device that allows grazing and drinking but prevents cribbing.

Horses are social animals. If part of the problem is boredom due to lack of companionship, it is possible that providing a companion animal might help. A variety of companion animals, from chickens to goats, have been used.

Sometimes horses that are developing a tendency toward weaving, circling or other repetitive movement vices will cease the behavior simply by getting more exercise, or by being turned out periodically in an open paddock or pasture.

Occasionally drugs are used to curb vices. This solution is often only temporarily successful, and may be prohibitively expensive for long-term use. However, success has been reported in some situations. Discuss this option with your veterinarian.

photo by Richard Maxey

Horses often chew wood because of boredom, and they can do considerable damage to stalls and fences.

ELIMINATIVE BEHAVIOR

Horses generally prefer to stop whatever they are doing to defecate or urinate. Riders should become sensitive to this and make allowances. Horses will often establish an elimination area within a paddock. If possible, they are likely to avoid grazing near that area.

Learning by Application:

Write a short story about something related to this section that applies to your horse, a horse belonging to a friend or a horse story you have read. If possible, share this experience in a 4-H meeting.

QUESTIONS AND ANSWERS ABOUT HORSE BEHAVIOR

Following are some frequently asked questions related to horse behavior.

Why are some people, such as experienced trainers, able to handle horses with such ease?

It is a combination of experience and an understanding of horse behavior. This, coupled with the trainers experience, skill and confidence, allows them to handle horses with deceptive ease.

Are horses dumb animals?

It depends on how intelligence is defined. It is doubtful that there has ever been a horse that would score very well on an intelligence test that was designed for humans. On the other hand, horses have survived as a species when others have disappeared. The horse has precisely the correct amount of intelligence it needs to allow it to function within the grazing/prey niche that it inhabits (horses don't need to be Einstein). Therefore, when the question is examined as the amount of intelligence present, relative to the amount needed, it would be unfair to characterize them as "dumb."

The negative use of "dumb" or "stupid" as applied to horses implies "dull," and horses have too many interesting facets to their behavior to deserve being labeled as dull. Sometimes a rider is tempted to call a horse stupid because the horse does not react in the manner the rider thinks it should. However, a properly trained horse reacts in a very predictable manner, and the failure of the horse to behave according to the rider's desires may, in fact, reflect the rider's lack of perception rather than the horse's.

Why do horses herd together?

Part of the explanation for the herding instinct is that it is a protective mechanism. Many horses are not equipped with the skills that allow them to effectively fight large predators, so they will normally flee from attack. The odds of successful escape are directly proportional to the horses' ability to detect the attack as quickly as possible. Increasing the number of individuals in the group increases the opportunity of early detection and successful escape. Also, it is more likely that older or crippled horses will be apprehended by a predator in an attack on the herd. These horses happen to be the ones that are less important to the survival of the herd.

There are also social benefits to the herding instinct. Being a part of a herd, guarantees horses access to mates. They are also supplied with companionship and a defined social hierarchy. There is, of course, a requirement for horses to sacrifice a large portion of their individuality in return for the advantages of being part of the herd. Individuality, however, apparently returns very readily under training conditions, almost exactly as soon as humans give the horse a name.

Do horses prefer to drink running water or still water?

Horses will pick still water when they have a choice. In fact, based on field reports, they may cut back on water consumption if running water is all that is available.

How do horses stay cool in the summer?

Horses will often seek shelter from the sun in dark places. A cool barn, a rock overhang or a grove of trees will provide the relative cool that the horses are seeking. Plenty of cool, clean water also helps. Horses also perspire, which becomes their natural cooling mechanism, especially during periods of activity.

Will horses choose fight or flight when confronted with a threat?

To understand whether a horse will fight or flight, it is important to understand a horses' "flight zone." This is the space around the horse which, if entered by a perceived threat, will cause the horse to react. If the horse has a choice, it will choose flight. If an untamed horse is cornered or penned, and cannot escape by flight, and a dog or a person penetrates their flight zone, the horse will become nervous or even highly agitated. Panic can cause them to leap fences or stampede. Usually, simply removing the threat from the flight zone will calm the horse.

Horses that are handled more frequently are not as sensitive about their flight zone. Loud noises or frenzied activity can increase the effective size of the flight zone. This is why someone with a calm, confident manner is more effective as a horse handler than a nervous, noisy person.

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EXERCISES

Successful completion of this part of your 4-H project requires that you complete at least one research exercise and one behavioral observation exercise. These are described below:

Research Exercise

An abundance of literature exists related to horse behavior and training. Pick a behavior-related topic that interests you and find out as much as you can related to that topic (this is research). Use as many information sources as possible (library, the Internet, bookstore, breed publications, magazines, personal interviews with experienced people, etc.). Write a report or article about this topic from the information you have gathered. If possible, present this topic to your 4-H Horse Project Group or other audience. Pick your own topic (with approval of your project leader or 4-H agent) or use one of the following suggestions:

- Predicting horse behavior from facial expressions.
- Teaching a horse to respond to pressure.
- Treating or preventing vices.
- How understanding "pecking order" affects horse management.
- Read the Horse Whisperer (a novel) and try to find a person in your area who has the level of experience and skill that approaches that of the fictional character in the book. Interview that person, placing your emphasis on learning how to develop this level of understanding of horse behavior and training.

Behavioral Observation Exercise

Conduct a behavioral observation exercise by picking a particular type of horse behavior, and carefully observe that behavior in your own horse(s) or horses that belong to someone else. Record your observations. Include timing observations, if appropriate. Prepare a report about the observations you have made. Support your observations with research (see research exercise). If possible, present this topic to your 4-H Horse Project Group or other audience. Pick your own observation topic (with approval of your project leader or 4-H agent) or use one of the following suggestions:

- Turn out three horses that have not previously been together into the same paddock (Warning: make certain that submissive animals have room for safe retreat from aggressive animals). Observe their behavior for at least a half hour. Record your observations. Answer these questions: Which horse is most dominant? Which horse is most submissive? What behavioral activities were exhibited? Was there fighting or did horses exert dominance by threat display? Alternative: Turn one horse into a group with which it has never been before and make the same observations.
- Observe horse behavior during parturition (birth). Do this under the supervision of an experienced adult. (Caution: this may require staying up late for several nights before birth actually occurs.) Answer these questions: How long was the mare in labor? What time of day did the birth occur? What was the position of the mare during the birth process? How long did it take the foal to stand? Suckle? Trot or running walk? Lope?
- Observe feeding behavior. Turn horses into a pasture or paddock with feed after a workout or short period without feed. Observe which horses

are the most aggressive eaters and which are most timid. Do any of the horses tend to “bolt” (eat too rapidly) their feed? Record observations.

- Observe investigative (curious) behavior. Introduce horses into a new environment or put a new object into their existing environment. Young horses often work best. Observe behavioral responses. Do different horses respond in different ways? How long does it take the horses to explore certain areas or aspects? Are there differences due to gender? Age? Do horses that exhibit more curiosity tend to be the ones that learn better during training?

Questions

Answer the following questions based upon your review and understanding of the topics in this manual.

Horse Behavior Basics

1. The study of animals in their natural habitat is _____ .

2. Within the animal kingdom, cats are predators and horses are _____ .

3. Horses are anatomically designed for (pick one):
   Intellectual achievement _____
   Stalking and subduing _____
   Spending time on eating _____

Types of Behavior

1. Which type of behavior is associated with the consumption of food and water? _____

2. When horses “check out” a new arrival in the pasture, they are exhibiting _____ behavior.

3. As horses establish pecking order, they prefer (pick one):
   Threatening display _____
   Arbitration _____
   Damaging attacks _____

Horse Senses

1. How is “spooking” related to binocular vision? _____

2. How do horses use their ears as a protective mechanism? _____

3. Rank the importance of vision, hearing and touch in transmitting signals from rider to horse.

   1. _____ 2. _____ 3. _____

Domestication

1. How long have horses been domesticated? _____

2. What animals were domesticated before horses? _____

3. Give one or more methods that humans have used to change breeding patterns during the domestication of horses.

_____

Mating Behavior

1. In Tennessee, when are mares most likely to mate? _____

2. The lip-curling reflex is called _____ .

3. The manager can encourage the expression of estrus display behavior. How is this done? _____

_____

Behavior at Foaling Time

1. At parturition, mares are likely to (pick one):
   Seek solitude _____
   Wait for the vet _____
   Need more light _____

2. The new foal is likely to nurse within _____ .

3. How often will foals nurse during the first few weeks? _____

Feeding Behavior

1. In a grazing habitat, the time spent consuming feed depends on what factors? _____

_____

2. Do horses always eat what is best for them (give an example to defend your answer)? _____

_____

3. What senses does a horse use in selecting what it will consume? _____

_____

Abnormal Behavior / Vices

1. What is the difference between wood-chewing and cribbing? _____

2. Why are companion animals sometimes used to curb vices? _____

_____

3. Which of the following is likely to be the least effective in correcting vices:

___ Understanding the basis of the problem and correcting based on that information.

___ Innovative punishment such as playing loud music accompanied by a careful explanation of why “this is for your own good.”

___ Moving the horse to a different environment or the use of physical barriers.

GLOSSARY

Agonistic Behavior - All behavior involved with conflict or fighting, including anger, aggression, submission and flight from conflict.

Allelomimetic Behavior - Mimicry; copying behavior such as when one horse imitates the behavior of another.

Auditory - Related to sound, listening.

Behavior - The animal's response to its environment.

Binocular Vision - Using both eyes for observation.

Carnivorous - Meat-eating.

Contactual Behavior - Seeking affection, protection or other benefits by contact with other animals.

Dominance \ Submission - Often referred to as "pecking order,"these terms refer to the ranking or social order of animals. Dominant animals rank over submissive animals.

Eliminative Behavior - Activities associated with defecation and urination.

Epimeletic Behavior - Giving care and attention, most common between mare and foal, but also between other horses, such as horses standing together under shade and "switching" flies from one another. (Et-Epimeletic behavior is the calling or movement associated with seeking epimeletic behavior, such as when a lost foal is seeking its dam).

Estrus (Heat) - The period of the reproductive cycle when the mare ovulates and, if bred, is likely to conceive. A behaviorist would define estrus as the "behavioral state when the female seeks and accepts the male."

Ethology - The scientific study of animal behavior, often in the natural environment.

Flehmen Response - Head-raised, lip-curling behavior of the stallion (bulls and rams, also) as he smells estrus females. The behavior is sometimes observed in females.

Flight zone - This is the space around the horse which, if entered by a perceived threat, will cause the horse to react. If the horse has a choice, it will choose flight.

Gustation - The sense of taste

Herbivore - Plant-eating animal

Imprinting - The process in the first hours of life by which animals learn to recognize and bond to their dam (and/or other caregiver).

Ingestive Behavior - The behavioral activities associated with the consumption of food and water.

Investigative Behavior - Curiosity; the exploration of the surroundings or objects. Horses are noted for using all their senses to thoroughly "check out" any new item, horse or place with which they are presented.

Libido - the term which is used to denote sexual drive or the degree of sexual urge of animals.

Monocular vision - Using one eye for observation.

Olfactory - Related to the sense of smell.

Pheromones - compounds which are emitted from an animal to signal sexual receptivity.

Parturition - The process of giving birth.

Placental Tissues - The vascular tissues connected to the fetus by the placental cord; these tissues are expelled from the uterus after parturition (hence the common name of "after-birth").

Polyestrus - Multiple estrus cycles; horses are seasonally polyestrus meaning they may cycle repeatedly within the breeding season.

Puberty - The attainment of sexual maturity.

Reinforcement - Teaching by repetition. With horses, the trainer "reinforces" in a positive way by rewarding the correct response and in a negative way by discouraging an incorrect response.

Sexual Behavior - Behavioral aspects related, generally, to mating between males and females.

Stereotypical Behavior (stereotypies) - Vices, abnormal behavior

Stimuli - In horse training terms, a signal or cue initiated by the trainer/rider. The horse "senses" the stimulus, and responds to the stimulus with an action

Teaser - A stallion which is used to stimulate a mare into sexual receptivity, usually in preparation for breeding by another stallion.

Ungulant - An animal with hooves, most species of which consume forages.

Vocalization - In animals, making recognizable, behaviorally predictable sounds with the mouth.

Vomeronasal organ - This organ is in the nasal cavity and is connected to the roof of the mouth. Its purpose may be to detect the pheromones (sexual odor compounds) in the urine.

4-H Project Plan (F652)

Project _____ Year _____

What I plan to do and learn in this project (goals): _____

_____

_____

How I plan to reach my goal: _____

_____

_____

Resources I can use (money, supplies, equipment, help from others, etc.): _____

_____

_____

Signed: _____
4-H Member

Signed: _____
Parent/Guardian

Date: _____

(This form should be included in the Project Record Section of the 4-H Achievement Record Book.)

Project Plan Evaluation

What I did: _____

_____

I feel I met by goals (or did not meet my goals) because: _____

_____

Resources I used (money, supplies, equipment, help from others, etc.): _____

_____

Other things I would like to do (future goals): _____

_____

Signed: _____
4-H Member

Signed _____
Parent/Guardian

Date: _____

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Agricultural Extension Service, Charles L. Norman, Dean